PC

AUSTRALIA'S **#1 PC GAMING MAG**

PowerPlay

10 YEARS OF WARFARE

FROM D-DAY TO THE
FROZEN FAR FUTURE:
THIS IS THE HISTORY
OF **BATTLEFIELD**

BATTLEFIELD 4

THE INSIDE STORY ON DICE'S ATTEMPT TO COLLIDE ITS SINGLEPLAYER CAMPAIGN WITH MULTIPLAYER'S FREEDOM

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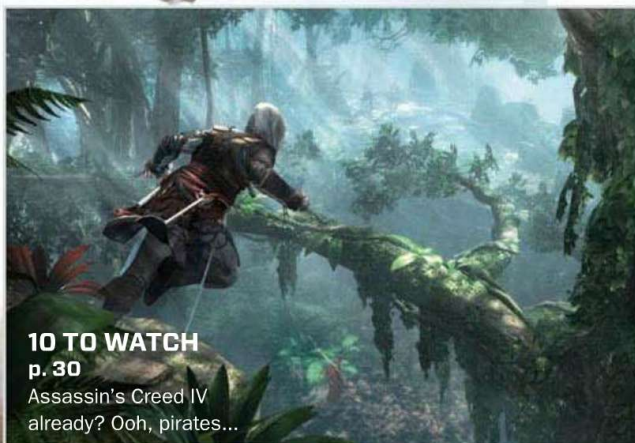
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Fielding Questions

I feel I need to take a moment here to explain how Battlefield 4 came to be on the cover of this issue of PCPP.

We are huge fans of the series. I myself have lost thousands of combined hours to them. No other online shooter offered the same scope and the freedom within it to wage war how you saw fit. These were never games that I played singleplayer; even when playing online without fellow regular squad mates was less of an optimal experience.

The first Battlefield game I reviewed for this magazine was Bad Company 2. Sure, it had a singleplayer campaign; something competent but unremarkable. It really wasn't a big deal. A holdover for the console audience. The multiplayer, with its new destruction effects, was where it was at.

The next game I reviewed was Battlefield 3. Yet again, a singleplayer campaign showed up. It was uninvited, but I gave it a chance. It was a waste of time. Still, it didn't affect the multiplayer offering, which continued its brilliant evolution.

So when EA offered us the chance of a first-look at Battlefield 4, I jumped at the opportunity. I was there at 2011's GDC unveiling of Battlefield 3, in which a quarter-hour of the singleplayer campaign was projected. I was not impressed. Not many were. I was sure DICE would not make the same mistake again. This time they'll know what we want to see.

The thing about organising cover stories is that so much must be confirmed in advance. Journalists' availabilities, flights, accommodation, cover artwork, interview schedules. As this particular trip took place at the very end of this issue's production cycle, I was unable to attend myself. So Nathan Lawrence represented PCPP this time around – the only other Australian games writer whose knowledge of the series makes him someone I trust to keep a cool head amongst all the first-person explosions. He's also a trusted squad mate.

Still, EA was unwilling to divulge the nature of the content we'd be shown, so I gambled. This was Battlefield 4. One of the greatest multiplayer series on PC. This could blow us away. Yet we came away underwhelmed. Not only was it more singleplayer footage, but EA publically released a modified version of the video in full the moment the press event was over – something else we weren't told about until it happened.

In hindsight, knowing what we'd be shown, and what would be released, I don't believe we'd have put Battlefield 4 on the cover. The right time for this kind of exposure would have been with a multiplayer experience. We refuse to be fooled again by DICE's singleplayer promises. This is why I'm still proud of Nathan's piece, for his breakdown of the singleplayer content and his interview with DICE reflects exactly how we feel about the series, and doesn't shy away from asking the hard questions. What we have for you, then, is a cover story that is almost a battlefield in and of itself.

I hope you enjoy it. And I promise, next issue, we'll have something whose singleplayer campaign we are genuinely excited about...
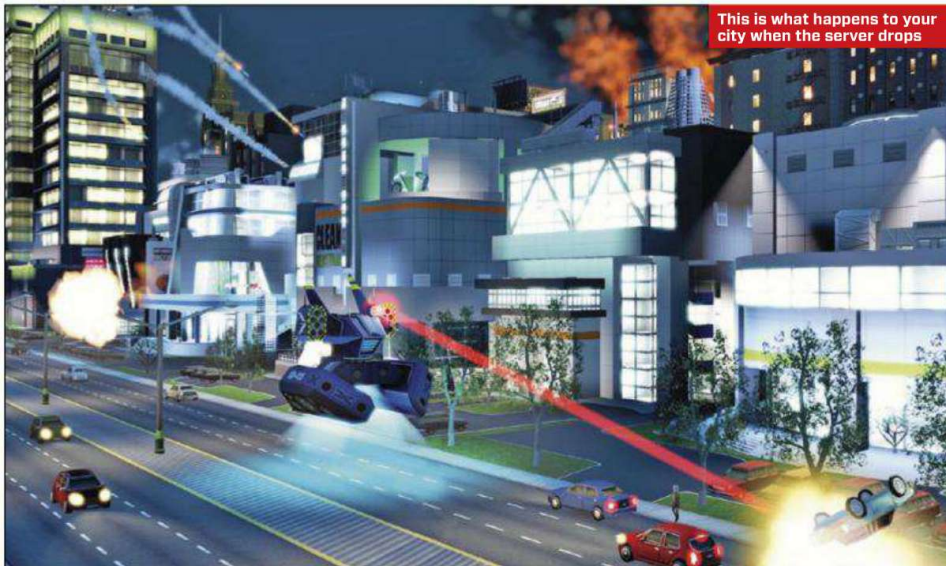
Daniel Hindes
Editor
@dhindes

QUOTES OF THE MONTH

"Gonna sit in my cockpit and pretend I'm famous."

"Um, analogue is so five years ago."

"If you were a cow, they would put you down."

inbox

This is what happens to your city when the server drops

LETTER OF THE MONTH WINS!

Write in to PCPP with your rants, considered opinions, and endless run-on sentences of pure awesome. The address is letters@pcpowerplay.com.au. Each letter read by hand! This month's winner scores themselves a copy of Sleeping Dogs for PC – with three bonus content packs included! Swish!

LETTER OF THE MONTH

G'day. I write in reference to your article regarding Digital Combat Simulator World. The first sentence reads Forget Falcon 4.0. You also mentioned the sim as having crashed and burned. I ask why this is your official view, given the recent release of the BenchmarkSims mod of F4, Falcon BMS 4.32. This mod improves avionics and flight models to an extent not previously seen in the simulator community, as well as providing a stable multiplayer solution, in addition to the obvious features of flying the most beautiful jet designed.

I also have to question the praise for Eagle Dynamics, given some of their business practices. In short, your article focussed on the corporate offering and completely ignored the free to play modding community's excellent production. You can find out more from benchmarksims.org

In this reader's opinion, there is sufficient information on that site, combined with the free download, that any simulator "expert" could rectify this fault, with a follow up article...

Blu3wolf

Bennett here. The article was about upcoming sims, not mod releases for ten year old sims, which is why it wasn't covered. If we ever do a feature on simulation mods, I'll be sure to cover it.

By the way, I'm well aware of the

various mods for Falcon 4.0 – as an avid reader of SimHQ's forums I continually check their screenshot thread to see if F4's terrain has magically been improved to 2013 standards. It has not. When and if it ever happens, I'll be the first to check out the various mods – F4AF, Skunkworks, BMS, etc, etc. Until then, I simply can't stand flying a beautifully rendered 3D cockpit through a crude, square, empty landscape, engaging enemy targets that look like they were built over a decade ago, which they mostly were.

I hope I've explained my reasoning behind the article – again, the focus was on upcoming releases, not mods. If we were to cover mods, it'd be a huge feature in itself, as BMS is just one of many.

I'M WATCHING YOU

Great to see those competitions back. They've been missing in action ever since PCPP got name-dropped on Media Watch years ago. I don't if it was a coincidence or not, yet seemed to coincide with that. You guys get some access to great stuff and it's great to see we have a chance to win some great booty! Why be a pirate when there is real treasure to be won?

Mitchell Hall

Thanks Mitch! Be sure to check out this issue's comps over the page. And how would we know we're great if we didn't get name dropped?

FOREVER TETHERED ONLINE

Being a big fan of Sim City I happily dropped $100 to get the game at launch. Thanks to their big launch day debacle the four hours of time I allocated myself out of my Uni studies was spent waiting for a server space, only to then lose connection once the game finally let me in. The next morning I finally got in and built my first city. Suddenly WHAM! Server connection drops out and the three hours I spent building up my city was completely vapourised. Is this really what the future of videogames is going to be? Loyal customers get screwed over for playing games on launch day thanks to poor servers.

What are our rights? As a paying customer, surely EA has a duty and responsibility to provide that service to an acceptable level of quality. I think the industry has transformed so much that the regulators haven't had time to actually regulate, especially when it comes to disclaimer policies and customer treatment.

I could even ask the same thing with MMOs. I spent probably close to $1k on City of Heroes over six years, and now all that money and my progress is gone and I have no way to play that game anymore because there's no server for it. My original installation disk is completely redundant because the software on it no longer works. Now even the games that aren't even anything close to MMOs are using the same kind of requirements all in the name of DRM. should games really be allowed to become so... temporary? Does buying a physical box from a store no longer count as a product?

Matthew Dorey

According to EA, who refunded physical retail copies of SimCity but not digitally-purchased ones, physical boxes are still more real products than those sold on Origin. Which doesn't sit right with us either. Rest assured we'll be launching a full investigation in a future issue.

PC PowerPlay
AUSTRALIA'S #1 PC GAMING MAG

COMPS

Welcome to the PCPP competitions page! With the office positively overflowing in PC gaming goodies, it's become so difficult to do our ridiculously awesome jobs that we decided to pass the savings onto you. And by savings, we mean free stuff. Games, collectibles, swag, and all kinds of media that screams PC gaming. Or perhaps those are the screams of the intern trapped under the boxes of giveaways. Only one way to save them:

Head to **www.pcpowerplay.com.au to enter**!

To find the competitions, simply mouse over the "Community" tab in the main menu at the top of the homepage, and click on "Competitions". Click through to each individual competition page, fill out the form (be sure to agree to the terms and conditions) and you'll be in the running to win! Keep an eye out for this page in future issues of PCPP, as we roll out new competitions every month!

WIN

10 COPIES TO WIN!

Ultramarines

The Warhammer 40,000 universe finally gets its own feature-length film! Thanks to Kabuku, we've got 10 copies of the Ultramarines movie DVD to give away. For the Emperor (and ten lucky winners!)
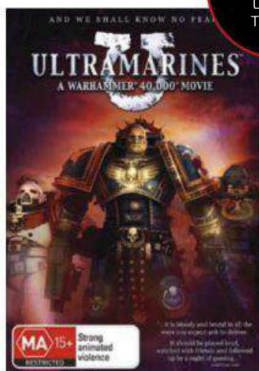
FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
► **Which is the best Warhammer 40,000 race, and why?**

WIN

10 COPIES TO WIN!

Driftmoon

This surprise indie RPG gem – reviewed p.92 – was made by two developers over seven years! Thanks to Instant Kingdom, we've got 10 copies to give away. Shove it in your loot sack!

FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
► **What's the most annoying way to die in an RPG?**

WIN

10 COPIES TO WIN!

Monaco

Also reviewed this issue on p.94 is indie top-down heist game Monaco! Thanks to developer Pocketwatch Games, we've got 10 copies to give away. We even promise we didn't steal these ones!
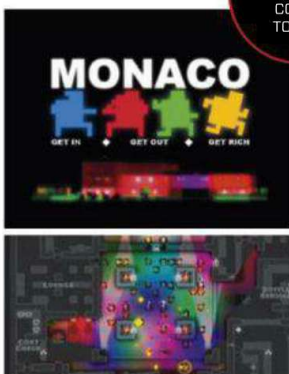
FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
► **What's the worst thing that could happen during a casino heist?**

WIN

5 HEADSETS TO WIN!

GameCom Commander

The GameCom Commander is one of the most heavy-duty PC gaming headsets yet! Thanks to Plantronics, we've got 5 headsets to give away!

FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
► **What do you say into the microphone after besting noobs online?**

PC PowerPlay

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COMPETITIONS

WIN   10 COPIES TO WIN!

The Secret World

Now without its monthly subscription fee, The Secret World is getting bigger and better! Thanks to EA, we've got 10 copies to give away. But, shhh, don't tell anyone. It's a secret.

FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
▶ *Which popular conspiracy are you convinced is true?*

WIN   10 COPIES TO WIN!

Medal of Honor: Warfighter

Danger Close's controversially patriotic shooter is something to experience! Thanks to EA, we've got 10 copies to give away. You can even play an an Aussie!

FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
▶ *What kind of medal do you think you deserve, and why?*

WIN   10 COPIES TO WIN!

Need for Speed: Most Wanted

Criterion's glamorous multiplayer reimagining of Need for Speed: Most Wanted is so fun, it's illegal. Thanks to EA, we've got 10 copies to give away!

FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
▶ *What's the best way to get the coppers off your tail?*

WIN   10 COPIES TO WIN!

The Showdown Effect

This 90s action movie-inspired shoot 'em up has blasted its way onto PC! Thanks to Paradox, we've got 10 copies to give away. Dive in slow motion over to our competitions page to enter!
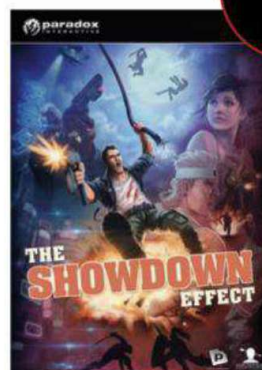
FOR YOUR CHANCE TO WIN:

Head to **www.pcpowerplay.com.au**
In 25 words or less, answer the following question:
▶ *Which is the best 90s action movie one-liner?*

FRONTEND

THE RELEASE SCHEDULE

Looking ahead to the upcoming PC game releases

LEGEND: Steam | Origin | Good Old Games | Download | Retail

APRIL

26th STAR TREK
DIGITAL EXTREMES, $TBA

30th ZENO CLASH II
ACE TEAM, $TBA

MAY

KINETIC VOID
BADLAND, $TBA

2nd MIGHT & MAGIC HEROES VI: Shades of Darkness
VIRTUOS, $34.95

16th WARGAME: AIRLAND BATTLE
EUGEN SYSTEMS, $TBA

17th METRO: LAST LIGHT
4A GAMES, $59.95

23rd RESIDENT EVIL REVELATIONS
CAPCOM, $59.95

29th THE NIGHT OF THE RABBIT
DAEDALIC, $TBA

31st GRID 2
CODEMASTERS, $79.95

JUNE

MOTOGP 13
MILESTONE, $TBA

MAGRUNNER: DARK PULSE
3AM GAMES, $19.95

6th REMEMBER ME
DONTNOD, $79.95

7th DARK
REALMFORGE, $TBA

21st THE RAVEN
KING ART, $TBA

25th COMPANY OF HEROES 2
RELIC, $89.95

27th LOST PLANET 3
SPARK UNLIMITED, $79.95

JULY

12th CIV V: BRAVE NEW WORLD
FIRAXIS, $TBA

Q2

NEVERWINTER
CRYPTIC, FREE-TO-PLAY

EAST VS WEST
BL-LOGIC, $TBA

DIVINITY: ORIGINAL SIN
LARIAN, $TBA

AMNESIA: A MACHINE FOR PIGS
THECHINESEROOM, $TBA

THE DARK EYE: DEMONICON
NOUMENA, $TBA

AARKLASH: LEGACY
CYANIDE, $TBA

MARS: WAR LOGS
SPIDER, $TBA

Q3

EUROPA UNIVERSALIS IV
PARADOX, $TBA

PATH OF EXILE
GRINDING GEAR, FREE-TO-PLAY

STARPOINT GEMINI II
LGM, $TBA

ARMA III
BOHEMIA, $89.95

Dishonored: The Knife of Dunwall

DEVELOPER ARKANE
PUBLISHER BETHESDA
OUT NOW
www.dishonored.com

Take on the role of supernatural assassin Daud in this hefty story-based downloadable content for Dishonored! Play through all-new missions that take place concurrently with the main game! And summon other assassins to do your dirty work for you – then give them a thumbs-up for a job well done! An assassin is nothing if not supportive!

DIGITAL ★ CURTAIN

DRAGON'S CALL II: REVIVAL OF THE GIANT DRAGONS

The inevitable success of this business plan ate my brain!

DEVELOPER GAMEDP
ORIGIN INDONESIA
http://dragonscall2.lekool.com

L ook, it's easy to make fun of an Indonesian MMO that ticks every clichéd box you can think of and boasts of not just being about "PK" but also having various other "systems" to "enable relaxation". It's easy to make fun of a developer called GameDP where the DP stands for Deep Passion.

It's easy to make fun of hackneyed dragon designs and the whole insane concept of a side-scrolling turn-based MMO where giant molten hammers flatten your opponents once you pay a shell corporation in fake money that you generated using real money. And disembodied dog skulls that are on fire. And... hang on a second, could this actually be awesome?

Oh. On further examination no, no it couldn't, but the point I'm driving at here is GameDP has come up with a concept, a model, an execution, and they already have 1,200 Likes on Facebook. So I choose to believe there's a bunch of guys in an office in the awesomely-nicknamed Solo City (Surakarta dontcherknow) who are living the goddamn dream of running a sweet MMO that speaks to their own particular... thing. Though their April Fools gag was odd, in that if you logged in to the game on April 1 they gave you a whole bunch of points and money and stuff. And

let you keep it. So... April Fool? Ha ha?

Apparently I'm supposed to tell you what these Digital Curtain games are actually LIKE, so Dragon's Call II: Revival of the Giant Dragons is LIKE a turn-based fantasy Double Dragon where you spend points like "action" and "honor" to kill the heck out of other players. EXTRA BONUS LOOT DROP: The graphics are slightly better than Double Dragon!

Under the section on the website "Brief Introduction to Adventure" the developers promise you'll be rewarded with reputation, honor, action point (sic) and gold for answering random questions. I'm just dropping this paragraph in at random because that fits with Dragon's Call II: Revival of the Giant Dragons narrative style.

There is something irrepressibly cheerful about this game. Maybe I'm being fooled. Maybe these guys are in a living hell, in thrall to organised crime, milking bored MMO addicts by use of a gimmicky perspective and... something... no. No I just can't see it. DCIIROTAD is so optimistically terrible it has to be genuine. It speaks to a certain kind of person. And if you see that certain kind of person on the street, try not to point and stare. It might make them... angry. PC

WHY DCIIROTAD FREAKS ME OUT

- It is a... 2D... side-scrolling... turn-based... MMO.
- Explore Revantusk Mountain(3) to get the Hand of Midas for abundant gold! Why does that freak me out? Doesn't it freak YOU out?
- Where does all this ART come from? I mean, do they buy it on a DVD? Or just steal it?
- On Facebook, Claude Genest asks "how do I put full screen?" and César Augusto Barroso Neres answers... oh who cares, no one I know has a name that awesome.

CHOICE QUOTES

"The game introduces an innovative leveling system, adding much to leveling process."
"Along with various systems, humanistic storyline, abundant tough stages and fun gameplay, Dragon's Call II will demonstrate a unique exciting and fun game world."
"Notice! 1.9 version has strongly struck!"
"Are you fooled today? To thanks for the full support, we have prepared a series of events for our Dragon Hunters."

ALIENWARE
GAME VICTORIOUS™
X51

TRIUMPH IS WAITING

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alienware.com.au/x51

Monitor sold separately.

intel inside™
CORE™ i5
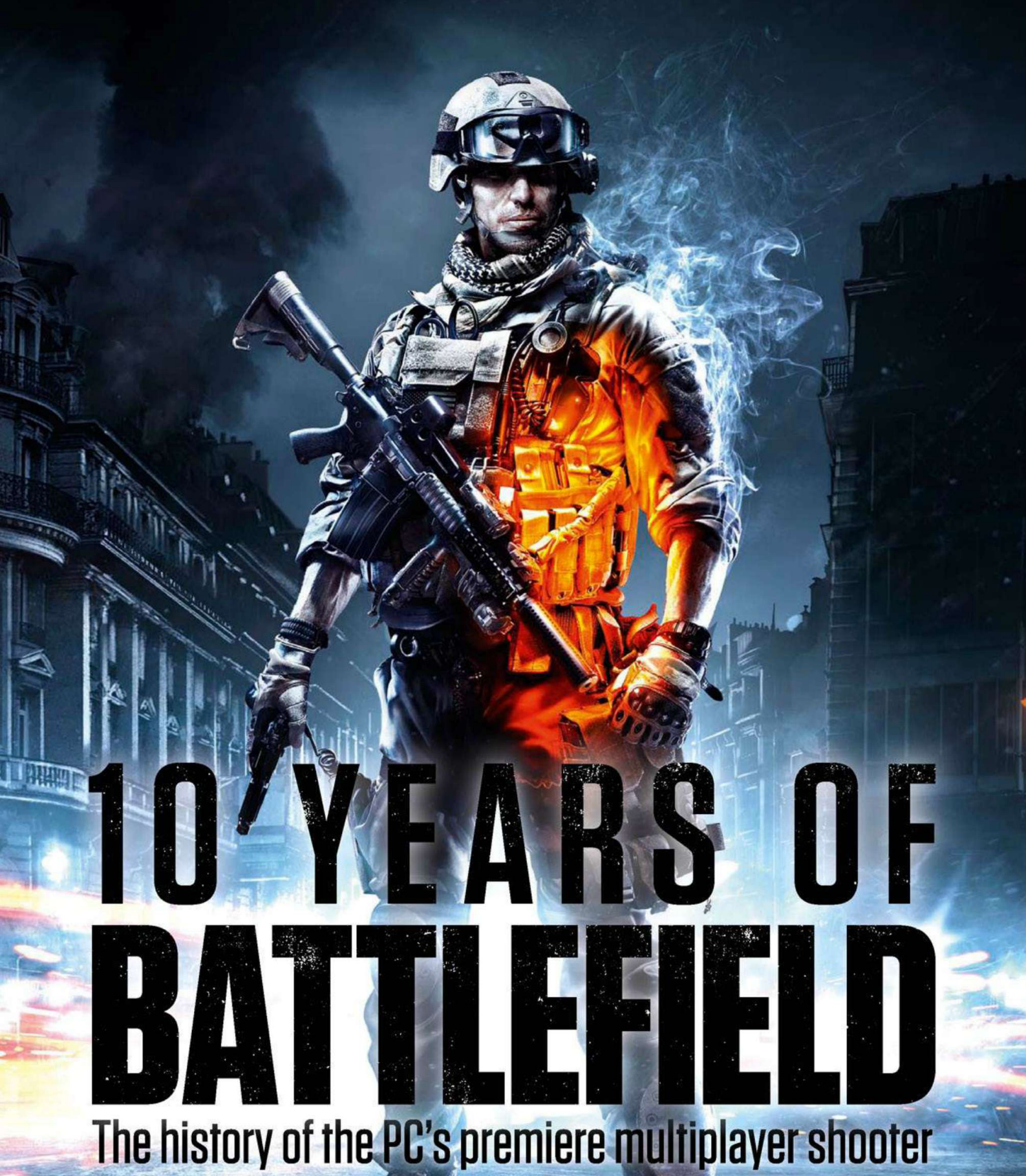
10 YEARS OF BATTLEFIELD

The history of the PC's premiere multiplayer shooter

It's been a long road from 1942 to 2142 and back – but it's been far from lonesome. DICE has spent a decade creating, experimenting with and refining the Battlefield formula to create the ultimate combined arms multiplayer FPS. Along the way, players have adapted to new fronts, new technology, and new ways to employ daring strategies and take advantage of emergent opportunities. Join **DANIEL HINDES** as he rides a wing through the entire Battlefield series.

THE GREATEST WAR IN HISTORY

Returning to the where the series began with **BATTLEFIELD 1942**
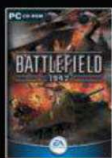
World War II may not have broken out in 1942, but it nevertheless served as the period for which DICE broke into multiplayer gaming history. The series' debut title, Battlefield 1942, offered the combined arms warfare of Operation Flashpoint, but with the pick-up-and-play accessibility of each vehicle's more arcade outings. It took the kind of teamwork only hinted at in Return to Castle Wolfenstein's seminal multiplayer mode and blew it out to a massive scale that saw 64 players engaging in all-out warfare across vast terrain.

"It was almost impossible to play 64 players when we launched," says Lars Gustavsson, then Producer on Battlefield 1942 and now series Creative Director. "The design doc we signed with EA actually said we would have 128 players."

Despite the discrepancy, players attached themselves to the game's most recognisable map, Wake Island. It launched in Battlefield 1942's demo and has become the series' most iconic landscape, finding some representation in nearly all subsequent Battlefield titles.

"Its U-shape means that the water gameplay between the map's two legs – whether it's going by boat or swimming across – creates new alternatives for when you're locked in a hopeless struggle against superior armour," says Gustavsson. "There's always an alternate solution on Wake Island, and for me personally, that's what makes Battlefield Battlefield."

It's also a map that saw every vehicle in the game's combined arms warfare get its chance to shine – from bombers, to tanks, to drivable aircraft carriers.

Gustavsson recalls the Wake Island demo launch: "Patrick Söderlund [then Team Manager] kept calling me all night to update our numbers: 'Now we've beaten this game, now this game, now we beat Unreal!' and we just sat there and toasted and shouted with joy. Sure, we had high ambitions and high hopes, but this just felt crazy."

Such dynamic gameplay on Wake Island was contrasted by a large, open map like

A WING AND A PRAYER

Nothing characterises Battlefield 1942's near-comical sandbox nature like players discovering how to hitch a ride on aeroplanes by carefully sitting and balancing on the wing. DICE later went on to make the wing a fixed seating position in the planes featured in Battlefield Heroes. Neeeorrrw!

El Alamein; a vast expanse of desert that saw a polar opposite flow akin to a merry-go-round as players weren't limited by the terrain. Early in development, however, DICE actually tiled the terrain to allow players to fly off the edge of Al Alamein and reappear on the other side of the map.

"Which meant you could snipe yourself in the back of the head!" says Gustavsson.

Though the approach was abandoned a year into development and replaced with an out-of-bounds area, the contrast between even these two maps is something no Battlefield title has been able to recapture since 1942: the sheer

> "It was almost impossible to play 64 players when we launched. The design doc actually said we would have 128 players"

variety of combat experiences available based upon map design alone. Taking advantage of all four theatres of war, Battlefield 1942 would have players paradropping into Market Garden on one map, re-enacting the D-Day landings on another, or fighting tense infantry stand-offs in the urban ruins of Stalingrad.

"We had this idea that vehicles weren't supposed to spawn in front of players, but inside factories instead," says then Lead Artist, Stefan Vukanovic. "The doors would open, the tanks roll out, and THAT'S when you could enter the vehicle. And we had huge shipyards for the boats! I had to build shipyards that were 300 meters long, then the carriers would spawn there and come floating up through a pair of opening doors. I think we realised pretty quickly how hard

A concept sketch for the Operation Market Garden map that ended up being very close to the final design.

DICE sketches out its map layouts to identify key tactical areas such as bunkers, anti-air turrets and fortifications.

CROSSING CONTINENTS

Gustavsson recalls a lot of late nights uploading game builds to EA's US offices. "Sending it took like seven hours, and we didn't have any fancy FTP or anything. You couldn't split the delivery and you couldn't resume a disconnected upload, so you just sat there. If you were lucky, someone found a bottle of wine or something, and then you sat there and played while the build uploaded."

that would be to implement!"

What characterised Battlefield 1942 perhaps more than the intended gameplay was what players managed to accomplish that DICE did not expect. Entire servers would be set up for players to practice and perform stunts, such as flying a plane through the narrow opening beneath a bridge.

"In the evenings I would sit on the phone with the US," Gustavsson recalls. "I used to play on the Bocage map during these calls. Me and Ken Balthaser [Producer at EA] and the guys over there talked in the phone conference while chasing each other and doing stunts, so any time I watch one of these fan made videos I really get the sensation that so much of what Battlefield is has stayed untouched."

Such variety and attention to detail made Battlefield 1942 the hardest game in the series to make, says Gustavsson. "We were young, inexperienced and extremely overambitious. Still, it wouldn't have become what it became if we hadn't had that mindset."

TANK SMASH

DICE's early design documents show the developer attempting to incorporate minor destruction elements as early as Battlefield 1942 – though we wouldn't see the first iterations of the developer's efforts until three years later in Battlefield 2, then fully realised in Bad Company.

ALL ROADS LEAD TO ROME

With the success of Battlefield 1942, an expansion pack was inevitable. DICE sought to plug a hole in the game's available theatres and create Battlefield 1942: The Road to Rome in 2003, which focused on the Italian theatre. Six new maps, eight new vehicles and two new armies rounded out the new content. It was a surprisingly timid expansion, with few significant additions that changed or refreshed the core multiplayer gameplay – instead, it focused on just adding more stuff. In other words, it's the kind of DLC you'd expect to pay no more than $15 for these days.

SUPER SOLDIERS AND MECHA HITLERS

In almost a response to the lack of gameplay modifiers in Battlefield 1942's first expansion pack, DICE's follow-up six months later, Battlefield 1942: Secret Weapons of WWII, went all-out crazy – to the point where some maps had a jetpack that could be picked up and used by either faction's infantry. The major addition, however, was a new objective-based mode that pit Axis and Allied special forces squads against one another. Sixteen new vehicles made it in, including a motorcycle (later returning in Battlefield 3's DLC, End Game), whilst the special forces theme saw factions gain throwing knives.

[THE REDHEADED STEPCHILD]
Jumping forward to jungle warfare with **BATTLEFIELD VIETNAM**

RELEASE: 2004
WHAT IT ADDED:
· VEHICULAR RADIOS
· ASYMMETRICAL WARFARE
· 3D MAP
· VEHICULAR AIRLIFTS

While DICE's Stockholm HQ plugged away at the first modern-day Battlefield iteration, DICE's now-closed Ontario-based offshoot released Battlefield Vietnam – the least memorable game in the Battlefield lineage. This wasn't for lack of quality, mind you. Vietnam added a number of features that would soon become mainstays of the series.

Though unlocks wouldn't be seen until Battlefield 2, Vietnam reduced the available classes but added multiple loadouts for each, as well as loadouts that different in functionality depending upon the faction. Thus, Vietnam was the first Battlefield title to experiment with asymmetrical warfare. This extended to the vehicle selection, too, with US forces rocking heavy armour, whilst the Viet Cong employed guerrilla tactics and infantry-based anti-tank weapons. North Vietnamese forces were even able to dig tunnel networks, creating a mobile spawn point for the entire team and allowing them to flank from unexpected angles.

But what is Vietnam without Creedence? Vehicular radios were given much love, playing everything from protest songs to Ride of the Valkyries. Battlefield's filmic influences were never more apparent; where the previous title imitated Saving Private Ryan, Vietnam was all about Apocalypse Now, Platoon and Full Metal Jacket. But, by this point, Battlefield 1942's modern-day Desert Combat mod had series fans hungering for something else.
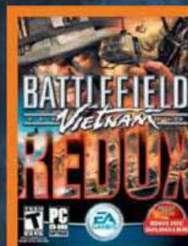
WORLD WAR 'NAM

DICE released an official mod for Battlefield Vietnam that reintroduced the previous game's World War II maps into the Vietnam engine. It was a great chance to play the Pacific theatre maps with some proper vegetation, then burn it down with a flamethrower.

WHISKEY, TANGO, FOXTROT

BATTLEFIELD 2 thrusts the series into modern warfare
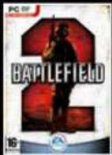
RELEASE: 2005
WHAT IT ADDED:
- STATS
- UNLOCKS
- SQUADS
- SCALING MAP SIZES
- COMMANDER MODE
- VOIP
- BATTLERECORDER

If Battlefield Vietnam was a little underwhelming, Battlefield 2 was nothing short of revolutionary. It wasn't even the modern-day theatre that was the main attraction – its gameplay improvements would be at home anywhere. A new chain of command was introduced that saw squads with individual voice communication channels serving under an all-seeing Commander, whose special abilities could turn the tide of any engagement. Maps scaled in size to match 16, 32 or 64 players, and included the first kind of destructible terrain in the form of collapsible bridges. Its ranks and unlocks would come to define the series' future.

"Back then the game was pretty hardcore," says Gustavsson. "I don't know that it was exactly what we aimed for, but we delivered a game with just one game mode and no real singleplayer except bot wars, and that still got us our highest rated game ever."

Battlefield 2 was also the first game where DICE learned it needed to be fluid and react to players. For every exploit that was patched out, a new one cropped up that required a hotfix for a hotfix. Dolphin diving, C4 throwing, grenade launcher spam – Battlefield 2 went a year unbalanced.

HIT THE BOOST

Battlefield 2's following expansion packs were instead called "Booster Packs", being essentially DLC before DLC was a thing. Euro Force introduced a new faction and new weapons, but lacked 64-player maps. Armoured Fury instead focused on massive tank engagements, and moved the theatre to US shores for the first time – though the move was something that was initially planned when Battlefield 2 first entered production. One particular map, Port Valdez, would feature again as a location in Battlefield: Bad Company 2. In 2009, the Booster Packs were added for free in the final Battlefield 2 patch. Hooray!

And who can forget when players would instantly cap points in a full Black Hawk, whilst repairing it from the inside?

Echoing EA's SimCity apology, DICE would release an updated Wake Island map for free. Later in the game's life, a new map would drop – one sponsored by Intel where soldiers had to protect crates of CPUs. Ugh. Still, Battlefield 2 was phenomenal – just ignore the crumbling walls and duct tape.

The highest-ranked player on the server had preference for the Commander position, which gave them a bird's-eye view of the battlefield.

EVERYONE IS SPECIAL

Battlefield 2's first expansion pack, Special Forces, echoes much of the themes of Secret Weapons of WWII, but with a more coherent focus. Despite the fact that its night vision didn't actually work until a few patches in, the new toys and maps were some of the most well-designed the series has seen. One major experiment was Iron Gator, a map set entirely inside a US aircraft carrier. The engine didn't handle interiors too well, but DICE learned a lot from it that would go on to affect the Titan interiors of Battlefield 2142.

When the Vehicle Drop function was added to the Commander mode, it was easily exploitable and often resulted in a shower of dune buggies.

ICE ICE BABY

Chilling out in the distant future of **BATTLEFIELD 2142**

RELEASE: 2006
WHAT IT ADDED:
- ITEM UNLOCKS
- FOUR CLASS SPECIALISATIONS
- TITAN MODE
- MECHS
- HOVERTANKS

If Battlefield Vietnam is the redheaded stepchild of the series, Battlefield 2142 is its slightly more personable older sibling. Shipping less than a year and a half after Battlefield 2, it's a game that deployed with a number of problems – but what Battlefield game didn't? We can forgive it because it's easily the most ambitious game of the entire series, achieving some lofty goals by delivering a game mode that still has no equal in multiplayer gaming today.

That game mode is Titan. Taking the open area Conquest gameplay and turning the flags into missile silos, Titan tasked players with capturing those silos to launch payloads at the shields of the opposing team's massive, hovering carrier. And when those shields went down, it was time to launch up in a pod for an on-foot assault inside the Titan's cramped confines. Blowing up the reactor and escaping the explosion makes for a fantastic way to top off a round. Though Commanders were able to move the Titan across the map, similar in a way to players driving Battlefield 2142's aircraft carriers, doing so caused significant lag. Being inside a moving Titan was a surreal experience, sometimes ending with players stuck inside walls. Help!

But it was Battlefield 2142 that saw the start of farther-reaching series changes. Available kits were reduced to the now series staple of four, whilst individual item unlocks made their first appearances and effectively allowed for two different specialisations per kit. 2142 was also the first game players could knife each other for their dog tags, beginning a long-running hunt between players and DICE developers themselves.

What created the biggest rift was the inclusion of in-game advertising. Massive billboards on certain levels would display prominent poster ads – we can vividly remember fighting for a control point whilst Matt Damon's giant head stared down at us, asking us to go and see The Bourne Ultimatum. For a game set in the far future, it made absolutely no sense. But hey, the mechs were pretty great.

GUESS AGAIN

DICE had been dropping hints about a potential new far-future entry in the series. A crate with the word '2143' printed on it could be found in one of Battlefield 3's DLC packs, whilst another had a miniature 2142 hovercraft hidden within. Sadly, the studio just seems to be teasing. Bastards.

HEADING NORTH

Battlefield 2142's only Booster Pack, Northern Strike, finally added a game mode called Assault Lines – something that had been planned for Battlefield 2. The mode functioned like Conquest, only flags had to be captured in sequential order. It's now all been replaced by the series' new Rush mode. Awww.

GOOD TIMES, BAD COMPANY
The series goes singleplayer in **BATTLEFIELD: BAD COMPANY 2**

RELEASE: 2010
WHAT IT ADDED:
· SINGLEPLAYER CAMPAIGN
· DESTRUCTIBLE ENVIRONMENTS
· RUSH MODE

The PC actually missed out on the best of what the Battlefield: Bad Company sub-series had to offer. The first console-only game's singleplayer campaign played like a typical game of Battlefield – that is, you were given a mission objective at the other end of a sandbox map and asked to get there by any means necessary. Raid an enemy camp, steal a jeep, or a chopper, whatever. It was all good.

Bad Company 2's singleplayer was a stark contrast. Though it was still possessed of a degree of freedom, it felt like a response to Call of Duty 4: Modern Warfare and its own sequel – going so far as to include direct references and parodies. It was a serviceable campaign, but it didn't play to Battlefield's strengths.

The multiplayer fared much better, enhancing the signature element of the first Bad Company to create what the studio called Destruction 2.0. Ever since Battlefield 1942, DICE has wanted to create fully destructible environments, and eight years later that was achieved here. Terrain deformed under the explosions of tank shells. Players could level entire buildings with explosives, killing enemy

occupants in the collapse – a perfect way to deal with pesky Recon classes.

Yet frustrations remained. The time-to-kill (the time it takes for an enemy to drop when firing at them – a combination of player health and bullet damage) was the shortest the series had yet seen, leading to quick and nasty engagements rather than drawn out tactical firefights. Being instantly killed after unwillingly being revived became a significant issue that led DICE to address the mechanic in Battlefield 3.

What was really missing was the true 64-player scale of Battlefields of old, cementing Bad Company 2 as the console-friendly offshoot that, since Battlefield 3's release, has been all but forgotten.

"Ever since Battlefield 1942, DICE wanted to create fully destructible environments, and eight years later that was achieved here"

BACK TO 'NAM
Battlefield: Bad Company 2's only downloadable content expansion thrust players back into the Vietnam era, retreading similar concepts to Battlefield Vietnam but presenting them with the full detail of the Frostbite engine. We actually found the DLC to be superior to Bad Company 2 itself, as it offered larger maps with greater freedom of movement, and a slower pace thanks to the Vietnam-era weapons and dense foliage to creep through. That grenade launcher-equipped boat can go to hell, though.

END GAME
The series comes full circle with BATTLEFIELD 3

PC·DVD
BATTLEFIELD 3
DICE EA

RELEASE: 2011
WHAT IT ADDED:
· STORY CAMPAIGN
· CO-OP MODES
· BATTLELOG
· PC-ONLY 64 PLAYER MAPS
· NEW SQUAD FUNCTIONALITY

DICE was eager to hammer home that Battlefield 3 was the studios biggest production yet, with a serious singleplayer campaign, co-op modes and the most polished iteration of its multiplayer gameplay yet. "We had more people on the user interface than the entire Battlefield 1942 team!" says Gustavsson.

Whilst the singleplayer and co-op modes ended up being junk and a throwaway distraction respectively, the game's multiplayer soared. Jets shot back onto the scene, Commander functionality that was missing in Bad Company 2 had been redistributed amongst the soldiers' kits, and servers shot back up to the good old 64 player count.

But it's in Battlefield 3's DLC packs that DICE showed its true craftsmanship. Each expansion pack arrived with a theme, and reintroduced more content that had defined the series prior. Classic maps, gunships, capture the flag mode – even the motorcycle from Secret Weapons of WWII. Forget the singleplayer and co-op; with Battlefield 3's complete DLC available, it's easily the biggest production yet.

"I meet so many people in free-to-play or the indie scene and other areas of game development," says Gustavsson.

"Sometimes we're not held in the same regard as these because we're a big company creating big games. You can see that with a few journalists as well, saying we're not indie, ergo we're not real artists. But with the experience we have today I think it would be way easier for us to make a small game with a small budget. Having a huge budget can actually sometimes be a heavy burden to bear, in my opinion. If we spend this much money, the game better be worth it, you know? I think some of us would be glad to lose that burden."

Too bad, Gustavsson – it looks like Battlefield 4 is going to be even more expensive, so you're damn right the game better be worth it. For our take, jet on over to p.40. PC

THE UNSEEN BATTLEFIELDS
DICE's other Battlefield titles that didn't make it to PC contained a few interesting ideas...

BATTLEFIELD 2: MODERN COMBAT
RELEASED: 2005
Essentially Battlefield 2 for consoles, Modern Combat included a neat hotswap feature that allowed the player to 'possess' any AI teammate they looked at and assume their role on the battlefield. Spooky!

BATTLEFIELD 1943
RELEASED: 2009
A console-only downloadable title that reimagined Battlefield 1942's maps in the Frostbite engine. Notable for including Air Superiority mode, which made it into Battlefield 3's End Game DLC. PC version: cancelled. Bah!

BATTLEFIELD ONLINE
RELEASED: 2010
A Korean-only online port of Battlefield 2, Battlefield Online used the more advanced Battlefield 2142 engine, but also contained support for 100-player battles – the largest the series has officially seen. 64 seems small now.

10 TO WATCH

CALL TO ARMS

DEVELOPER DIGITALMINDSOFT
PUBLISHER DIGITALMINDSOFT
DUE TBA
www.digitalmindsoft.eu

Never mind the fact that the developer seems to have a phobia of spacebars – they're going all-in to crowd-fund the creation of a true follow-up to the Men of War real-time tactics series. The twist: this one's modern-day warfare.

Digitalmindsoft isn't revealing exactly what gameplay changes are being made thanks to the new setting, but it has hinted at now being the time to improve the series and its engine. Tread carefully: there may be IEDs.

CIVILIZATION V BRAVE NEW WORLD

DEVELOPER FIRAXIS
PUBLISHER 2K
DUE Q2
www.civilization.com

A new Civilization V expansion pack has been announced. Hooray! Brave New World brings a focus on culture and diplomacy, with new Culture Victory conditions, a World Congress and new international trade routes. The expansion will also introduce nine new civilisations, each with new units, buildings and leaders. Plus a whole bunch more stuff. But let's be honest: you didn't really need another reason to keep playing Civilization V, did you? More next issue!

THE RED SOLSTICE

DEVELOPER IRONWARD
PUBLISHER IRONWARD
DUE TBA
www.theredsolstice.com

Indie developer Ironward describes The Red Solstice as Syndicate Wars meets Left 4 Dead. It's a top-down, co-operative action shooter set on an infested Mars colony. Apparently based upon Warcraft 3's Night of the Dead mod, the game required players to actually co-operate in order to progress, rather than just combine their firepower. Each customisable class brings an essential ability to the table, so you'll need to work together to survive!

UNDERRAIL

DEVELOPER STYGIAN SOFTWARE
PUBLISHER STYGIAN SOFTWARE
DUE TBA
www.underrail.com

Currently running an alpha-funding campaign on Desura, Underrail looks like a unique little indie RPG. The game's turn-based isometric nature betrays its classic RPG inspirations of Fallout, Arcanum and System Shock 2.

The plot itself is also something akin to the Metro series, with humanity now living in underground rail stations after living in the surface is no longer an option. Still: crafting, feats, exploration, stats – we're happy!

MARCH OF WAR

DEVELOPER ISOTX
PUBLISHER ISOTX
DUE TBA
www.isotx.com

Dieselpunk! Alright! It's like Steampunk except there are big billowing clouds of disgusting black smog covering everything. Good for fog of war, perhaps? ISOTX will need it if it hopes to give players the strategic ability to conquer the world in this alternate 1940s massively multiplayer turn-based strategy game. Wow, that was a mouthful. Still, try not to breathe too much though – the air isn't particularly good for you. Damn dieselpunk war machines…

BROKEN AGE

DEVELOPER DOUBLE FINE
PUBLISHER DOUBLE FINE
DUE TBA
www.brokenagegame.com

Remember Tim Schafer's pitch for Double Fine Adventure Game that began all this Kickstarter madness? Well, that game has a name, a synopsis, and a swell piece of art.

It's called Broken Age, and it follows a young boy and girl leading parallel lives – one on a spaceship, the other in a village. Of course, their paths will eventually cross, and from there we can only assume classic Double Fine debauchery begins.
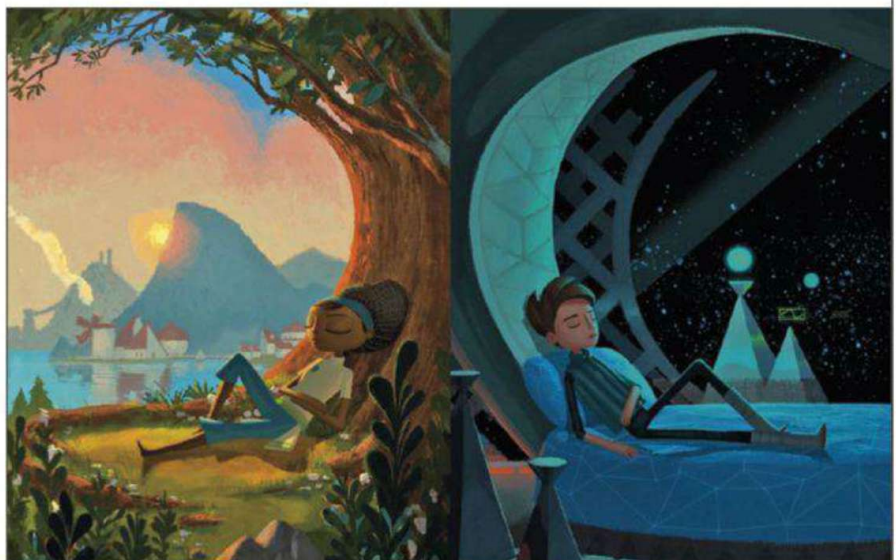
SHROUD OF THE AVATAR: FORSAKEN VIRTUES

DEVELOPER PORTALARIUM
PUBLISHER PORTALARIUM
DUE OCTOBER 2014
www.shroudoftheavatar.com

Oh, SNAP. We were quite apprehensive when EA showed us Ultima Forever – but now Richard Garriott has finally descended from space and brought with him something could shunt the next actual Ultima game off our scopes entirely.

Shroud of the Avatar: Forsaken Virtues is a game in which Garriott promises to return to his roots – the classic fantasy RPG that focuses on player choices and exploration. We're already climbing aboard the shuttle.
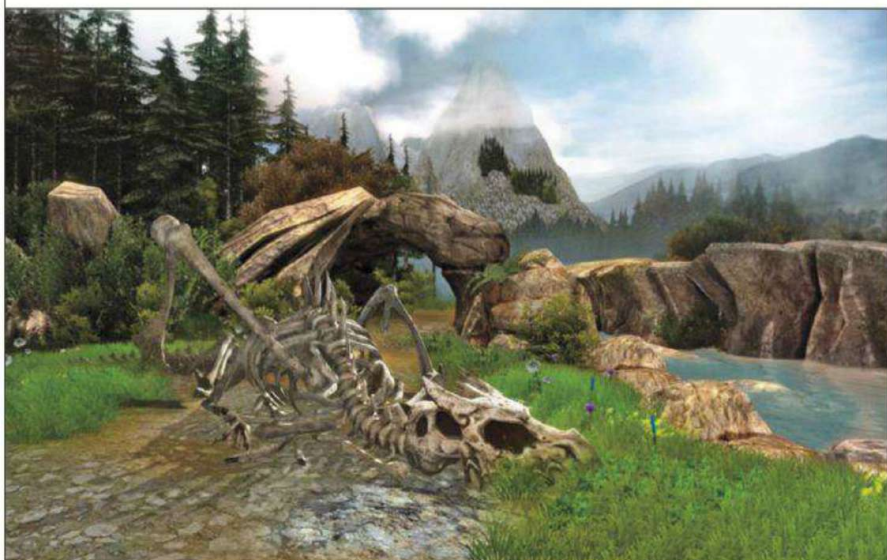
MIGHT AND MAGIC X LEGACY

DEVELOPER LIMBIC ENTERTAINMENT
PUBLISHER UBISOFT
DUE SEPTEMBER
might-and-magic.ubi.com

Wow, we weren't expecting this. After 12 years silence, Ubisoft has announced a tenth entry in the classic Might & Magic RPG series. Creative Director Erwan Le Breton (with a name like that, is he also a party member?) said the main goal is to stay true to the series. So far, so good: it's still a first-person, turn-based affair, so let's hope it doesn't turn into an Ultima Forever kind of reimagining. Okay, Ubisoft? We're watching you.

PAYDAY 2

DEVELOPER OVERKILL
PUBLISHER 505 GAMES
DUE Q2
www.overkillsoftware.com

The ultimate bank heist sim is back! The four-player action returns with all-new dynamic elements that randomise much of what happens on each mission. This plays into the new character classes with individual abilities; playing each should allow for open new approaches to every heist. Replayability, hooray!

Of course, the expected customisable arsenal is now in, though individual characters can also be upgraded with new masks and gear.
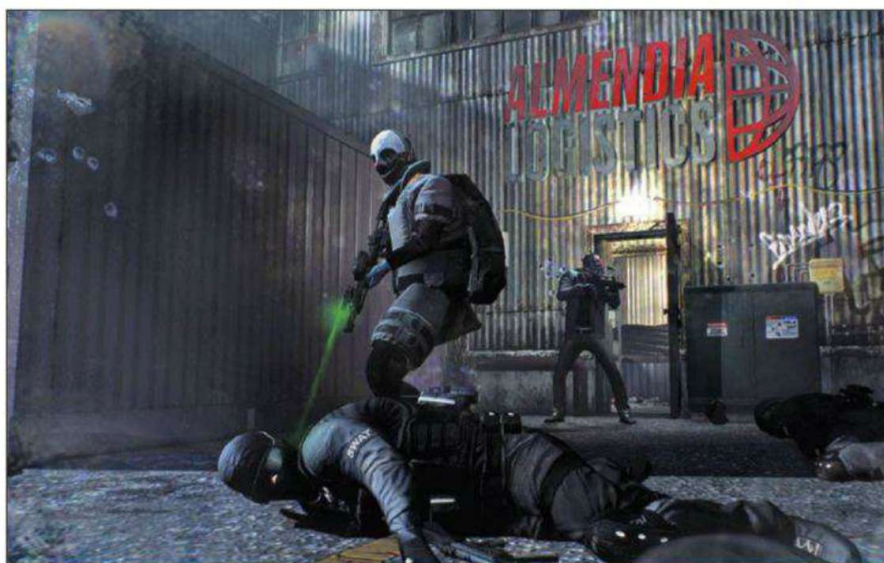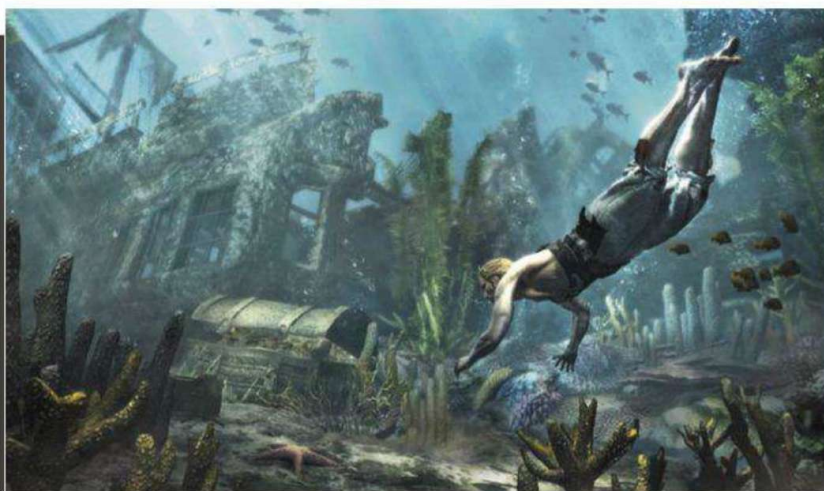
ASSASSIN'S CREED IV: BLACK FLAG

DEVELOPER UBISOFT MONTREAL
PUBLISHER UBISOFT
DUE OCTOBER 31
assassinscreed.ubi.com

Yarrr, the scallywags at Ubisoft 'ave gone an' announced anuvver Assassin's Creed game already. Ahem. Why so soon? Well, it's set in a new period – 1715, the golden age of piracy – and a new location – the Caribbean. You're the grandfather of the boring guy from the third game, and you're a bloody pirate – which means Black Flag is all about open world adventure on the high seas. Considering the naval sections were the best parts of Assassin's Creed III, this is something we can get behind.

And by open world, Ubisoft apparently means a true open world this time, rather than the series' historically gated sandboxes. If you can see it, you'll apparently be able to sail to it, though bigger and nastier ships guard certain locations. How do you get past them? Upgrade your own ship, naturally. Far Cry 3's sharks might even make an appearance, if the underwater treasure diving we saw is anything to go by.

THE HORNS OF DILEMMA

THE PCPP INTERVIEW

We recently had the chance to catch up with Membraine Studios technical director **JOSHUA ANDERSON** to talk about how his three-man team is on the cusp of reinventing turn-based strategy, about what it takes to succeed as an indie, and how tabletop gaming is like basketball...

Currently in alpha, and with a version 1.0 release projected for the end of the year, Exodus Wars: Fractured Empire is designed to recreate the intricacies of traditional tabletop wargaming on the PC. As Joshua Anderson told us, for the three co-founders of Membraine Studios this is a project born of a lifelong obsession. "We're very, very passionate about it. But as most tabletop gamers realise, as you grow up, and your friends physically move, and spread out, it's very, very difficult to maintain that hobby.

"There's a massive time investment in collecting, building, and painting the models, and then there's also a massive time investment playing a game. It's very, very rare for you to be able to find half an hour and get a tabletop wargame done. It's more like setting aside a day. And Mark [Sheppard, producer] and Glenn [McCloud, art director] both have kids, as well, which makes it really difficult."

It was this shared interest that inspired Mark to seek out a potential property for a game adaptation. What he found was Steel Crown Productions, a British miniatures company that was in the process of developing their own tabletop rules via an open beta process. Steel Crown was eager for Membraine to create a PC adaptation, but this opportunity forced Joshua and his mates to think long and hard about just how feasible it would be for a three-man team to tackle such a complex task.

"It's very rare for you to be able to find half an hour and get a tabletop wargame done"

Joshua sees Exodus Wars: Fractured Empire appealing to two large groups of gamers. "The first being: tabletop gamers whose friends have spread out and they don't have as much time. And from the other direction, of course, there's PC gamers who play all these strategy games, real-time and turn-based, who've never touched a tabletop wargame. And I don't think they understand how awesome the full experience can be. From piecing together your army, right the way through to destroying someone with some great tactics."

Membraine ran a flexible funding campaign last year on Indiegogo, and in the process learned some hard lessons about the value of visibility and promotion. While the conversion rate was high, they did identify something that all newly-minted indies seeking crowdfunding should be a aware of.

"One of the key things you need is a playable version of the game. You need to sell people... something. Rather than sell them an idea. Especially when you are, as hard as it is to admit, an unknown studio without a track record. It's very difficult to say: 'Look, we're asking for this amount of money for an imaginary game that doesn't exist. But we promise we'll deliver it.'"

Two main multiplayer modes are planned, and one will incorporate a feature to keep the sprawling time demands of the genre under control. "In order to keep the game moving along we're going to implement a sort of Chess timer system. So when you set up your game, you might decide: 'Well, I've only got, really, an hour to play, so I'll put 30 minutes on each person's clock.' And then you'll take your turn, and as you're thinking, deliberating, physically moving your units, your clock will tick down. We think that's really, really cool, and it could help what could potentially be a very slow game move along."

The other mode will be asynchronous. It's here that Joshua sees the most potential; yet it proved to be a difficult concept to explain to backers. "We used 'Play By Email' originally in our Indiegogo campaign, and people were saying: 'Are you serious? You want me to zip up a file and send it to someone by email?' And it was very difficult to break that perception." Nevertheless, asynchronous play will allow gluttons to gorge on as many games as they like. "You could

have multiple games going on at any particular time. Maybe you've only got an hour a day. But you could play three or four turns of three or four games in that hour." Naturally, there'll be features to help armchair space generals to keep track of their various campaigns. "You'll be able to rewind, and review. So if someone hasn't taken a turn for a few days, and you've forgotten what the flow of the battle was like, you actually step back in time and watch the game to date, and catch up."

Once it's implemented, Joshua sees the synergistic beauty of coordinated combined arms attacks as the key selling point of the game. "By manoeuvring your units in a certain way, and loading them up with suppression, you can create an overwhelming advantage in that close assault. And then once that assault's resolved, obviously the enemy will break, and start running. At which point, shooting them is twice as effective."

There's still a lot of depth to add; in an unexpected analogy, Joshua compared the complex state changes on the battlefield to NBA 2K Basketball. "It's actually really complex, and your player can get into interesting states, where he's got his back to the ring you've got a whole different set of moves."

While the sci-fi universes involved aren't entirely unlike each other, Joshua is convinced that his game stands apart from just about everything else on the market. "We don't think we're in competition with Games Workshop, here. Now, whether Steel Crown and Games Workshop are in competition is a different question. Of course they are. They both offer miniature wargaming. But I don't see anyone taking advantage of the Games Workshop IP, to produce what people probably really want, which is to be able to play 40K on their PC.

"Blood Bowl was an inspiration to us. The way they represented the tabletop game was fantastic! I mean, it IS the tabletop game.

And they had that real-time mode that no-one plays [laughs]." In addition to inspiration, they've also been stocking up on counter-intuitive insights from Blood Bowl's fan reception. "I thought someone would want to see detailed dice logs: 'What did I roll for this, and what did roll for that? What were my target scores?' No-one cares! That's for nerds like me who love maths. That's not for most gamers."

We asked Joshua about his own experiences growing up as an amateur Quake modder, and what he'd say to youngsters who sought to follow in his footsteps. While a man of boundless enthusiasm, it's a topic he takes extremely seriously. "...[Long silence]... It's difficult. It is a challenge. You HAVE to want it. I mean, if you think that you are going to create a game concept, make a few million dollars on Kickstarter, and kick back and ride that through, maybe you can do it, but you're definitely in a bit of a dream world, there."

Joshua cited the importance of knowing how to run a business and manage cash flow, and how using tools such as Unity 3D is essential. "It's quite eye-opening just how much money these things cost." One tip, though, was paramount: "I guess as a programmer, specifically, if you're a young guy and you're interested in getting into programming, my key advice would be: start.

"Unity 3D has a free version, and C# is an incredibly powerful and easy language to learn. And the best thing to do is just start. I didn't know how to program in C when I started on Quake II mods, but I taught myself, and I picked up books like: 'Teach Yourself C in 21 days'. And although it taught me a lot, I'd also recommend that you go to uni or TAFE and get a degree. Because although I could program mods, I didn't understand software engineering, and how to design and architect systems properly, to make the actual coding of the game a lot easier." *JAMES COTTEE* PC

It's alright men, these circles will protect us

Johnson, don't go out side the circle. Johnson? JOHNSON!
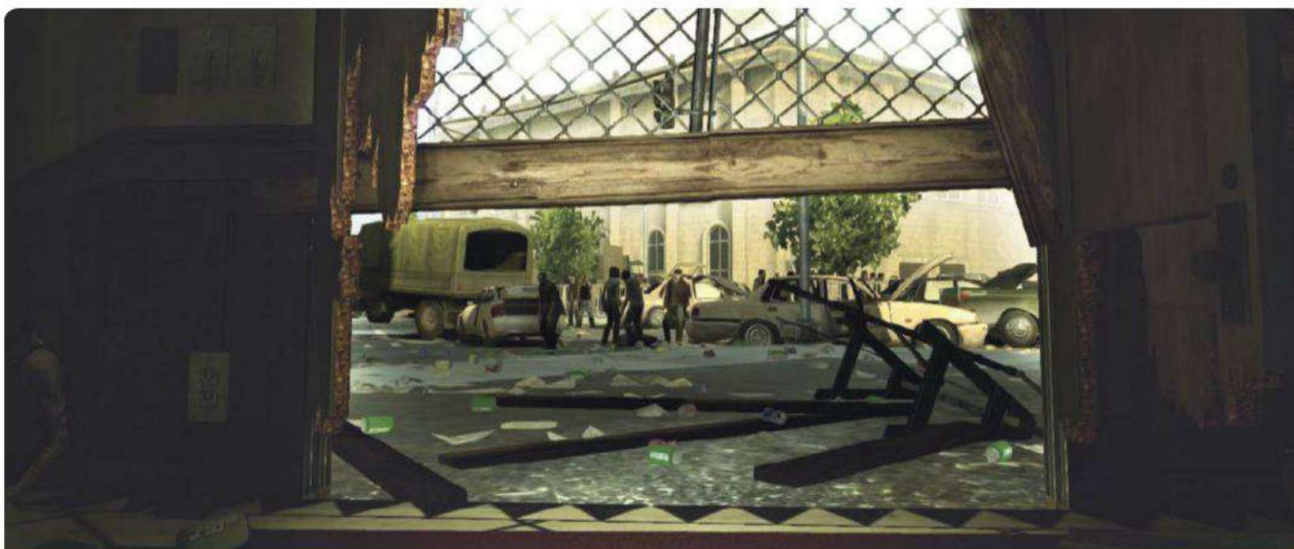
LICENSED LAMENT

The perils of building your game on another man's property

As Terminal Reality's Walking Dead: Survival Instinct hits the shelves to a fanfare of mediocre reviews and snarky gamer comments, it seems timely to take a look at why we keep seeing this scenario play out. Why are games based on licensed properties, whether movies, cartoons, comics or whatever else, so frequently dreadful?

As a 3D artist working in Australia in the mid-noughties, I saw my fair share of licensed game productions. Back before the local industry refocused on small indie projects, the licensed game was the bread and butter for many studios. Every project comes with its unique challenges, but there are a number of factors that make developing a game based on an existing property that little bit more difficult.

When a publisher wishes to have a game made, they will commission a development studio with the budget to construct all of the design, code and art. It's this budget that can take much of the blame for the terrible licensed title. Traditionally, these games sell to the younger or less savvy gamer, the unwary mum or the diehard fan, based more on the appeal of the name on the cover than the quality of the game itself. They are priced lower and typically sell in smaller numbers than triple-A titles. Because of the built-in audience and lower expected returns, the money that we developers get to work with is, likewise, smaller. This means that we will not be able to allocate as many staff to the project and there will be much tighter deadlines. A triple-A title might get three years in development. A licensed title, closer to six months. With such a rushed turnaround time, it's little wonder that, despite our best efforts, these games often arrive on the shelves in an unpolished state.

Working on videogames is a fairly regimented process. There is a chain of command running from the various echelons of the publisher through to the producers, designers and down to the coders and artists. Every element of a game has to receive the OK from the publisher and there is frequently a great deal of debate over what should and shouldn't make an appearance in the game. Each party approaches games with a different and often not entirely compatible purpose: the developer looks to make games that succeed on a creative level; the publisher, on a financial one.

"Focus tests indicate we'll sell more units if the characters have 25% larger breasts"

When a game is based on a license, another link is added to the top of the hierarchy in the form of the owner of the property, and with them another divergent goal: the licensor's priority is to make sure its IP is treated respectfully. Now, not only does the developer have to contend with "our focus tests indicate that we'll sell more units if the characters have 25% larger breasts" but also "Superman would never kick an enemy. And shouldn't have such big boobs."

On a licensed title, the IP owner's word is law. Once a project kicks off, the developers will be issued with an enormous document containing everything down to minute detail on how the property's respective universe and characters should look. With it will also come a set of rules what can and can't be done with them. Some will be reasonable. Some will invariably be detrimental to

gameplay and require some real creativity to circumvent. I worked on a platform game based on an animated series that disallowed the enemies from attacking the player directly. It was decided that instead of attacking, the "enemies" would be flailing at tiny creatures buzzing around them and would "accidentally" bump into our hero if he crossed their path.

The extended chain of command itself can become a drain on resources as the critiques on the game's direction from the licensor slowly filter down to the art team, who will then spend a great deal of precious time chasing minutiae and waiting for word to work its way back and forth through the layers of management trying to clarify ambiguous requests like the classic "could you make X better?" Time that would have been better spent on the major elements of the game.

It's not difficult to take a look at licensed games that have succeeded where so many others have failed – from Batman: Arkham Asylum, to Lego Star Wars, to Telltale's Walking Dead – and see a pattern. These are games that were not only allowed the freedom required to tell their own story and design gameplay that supported the license, but also the time with which to polish that experience to a high gloss. Sadly, it's unlikely we'll ever be entirely free of the terrible licensed game while there's still money to be made from the unwary fan. **PC**

STEPHEN SCHULZE *is an Australian developer whose work at Sidhe and Tantulus spanned over 15 shipped titles. He is currently seeking renewal for his license to kill.*
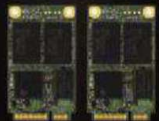
CITY OF DEATH

Thanks to institutionalised pathology, the biggest names in gaming are in a race to the bottom...

So. SimCity. By the time this magazine hits the newsagents, it's entirely possible that EA has expanded server capacity to meet demand, resolved all consumer complaints, cheerfully complied with all requests for refunds, patched things up with Amazon.com so they'll start selling it again, and smoothed things over so completely that we'll look back on the games launch and wonder what the fuss was all about. But for the time being, here in the not-too-distant past, one gets the distinct impression that the corporate overlords at EA are actively competing with Ubisoft to see who can create the most obnoxiously customer-hostile online gaming experience for games that never needed to be online in the first place.

It doesn't just make you wonder what they're thinking. It makes you wonder how they're thinking, and even if they're thinking. Is EA like a mighty oak tree, technically alive, but mindlessly grasping outwards in search of nutrients, and in the process undermining a stately home that took generations to build? Is the whole game-making side of things irrelevant, because unbeknownst to consumers the company is in fact an elaborate money-laundering front for an organised crime syndicate? Or is it a tax dodge? A pet project for a dilettante trust fund baby? A men's club? A country club? A sheltered workshop?

Surely EA management had observed Ubisoft's spectacular woes with The Settlers. They must have caught wind of the troubled launch of Diablo III, and absorbed the knowledge that when you release a blockbuster sequel for which punters have been waiting a decade, even the most pre-eminent of online gaming firms can be caught flat-footed. None of the alternative explanations are palatable. Either they were caught off-guard, or they made a calculated choice to save a few bucks by skimping on the servers at launch. Or perhaps they even thought that SimCity was such an iconic, titanic brand that it was completely unsinkable – that gamers would buy it, and jolly well like it, simply because it said 'SimCity' on the box.

One would hope not, and not just because such an attitude is callous. It's also ineffective. The reality is 'Because I said So' is a terrible marketing plan. After the disaster that was Vista, Windows users realised that there's no pressing need to upgrade to the very latest version of Windows the very instant it's released. And if it turns out that the new version lowers system performance, introduces maddening compatibility

"The reality is 'Because I said So' is a terrible marketing plan"

issues, and has an interface that looks like educational software designed for autistic Martians, then there's no harm in simply giving it a miss and waiting for the next Windows.

The sales figures for Windows 8 would suggest that this is now the prevailing wisdom amongst Microsoft customers. Sales are far, far lower than the equivalent sales for Vista when that malformed operating system was new – arguably, even lower than the rate of attrition. If OS developers aren't careful, the next generation of customers will see no value in owning a desktop, and will run their lives entirely from their phones. The PC user will become extinct, and in his place there will evolve a new race of androgynous Eloi ultra-hipsters enthralled by the virtual cats that live in their pocket-sized fondle-slabs.

Recent years have seen many once-mighty franchises run into the ground: Tony Hawk Skateboarding, Guitar Hero, and yes, Medal of Honor. Bad decisions happen at the highest levels of business so routinely that one begins to wonder what psychological blinkers make such rank incompetence possible. Billionaire Warren Buffet's sidekick Charlie Munger has made a hobby of studying the mental pitfalls that lead to things like New Coke and the Apple Pippin, and he's singled out the institution of the board of directors as a mechanism for reinforcing terrible choices. It was this unwillingness to rock the boat that led to THQ execs betting everything on the uDraw. We can only assume it was the same thought process that led to the person who designed the horrid 'ribbon' interface in Microsoft Office being put in charge of the look and feel of the entire operating system.

And how are they advertising the merits of Windows 8? With Flash ads depicting youths heartily partying, then looking up cleaning supplies afterwards on Bing. Well played, sirs, but as I'm watching said ad on a PC, I am already familiar with what a 'search engine' is. 2/10, would not buy.

It's ghastly, but there is cause for hope. The executives at Sony, of all people, took heed of the many flaws of the PlayStation 3, and addressed them all in their concept for the PS4.

It's not too late. They could start bundling Win8 with that Stardock app that makes it usable. And who knows, Windows 9 could be a cracker.

It had better be. PC

JAMES COTTEE would like you to know that you just got served. Or servered. It's not a word? Be quiet, minion.

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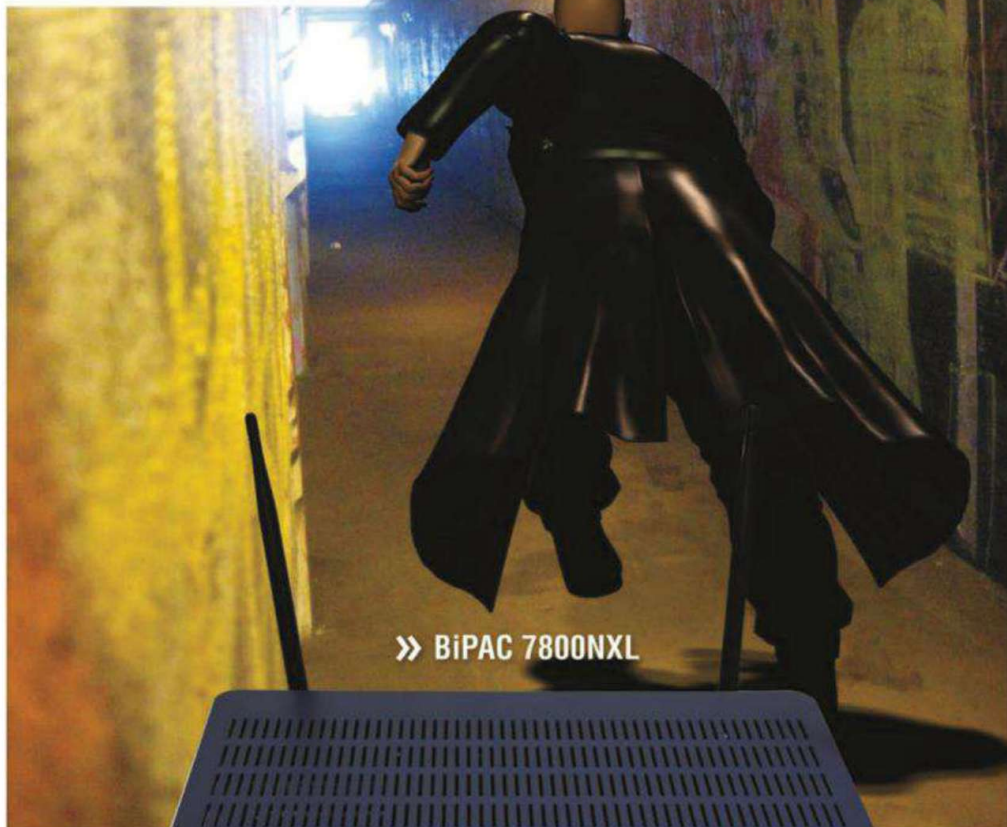
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Thanks to the new 7800NXL you've won before even hitting the Start button.

BILLION

A PANDORA PROBLEM

Richard and Alice; narrative design made convoluted. Possible structural spoilers within.

If I hadn't opened the box, literally speaking, in Richard and Alice, I'd have simply accepted the ending as your typical, not-unexpectedly-vague conclusion to an Indie adventure. Of course, if I'd never visited Good Old Games' forum, I'd never have opened the box. I'd have forgotten about the box. I just wanted to see what people thought of the ending, because I was having trouble accepting it. Confused yet? Welcome to my world, in which choice and consequence have recently become all circular and muddled.

So, when I didn't open the box on a first playthrough, I got an ending. When I did open it, on a second, I found an item that was instrumental in making the ending absolutely opposite, for some reason; it went completely over my head. The vaguely unsatisfying conclusions I'd drawn about the story, based on the first ending, were then further undermined. Indeed, people posting on the GOG forum reported, at least, five, diverse endings and literally no-one knows why they got any of them.

This, it seems, more so than the endings themselves, is my problem. Was it really opening the box that caused the massive discrepancy between my two endings, or some other choice I made along the way? At one point my character was asked whether he'd ever killed anyone and there was no context on which to base a response. I don't even remember what I answered, either time. There was a TV show I didn't bother to watch the second time. Did that set some crucial flag?

So, I played a third time. I just don't know how to quit. I got the first ending again. I didn't happen across any new information, or any meaningful moments of choice at all, but whatever seemingly arbitrary decisions I'd made hadn't triggered one of the other three endings. In the GOG thread, the game's designers outlined that their intention was to allow players to experience the story without noticing decision making, instead of providing more explicit, binary style endings.

Yes, I didn't notice decision making. And, yes, I'm willing to concede that my ending confusion might simply be because I wasn't perceptive enough to appreciate aspects of the narrative. What I'm not willing to concede is that such radically different endings make enough sense, based on clues that were too subtle for me, and a handful of GOG dwellers, to figure out. I tried so hard. I want to cry. But, forgive me. You've listened to my ramblings. I'll tell you more about the game.

"It's just Alice pleading with a five year old to be quiet when the bad men come by"

So, Richard and Alice is essentially a short, $7 adventure set in a post-apocalyptic snowscape. The player, Richard, shares wordy conversation with Alice, while they are both incarcerated in the present, then the player switches to a past version of Alice, as she tries to keep her son safe from harm. It's no Life is Beautiful, the movie in which a man invents exciting games to keep his son quiet in a nightmarish situation. It's just Alice pleading with a five year old to be quiet when the bad men come by.

Honestly, in a game that hinges on story, the story wasn't my cup of tea. Although I've read that many players found it evocative and touching, I couldn't relate to Alice's interactions with her son at all, her dialogue or her actions. What most irked me was the climax, the content of which I'd already guessed in the first five minutes. There's vast

a difference between a story that is inherently sad and one that aims to manipulate your emotions.

The puzzles were very easy but I did have to get one hint. Why? Well, I didn't try to leave an area I was in. Why? Because that would have meant leaving the sick five-year-old alone. In fact, there was quite a lot of leaving the little guy in the snow while Mummy solved puzzles, despite fresh evidence of violent crime and scary encounters with people. I don't know if you have a five-year-old son, but I'm not really inclined to leave mine in dangerous places.

But, like I said, it was really experiencing the immense, unexplainable deviations between endings that made me wish I'd left that box the hell alone, literally and metaphorically. I'll demonstrate. If your five-year-old son likes toy cars, like mine does, skip to your tailor made conclusion to this article; number 1. If you totally understood what I was saying about Life is Beautiful, skip to number 2. If neither of those things happened, skip to number 3.

1. I quite like the idea that some choices can have unexpected consequences, but you really have to then immediately understand why it turned out the way it did, right? 2. You know what's awesome? Stories about snow. 3. Surely there is a real case to be made for classic, explicit, binary endings in adventure games, due to general lack of replayability and coherent narrative structure. The secret ending (for if you read all three anyway); your ending didn't make any sense? Well, read the column again, until it does! **PC**

MEGHANN O'NEILL *does not understand why everyone insists that the naked Emperor is wearing clothes. Were they in the box?*

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LOCKED AND LOADED DICE

Taking a closer look at the "emotionality" of BATTLEFIELD 4

The love of the Battlefield franchise isn't necessarily the same as love on the DICE's battlefield. **NATHAN LAWRENCE** plays wartime correspondent and reports back from the San Francisco singleplayer unveiling of the latest entry in the massively popular series: Battlefield 4.

It wasn't so long ago that a proud Patrick Söderlund, CEO of EA Digital Illusions CE (DICE) and EA Studio General Manager, stepped in front of a cinema screen to introduce Battlefield 4. There's no hyperbole or hints at what was to come, he simply stated that we're about to see live software and assured us that the merits of the game will speak for itself. Fewer than 18 minutes later, we're underwhelmed, confused and have more than a few pertinent questions.

Söderlund hails Battlefield 4

as "a new era for Battlefield and, frankly, a new era of interactive entertainment," but what we saw was a singleplayer unveiling of a franchise whose roots and, arguably, legacy are wholly multiplayer. He goes on to make the claim that "the DICE studio has evolved into world-class entertainers and storytellers." Now we're scratching our heads even more.

As far as "world-class entertainers" go, DICE could certainly make a strong case for such a mantra based on its addictive multiplayer formula; hell,

we'd gladly defend them on that front. But where we respectfully disagree is in Söderlund's belief that DICE is world-class storytellers. That's certainly not its reputation, nor is it reflected in DLC support for its most recent title, Battlefield 3, which has only exclusively released multiplayer content.

The day after the unveiling of Battlefield 4, we sat in front of Executive Producer Patrick Bach to talk about our concerns and get to the bottom of DICE's emphasis on singleplayer over its multiplayer heritage.

▶▶ PLAY BY PLAY The Battlefield 4 trailer dissected

00.44

Michael K. "Chalky White" Williams' beautifully rendered face.

03.18

More birds than Priscilla, Queen of the Desert.

04.11

More birds than a John Woo film.

04.19

Rat stabbing. Dog shooting. Yup, PETA won't like Battlefield 4, either.

Don't worry little man, you'll get a big gun of your own someday

BATTLEFIELD 4
DEVELOPER DICE
PUBLISHER EA
DUE Q4
www.battlefield.com

04.42

A grenade and some well-placed shots lead to...

04.49
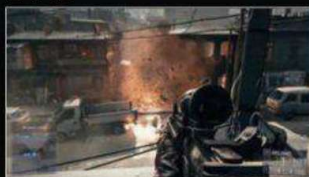
...the return of macro destructibility. Sweet.

04.57

The new modern-warfare trope: switch between scope or iron sights.

05.58

More birds than The Birds.

LIGHTS. CAMERA. SCRIPTED ACTION

By now, it's highly likely that you have seen the 17-minute Battlefield 4 'Fishing in Baku' gameplay section pulled from the prologue of Battlefield 4's campaign. The version that hit the internet was actually slightly different to the live playthrough we witnessed in stunning 3K resolution, at 60fps (as confirmed in our interview with Bach) projected on a cinema screen by way of a projector that DICE had flown in especially for the unveiling. Certain minor mistakes made by the guy in charge of the demo, singleplayer producer Tobias Dahl, such as an almost-deadly case of frag-grenade suicide, proved that it was absolutely a live affair. There were other moments of serendipity that showed off the tech.

While engaged in a firefight with troops pouring out of three trucks, some wild firing sparked a fuel tank on one of the trucks. As the fire spread, the other two trucks ignited, too, showcasing some gorgeous flame and smoke effects that were manipulated by the blowing combination of the wind and the support helicopter performing fly-bys on the hapless troops caught in the fire and begging for the pot. All in all, it sure looked beautiful as the four-man Tombstone Squad blasted its way from a few minutes in to the demo until right up to the end.

The main problem is that it all looks so familiar. Not visually, per se, as Frostbite 3 certainly has a noticeable graphical leap over its predecessor, despite the fact that Frostbite 2 still holds up on a high-end PC. "It seems so 2011," said Bach, in reference to the 'ageing' Frostbite 2 tech. What looks so familiar, though, is the disappointment of leading, once again, with a singleplayer reveal, and the reality that the lonesome campaign is an afterthought

for many PC gamers who have always played and only want to play Battlefield games for a world-class multiplayer experience. As far as the history of the franchise goes (see p.19 for a complete retrospective) from a PC perspective, Battlefield hadn't even included a singleplayer campaign until 2010's Bad Company 2.

If you believe DICE, in the last few years, the Battlefield series has started to win over audiences with what Bach calls "good" singleplayer campaign experiences. The problem, according to Bach, is that Battlefield 3's "good" singleplayer campaign also shipped with "great" multiplayer. "We're in a weird situation where we have the luxury of having a good singleplayer in BF3," explains Bach, "but we had a great

since viewing the live Battlefield 4 playthrough has been spent dissecting and discussing what DICE is hoping to achieve with singleplayer; particularly when Bach made it clear that multiplayer isn't yet ready to be shown, let alone be played.

As much as we wanted to disagree with Bach's logic for not leading with a multiplayer reveal, his reasoning makes a lot of sense. "After playing multiplayer for 100 hours, the graphics and all the technical specifics fade away," he began, "and it turns into the game mechanics. That's much harder to demo in a 17-minute presentation." The solution, it seems, is to let multiplayer be something that is experienced in a hands-on capacity. Bach continued. "You need to feel [multiplayer],

"Frostbite 3 certainly has a noticeable graphical leap over its predecessor"

multiplayer and, therefore, the discrepancy [between singleplayer and multiplayer] becomes the problem." Initially, we disregarded Bach's comment as hyperbole; but, upon closer inspection, it's clear the executive producer has a point.

GULF OF SINGLEPLAYER

As far as we're concerned, the singleplayer campaign for Battlefield 3 was a 'take it or leave it' affair, whereby it didn't really impact the overall quality of the product if you didn't enjoy it; nor did its seven-hour length matter in comparison to the potential hundreds of hours on offer in competitive multiplayer. That DICE chose to unveil Battlefield 4 with singleplayer content was not unexpected, but it was still disappointing. Much of the time

you need to play it, and we want people to get hands-on with the game to be able to see and feel all the new stuff that we're building. So, of course, that will come later but, right now, we want to have something that is bite-size and easy to understand for everyone."

The move to the higher-fidelity potential of Frostbite 3 and the reality of multiplatform development make it clear that next-generation consoles will be among the supported platforms for Battlefield 4. This line of reasoning supports Bach's stance in regards to a larger market that's more familiar with a Battlefield franchise as a singleplayer-inclusive product. In fact, when we asked Bach about whether PC was lead platform, as it was with Battlefield 3, he claimed there is no lead platform for
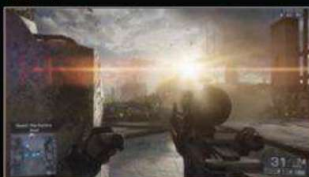
06.41
Squad orders that can't be ignored... unlike multiplayer.

07.20
Targeting a fuel tank ends with explosive results.

07.44
An abundance of cover fail from the enemy AI.

08.16
Launched grenade fails to take down this guy...

LIVE DEMO PC SPECS

After he made a point of saying how glad he was that no journalists had been interested in asking him about the PC specs of the live-demo machine, Bach laughed when we pointed out that it was one of our questions. Unfortunately, Bach didn't know; in fact, he said that he didn't want to know because he was "trying to not care about it." AMD, though, were not so coy and issued a press release stating that the demo ran on a Radeon HD 7990, which suggests a partnership between DICE and AMD.

Don't cry man, I always liked you more than Chandler

08.20

...but a hail of bullets does not.

08.27

More squad orders result in instantaneous tagging.

09.08

Another round of insta-tag results in...

09.14

...a mini-gun fly-by. And if once wasn't cool enough...

Alpha and Bravo decide to replay this scene using only one leg each
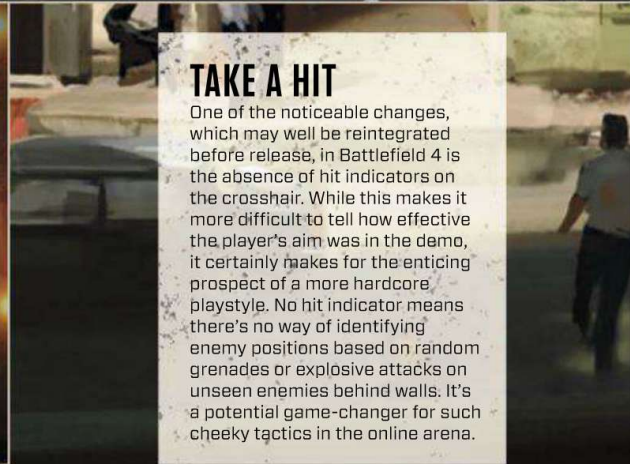
TAKE A HIT

One of the noticeable changes, which may well be reintegrated before release, in Battlefield 4 is the absence of hit indicators on the crosshair. While this makes it more difficult to tell how effective the player's aim was in the demo, it certainly makes for the enticing prospect of a more hardcore playstyle. No hit indicator means there's no way of identifying enemy positions based on random grenades or explosive attacks on unseen enemies behind walls. It's a potential game-changer for such cheeky tactics in the online arena.

10.01
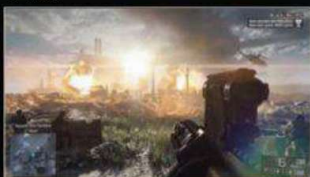
...you can see death-by-helicopter again.

11.18

Perfect opportunity to hit that chopper with the gren-launcher.

12.14

Russian attack choppers are the sharks of the skies. Surprise!

12.25

Standard-issue Kevlar doesn't protect against chopper blades.

Battlefield 4. However, that doesn't mean that PC isn't being respected as a leading platform. "PC is what we use to push the boundaries," said Bach, "because, in theory, we have unlimited memory, unlimited CPU, and we can really push the boundaries; but then again we can see that the scalability on the engine lets us then derive the important stuff even down to the low-spec machines."

FROSTBITE OF THE HEART

Try as we might to get Frostbite 3 technical specifics out of Bach, he was less interested in discussing what was beneath the hood and infinitely eager to talk about what the engine would be driving. Once again, he made an intriguing argument. "What we realised is that we need to move beyond [engine specifics]; we need to turn games into entertainment, like every other form of entertainment, where it's not about technology anymore, it's about the output of the technology." The output, at least for this first-look at Battlefield 4, is very much focused on creating a campaign experience with which players can connect.

The three key words during Bach's brief presentation at the Battlefield 4 reveal were "Human, dramatic and believable." Frostbite 3 certainly has the technical bite to convey realistic human emotions, as evidenced by the impressive level of detail in the facial-animation systems and motion-captured movements. The dialogue and voice acting, though, are also part and parcel in conveying human drama, alongside believable faces; both of which weren't as memorable as other pertinent examples of game characterisation such as Michael Mando's depiction of Vaas in Far Cry 3, even though DICE has enlisted the aid of at least one identifiable Hollywood-

calibre actor, Michael K. Williams (Albert White from Boardwalk Empire), to play the role of Irish: the first face you see in the gameplay demo.

It's a fascinating move by a studio that's always tended to create games that have been in line with the visual zeitgeist of various gaming generations. Not that Bach discounted the importance of tech entirely; far from it, in fact, as he stated that DICE is currently working on creating the best Battlefield experience, to date. He was more interested in changing the internal and external line of question of what should be expected of a game: are we connected with the characters, the gameplay and how can technology such as Frostbite 3 best suit that? It's a fascinating paradigm-breaking prospect

be said about Battlefield 3's own singleplayer portion.

Specifically given the ooh-worthy set piece moments in the Battlefield 4 prologue, it's hard to see that filmic flare can ignite the same reaction twice. When we shared this concern with Bach, he was adamant there would be reasons to come back for another run at the campaign. Most evident is the presence of leaderboard-type challenges that pop up to compare your progress with your friends. "When we play multiplayer, we compare progress in different ways," said Bach. "It's not only about this or that; it's about who is the best at this specific thing. So we're bringing elements of that over into singleplayer." He wouldn't elaborate further, but it's safe to assume that will equate to more meaningful (and active) integration

"We need to turn games into entertainment, like every other form of entertainment"

that, when reading between the lines, means DICE is focusing on a deeper level of emotional connectivity with the Battlefield 4 campaign; something that has been hit or miss in past Battlefield solo outings.

CINEMATIC FATIGUE

All of this emphasis on a dramatic singleplayer experience is all well and good in theory, but a campaign filled with cinematic moments stands at odds with replayability. While the obvious counter to this is to say that Battlefield 4's competitive multiplayer is there to ensure longevity, Bach alluded to the DICE standard that there should be reasons for players to revisit the Battlefield 4 campaign; something which, for us, can't

of whatever updated version of Battlelog ships with Battlefield 4 for its campaign.

MULTIPLAYER, MEET SINGLEPLAYER

But it's more than just 'love it or lump it' leaderboard-style score chasing that's been brought across from the multiplayer side of the Battlefield formula. "We are changing the whole mentality behind singleplayer and taking the core values of multiplayer and bringing that over into singleplayer," explained Bach, "and not only from a feature set perspective, but also from a mindset when it comes to the storytelling." As interesting as that sounds, it doesn't really explain a lot about how exactly that works.

Thankfully, Bach was willing to share more. The setup for

12.35

The most deadly slide in the world.

12.54
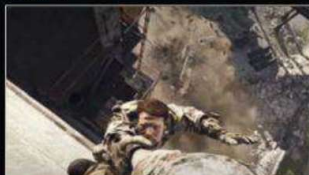
One hell of a drop...

13.00

...especially when being chased by a giant concrete slab...

13.26

...Protagonist is clearly Bruce Willis in Unbreakable.

Best birds since Deus Ex

CLASS WARFARE

Although Bach expertly deflected any question that could possibly relate to multiplayer, it was impossible for us to ignore the persistent presence of what appeared to be a defibrillator icon in the bottom right-hand corner of the screen. Could it be that multiplayer classes are making the transition from multiplayer to singleplayer, too?

Tombstone Squad was a deliberate move to replicating the standard four-person squad experience in Battlefield multiplayer. "You play together with your friends, you care about them, they have different personalities," said Bach, "and they have different agendas, but you play together as a team. We wanted to bring that emotion over to the narrative and the story as well." Where earlier Battlefield games had multiplayer bot-matches masquerading as singleplayer, and Battlefield 3 had singleplayer that stood alone from its online offering, Battlefield 4 is slated to carve a space between the two extremes.

In fact, Bach had a refreshingly honest6 comment when it came to reflecting on the singleplayer portion of Battlefield 3. "We agree that it was not good enough, so we want to show people that we're doing something about it." Outside of the funnelling approach to the bulk of the campaign and how much that stood at ends with the openness of Battlefield 3's multiplayer, there were still shortcomings for players making the jump from singleplayer to multiplayer. There was no proper jet training (unless you count a linear mission in the sky which felt out of place), and helicopter training was reserved for a single co-op mission. Outside of this, it was up to players to jump online

and cut their teeth in a trial by hellfire missiles.

Hopefully, Bach's hints at multiplayer meeting singleplayer also take into account the importance of training players for the online foray. One of the biggest oversights of Battlefield 3's multiplayer was there wasn't really any training for the depth that comes from successive weapon and item unlocks. If DICE can achieve its Hollywood-like singleplayer experience in combination with some form of multiplayer training, no matter how subtle it may be, it may well set a precedent of what's expected from franchises that offer a lonesome campaign in cahoots with the longevity of online multiplayer. Fingers crossed. **PC**

14.00
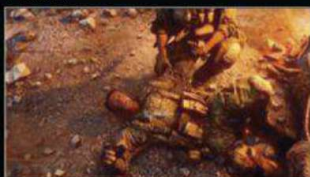
We disagree with DICE's definition of 'Help', in this context.

15.00

Does the owner of this car have Total Eclipse of the Heart on repeat?

15.53

What? No achievement for a one-handed takedown of a chopper? Boo!

16.21

A phone conversation between a C.O. and a commander-type... role.

COMPOSING BATTLEFIELD 4

During our time at the Game Developers Conference, we sat down with **Patrick Bach** and really picked his brain about some of the key decision processes behind Battlefield 4.

PCPP: Why the upgrade to Frostbite 3?

Bach: Frostbite 2 was a big step forward when it came to visual fidelity, audio, animation, et cetera. But we had a big mind shift at the studio after BF3 where we talked about, 'How do we move beyond polygons and shaders?' We saw a big shift when it came to games: old-school games versus the future of games being focused on experiences.

What is the intention of Frostbite 3's tech, then?

The Frostbite team actually sat down with us and talked about this; we need to go beyond polygons, because we are extremely tech-focused at DICE. We live and breathe technology, we talk shaders all day, we talk optimisations, we talk a lot about technology. The big leap was how do we create games that are more than just a discussion on how many maps, how many polygons, and where it becomes a discussion on, 'Oh, did you see what happened to that guy? I know that person's name because I care about him or her.' The demo hopefully proves, at least partially, those points where you actually have a very immersive, coherent experience that includes pretty graphics and audio.

So you are less interested in talking about the specifics of what makes Frostbite 3, Frostbite 3, and not Frostbite 2.5?

No, we can talk about that all day. It's not that we don't care about technology: we care about it too much. It's a problem for us because we are fixated on having the best technology; but that is not what will make our games better in the future, because we need to start looking at, like, 'What will Battlefield be in five years?' What we came up with when talking to the Frostbite team was actually that we need to look under the hood, so it's easier for developers to build the game. If we have a vision, we need to be able to copy that vision into the actual game. Creating better graphics, better characters, better environments, better audio without spending more time.

You're talking about a more streamlined iteration process.

Iterating is the key to creating quality. There's

also the ease of use of the tool set. People can get extremely creative with what they're building and we don't talk so much about how we do it anymore. Even if we're sitting in a room with artists, animators and programmers, we don't talk about 'how', we talk about 'what'. What is it that you want to achieve? Next thing, when we look at it again, it's there.

At gamescom 2012, you mentioned what was going into Battlefield 3's DLC wasn't content that was being held back for Battlefield 4, per se, because you said what DICE is doing in Battlefield 3 couldn't be done in Battlefield 4. Was that you talking about Frostbite 3, or were you referencing about something more specific than that?

Well, it's both, actually. What we're doing with the post-launch premium campaign of Battlefield 3 is evolving and expanding the experience; but we couldn't really add new features or change

the engine halfway through because then that would be a completely new game. We're building Battlefield 4 in a slightly different way. The whole tool chain and some of the innovations we're doing for Battlefield 4, you couldn't do in Battlefield 3. It's a different mindset, and if you look really closely at the demo, we're actually building the worlds and the characters in a slightly different way than we did in Battlefield 3, so it's not even the exact same pipeline. We are evolving, but it's also a big revolution when it comes to how we build things and how we create the environments.

The Battlefield legacy and longevity is 100 percent focused on multiplayer. Why lead with a singleplayer reveal?

We often get that question, of course, and the answer is multifaceted. First of all, why we showed singleplayer at the event last night, it's easier to showcase what Battlefield 4 is all about:

innovations in everything from storytelling to characters to other things in singleplayer than it is in multiplayer. Multiplayer is more about the hardcore players seeing and understanding the feature set. I still haven't seen a multiplayer demo that I'm really impressed with. I've played a lot of great multiplayer games so, to me, it's really hard to showcase multiplayer in a kind of singular-dimension presentation.

Why is singleplayer so important to DICE?

For some reason, people think that no-one likes singleplayer in Battlefield, but they do. There are a lot of people that have played Battlefield 3 singleplayer and liked it a lot. If we only shipped the singleplayer, I think people would have been more positive because it's a good singleplayer game compared to other games. But now we have this super-awesome multiplayer game and now everyone's upset that singleplayer is not as good [as the multiplayer].

"It's really hard to showcase multiplayer in a kind of singular-dimension presentation"

So it's the Battlefield bubble: if you look at Battlefield only, it is a problem; if you look at other games, it's not that bad.

How do you offer incentives for replayability in a campaign filled with cinematic moments that lose their full impact after first viewing?

If you use multiplayer as an example, graphics fade away, animations fade away, it turns into the mechanics of, 'I want to win. I will use the gadgets and the weapons and the vehicles and the sceneries and the destruction to win.' And that is the part we want to bring over, and we understand, of course, that it's only part of the singleplayer where this matters: where it's actually something to strive for. You don't want to look at epic set pieces over and over again, and that's not what we're trying to build. It's the social element of competing with your friends in multiplayer that we're bringing over to singleplayer.

What, Me Worry?

Why the launch of a new console is traditionally a trying time for PC gaming

Even if $400 consoles usually outpace our custom-built PCs which cost five times as much at launch, the release of the Playstation 4's specs show that this might not be the case in the next phase of the console lifecycle. Why? It's basically a PC in disguise.

Built around a modified AMD Jaguar CPU with eight cores, this low-powered CPU was originally intended for tablets and laptops. Attached to this is a custom AMD GPU, with 18 of the Compute Units found in today's Radeon HD 7000-series products. Considering the CPU's cores run at just 1.6GHz each, while today's Radeon HD 7970 has a whopping 32 Compute Units, it's no wonder that worried PC gamers have been sniggering at the mediocrity of the PS4. But they're forgetting one major factor.

Console devs can "code to the metal", bypassing the driver and OS junk that PCs have to suffer through thanks to their infinite range of possible configurations. As a result, consoles can squeeze out around four times the performance compared to a similarly specced PC. It's likely the PS4 will have a graphical edge over the PC for at least a year or two, until PC hardware can leapfrog the PS4's unchanging specs. That's the bad news.

The good news – and it's especially good news for AMD – is that game developers will now have to learn multi-threaded programming in earnest, taming eight independent CPU cores to all work in harmony. AMD's eight-cored desktop CPUs will finally start seeing games that can utilise their full capacity, leaving Intel floundering in the gaming space until it too releases hex-cored chips.

Bennett Ring
Tech Editor
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Our Power Award is given to products that are best in class no matter your budget.

Our Smart Buy Award goes to products that balance performance with price tag.

PCPP TESTBENCH

CPU
INTEL EXTREME EDITION I7-3960X
www.intel.com.au

MOBO
INTEL DX79SI
www.intel.com.au

RAM
8GB KINGSTON HYPERX
DDR2400MHZ
www.kingston.com

SSD
TWIN KINGSTON HYPERX
240GB SSDS IN RAID 0 MODE
www.kingston.com

PSU
750W COOLERMASTER
www.coolermaster.com

DISPLAY
DELL ULTRASHARP
U2711 (2560X1440)
www.dell.com.au
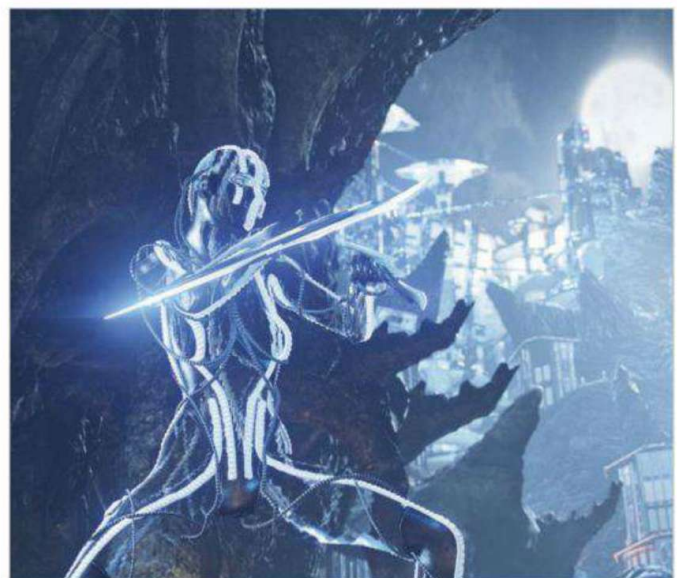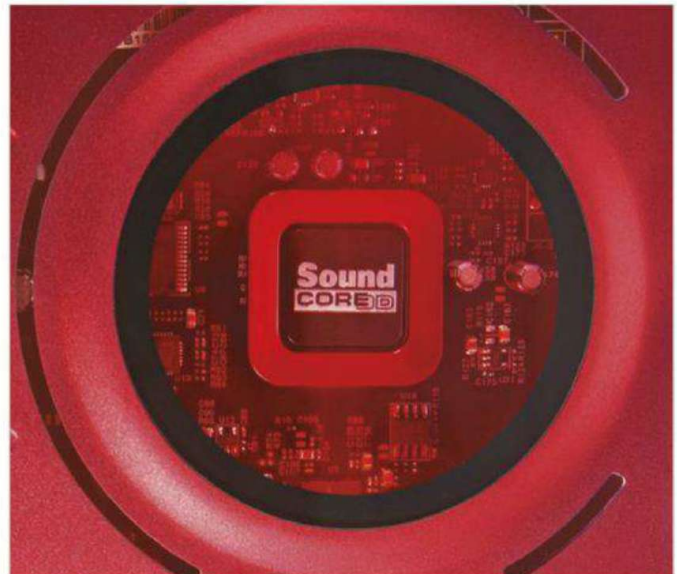
MINISTRY OF
SOUND

In the under-appreciated world of PC gaming audio, Creative is about to make a comeback. **BENNETT RING** puts his ear to the floor.

Those of us with receding hairlines and expanding waistlines will remember the era of Sound Blaster, where every gaming PC on the planet came packing one of Creative's ubiquitous soundcards. These little slabs of ear candy were to audio as the 3dfx Voodoo was to graphics, delivering the wonders of hundreds of simultaneous sound effects, with dozens of crazy environmental effects that all sounded like a cavernous bathroom. Creative sold lots of them, hundreds of millions in fact, but its monopoly led to the usual arrogant behaviour seen when companies get too big for their boots. Worst were bloating drivers, which were as bulky as they were unreliable, and which still give greying gamers nightmares about conflicting IRQs and DMAs. By the time of Windows Vista, Microsoft had determined that many of the PC's stability issues were caused by sound cards, so the Seattle software giant pulled the rug out from under Creative's feet.

Vista's introduction of the Universal Audio Architecture (UAA) standard removed the ability for Creative to pipe DirectX's DirectSound to its audio drivers, making Windows infinitely more stable but also destroying the technology Creative had used for years. The company watched its fortunes turn, as their former must-have devices became expensive paperweights. It was a dark period for the former masters of sound. However, in the last couple of years we've seen Creative playing a comeback tune. With the launch of the SoundBlaster Z series, not to mention some rather tasty gaming headphones, it seems to have learnt from the lessons of the past. However, you're probably wondering why you even need a sound card if Windows 7 now uses the UAA standard?

The move to UAA means Creative can't build cards the way it used to, but your PC still needs to process audio. So there are several advantages to using a dedicated gaming sound card. For starters, the Digital Signal Processor (the audio equivalent of a CPU or GPU) is much more powerful than onboard solutions, which means your CPU wastes less time thinking about audio. Secondly, sound cards use quality components to process the sound, usually in the form of expensive Digital to Analogue Converters, or DACs. Finally, by moving the circuitry away from the motherboard, and hiding it behind a special shield, the card isn't subjected to the rigours of interference, allowing it to deliver a much cleaner audio signal.

With Creative launching the brand new Sound Blaster Z series, as well as a range of premium gaming headphones, it's a fantastic opportunity to see what the company is up to, and whether it's learned from the harsh lessons of the past. It's also a great way to remind you guys just how important gaming audio is – if you're running onboard audio through crappy headphones, you're simply not doing today's blockbuster musical scores and sound effects justice.

Creative Tactic3D Rage USB

PRICE $99.95
http://au.creative.com

You don't even need a sound card with this gaming headset, as there's one stashed inside the left ear cup. Plug the headphones into your USB port and your PC will detect them as an audio device, allowing you to install the Creative software to unleash its full potential. You can also use it these headphones in conjunction with one of the Sound Blaster cards reviewed here; simply plug it in via the usual headphone cable instead of USB. Running off the internal solution delivered above average sound quality, largely thanks to the excellent 50mm drivers (drivers are the mini-speakers in headphones, and generally speaking the larger the better – 50mm is used by the best). Bass reproduction is especially noteworthy, but the mid to high end also impresses, if occasionally crunching in hectic soundscapes. They might not support Dolby Headphone, but Creative's SBX 3D Surround is even better, with brilliant positional audio yet little of the echo effect seen in Dolby's solution. While the integrated audio is a fantastic feature, these little rippers shine even more with one of the new Sound Blaster cards. PC

8

Creative Tactic3D Rage Wireless

PRICE $149.95
http://au.creative.com

To what lengths would you go to sever the tether that binds your soul to your digital tower of slavery? That's an overly dramatic way of asking how much coin you'd be happy to blow to get rid of your headphone cable? Creative thinks you'll pay fifty bucks for the privilege, as that's how much more the Tactic 3D Rage Wireless is than the USB model. These gaming cans are identical to the Rage USB, minus the USB cable. As there's no physical connection, the digital sound processor is now housed in a small USB dongle that you plug into your PC, which doubles up as the radio transmitter. This offers the exact same sound features as the USB version, such as awesome virtual surround and deep EQ settings, but beams audio via RF to the headphones. Given that it's using a wireless connection, a slight drop in sound quality would be forgivable, but the Wireless kit maintained an excellent level of audio over its chunky 50mm drivers. This makes them excellent value for money, just bear in mind they won't work with a dedicated sound card, as there is no 3.5mm input, with all audio having to be transmitted via the dongle. PC

8

Creative Sound Blaster Tactic 3D Omega Wireless

PRICE $199.95
http://au.creative.com

If you're onto a good thing, don't screw with it. Creative has a great thing going on with the design of its Tactic3D headphones, so they've used the exact same 50mm drivers and ear cup design in these premium Omega headphones. As a result the Omegas maintain the same excellent audio quality of the Tactic3D cans, but there's also an extra goodie in the form of a USB base station. Not only does this act as a wireless transmitter and digital sound processor, similar to the Rage Wireless, it's also where the Omega magic happens. Both the PlayStation 3 and Xbox 360 can be connected to the base station, making these truly cross platform gaming headphones. Even the microphone works on all three platforms, an amazing feat at this price point. Our only concern is the jungle of wiring necessary to hook up all three devices, but it's a small price to pay for a set of cans that rival those twice the price. If Creative keeps making products like these, we have no doubt they'll be around for a while yet. PC

9

Sound Blaster ZXR

Oh so good, yet oh so bad

PRICE $270
www.soundblaster.com

Aimed at enthusiast PC gamers like us, the ZXR is Creative's cream of the crop sound card. We whacked it into a high end gaming rig to see how it would go, pumping audio through a $4,000 set of 5.2 Cinema Paradigm Monitor speakers and subs, as well as a set of Audio Technica ATH-A500X headphones. Let's hear the outcome.

The main card hides its silicon goodies behind an attractive red shield, keeping nasty EMF emissions at bay. It's powered by the Creative Sound Core3D chip, which was also found in Creative's last round of cards, the Recon3D series. This time around it's surrounded by top-shelf components, unlike the Recon3D's questionable choice of parts. Expensive Burr-Brown Digital Audio Convertors are the centrepiece, as well as the high quality TPA6120A2 co-amp which is used to drive headphones up to 600 ohms. If you don't like the sound of this co-amp, you can swap it out for one of your choosing, a great feature for headphone aficionados. Premium Nichicon capacitors are the final jewel in the audio crown.

In addition to the main sound card is a small daughter board, the DBPro, which connects via ribbon cable. This includes another Recon3D chip onboard, and houses the SPDIF I/O ports, which we used to connect the card to our Pioneer amplifier. Both Dolby Digital Live and DTS Connect are supported, and we tested both modes.

Creative claims that these components deliver a sound card with a Signal to Noise Ratio of 124dB, which should make it the clearest gaming card on the market. Replacing our usual sound card, the ASUS Xonar D2X, the ZXR initially revealed slightly more detail than the ASUS predecessor. It wasn't a huge leap, but then we played Battlefield 3 and noticed how much better the positional audio of the ZXR was. The D2X gave good 3D audio, but the ZXR absolutely smashed it, making it much easier to place incoming enemies. Turning on the Sound Blaster's Surround feature, the soundscape became even more believable, while a dash of the Crystaliser setting gave our sound effects a little more crunch. We were in sound card heaven, and spent the night testing a range of games, blown away by the impressive detail and positional audio coming through our home theatre speakers.

And then, the next day the software's auto updater loaded new drivers. Oh dear.

Suddenly the positional audio went crazy, swapping the front with the back, and the sub with the rears. It was truly bizarre, and even carried over to the headphone tests, where right became left, front became back. So followed three days of deleting drivers, PCI slot shuffling, and reinstalling drivers, but we couldn't get the card to perform correctly again.

We thought that the days of sound card problems like this were well and truly behind us, but apparently not. It's such a shame – when this card works well, there's nothing like it, especially if you're using high-end speakers. And we haven't even touched on the Audio Control Module or advanced voice capture features, not to mention the myriad of other cool touches. This could be a truly great product that enthusiast gamers must have… it'll just take some solid driver development to deliver on the potential. **PC**

Houston, We Have A Problem

We spent three days working with Creative's team to figure out why we had such weird channel swapping issues. The excellent news is that they were able to reproduce the issue when using the same Gigabyte Sniper G1 motherboard as us, which is the first step in solving the problem. Creative stated to us that compatibility issues will be solved in future driver updates, and we'd be very surprised if they don't resolve it in the very near future. As soon as they do we'll post an update in the magazine, but until then it's wise to avoid these products if you're running a PC with a heavily loaded PCIe bus, such as SLI setups or with multiple PCIe devices. Those of you with a single GPU or few PCIe devices should be fine.

- The best positional audio and clarity
- So many features
- ACM module

- It stopped working properly

VERDICT PCPP hopes to use the ZXR as our benchmark sound card for all future audio tests… once Creative delivers working drivers.

7

Sound Blaster ZX and Z Sound Cards

The price sounds good to us

PRICE $159 for ZX, $112 for Z
www.soundblaster.com

We've combined these two reviews into a single page as the two sound cards are almost identical. The only differences come in the form of the ACM, or Accessible Audio Control Module. Creative's Acronym team should be fired for not calling it the AACM, but the good news is their sound engineers are much better at their jobs. The ZX also uses Nichicon audio grade capacitors, which give it a slight boost in audio quality.

Both soundcards are physically the same product, powered by the same Recon3D audio processor found in the ZXR card, and its quad cores provide most of the same features of their bigger brother. There's no daughter board, so the SP/DIF optical in and out ports are now mounted on the card. The other major change is the use of more affordable components around the Recon3D chip, with lower quality DACs and capacitors. The result is a slightly less impressive Signal to Noise ratio of 116dB, which compared to other cards is still fantastic. Most PC gamers will be hard pressed to notice the difference compared to the 123dB of the ZXR thanks to their mid-range speakers, but we could hear a slight loss in detail and clarity over our high end speakers. There's also a lower quality headphone amp, a 600 ohm headphone jobbie that felt a little too raucous for our liking. The ZX also includes the ACM, a small unit with twin microphone and headphone I/O ports, along with a beamwave microphone and volume knob. It's a handy addition for regular headphone and mic users, but whether it's worth the extra $47 is up debatable.

The impressive SBX audio software suite arrives in full on both cards, and it's a notable collection of technology that doesn't eat anywhere near as much hard drive or memory space

as Creative's past creations. The SBX Pro Studio tab hosts the coolest features, with the Crystalizer and Surround sliders our favourite. Crystalizer debuted years ago as a way of improving the detail of MP3 tracks, but has since developed into a full-blown post processor for all audio signals. Turning it on enhances all levels of the audio, with sharper highs, warmer mid-ranges and boomier bass levels. A small amount is just right for bringing Battlefield 3's the explosive soundscape to life. The Surround tab enhances positional audio, which is already one of this card's strengths. It's especially impressive when used with headphones, easily surpassing other virtual headphone surround techniques such as Dolby Headphone. Not only is the positional audio much better over stereo headphones, but it also removes most of the echoey reverb that other HRTF (Head-Related Transfer Function) algorithms introduce. This is a killer feature for headphone users, and reason enough to make this a must-have device.

The Crystal Voice suite of voice enhancements tie in nicely with the beamwave microphone included with both cards. It's a fantastic solution for those who use VOIP with friends but don't want to forego speakers due to VOIP echo; the echo cancellation and other features of Crystal Voice combine with the beamwave mic to totally remove any game sound from the captured audio.

Unfortunately we ran into the exact same issues as the ZXR, with interference from the PCIe bus causing audio channels to get mixed, even in headphone mode. Until this issue is fixed, it's very

hard to recommend these sound cards for those with multiple PCIe devices. Thankfully, if you're running a less crowded box with just a single GPU eating your PCIe bandwidth, the Z and ZX series should work wonderfully, and leave the competition for dead. **PC**

- Excellent sound quality
- Impressive range of audio features
- Looks pretty

- Flaky performance in crowded PCs
- ACM is of questionable value

VERDICT Creative is onto a winner with the new Z-series, and the two entry level cards are killer pieces of kit, provided you're not running them in a crowded PC case.

7

MINISTRY OF **SOUND**

THE SOUND MAN

Listening in with one of the audiophiles behind Creative's new campaign

Ryan Schlieper is the Product Marketing Manager for Audio at Creative, and he's a bit of a wizard when it comes to the company's range of headphones and sound cards. **BENNETT RING** had a chinwag with Mr Schlieper to discuss how to design a headset, why onboard audio is god-awful, and the philosophy behind Creative's new sound cards.

PCPP: When building a gaming headset, what's the most important piece, and how do you make sure you're building it better than anybody else?

Ryan: Rather than it being once piece, it's a concert of pieces. That's what differentiates a gaming class headset from your usual musical headset. You need to know who you're building for. There's a misnomer that gamers just want bass and high impact. What we try to do is we go for the best possible drivers we can get for the device and then build everything around those because we know if we can get the core right, the part that's delivering the audio at a price point to the customer right, then we can build everything else around that. At the end of the day if you're not building around great delivery mechanisms, you're going to be letting your customer down.

Of course that changes from price point to price point, because you obviously have to deliver more and more as you go higher. We start at the core, we know what our technology can deliver, and then we start building the framework around that. First we build around the driver (the small speakers in headphones), then build the comfort factor in there. You know gaming people are going to listen to the device for a lot longer. So the two main things are deliver great sound, and then make sure people are comfortable while you're doing it.

Many PC gamers still use onboard motherboard audio. What are the benefits of using the external audio dongles that come with your headphones compared to motherboard audio?

The biggest, hands-down biggest, benefit is Signal to Noise ratio. By going with an external USB solution, you're eliminating that noise that can be heard on the motherboard. Even though it's digital, you still get a muddy sound when going through the motherboard due to all the system noise. By going USB and external, you get a cleaner sound, especially if you're taking an analogue rout. Another huge difference is what we can do in

hardware, we're able to deliver different types of technologies like our SBX software that we have.

What are some of these key new audio technologies that are unique to Creative products?

The biggest thing that we've focused on is the SBX technology. We've had different names for different pieces of technology in the past, but now we're centred on SBX, or Sound Blaster Experience. We've had all of these pieces of technology, like the Crystalizer, Bass Enhancement, and Surround, which used to

be CMSS but is now SBX Surround, and it's all been completely re-written. As we've iterated this technology and developed it we've really taken into consideration all the changes that have happened and what people are now looking for. SBX is the core of what we offer, and with the Sound Core3D chipset running with SBX we're able to do all this stuff in hardware, even in external USB devices. For example our Recon3D USB unit is a hardware accelerated unit that can be used with the Xbox 360 or PS3, so we're not locked into just PC.

We're not just focused on the delivery

mechanism either, such as Surround or Crystaliser; we're also focusing on voice with our Crystal voice technology. We're in the era of team games, with games like Heroes of Newerth, Call of Duty and League of Legends, and voice is super critical so we've focused a lot of our effort on it.

What are you doing in regards to voice that nobody else does?

We have several different techs. Every one of our Sound Blaster Z-series cards, including the base line Z model, includes a stereo beamform microphone. When you buy the card you can game without a headset, because we boost echo cancellation in hardware, allowing you to place that beamforming microphone on top of your monitor. You can play audio from your speakers, while talking to that microphone on your monitor, and other players will not hear your game audio coming through. That's all being done in hardware. We have four cores in the Recon3D chip, and we dedicate one of them to voice. We also have hardware voice morphing through our voice effect software, so you can sound like a demon, or an alien, or whatever.

On surround sound headphones, Creative only makes virtual surround units that simulate it over stereo – you don't do discrete surround headphones that physically have 5.1 speakers. Can you explain why you've stuck with virtual surround rather than physical?

There's a few different reasons. First off it's a matter of componentry. When you are doing a

"You need to know who you're building for. There's a misnomer that gamers just want bass and high impact"

discrete solution, you really have to make a lot of sacrifices. Unless you can design something that's the size of an NFL football helmet, you have to be aware of how much cavity space you have in the ear cup, which determines how big your drivers are going to be. When you build a discrete 7.1 headset you have to fit all of these different drivers into this small space. This means I can't even remotely think of a 50mm driver, at best I can go 30mm, with two 20mm drivers, and now I can get everything to fit inside the space. You lose all of the audio quality that comes with bigger drivers, as you're using much smaller,

inferior drivers. You can't drive as much bass or mid-range, you end up with a tinny response. You can't get any impact out of it, it's not a full sound.

Part B is that I, as a designer, would like to go and source a quality 50mm driver that I know has a great linear response, that I know can handle the extra bass response needed if the gamer cranks up the SBX bass enhancement. However, if I have to build a surround headset for this crazy low price point, and it's using six drivers versus the two we use, something has to give. And they end up using much cheaper drivers, which don't sound very good. **PC**

BACK TO THE FUTUREMARK

Behind the blindingly-beautiful eye candy of the graphics industry's standard benchmark

3DMark has been lowering the stress levels of tech journalists for over a decade. Offering performance analysis that doesn't favour any particular vendor, it's the weapon of choice for benchmarking graph-lovers. **BENNETT RING** spoke to Jukka Makinen, CEO of 3DMark developer Futuremark, about the brand new version that promises to test PC gaming hardware across all of its many incarnations. Grab the free version from www.futuremark.com, and watch it punish your PC as you read how it was created.

PCPP: 3DMark11 tended to perform better on NVIDIA hardware, yet AMD hardware now tends to perform better in games? Why is that?

Jukka: Since good benchmarks should remain relevant for several years, 3DMark aims to strike a balance between the amount of processing used in games today and that which could be used in games in a few years' time as hardware improves. 3DMark Fire Strike, which is our new showcase benchmark test for gaming PCs, uses a multi-threaded DirectX 11 engine, which supports tessellation, ambient occlusion, volumetric illumination, particle illumination, and a variety of lighting and shadowing techniques. With post-processing, the engine can produce depth of field, bokeh, particle-based distortion, lens effects, bloom and anti-aliasing.

3DMark Fire Strike Graphics test 1 focuses on the GPU's ability to process geometry and illumination. Fire Strike Graphics test 2 focuses on the ability to process particles and GPU simulations using Compute Shaders. There is also a Physics test that focuses on CPU performance and a Combined test that stresses the GPU and CPU at the same time.

Comparing 3DMark test scores, particularly individual graphics test scores, is a useful way to see the strengths of NVIDIA's and AMD's architectures in practice. But bear in mind, hardware performance in games and 3DMark is heavily dependent on the
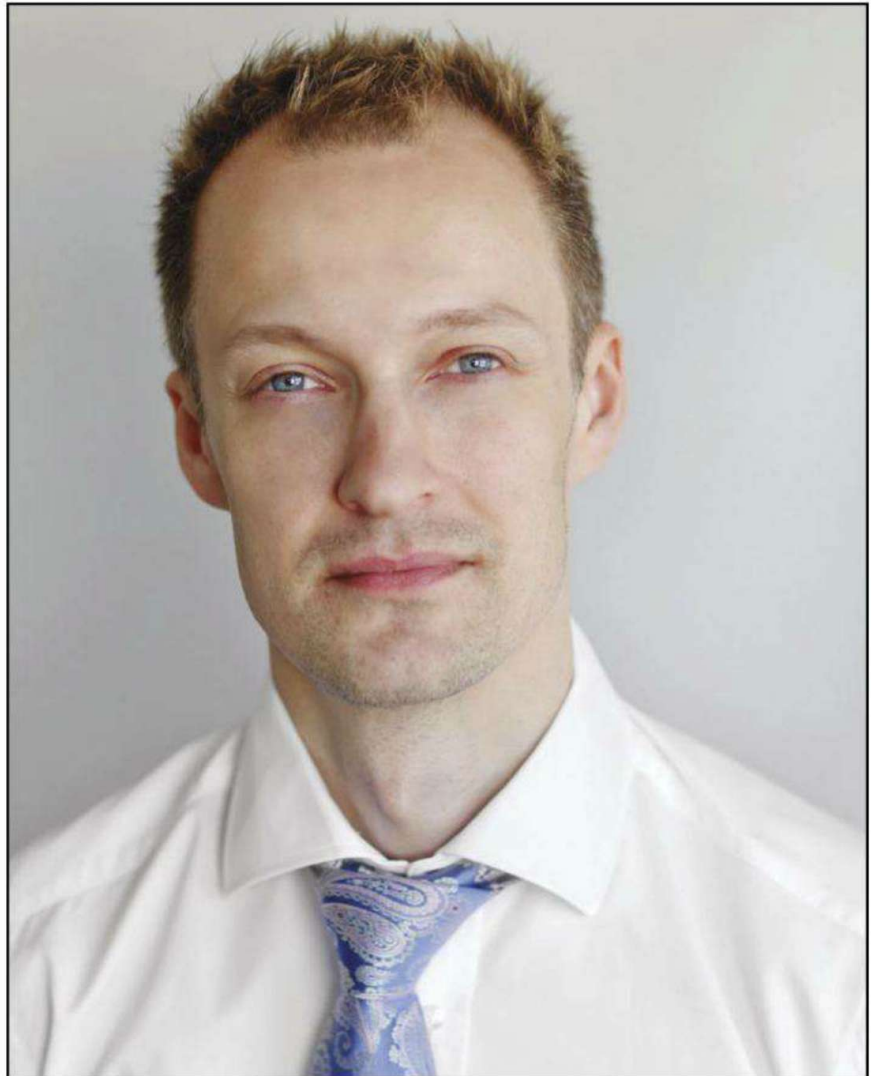
drivers. While one company's graphics cards might perform better at some techniques right now, the next set of drivers could easily see that situation reversed.

How closely did you work with AMD and NVIDIA when building the new 3DMark? Was equal time spent consulting both teams?

Creating a new 3DMark is a very collaborative process. We are convinced

that the only way to make high quality benchmarking software is by working with the major players in the industry through our Benchmark Development Program. AMD and NVIDIA, along with Intel, Microsoft and many other well known companies, are all members. They are involved in the planning and development of each new 3DMark at every stage from the initial technical specification through to the final public release. They get

to test regular builds of the software during development and their engineers frequently visit our headquarters in Finland to inspect the source code.

How do you balance the unique strengths of AMD vs NVIDIA hardware in your benchmarks? Is it possible to create a benchmark that is truly fair to both products?
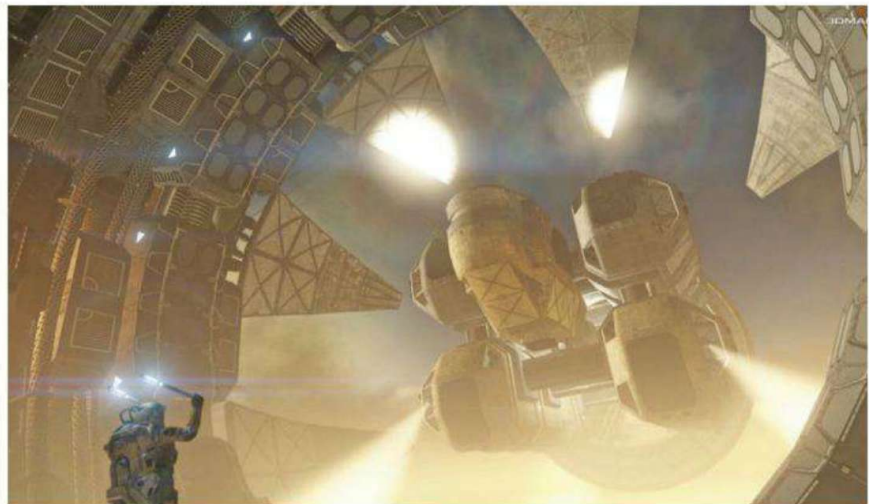
It can be very challenging. AMD and NVIDIA have different visions for the future of technology. Behind those visions are massive investments in manufacturing and marketing. It is very important to these companies that their hardware is shown in the best possible light.

Fortunately, we have found that our Benchmark Development Program is the best way to resist these pressures and keep our benchmarks impartial. We have an open, yet strict, change control process that governs any changes to the benchmark away from the technical spec. When one member suggests a change, the other members get to have their say on the value and validity of the change. If the change disproportionately benefits a single manufacturer, the other members will most likely object, though in every case, the final decision always rests with Futuremark.

What are the major improvements in the new 3DMark versus the older version?

The new 3DMark is different from previous versions in that you don't get an overall 3DMark score. Instead, 3DMark has three different tests, each designed for a different class of hardware. Ice Storm is our new benchmark test for smartphones and tablets. Cloud Gate is designed for notebooks and home PCs with integrated graphics, and Fire Strike is intended for benchmarking the latest high-end gaming PCs. Each of the three tests gives it own score which you can then compare with similar systems.

Ice Storm is the first cross-platform 3DMark test and you will be able to directly compare Ice Storm scores from Windows, Windows RT, Android and iOS devices. There are currently no Android or iOS devices capable of running the Cloud Gate or Fire Strike tests, but when

mobile technology catches up, we will make those tests cross-platform too.

On Windows, this version of 3DMark is the first to include tests for DirectX 11, DirectX 10, and DirectX 9 level hardware within one application. All three tests, even those targeting DirectX 9 and DirectX 10 compatible hardware are powered by modern DirectX 11 engines using Direct3D feature levels.

Do you ever find that hardware companies "cheat" to improve 3DMark performance, and if so how do you tackle the problem?

The fierce competition between companies to "win" at 3DMark pushes them all to constantly improve their drivers, and everyone benefits from that. However, no company would risk outright cheating to improving

> **"No company would risk outright cheating to improving their 3DMark scores. Can you imagine the headlines if they got caught?"**

their 3DMark scores. Can you imagine the headlines if they got caught? And they would get caught, since so many people and publications use 3DMark to measure and compare hardware performance.

That said, we pay very close attention to driver optimisations. A benchmark is only valid if the hardware performs all of the work without skipping or modifying the content in any way. We have a strict driver approval policy that states what is and isn't allowed.

We test every major WHQL driver release to make sure that it does not unfairly influence or manipulate the 3DMark tests or scores. 3DMark will only give you a valid result if you are using a driver that Futuremark has tested and approved. When you use 3DMark you can be sure that the scores are fair. **PC**

HOTWARE

1. ROLI Seaboard GRAND
Price: $TBA • ROLI
www.weareroli.com

Despite what pianos and keyboards may have you thinking, music is not something that's just black and white. Ao ROLI has decided to make use of the grey area by blurring the lines between digital and analogue with the Seaboard GRAND.

POWERED UP: The way you hit the keys determines the resultant pitch, timbre and volume, and allows you to create effects like vibrato while you play.

PLAYED OUT: A limited run of only 88 Seaboard GRANDs in April means you may just miss out on having one of these unique instruments.

2. Steelcase Gesture Chair
Price: $TBA • Steelcase
www.steelcase.com

We've always been huge advocates of seating comfort, but the way in which we work (and play) has changed dramatically in recent years. We are a lot more mobile now, with laptops, smartphones, and tablets forming the main tools of the office trade. Steelcase noticed that the way people sit relative to these devices changes, so made a chair that changes as well.

POWERED UP: Continued support regardless of your favourite seating position(s).

PLAYED OUT: Undoubtedly it will be a pricey piece of lumbar support, and we won't see it on the market until around Spring.

3. iStomp
Price: $150 • Digitech
www.digitech.com

Digitech's iStomp means you no longer need to decide which guitar pedals to take on tour, as they've cleverly allowed you to load whatever effect you would like straight on to the iStomp.

POWERED UP: Download effect from the app's store (currently with 47 available), and load on to pedal. All processing is done there to avoid delays or signal issues.

PLAYED OUT: Additional pedal effects do cost money, so you'll be looking at anywhere from a dollar up to $20 each for those. It's iDevice-only at this stage. And only one effect per pedal at a time, so you may still need to buy several.

4. Toyota i-ROAD
Price: $Maybe • Not yet
www.toyota.com

While only a concept, it's worth noting that concept designs help give rise to new ideas and innovations. The iRoad is practically an enclosed trike, with a clever leaning system allowing it to handle corners like a motorbike would.

POWERED UP: Electric motors power the vehicle, so renewable electricity is obviously the target here, and it's diminutive proportions mean four of these would fit into a standard car parking space.

PLAYED OUT: Pitiful range (50km) at a pitiful average speed (30km/h) mean in its current form it's probably not useful to many people.

5. Google Chromebook Pixel
Price: $1300+ • Google
www.google.com

Not content with owning the internet and smartphones, Google's now trying to dominate the laptop space with the Chromebook Pixel.

POWERED UP: Backlit keyboard, glass touchpad, machined aluminium case, Gorilla Glass screen with pixel density higher than Apple's Retina efforts, weighs only 1.52kg.

PLAYED OUT: Requires an always-on internet connection to get the full benefit of the machine. Can't run the software you're likely to want – just the Google alternatives. Not available for us yet, pricing will probably jump a little when it is. Really no reason to own this unless you're a Google fanatic.

KEANU AGE 18 | VICTORIA

FOUR MOST IMPRESSIVE FEATURES:
1. Intel i7 3820 CPU
2. 32GB Corsair Vengeance memory
3. GeForce GTX 590 graphics card
4. ASUS P9X79 deluxe motherboard

LAST UPGRADE: The Asus P9X79 Motherboard as my old one died and I thought I would upgrade to 2011 socket as well! Best decision!

DREAM UPGRADE: A GTX 690. Being that I have a dual GPU card already and wanna go the next step and push games to more than I need, haha!

FAVOURITE FEATURE: The custom clear acrylic case (NZXT Phantom copy); all clear except the top and bottom to look like the NZXT Phantom, with laser engraving. And before you ask, I do clean it... A LOT!

WHY SO SPECIAL?: It's not over the top but still looks great and amazing. The fact that I built the case and did the engraving graphics on the side makes it my own and unique.

KEANU WINS!

This awesome Creative Sound Blaster Tactic3D Rage USB headset! It'll blow your head apart with its superior surround sound! Congratulations, Keanu!

WINNAR!

1. Want to know how to guarantee your entry making it as the My PC of the month? A custom engraving of the PCPP logo goes a long way.
2. Those three white disks are actually cooling fans, and we have to say they look superb. That's one cool case you're looking at.
3. Pro-tip for a good looking system – colour match everything. Keanu's choice of black makes this look like a coherent whole, rather than bits and pieces thrown together.
4. Why use two speakers when you can have four? Guaranteed to please your housemates!
5. Naughty Keanu – you might think a desk is an OK mousing surface, but your next upgrade has to be a pro mouse mat. Trust us, you'll thank us later.

WANT FREE STUFF?

Send your MyPC entry today to *mypc@pcpowerplay.com.au*. Include the four most impressive elements of its hardware, your last upgrade, your dream upgrade, your favourite feature and what you think makes your PC special. Make sure to include your name, age and location. And last but not least, attach a 5MP or bigger image of your PC! No camera phone shots, and make sure it's in focus!

TO THE **BITTER** END

Pitting the Sapphire Radeon HD 7790 1GB against the ASUS GeForce GTX 650 Ti Boost

NVIDIA and AMD have the temperament of a couple of Tassie Devils fighting over a dead roo; neither company is willing to back down, with each vicious snarl answered by a brutal bite. BENNETT RING has seen it at the upper end, with both companies constantly trading blows, be it via hardware updates, new product launches or driver tweaks. And now he's seeing it yet again at the mid-to-low range tier, with two new GPUs battling for your budget dollar.

A HOBBLED GTX 660

The ferocious devil with emerald green eyes is NVIDIA's GeForce GTX 650 Ti with Boost, a GPU ASUS has put to good use. Based on the GTX 650 Ti released late in 2012, many would suggest that this card wouldn't exist had it not been for AMD's new Radeon 7790 GPU. It's designed to take the fight to the $200 price bracket, and as the name suggests includes NVIDIA's Boost feature, an automagical overclocking technique formerly limited to the upper echelons of NVIDIA's army. In the default version of the GPU, Boost pushes the maximum frequency to around 1033MHz, a minor increase on the 925MHz offered by the boost-less GTX 650 Ti. As expected, ASUS has given it a further nudge northwards, with its variant topping out at 1085MHz.

Increasing the core speed delivers a decent performance boost, but NVIDIA has also seen fit to unleash more of Kepler's features in this GPU. While the number of Stream Processors and Texture Units remain identical between the GTX 650 Ti and the newer Boost model, the number of ROPs has been increased by 50%. The memory bus width has also been stretched, up from 128-bit to 192-bit, and the Boost now ships with 2GB of memory running at the maximum 6GHz frequency Kepler is capable of. In layman's terms, not only has NVIDIA tuned the Boost's engine to run faster, it's also added a turbocharger and double overhead cams.

Obviously this higher performance is going to result in a warmer chip, and the Boost bumps up the TDP to 134W, compared to the non-Boost's TDP of 110W. It's still a chilly little beast compared to the high end, but that hasn't stopped ASUS strapping its powerful DirectCU II cooler to its back. This kind of cooler is basically overkill, but it delivers a cool GPU at whisper-quiet volumes. ASUS has also decked out the card with twin dual-link DVI outputs, as well as a single DisplayPort and HDMI out. It's an excellent variant of the card, but ASUS has soured its offering by slapping on a hefty price tag. Considering NVIDIA is suggesting an RRP of US$169 for cards based on the Boost GPU, ASUS' RRP of $279 is an eye opener. Street price should debut a little lower, around the $240 mark, which is much closer to the $200 we expected from this new product. If you don't want to shell out the extra $40, there will be plenty of GTX 650 Ti Boost cards from other manufacturers, and they should sell for $200 or less.

BONAIRE-CONDITIONED

Welcome to AMD's attempt to deliver HD performance for less than $200. Codenamed Bonaire, the Radeon HD 7790 is built to fill the gap between the 7770 and 7850 products, and uses 14 Compute Units (CU), the blocks of transistors used to build AMD's existing products. This places it just south of the midway point between the 7770 (10 CU) and 7850 (20 CU), delivering around 40% more shading and texturing performance than the 7770.
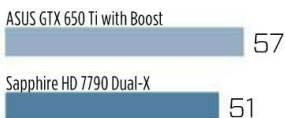
The default core speed specified by AMD is identical to the 7770, clocking in at 1GHz, but Sapphire has increased this to 1075MHz, a minor jump. The memory bus is likewise the same as the 7770, at just 128-bits;

SAPPHIRE HD 7790 DUAL-X OC
PRICE $175
www.sapphiretech.com

BENCHMARKS
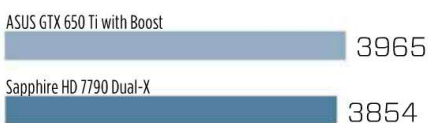
Battlefield 3 - 1920 x 1080 (Average FPS)

ASUS GTX 650 Ti with Boost
57

Sapphire HD 7790 Dual-X
51

Tomb Raider - 1920 x 1080 (Average FPS)

ASUS GTX 650 Ti with Boost
71

Sapphire HD 7790 Dual-X
62

Crysis 3 - 1920 x 1080 (Average FPS)

ASUS GTX 650 Ti with Boost
51

Sapphire HD 7790 Dual-X
43

3DMark - Firestrike (Score)

ASUS GTX 650 Ti with Boost
3965

Sapphire HD 7790 Dual-X
3854

rather than widening the bus AMD has instead cranked up the frequency, with the 1GB of onboard GDDR5 memory now running at 6GHz, a sizeable increase on the 4.5GHz of the 7770.

These specs deliver a TDP of just 85W, a more conservative temperature than NVIDIA's offering, and it's handled effortlessly by Sapphire's twin-fan Dual-X cooler. This remains quieter than a sparrow's fart even when being tortured for hours on end. Sapphire has endowed its card with exactly the same outputs as the ASUS card, but has gone for a much less intimidating price. Sapphire expects the card to sell for $175 in Australia, making it around two thirds of the cost of the ASUS GTX 650 Ti with boost – a significant chunk of change cheaper! It's not all good news though, as it will still have to face off against a wave of more affordable, generic GTX 650 Ti Boost cards.

FIGHT!

We tested both cards on our new 2013 testbench, powered by Gigabyte's Z77X-UD3H motherboard with Intel's i5 3570K CPU. 8GB of DDR3 1800MHz memory supplied short-term memory, while a Kingston HyperX SSD did the same for the long-term. A fresh install of Windows 7 64-bit with the latest Catalyst and NVIDIA beta drivers rounded out the test bench of torture. We loaded it up with several new benchmarks, designed to haul PCPP's testing procedure into 2013.

As you can see from the results, the ASUS GeForce GTX 650 Ti with Boost scored a resounding victory over the Sapphire. It's not too surprising considering it's powered by a cut-back GTX 660 designed with the sole

intention of beating the 7790. In every game test, the ASUS card led by around 10%, even in those that are part of AMD's "Gaming Evolved" program. The closest result was in Futuremark's latest version of 3DMark, where we used the impressive Firestrike test.

A WIN... FOR NOW

Despite losing out to the ASUS card in our benchmarks, the Sapphire 7790 works out to be the much better buy. Being 30% cheaper for a 10% speed decrease sounds like a sweet deal to us, but this is based on ASUS's inflated pricing. For now, the Sapphire 7790 takes home our Value award, but when an army of GTX 650 Ti with Boost clones arrive, it's going to be a different story. **PC**

VERDICTS

Sapphire HD 7790 Dual-X OC
Facing off against ASUS' GTX 650 Ti with Boost, Sapphire's implementation of the Radeon HD 7790 might not be quite as fast, but it's a damned sight cheaper.

9

ASUS GeForce GTX 650 Ti with Boost
A slight lead in benchmarks doesn't help overcome the worryingly high price tag of ASUS' version of NVIDIA's potent GTX 650 Ti with Boost. The 7790 should be worried when more affordable versions arrive. The Radeon HD 7790 might not be quite as fast, but it's a damned sight cheaper.

8

AUDIO

Plantronics GameCom Commander

Built for competition

PRICE $348
www.plantronics.com

Plantronics has been making expensive business-oriented commercial headsets for years, so it's interesting to see what it can pull off when building a PC gaming set. It's stuck with the high price tag and incredibly robust build quality, but a couple of issues hold the GameCom Commander back from greatness.

You won't need a soundcard for these cans, as they come with a USB digital sound processor (DSP) that supports Dolby Headphone Surround. Sadly, there's absolutely zero software, so you can't tweak the surround effect or equalise your audio. If you use this USB DSP you're stuck with the default sound, a very crisp and clear soundscape that's sorely lacking in the low and mid-range. This is perfect for the intended audience, professional eSports players, where clarity is more important than ambience, but for

average punters the 40mm drivers simply aren't up to snuff. It's especially noticeable when played off against the 50mm drivers found in Creative's new range, not to mention our beloved Audio Technica ATH-A500X cans. It's a shame, as the surround effect is excellent – if only it had a bit of energy and warmth we'd be in love.

If you are a pro LAN-er, the rugged build quality will inspire confidence, able to handle years of abuse. A thick carry case makes them easy to transport, while the superb microphone delivers crystal clear VOIP.

Pro-gamers will appreciate the Commander's crisp audio and precise directional audio, not to mention their ability to withstand a tactical nuke blast. For the rest of us, the sterile tone and limited feature set make these an overpriced niche product.
BENNETT RING PC

- Clear audio
- Built like a brick shithouse
- USB DSP with Dolby Headphone

- Lacks in mid and low-range
- No configuration options

VERDICT Plantronics needs to aim a little wider than pro eSports players if it wants to justify such a stratospheric price tag.

7

CASE

Antec GX700

Ready for war

PRICE $79
www.antec.com

When you buy a budget PC mid-tower, it's wise not to expect anything flashier than a removable fan filter. You pay for what you get... unless you're buying this new case warrior from Antec. As the photo shows, this is not your average budget battler.

The most distinctive feature has to be the striking militaristic styling. From the weapon launch button that is actually a fan speed controller, to the face plate straps that look like ammo cases, this is the perfect looking box for any dedicated virtual soldier. Even the top-mounted USB and headphone ports look kind of awesome.

It's not merely a good looker; the GX700 builds on Antec's reputation for delivering some of the best cases on the market. Two huge 140mm fans vent warm air from the top, while another 120mm jobbie sucks it out the back. Plastic is used sparingly

throughout, with most of the case built from thin metal. It's a little too thin for our liking, but at this price something had to give. With room inside for seven PCIe slots, along with 293mm of clearance for uber-graphics cards, there's plenty of space for a well-stocked gaming box.

Whether or not you like the style of the GX700 is purely a matter of taste, but we're pretty sure it'll prove a hit with virtual weekend warriors. And once they get past the interesting design, they'll see there's a decent armoury backing up the good looks.
BENNETT RING PC

- Cool design
- Metal construction
- Well laid out

- Metal is a little thin
- Styling not to everybody's tastes

VERDICT With great looks, an excellent feature set and solid build, Antec has smashed our budget expectations.

9

SMART BUY

Epson TW9100

Quality that can't be rushed

PRICE $3,213
www.epson.com.au

Wow, and then hmmm. They're the two words that came to mind after spending a few hours playing with Epson's latest HD projector. The first because it looks so damn impressive; the second because there's a bit of an issue that only hyper-sensitive PC gamers will notice.

Epson panels power most of the projectors in Australia, and after playing with the 9100 we can see why. Most impressive of all is this baby's black levels; LCD projectors often struggle at projecting the colour black, but the 9100 has seemingly borrowed the colour palette of a raven when pushing out blacks. The contrast performance was similarly spectacular, and it romped it in over the AE8000.

3D mode is also much brighter on the 9100, but fan noise is a bit of an issue as a result of the extra brightness.

Like all HD projectors, games are limited to 720p in 3D due to hardware limitations, but if you can handle the lower res the 9100 is the route to take if you're going to be spending a lot of time wearing weird glasses.

The 9100 has a compelling lead when it comes to both 2D and 3D image quality, but there's one issue that will have twitch gamers sighing in disappointment – latency. Online benchmarks show it measuring in at around 50ms, and we noticed it as soon as we started unleashing electrical currents through the Vox Populi in BioShock Infinite. It's such a shame, as this single issue will be enough to put off most PC gamers. Hopefully Epson realises this mistake in the future, but until then we can only recommend the 9100 if you're not playing twitch-games. *BENNETT RING* PC

- Amazing blacks
- Excellent colour and contrast performance
- Best warranty

- High latency
- Rather expensive

VERDICT Input lag stops the 9100 from being the perfect gaming projector on the market. Maybe next time Epson?

7

Panasonic AE8000

Panasonic <3 Gamers

PRICE $2,871
www.panasonic.com.au

Panasonic projectors have been the weapon of choice for wall-spanning PC games for several years, largely as a result of the dedicated "game" mode included with their products. The inclusion of a setting built solely for PC gamers shows Panasonic sees us as early adopters who don't mind spending a small fortune for the ultimate in immersion. It's this focus that makes the AE8000 our preferred sparring partner, even though it's technically the inferior of the two products in several ways.

Setting up the AE8000 is a bit painful unless you mount it dead centre, as the lens shift feature used to centre the picture is controlled via a clunky joystick. The off-centre lens doesn't help matters either, as most mounts are dead centre. Powering up the projector in standard power

mode is almost blinding; dropping the light output to Eco mode made it far less harsh on the eyes, while also expanding bulb life to a crazy 5000 hours while simultaneously silencing the fan noise.

Contrast performance is excellent, if not quite up to the stellar standards of the Epson, and the blacks also weren't quite as inky. 3D performance was a little darker, but crosstalk (aka ghosting) felt slightly less prominent.

Where the AE8000 wins hands-down is input latency. Switching to game mode, it was basically impossible to feel any delay, a huge contrast to the sluggish feedback of the 9100. The image quality might not be quite up there with the Epson, but the AE8000 is still a stunner. More importantly, it's got the razor sharp response times that gamers demand. *BENNETT RING* PC

- Very good image quality
- Excellent latency
- 5000 hour bulb life

- Contrast and blacks not quite to Epson standard

VERDICT Panasonic's love for PC gamers pays off, with the AE8000 the new benchmark for wall-spanning gaming nirvana.

9

MENAGERIE

All of our systems have had been spiced up this month, with a new CPU in the budget, memory in the performance, GPUs in the premium, and a stack of crazy in the Beast. New additions in red!

WITH BENNETT RING

BUDGET
The perfect entry-level gaming PC

CPU
AMD FX 6300
$141 www.amd.com
It's time to upgrade our AMD chip. Six-cores of updated architecture are just what we need!

MOBO
ASRock 980DE3/ U3S3 AM3+
$107 www.asrock.com.au
Our new CPU needs a new ASRock home.

RAM
Kingston DDR3 8GB 1333MHz CL9
$40 www.kingston.com
For those times when four just ain't enough.

VIDEO
HIS Radeon HD 7950 3GB
$319 www.hisdigital.com
It might be pricey, but it's worth the power.

POWER
Cooler Master 500W
$55 www.coolermaster.com
Unlike high end PCs, the Budget build doesn't need a lot of juice to get up to speed.

SOUND
Sennheiser HD201 + ASUS Xonar DG
$67 www.sennheiser.com
www.asus.com.au
Headphones plus soundcard – yes!

OPTICAL
Lite-on DVD-RW
$20 www.us.liteonit.com
We'd happily retire the drive, but some of you guys still believe in physical media.

STORAGE
Toshiba DT01ACA050 500GB HDD
$55 www.toshiba.com.au
Half a Terabyte should handle everything.

DISPLAY
Samsung S24B300H 24"
$175 www.samsung.com
Crystal clear 1920 x 1080 resolution.

CASE
BitFenix Shinobi
$64 www.bitfenix.com
Nice for the price. This is the little brother of the case used in our Performance build.

KEYBOARD
Tt eSPORTS Challenger
$45 www.thermaltake.com.au
Built for PC gamers. Macros, shortcuts, the lot.

MOUSE
Gigabyte M6900
$22 www.gigabyte.com.au
A sensor resolution of 3200DPI will make your headshots count.

TOTAL – $1070

PERFORMANCE
Most of the bells and whistles, without breaking the bank

CPU
Intel 3rd Generation Core i5-3570K + Cooler Master Hyper 612 PWM
$219 + $48 www.intel.com

MOBO
ASUS P8Z77-V LK
$160 www.asus.com.au
Awesome overclocking features via an easy to use BIOS.

RAM
Corsair CMX8GX3M2 -A1600C9 8GB (2x4GB) DDR3
$69 www.corsair.com

VIDEO
Gigabyte Radeon HD 7970 GHz OC
$449 www.gigabyte.com.au
It's fast, affordable and comes with games.

POWER
Corsair 650W VS650
$91 www.corsair.com
With minimum removable cables, this overclock-ready PSU delivers!

SOUND
Sennheiser PC151 + ASUS Xonar DG
$132 www.sennheiser.com
www.asus.com.au
Get rid of that onboard rubbish!

OPTICAL
Lite-on DVD-RW
$20 www.us.liteonit.com
This is the one bit of kit that stays the same between most of our machines.

STORAGE
W.D. Caviar Black 1TB + OCZ Vertex III 120GB
$128 + $119
www.wdc.com / www.ocz.com

DISPLAY
BenQ XL2420T
$499 www.benq.com.au
We've gone back to BenQ's 24" display after seeing the horrific aliasing on 27" cheapies.

CASE
BitFenix Shinobi XL
$159 www.bitfenix.com
Just like the beloved Shinobi, but biggerer.

KEYBOARD
Tt eSPORTS Challenger Pro
$45 www.thermaltake.com.au
A Performance system needs this keyboard.

MOUSE
Razer DeathAdder V2
$59 www.razerzone.com
Doesn't bite!

TOTAL – $2,114

PREMIUM
Crank everything to Ultra, including your credit card limit

CPU
Intel 3rd Generation Core i7-3770K + Noctua NH-D14
$335 + $85 www.intel.com

MOBO
Gigabyte GA-Z77X-UD5H
$275 www.gigabyte.com.au
USB 3.0, at long last.

RAM
2 x Corsair Vengeance DDR3 Low Height Kit
$144 www.corsair.com
16GB should be more than enough.

VIDEO
2 x Leadtek GTX 680
$940 www.leadtek.com.au
We're sticking with NVIDIA's dual GPU solution, due to stutter issues with AMD.

POWER
Silverstone Strider Plus 850W
$209 www.silverstonetek.com
A high end PSU to ensure stable overclocks.

SOUND
ASUS Xonar D2X + Audio Technica ATH-A500x $299 + $149
www.asus.com / audio-technica.com

OPTICAL
Samsung SH-B123A Blu-ray Combo Drive
$89 www.samsung.com.au
Blu for you!

STORAGE
W.D. Caviar Black 1TB + Samsung SSD 840 PRO 512GB $96 + $535
www.wdc.com / www.ocz.com

DISPLAY
Dell 30" U3011 UltraSharp
$1299 www.dell.com.au
Delivers pixel-perfect 2560 x 1600 resolution.

CASE
Cooler Master Cosmos II Ultra Tower
$379 www.coolermaster.com
Big is best!

KEYBOARD
Razer Black Widow
$109 www.razerzone.com
Mechanical keys... drool...

MOUSE
Razer DeathAdder V2
$59 www.razerzone.com
Amazing performance without paying through the nose.
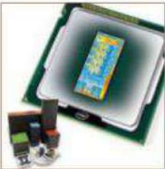
TOTAL – $4,826

I never asked to like this.

PC PowerPlay
facebook.com/PCPowerPlay

THE BUNKER

TITANS CLASH

It's Bunker vs Bunker in this supercomputer showdown

Somewhere in Oak Ridge, Tennessee, deep within a bunker not unlike our own, lies one of the most powerful computers ever assembled. Filling its hall-sized core are over 18,000 AMD CPUs, and over 18,000 NVIDIA GPUs. It cost nearly $100 million to make. It is simply known as Titan.

But you won't be playing PC games on Titan. Oh, no. It's used for "scientific" purposes so-called "climate research" and "molecular physics". Phhhht. Big whoop. Who cares. Can it run Crysis 3 on a 4K 3D projector? That's what we thought. See, there's nothing less-scientific about the clocks we're trying to reach down here.

Still, we wanted to get our mitts on that kind of supercomputer performance. And there was hope! NVIDIA has now attempted to bring the kind of mind-blowing architecture it's responsible for in Oak Ridge to the desktop gaming PC with the GTX Titan. But just what can a card that's designed more for compute tasks than discrete graphics rendering offer PC gamers? Our four-page expose tells all.

And The Beast need not worry – even without a Titan, we think it's just as super as a computer can get.

Our Insane Award is bestowed upon the tech that dares to break boundaries, no matter the cost!

BUNKER TESTBENCH

CPU
INTEL I7 3770K
www.intel.com.au

MOBO
ASUS MAXIMUS V GENE
www.asus.com.au

GPU
GIGABYTE GTX 680
4GB OC
www.gigabyte.com.au

RAM
G.SKILL RIPJAW 2X4GB
@ 2400MHz CL10
www.gskill.com

SSD
TWIN KINGSTON HYPERX
240GB SSDS IN RAID 0 MODE
www.kingston.com

PSU
ENERMAX MAXREVO 1500W
Enermax.com

NVIDIA GTX TITAN

Will the real 680 please stand up?

PRICE $1,300
www.nvidia.com

W ell, it's finally here. The supercomputer-style GK110 that everyone was talking about 12 months ago with the launch of the GTX 680 has been unleashed on the world and NVIDIA diehards are squealing "I told you it existed" and referring to their own 13 month old forums threads where they pointed out that NVIDIA had this "secret weapon" ready to launch and take back the performance crown without breaking a sweat.

Well, NVIDIA certainly claimed back the performance crown in the single GPU domain, let's get that clear right off the bat. But what is the purpose of doing so when you're charging 100% more for a (roughly) 30% performance gain on average? This raises a larger question: is there point where even The Bunker cannot compute the performance to value ratio, despite the power on offer?

As mentioned, the GTX 680 (GK104) launched roughly 13-14 months ago. Nearly everyone guessed that there would be a bigger chip on the way, as in the past NVIDIA's naming of its silicone had gone up to X10. A quick look at the GTX 680, and especially the GTX 670, quickly confirmed to most people that NVIDIA had most likely bumped up their GTX 670 to GTX 680 badge after seeing the performance of the HD 7970 and deciding it could compete well enough, and therefore pulling each lower model up one ladder position to follow.

The is some merit to this theory, though others would insist that GK110 (or Titan as it's now known), was far too big, far too complex and far too expensive to be manufactured en masse, and NVIDIA simply chose to abandon the GK110 as it would be nearly impossible to generate a profit on such and expensive chip. Remember, this was in the day where the GTX 680 was having some yield issues under TSMC, and NVIDIA wasn't the only one having troubles on the 28nm process.

So whether you're a bleeding heart NVIDIA fan, insisting that this is the true GTX 680 held back until now for extra "suspense", or if you can accept that the design was too ambitious to begin with and has only now started to see profitable yields, we in The Bunker believe all need to agree on one thing. This card is an engineering marvel, and it's exactly what every single overclocker should swoon over for their dream test bench.

THE DESIGN
As mentioned, the heart of the card is the GK110 microprocessor, which is fabricated by TSMC using a 28nm process technology. It contains a mind staggering 7.1B transistors (double that of the GTX 680) along with a new and improved 384-Bit memory bus with a RAM pool of 6GB to play with. Coupled with the fact that the Titan wields almost 60% more transistors in the GTX 680 and we should get an idea of how much more performance we can expect in PC gaming and compute tasks.

There is, however, one key difference between the two GPUs, and that is the core clock. The Titan is only operating at 83% of the GTX 680's frequency, and for that reason each of the 2688 processors is actually slower than its little brothers when compared individually. This is why we don't see the 60% performance gains that we'd hope for.

But why did NVIDIA do this? Why wouldn't it just launch the card at 1GHz like the GTX 680? Surely that would see HD 7970 and GTX 680 owners flock to the streets with wads of cash in

SPECS:

	GTX Titan	GTX 690	GTX 680	HD 7970 GHz Ed
Stream Processors	2688	2x1536	1536	2048
Texture Units	224	2x 128	128	128
ROPS	48	2x 32	32	32
Core Clock (Boost)	837 (876)	915 (1019)	1006 (1058)	1000 (1050)
Memory Clock	6GHz	6GHz	6GHz	6GHz
Memory Bus	384-Bit	256-Bit	256-Bit	384-Bit
VRAM	6GB	2x 2GB	2GB	3GB
TDP	250W	300W+	195W	250W
Transistor Count	7.1B	2x 3.5B	3.5B	4.31B
Current Price	$1150-$1300	$1150-$1250	AU$500-$600	$400-$500

hand looking for their closest hardware retailer, right? Well, it's not that simple.

You can't just double the transistor and processor count in an identical GPU architecture and expect it to perform exactly the same. Yes, while the density of the CPU should be very similar (the GK110 is physically larger to hold the extra numbers) the power requirements and heat output are not as easy to manage. Creating a larger heatsink works up to a point, and adding more capacitors and power phases can help stabilise large loads, but you eventually get to a point where it's simply not in the company's best interest to run the card and hotter or harder and risk warranty return (especially when you're already so far ahead of the competition).

So, while the Kepler design is undoubtedly and unsurprisingly the best we've yet seen, the GK110 is more of the same on a larger scale, and as such cannot reach the clocks of the GTX 680 if NVIDIA want to keep the cards thermal power design at a sensible 250W at reference design. This is, in fact, the key to the Titan and something NVIDIA chose to focus on heavily in development of their new technology, "GPU Boost 2".

BOOST (NOT THE JUICE)

While NVIDIA's original GPU Boost focused on keeping the video card's voltage under a certain level, the GTX Titan is more concerned with heat output. The new iteration of GPU Boost on the Titan monitors current GPU load, voltage and temperature simultaneously, much the same as the old technology did though now there is a far great emphasis on GPU operating temperature, rather than voltage as the limiting factor.

In The Bunker's rigorous testing, the GTX Titan was clocking up to 992MHz as a maximum boost clock, though more commonly finding a resting point of 979MHz after a good hour or two of gaming warmed the card up. To manage the fluctuation in clock cycles, the card can instantaneously select a GPU voltage from

NVIDIA's GTX Titan is based upon the architecture featured in Oak Ridge's Titan supercomputer GPUs.

0.95v to 1.162v. This differs from the max 1.175v of the GTX 680's own Boost function.

So, what about PC gamers who want to take their Titan further? Unfortunately, this iteration of Boost is almost as unforgiving as the previous generations. While the automated overclocking has certainly been improved upon, there is still no real option for overclockers besides heavily modified PCBs and firmware.

The key difference is that Boost 2 will let you set your limits via TDP, and allow (in theory) higher voltages than previous generations if you get lucky with a particularly efficient GPU. The maximum TDP allowed on the Boost is 106% of TDP (250x0.06=15) equating to a staggering 15W additional power ceiling over the allowed 250W of the card, making for a total power ceiling of 265W.

As for what you get at this power ceiling? On our sample, it was a maximum Boost Clock of 992MHz – not too shabby, though we'd have liked (and expected) more. Though taking the voltage up to its maximum of 1.2v

(keeping 106% TDP applied) we were able to achieve a core clock of 1019MHz. Again, not too shabby when you consider it's using barely more power than a stock GTX 680, though we'd like to see the card using more power, and giving us more performance!

We asked NVIDIA at the Tech Editors Summit in San Francisco last year why we couldn't have a larger power ceiling and greater overclocking freedom with the GTX 680, to which we were told "do you really need more power than this card currently offers?" with a smug grin on the Q&A presenter's face. Well, NVIDIA, the blunt answer is yes. As an enthusiast and reader of The Bunker, you always need more power.

To us, it makes little sense to restrict the card to a power ceiling under 300W TDP, though we didn't design Kepler architecture, so perhaps it's all just a big ruse to cover up the core's inability to hit high frequency without the aid of soldering entire power supplies from other video cards onto the PCB. Actually that's a good point – at least when we overclock on Kepler, we're making good use of our modding kit, plus keeping our soldering skills up to scratch.

THE NUMBERS

With GPU Boost 2 at the controls, it's no surprise that all of the important numbers are impressive. We see a constant balancing act between core clock, GPU voltage, fan speed and GPU temperatures as the software updates itself four times per second.

For this reason, the card never tips itself over the 80C mark, and if it does this will quickly be rectified with a drop in voltage, core clock and possibly a very minor 1-5% increase in fan speed if you've set your software up to do so.
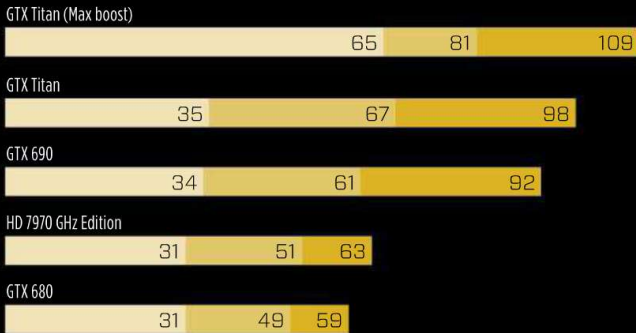
This may have some readers of The Bunker concerned about micro stutter or latency issues between clock cycle updates and their competitive first-person shooter being played

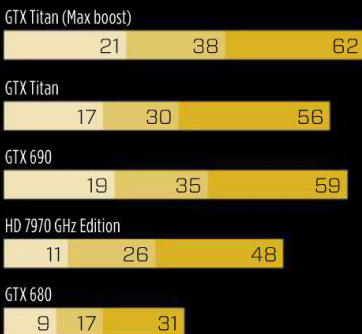## "Any PC game you want to play at 2560 x 1440 will do so without flaw at Maximum settings"
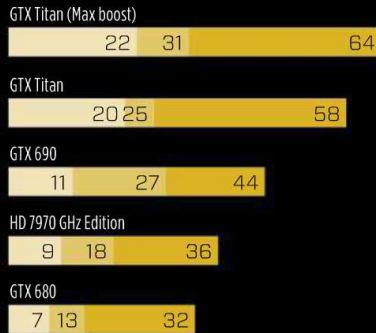
BENCHMARKS

Battlefield 3 • 2560x1440 "Maximum"

Card	MIN FPS	AVG FPS	MAX FPS
GTX Titan (Max boost)	65	81	109
GTX Titan	35	67	98
GTX 690	34	61	92
HD 7970 GHz Edition	31	51	63
GTX 680	31	49	59

■ MIN FPS ■ AVG FPS ■ MAX FPS

Hitman: Absolution • 2560x1440 "Maximum"

Card	MIN FPS	AVG FPS	MAX FPS
GTX Titan (Max boost)	22	31	64
GTX Titan	20	25	58
GTX 690	11	27	44
HD 7970 GHz Edition	9	18	36
GTX 680	7	13	32

■ MIN FPS ■ AVG FPS ■ MAX FPS

Tomb Raider • 2560x1440 "Maximum"

Card	MIN FPS	AVG FPS	MAX FPS
GTX Titan (Max boost)	21	38	62
GTX Titan	17	30	56
GTX 690	19	35	59
HD 7970 GHz Edition	11	26	48
GTX 680	9	17	31

■ MIN FPS ■ AVG FPS ■ MAX FPS

Crysis 3 • 2560x1440 "Maximum"

Card	MIN FPS	AVG FPS	MAX FPS
GTX Titan (Max boost)	23	32	58
GTX Titan	19	27	54
GTX 690	23	36	59
HD 7970 GHz Edition	14	24	43
GTX 680	16	28	47
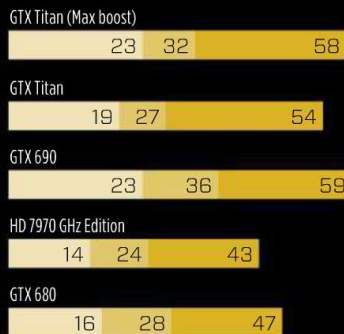
■ MIN FPS ■ AVG FPS ■ MAX FPS

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at a smooth 120fps. In this regard, we really do have to take our hat off to NVIDIA; there really isn't any noticeable stutter or glitching in gameplay when frequencies are adjusted.

As also expected, the card never goes above 265W under load, and 250W if you set your TDP limit to 100%. If you're trying to save the planet, you can even set your Titan's TDP limit at 50%, using only 125W of power, though this will net you a measly core clock of roughly 500MHz (still fast enough to power nearly any PC game at Maximum settings in 1920 x 1080).

So really what we're trying to say here is while the overclocking options of this card are limited for the enthusiast, for the average PC gamers and the casual tweakers the GPU Boost 2 technology on the card is actually vital to keeping the usual numbers under control in this card. Heat, noise and power draw issues are a thing of the past and easily monitored and adjusted for even the most basic of users, and it really does ensure you're getting a little bit more performance out of your card when it can spare the heat and power.

THE TITANIC VERDICT

We don't need to tell you the Titan is fast. While running at clock speeds of mid-to-high 900s, there really isn't anything that can slow this card down. Any PC game you want to play at 2560 x 1440 will do so without flaw at Maximum settings; heck, even triple monitor setups shouldn't pose any difficulties due to the enormous memory capacity and bus speeds.

Yet, with NVIDIA's GTX Titan, we really do find ourselves torn. On one hand, it's an exceptional piece of kit, offering the fastest GPU core we've ever seen in the mainstream market, though it's unfortunately (for some) been paired up with an extremely self-imposing "net-nanny" style of protection on the overclocking settings.

If you can afford this card and are happy to hit clock speeds only marginally lower than a reference design GTX 680 (yet with at least 50% more grunt under the hood) then the Titan is a top contender for your cash. If, however, you'd rather overclock your video cards freely and to their limits, it seems AMD is still offering the best option in the HD7970. *MATT WILSON* PC

- Only a reference card, yet still insane
- The fastest single GPU solution by a huge margin
- Almost entirely self-automated Boost management

- Can buy two 7970's or GTX 680's instead
- Not quite as fast as 7970/680 SLI/CF
- Almost entirely self-automated Boost management

VERDICT It's undeniably fast, though at this price you can buy freely overclockable HD7950 3-way CrossFire and absolutely destroy the Titan. That, we think, is something super.

7

RAMMING SPEED

When SSDs aren't enough, it could be time to make your way up to a RAM disk. But is it practical? **CRAIG SIMMS** populates his slots and gets his benchmarks running.

RAM disks aren't a new idea. Even back in the dark ages when computers generally didn't have hard drives, programs existed that allowed you to load the contents of a 5.25-inch floppy into memory and benefit from huge speed increases.

While RAM is significantly faster than your average SSD, it has an issue: it's volatile memory. Once you remove a charge from the sticks by turning the computer off, you lose everything that's stored there.

This presents us with some complications. For a software solution, if we want to use the RAM disk as permanent storage, then at some point we're going to have to copy everything back to a non-volatile disk. Then at boot time, we're going to have to copy everything back into RAM, both actions contributing to longer boot and shutdown times.

It also means that unless we have battery-backed up hardware, there's no way in the seven levels of tech hell that we're going to easily load an OS off the thing.

Once upon a time such hardware existed and was gloriously insane. By today's standards though it's embarrassingly slow, dominated by even a weedy, two generation old SSD. As far as we're aware, no one has made a PCIe x8,

DDR3, battery backed up hardware RAM disk that will calmly dump its contents to flash once it detects it's about to run out of power. Perhaps because they see monstrous flash drives like FusionIO's 10TB IoDrive Octal eventually becoming affordable for mere mortals. Perhaps current SSDs are simply enough for most users.

Gigabyte's i-RAM may be slow by today's standards (the first gen SATA connection sure doesn't help), but at the time it was a miracle.

So for now, we're restricted to software RAM disks, which can only be loaded once your operating system is. Thankfully, there's quite a few options on the market, and some quite good ones which are free.

Let's find out exactly what a RAM disk can do for you.

IT'S ALL IN THE SOFTWARE
We're going to use SoftPerfect's RAMDisk (http://bit.ly/njZKKO) for four reasons: firstly, it's free; secondly, there are no limitations on how large we can make the RAM disk; thirdly, it can regularly save the RAMDisk contents to an image on a hard drive, and finally, the performance is decent. How decent? Let's find out!
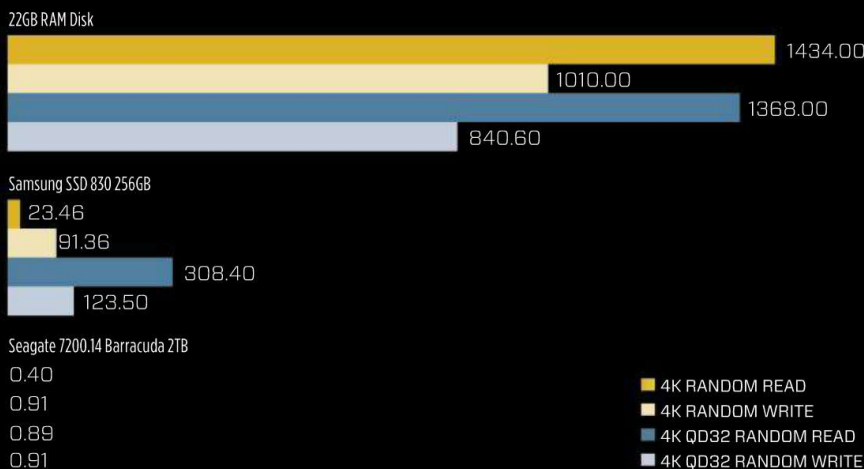
CHARTING A COURSE
Thanks to Altech, we secured four 8GB sticks of Corsair Dominator DDR3 RAM running at a standard clock of 1600MHz, at 9-9-9-24-2T. All benchmarks were run on a Core i7 3770K, Gigabyte GA-Z77X-UP4 TH and Windows 7 Ultimate.

Check out the CrystalDiskMark charts to the left comparing a 7,200 RPM 2TB mechanical drive, a typical SSD and a 22GB RAM disk.

We did experiment with RAM overclocks, but the Dominators have quite a low ceiling, and our successful overclocks returned varying results in CrystalDiskMark, not always resulting in faster speeds.

But the base results look beyond promising for RAM disks at first glance. Though some may be happy to look at the mesmerising numbers from a bunch of synthetic benchmarks, we at The Bunker like our extremes, so we set about seeing what practical PC gaming use a RAM disk has.

DRIVE SPEEDS, SEQUENTIAL (MB/S)

22GB RAM Disk
- 9265.00
- 8031.00

Samsung SSD 830 256GB
- 474.40
- 400.00

Seagate 7200.14 Barracuda 2TB
- 121.00
- 119.20

■ SEQUENTIAL READ
■ SEQUENTIAL WRITE

DRIVE SPEEDS, 4K RANDOM (MB/S)

22GB RAM Disk
- 1434.00
- 1010.00
- 1368.00
- 840.60

Samsung SSD 830 256GB
- 23.46
- 91.36
- 308.40
- 123.50

Seagate 7200.14 Barracuda 2TB
- 0.40
- 0.91
- 0.89
- 0.91

■ 4K RANDOM READ
■ 4K RANDOM WRITE
■ 4K QD32 RANDOM READ
■ 4K QD32 RANDOM WRITE

RAM A LAMB A DING DONG

From an application standpoint, uses for a RAM disk are actually quite limited for a single-client situation (that's us, gamers). Most applications tend to benefit from using RAM as RAM, rather than storage.

The insane Iometer scores below show that RAM disks will flourish under a multi-user environment where the storage gets hammered by multiple requests. Think CCP Games' EVE Online, or Facebook, both of which have to handle millions of simultaneous requests in a persistent environment, and you'll get an idea of the sort of company that might be interested servers with a RAM disk. Such storage would be a dream for database requests.

So how much improvement will a RAM disk bring to an average PC gamer? Let's check out something that should stress the storage subsystem to a reasonable amount: compressing 3.55GB in 1,659 files via WinRAR. (see graph below)

While the jump from HDD to SSD is a commendable 31 seconds, it doesn't exactly represent the huge deficit shown in the CrystalDiskMark results above. The RAM disk only manages to shave another six seconds off. Although we have access to huge storage speeds, the bottleneck to faster compression is simply elsewhere in this case. So let's turn to something arguably more important: PC games themselves.

We hit up six games, some modern, some known to have long level loading times. We then loaded a save game on each, recording the time it took to load the level on each

storage medium. (see graph on following page)

Now this is fascinating. Only one game, The Witcher 2, benefits from having a RAM disk, and even then only shaves two seconds off from the SSD. Some games weren't even affected by having an SSD. For everything else, a decent SSD will net you the best level loading performance you can get. Once again, the bottleneck for attaining better level loading speeds is no longer storage.

IT'S NOT ALL A WASTE, IS IT?

Not at all. The temporary nature of a RAM disk lends it to certain security aspects: any sensitive information stored there will be destroyed when the computer is turned off.

You could also point temporary folders, like browser caches or Windows' temp folder there, so you don't use up valuable program/erase cycles on your SSD when installing/running programs or visiting websites.

BUT WHAT IF I REALLY, REALLY WANT TO BOOT AN OPERATING SYSTEM FROM RAM?

While several Windows PE builds and various Linux distros will load themselves into RAM from a DVD or USB drive, you may want to roll your own. It is possible, but since you're essentially engaging in a hack, there sadly isn't a one-size-fits-all approach.

The concept is simple enough: using the GRUB4DOS boot manager, you can create a RAM disk, mount a raw VHD file (similar to an ISO file in that it contains an entire disk structure) to that drive, then boot Windows from there.

IOMETER, (1 HOUR RUN, 1 OUTSTANDING IO, 8 WORKERS, ALL-IN-ONE TEST)

RAM — 174079.42
SSD — 3672.27
HDD — 156.34

■ IOPS

WINRAR COMPRESSION (3.55GB, 1659 FILES)

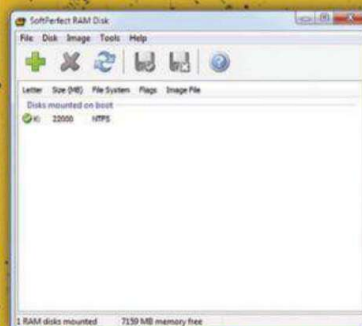RAM — 281
SSD — 287
HDD — 318

■ SECONDS

SAVING IMAGES

SoftPerfect's RAM disk is very straightforward, but there's a trick to automatically saving your RAM disk's contents to an image. You first have to create that image by clicking:

Image > Create Image

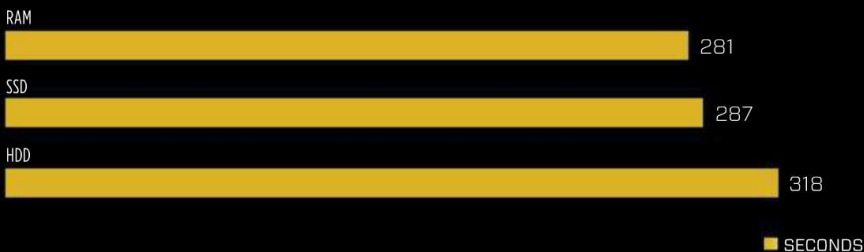then load it with:

Image > Mount Image

Even then once your RAM disk is up and running, you'll have to right click on it, choose Properties, make sure Save contents to Image is checked, click the Advanced button and set how frequently you wish to save your RAM disk's contents to the image.

HOW MUCH RAM IS ENOUGH FOR MY RAM DISK?

While recent chipsets support a ridiculous amount of RAM, getting RAM in high densities is actually quite difficult. Even getting our hands on 16GB DDR3 sticks seemed to be a challenge in this country, and with only four slots to populate on consumer grade boards, we were stuck at 32GB total. If you want extreme capacities, you may have to import.

It all depends on what you want to do. With game installs now heading upwards of 20GB, you're going to have to either buy a lot of RAM, or be incredibly selective with what is transferred to your RAM disk, perhaps by getting funky with NTFS junction points or symbolic links. We find **DirLinker** (http://dirlinker.codeplex.com) or **Windows Symbolic Link Maker** (http://bit.ly/ZsXM8N) to do a good job in this circumstance.

Some of the games we used to test level load times. They won't look any prettier, but you'll get in there faster.
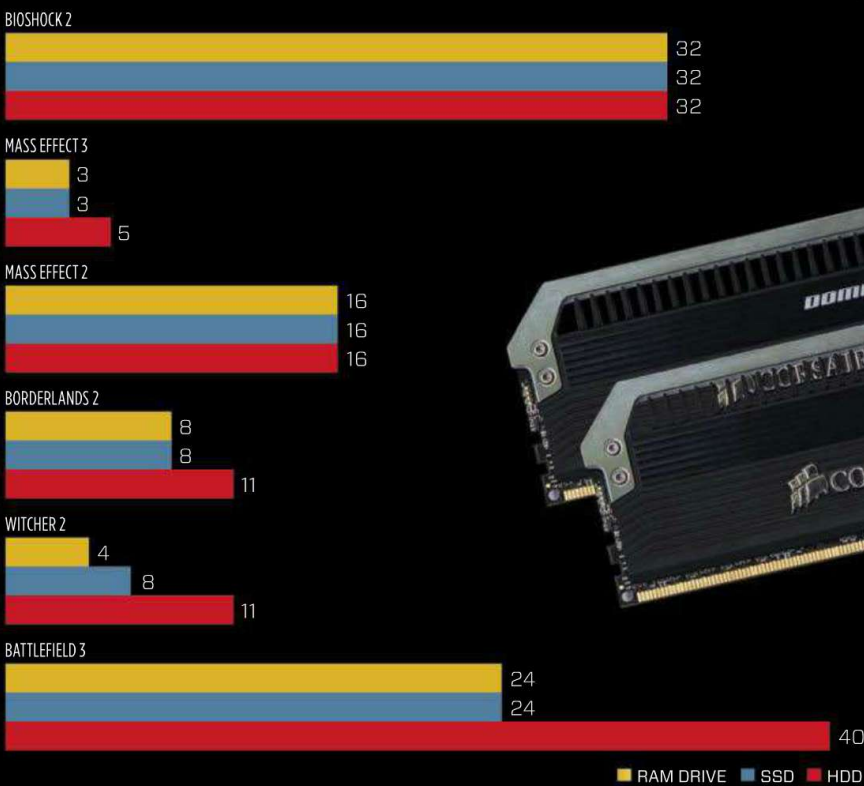
It's not for the faint of heart, though. How your motherboard sees RAM (and thus how much contiguous memory is available to GRUB4DOS) may limit the size of your RAM disk. If you're running a Windows 32-bit version, it will only see the first 4GB of addressable memory, so you'll have to make your Windows install as small as possible using either nLite or RT Seven Lite, so there's at least some RAM left after you've loaded the OS in.

When you're installing GRUB4DOS and you're running off EFI, Windows' BCD store is on a System Reserved Partition, and you'll have to assign it a letter through Disk Management to expose it before doing anything. Then you'll need to create and mount a VHD during Windows install time, and it's highly likely after install you'll need to load your working copy of Windows, mount that VHD under disk management and copy bootmgr and your BCD store from your installation media.

After all this, you'll then have to get the FiraDisk driver working, disable hibernation and the paging file, and pray the dreaded 7B error doesn't hit you.

In short, the above paragraph was intended to scare you. There are some places even The Bunker won't go. For now, keep your RAM disk independent of your OS, and you'll be the first to load into The Witcher 3 in 2014. PC

GAME LEVEL LOADING TIMES (SECONDS)

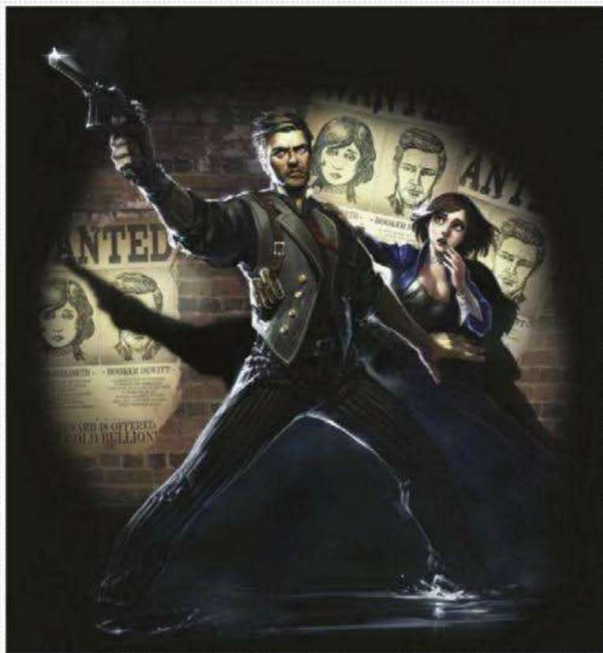|	RAM DRIVE	SSD	HDD
BIOSHOCK 2	32	32	32
MASS EFFECT 3	3	3	5
MASS EFFECT 2	16	16	16
BORDERLANDS 2	8	8	11
WITCHER 2	4	8	11
BATTLEFIELD 3	24	24	40

■ RAM DRIVE ■ SSD ■ HDD

After I finished BioShock Infinite, I went back and watched the trailers from 2011 and last year's E3. It's amazing just how many crazy ideas Irrational began with. There's a moment in the 2011 trailer where a building's balloons collapse; the entire structure tilts over and falls out of the sky, with the attached giant bell crashing into the ground by Booker DeWitt's feet. According to Irrational, the entire event was unscripted; governed by the physics engine and in-game weather system. There sure isn't any weather system in the final game.

Elizabeth's initial power set also appeared to work in tandem with Booker to augment his vigours. She would summon a storm, which Booker could cast Shock Jockey on for instant area of effect stuns, or superheat structures to make them vulnerable to the (now-cut) telekinesis vigour.

I don't hold Infinite to task for losing these aspects; things change over time, ideas get excised, pieces of the game get rewritten. The demos themselves are heavily, deliberately scripted. The complexity and specificity of both the above situations no doubt made them unfeasible in the long run. Still, it's always interesting to look back at what might have been. One thing's certain: Infinite is going to make for a fascinating post-mortem.

DANIEL HINDES
Editor
dhindes@nextmedia.com.au

BioShock Infinite

You're tearing me apart, (E)Liza(beth)!

Fair warning: this review contains spoilers for the entire plot of BioShock Infinite. Why? Well, print lead times being what they are, we're bringing this review to you a month late at the earliest. Chances are you've played and finished the game by now. So I need to decide what to do with these four pages, and I've settled on a kind of critique that would not be possible without discussing specifics. If you haven't played BioShock Infinite, here's the non-spoiler skinny: it's pretty damn good. Go and play it.

However, it is not the Citizen Kane of gaming, as some colleagues in the international press with their heads in the clouds have put it. For me to explain precisely why, the tone of this review may seem, on the whole, somewhat negative. But I mean it when I say the game is pretty damn good – yet there are a number of things that need to be addressed, and I need all the space in this review to do so. Let's just get on with it, shall we?

The world of BioShock Infinite is rarely subtle. In shifting the type of exploratory activities from archaeology to anthropology – thanks to the floating city of Columbia being populated with live, less-crazy humans – the environmental storytelling which prior Shock games and all other immersive first-person titles accomplished so well doesn't shift accordingly in Infinite. It offers not a study of human beings in action, but a study of human beings' depictions of themselves in action. Essentially, it's still a kind of archaeology, just with a new context. The sights and discoveries that Columbia offers are artificial: commanding statues, imposing busts, mechanical caricatures of "impure" races. Where Rapture was built upon an inclusive

society – so long as one followed their philosophy – Columbia is excessively exclusive, and exploring it is akin to suffocating in a malodorous mixture of racism and religious zeal. What is accomplished with subtlety are a few references sprinkled throughout the journey that nod toward the final twist; self-serving winks which change context with a second playthrough. And those performances by barbershop quartet, The A Nachronisms.

Back to the less subtle

aspects, such as everyone seemingly okay with the existence of plasmids. Sorry – I meant vigours. They feel completely out of place in Infinite. Where the original BioShock was all about crazy gene splicing because, hey, The Man ain't here to stop us, the existence of similar grotesque powers in Infinite should be a big deal. But they're just there, barely integrated into the story or the world itself. No one seems to mind.

But, look, they facilitate combat, so I guess we'll roll with it. Someone seems to have brought some modern shooter

conveniences back from another reality, too, as Infinite restricts Booker DeWitt to two weapons and gives him a recharging shield with an annoyingly intrusive screen shatter effect. Combined with the game's new encounter design, this completely changes the kind of combat on offer. Where BioShock asked you to prepare for battle with a small handful of enemies, Infinite demands you improvise whilst slogging through much larger groups of foes.

"At its peak, Infinite's combat is a brilliant dance intercut with tactical rollercoaster rides"

The mechanics don't really facilitate such improvisation until the final third of game, when Booker's vigour selection and upgrades combine to create chain effects and dazzling combos, and the sky rails become more prominent. At this peak, Infinite's combat is a brilliant dance intercut with tactical rollercoaster rides which serve to add a new and breathtaking dimension to the speed and positioning aspects of systemic combat. You have never done this in a first-person shooter before.

But getting to this point in Infinite is a trying task; you will

come to resent the amount of combat present before you reach the moment where it gets truly fun. You'll even need to wade through closed arenas with waves of respawning enemies. I actually possessed one enemy at the end of a wave to help fight in the next one, but the next wave didn't trigger until the possession effect had worn off my new friend and he had killed himself as a result of its dissipation. Ugh. These stupid, arbitrary rules don't belong in BioShock.

Elizabeth's powers are far reduced in the final game from Irrational's initial lofty goals. No longer summoning storms or other effects to enhance Booker's vigours, she now opens tears in specific points of the level to bring into reality new pieces of geometry, medkits, or allied turrets. It's quite tame in action, though still offers an additional layer of rather specific combat options. More useful, however, is Elizabeth's ability to pull a grenade launcher out of her arse and peg it to Booker from across the map. In some ways, she fulfils the role of the otherwise-excised combat consumable, though her unreliability is yet another aspect that pushes players toward thinking on their toes.

Still, I wish Elizabeth could open a tear to a reality where the difficulty level was somewhere between "Normal" and "Hard". The former is too easy, whilst the latter requires more tactical thought but ultimately resorts to turning enemies into bullet sponges who don't even react when getting shot in the head. The ability to tactically exploit vigour combinations is rendered moot by a conservative mana (AKA "Salts") bar that will drain before you manage to crowd control the larger enemy numbers. Increasing your Salts
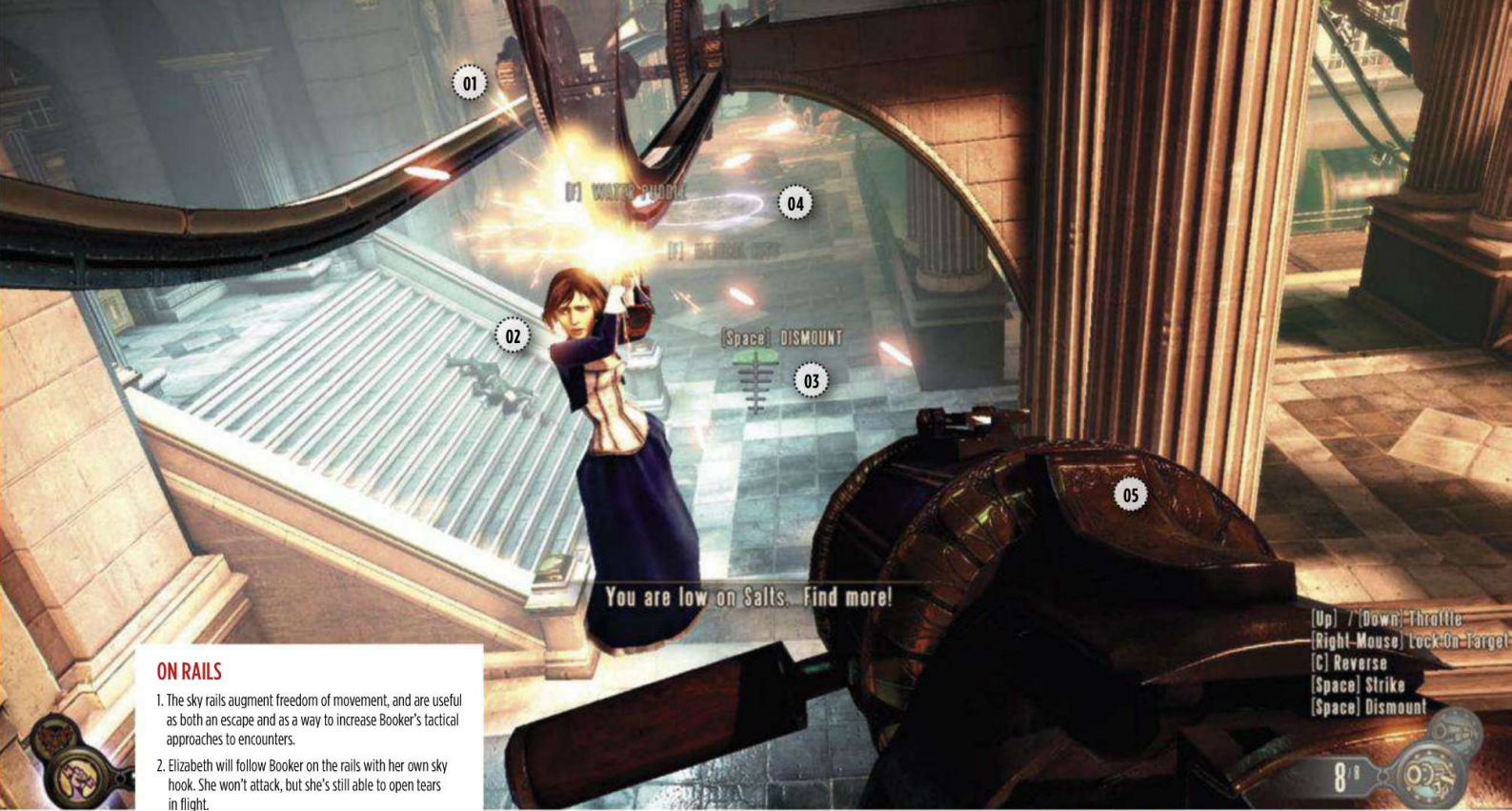
Callouts on main image: 01, 04, 02, [Space] DISMOUNT, 03, 05

You are low on Salts. Find more!

[Up] / [Down] Throttle
[Right-Mouse] Lock-On-Target
[C] Reverse
[Space] Strike
[Space] Dismount

8/8

ON RAILS

1. The sky rails augment freedom of movement, and are useful as both an escape and as a way to increase Booker's tactical approaches to encounters.

2. Elizabeth will follow Booker on the rails with her own sky hook. She won't attack, but she's still able to open tears in flight.

3. Booker can pick exactly where to dismount by aiming at the ground. Aiming at an enemy will perform a sky hook strike, stunning the victim and potentially those around him if the right gear is equipped.

4. Here, Elizabeth can open a tear to a universe where a water puddle exists. Well done. The puddle can be zapped with lightning to stun enemies, but it's a strangely specific situation to engineer.

5. Booker's Volley Gun, AKA an ornamental grenade launcher. It's the perfect weapon for when you're zipping by at 60kph.

The screen effect that indicates when your shield is depleted is extremely annoying, and doesn't gel with the rest of the in-game art.

Columbia in motion, with all its floating, shifting buildings, is fully realised in this scene. It's far more static from then on out.

Booker's psychopathic actions as emphasised by horrifying melee takedowns align with his implied past brutalities.

WATERED DOWN

1. Booker's sky gondola is under attack! Time to use the magnetised skyhook to leap onto the enemy vehicle!

2. The Bucking Bronco vigour lifts every enemy into the air at once. But... how to dispose of them cleanly?

3. Give them a wash! With a high powered jet of water! Off you go now. Uh, Liz, can I have some Salts please?

03

04

05

ZAP-A-DEE-DOO-DAH

1. This ghost thing is the most annoying enemy in the game. I'm not having fun right now.

2. I've upgraded my gear to create electric explosions whenever I 'overkill' an enemy – ie. when I shoot them in the head with a shotgun. It spreads to those nearby, stunning them for a few seconds. Which gives me time to line up the next headshot...

3. Shield and health meters, the former of which we've almost fully upgraded. Since we played on Hard, we didn't have much of a choice. (Protip: play on Hard for the first half, drop it down to Normal for the second, else you'll Undertow your monitor out the window.)

4. In addition to a passive overkill stun, I'm throwing Shock Jockeys at enemies just to keep them fizzling. It works well. ELECTRIFYINGLY well.

5. Weapons, of which you can only hold two at once. Switching between them is faster than reloading, so mix it up, you bumbling boob.

Spoiler alert: Rapture is actually Columbia that sunk after Booker left all the taps running. As Elizabeth would say: You're a monster.

Having Elizabeth throw you supplies in the middle of battle is a great way to attach players to an NPC's mechanical usefulness. Cheers, lady!
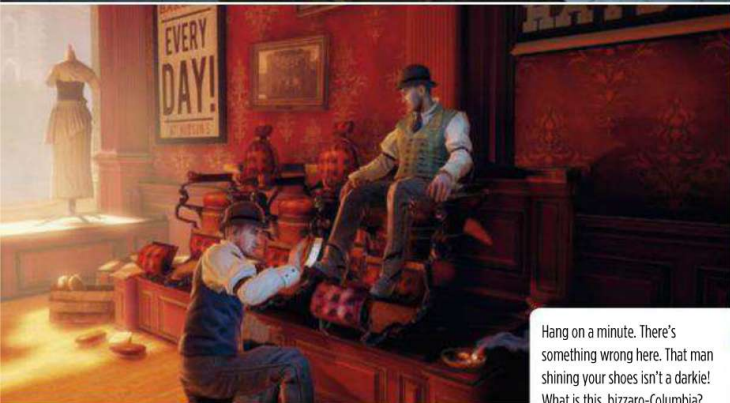
Hang on a minute. There's something wrong here. That man shining your shoes isn't a darkie! What is this, bizzaro-Columbia?
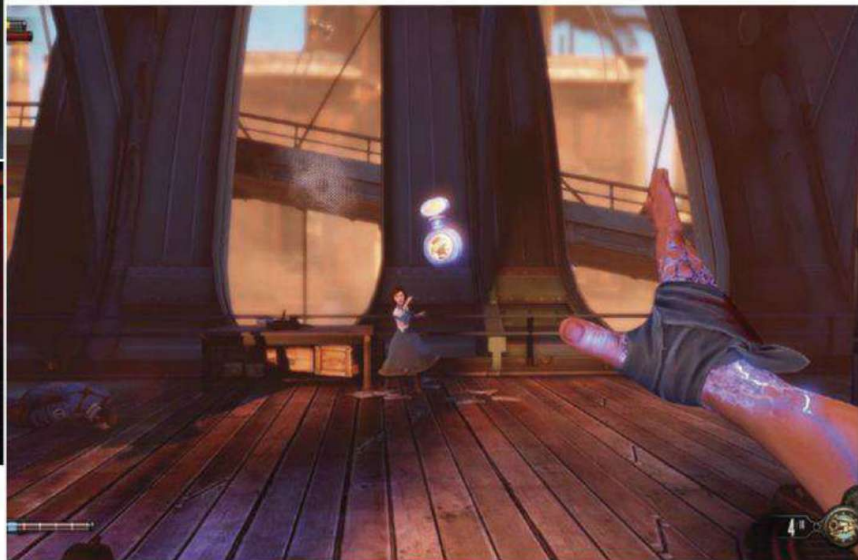
HAPPY HOUR
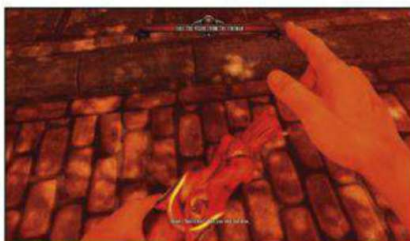
1. Booker's backstory pegs him as something of an alcoholic, so it's no surprise he chugs every bottle he comes across.

2. Wow, that was a spicy rum! Okay, can I have my fingers back now, please?

3. Hey buddy, nice to meet yo-OH MY GOD he's on fire! Someone call the fireman! The one that doesn't try to kill us!

capacity with the Infusion tonics found throughout Columbia at the expense of increasing shield capacity seriously jeopardises survivability, especially when a Handy Man enters the fray. And on top of all this, there's close to no significant penalty for death in terms of time or resources, so there's basically no tension. Infinite is not exactly a well-balanced singleplayer shooter. This is disappointing, because the systems here are so goddamn cool that, with a little tweaking, Infinite could offer some of the most satisfying weapon, power and environment interplay in years.

It often feels quite disconnected from the story, though, which is already fiddly to begin with. But the first problem with the narrative occurs immediately. A title card displaying a quote from one of Lutece's books reads "The mind of the subject will desperately struggle to create memories where none exist...". It's an immediate and desperate attempt to plug the plot hole that would have had Booker (but not the player) remembering everything that happened prior to entering the lighthouse. Though the game's concept of false memories is briefly explored further whilst messing with alternate versions of Chen Lin, it is a crutch around which the entire plot delivery hinges on. And that's how desperate attempts to plug plot holes work: the earlier you work it into the fiction, the more likely the audience is to accept it. Far better handled is the manner in which Infinite hints at Booker's status as an outsider to the game's dimension with regular nosebleeds. They tease at something. They make you curious. It's that subtlety we were talking about earlier. They don't hit you in the face with a rule that you need to accept.

And this speaks to the second,

and most significant, issue with Infinite's story. The entire thing is structured around the reveal of a twist. Anything that does not serve this twist is excised, explained away or forgotten about. The final confrontation with Comstock himself is telling; though he tried and failed to send entire armies to stop Booker, it's only now – right at the end of the game – that he realised he could have just told Elizabeth about her origin as Booker's daughter, and Booker being an alternate version of himself. Something that would have taken less than a minute.

Of course, that would not facilitate a dramatic reveal. Though Infinite's twist is possessed of a genuinely dramatic delivery, it's when reflecting upon the entire plot with full context that everything starts to fizzle. The first BioShock's

"Has Ken Levine reduced himself to the Damon Lindelof of videogames?"

'Would you kindly?' moment worked both in context and as a kind of subversive dig at the nature of gaming linearity. Here, the twist requires us to swallow too many contrived conveniences that exist only to set up this reveal. Is this really what BioShock is about? Plot twists? Has Ken Levine made himself the Damon Lindelof of videogames? Whilst much of the smaller or standalone moments in Infinite are well-written and accompanied by pitch-perfect voice acting and animation, the big picture stuff is all-too-often problematic, with a return to Rapture more self-indulgent than mind-blowing.

This isn't helped by the third issue, which concerns the amount of information made available to the player, and the manner in which it is delivered. See, every piece of science fiction

that dabbles into multiverses and all that wibbly wobbly timey wimey stuff needs to define its own interpretation of how the 'rules' of travel between time and dimensions works. There's a good chance such exposition can fall to tedium, which is why the film Looper delivered one of the best explanations in years: just shut up and enjoy the fucking movie.

Infinite gets no easy pass precisely because it is basing its entire plot delivery around its aforementioned twist that deeply depends upon players accepting the game's own interpretation of the rules. Yet the rules are treated as incidental, with absolutely critical information concerning them sometimes relegated to out-of-the-way audio logs. Do not mistake this for subtlety. Stumbling into the Lutece's house and discovering

the original tear machine – the actual source of Elizabeth's powers – elicits no comment from her and barely a word from Booker. This stuff is so much more interesting than protracted shootouts with the ghost of Elizabeth's dead not-mother, and its presentation betrays the kind of 'show, don't tell' philosophy that immersive first-person games usually adhere to so well.

Then there are the rules which aren't given definite behaviours at all. The haziness of Elizabeth's powers after destroying the Siphon (a building-sized machine that still dampens her powers even when she's not in the building, for some reason, is it wireless?) further complicates the dramatic impact of the ending. If Elizabeth is fixated on ridding Comstock from the million variant universes she now has access

to, what good would drowning one variation of Booker in one universe have? The answer: Oh, it's an umbrella universe of some kind; a place where all other universes are suddenly affected.

Look, Elizabeth's rise to what can only be described as Infinite's interpretation of a god is a fascinating idea for a story. But the Luteces are the real gods here; where Elizabeth only gains omniscience, the ability to see what's 'behind every door', Rosalind and Robert are also possessed of omnipresence right from the game's opening. As much as Infinite exploits Elizabeth to play upon the player's pathos, it's the Luteces who are far more interesting, more important, and far better-written than anyone else in the game. And they work better because they have a clear consistent set of rules – that omniscience, and omnipresence – which they adhere to. That might sound too broad to really work as a set of rules, but that's the point – these people are gods, and they are having fun with it.

So if the Luteces are gods, what is Elizabeth? Part Disney princess, part vending machine in a corset. Her interactions with the world outside of key scripted sequence are rather minimal. But it doesn't matter about that – we implicitly accept the limited actions of companion NPCs when playing games like this. It's when they do react, when they do vocalise, that is important. And it only takes one small thing to break the illusion. Here, it's Elizabeth's cheerful tones and sarcastic remarks when asked to pick a lock after being completely traumatised in many of those scripted sequences which shatters the idea of her not only as a human being, but even just as an NPC with consistent emotional reactions. Look, lady, just throw me some Salts, would you? I'm running low again.
DANIEL HINDES **PC**

OR TRY THIS

BIOSHOCK
IRRATIONAL • 2007
Would you kindly...
...fix that leak already?

DISHONORED
ARKANE • 2012
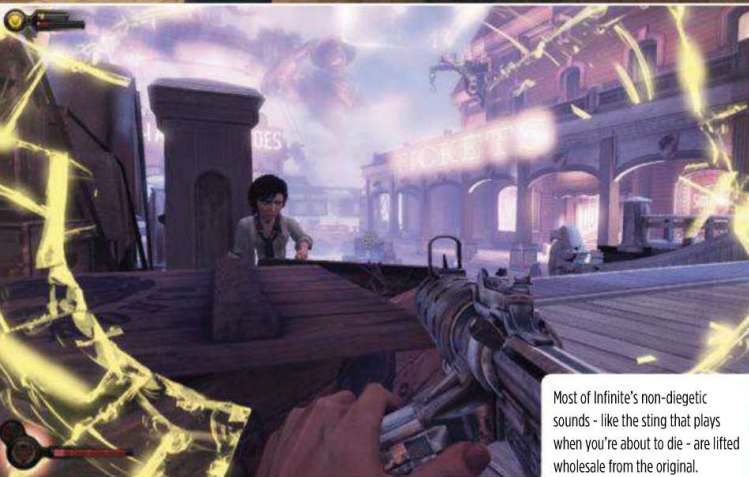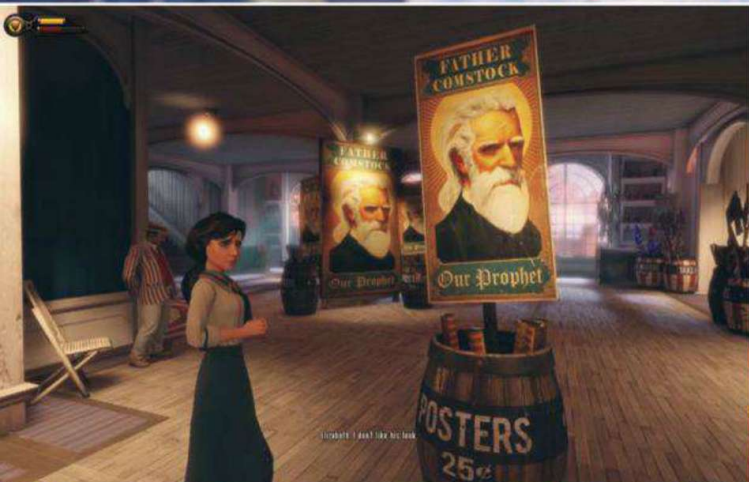Awesome weapon and power combos
Voice actors are bored

ROLLERCOASTER TYCOON 3
FRONTIER DEVELOPMENTS • 2004
Build and ride rollercoasters!
Need to hire more Handy Men

VERDICT Problematic plotting and excessive amounts of poorly balanced combat apply friction to what is otherwise one hell of a rollercoaster.

8

Like Andrew Ryan's Rapture, Columbia represents the vision and will of a single man: Zachary Comstock. His actual time on-screen over the course of the game is brief, but his presence is always felt.

Columbia differs from Rapture in that its ideals are personified: in contrast to Ryan's dispassionate Objectivism, Comstock's theology is built on hero worship.

So far as it's possible, everything in Columbia has a logical fictional purpose for being there, giving the world a kind of depth and authenticity. Case in point: skylines exist to haul freight around the city. This world building was true of Rapture also.

Most of Infinite's non-diegetic sounds - like the sting that plays when you're about to die - are lifted wholesale from the original.

That Bioshocky Feeling

A conversation with the problem solving professional behind the 'feel' of BioShock Infinite.

"My name is Bill Gardiner. I'm the user experience specialist at Irrational."

Here's the thing about doing interviews: you don't always get to speak to who you'd like. Ideally you want to get someone senior and creative: senior designer, art director, lead writer – that sort of thing. You want a job title that sounds impressive in a headline. What you don't want is "user experience specialist".

Because, honestly – what the Prophet is a user experience specialist? "Basically what I do is play the game and look for issues and for things that are going to be... y'know... problematic," says Gardiner. "I put together a bunch of presentations on how to fix things, and try to make the game a little better."

So, in other words, a user experience specialist is the one who makes sure the game, for want of a better term, feels right. In Gardiner's case, it's to make sure that BioShock Infinite feels BioShocky.

His job is quality control, which is one of those roles that sounds very mundane but is in fact vitally important. Irrespective of the medium, artists (and just people in general) have a natural tendency to overlook flaws in their own work, which is why you need someone like Gardiner. Someone who knows their shit and can provide much needed perspective from time to time.

Which can be difficult, sometimes confrontational. Constructive criticism is still criticism, irrespective of how helpful and/or correct it is. A bit of (mostly rhetorical) head-butting is inevitable.

"Every day I go into work and challenge [creative director and Irrational co-founder] Ken Levine," says Gardiner. "I have a very interesting relationship with him. I have to be able to gel with him, to challenge him, and have him challenge me, to test my ideas on what I think gamers want against his vision, and see what stands up."

This is how Columbia – Infinite's cloud-borne utopia – was constructed, piece by excruciating piece, until everything was just so. "If something doesn't feel or not play quite right, we shift things around and just beat on it until it does," explains Gardiner. "It's a whole lot of trial and error. I think you have an initial gut feeling about what's going to feel right, what's going to feel BioShocky, but implementing that isn't always straightforward."

One of the truly impressive things about Columbia, and this is something you'll notice right away if you played the first BioShock, is just how familiar – how BioShocky – it feels. At a purely superficial level it's a very different city to Rapture, but similarities between the two run deep.

Gardiner expands: "In terms of themes and the feel of the world, much of that comes naturally to us because it represents a very clear vision Ken Levine and the team has, a very clear perspective on games and storytelling. When we set you loose in Columbia, a lot of it feels very BioShocky BECAUSE of that perspective, that vision. The way you uncover information, the style of the narrative – that's going to feel very familiar, regardless of where it's set."

"The depths of the ocean could not be a starker contrast to a city in the sky," he continues, "but because of the way you're given choice in combat, because you're an active participant exploring the narrative and the world, it feels familiar."
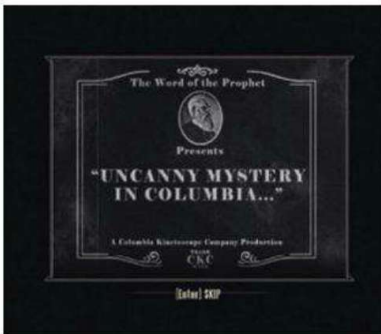
Consider the antagonists. Father Zachary Comstock, a theocratic zealot and de-facto dictator of Columbia, could not be more ideologically distinct from Andrew Ryan if he tried. Where Ryan extols the virtues of rugged individualism, strict atheism, and minimal government, Comstock preaches collectivism, fundamentalism, and authoritarianism.

But look below the surface and you'll see the similarities. Psychologically speaking the two men are almost identical: both are ruthless extremists, genuine in their commitments and all the more dangerous because of that. Comstock, says Gardiner, is a guy "who, if you stand in the way of him or disagree with him, he wants nothing to do with you. He'd sooner see you dead, and in some cases, yeah, he will see you dead."

Sound familiar?

Consider authenticity – attention to detail. Rapture was a fantastical setting, but also one grounded in reality, in functionality. So it is with Columbia. Gardiner tells me that experts would frequently be called in to brief Irrational staff on history, science, and other disciplines relevant to their world-in-the-making.

"You need to look at everything and ask: How can me make this fit into the world? What is it's purpose? Does it need to be there?" says Gardiner. "When you look at the skylines – we spent a tremendous amount of time trying to make that feel right. Okay, so it's a way for people to get around space, but it's also a way to get cargo around the place. When you have that hook, you have that sense of purpose, if there's a REASON these things exist, people buy into it."

Now consider something a little more subtle, like the audio-visual effects used to signify things such as damage and low-health – what Gardiner calls the game's "metasounds". All of them are ripped directly from BioShock. "When you're low on health, there's a very specific language in BioShock, and instead of retraining [players] you can leverage what you already have," he says. "It's almost a Pavlovian response, so why not take advantage of that?"

That BioShock Infinite feels BioShocky is indisputable, and evidently we have user experience specialist Bill Gardiner to thank for that. He didn't design the mechanics or build the levels or write the narrative – he's just the guy who makes sure all these things, and more, live up to Irrational's own insanely high standards.

It's a tough gig and I don't envy him it. I do have a newfound respect for it, though. *DAN STAINES*

SimCity

A tale of small cities, and all the loading screens betwixt.

DEVELOPER MAXIS
PUBLISHER EA
PRICE $80
AVAILABLE AT: ORIGIN, RETAIL

www.simcity.com

There was enjoyment, honestly, in that ephemeral time between actually connecting to a server and foolish optimism's demise. After creating, probably, ten, respectably sized cities, some lost to crashes and others thriving on inexplicably firmer foundations, it was genuinely exciting to be exploring the game. Then, something unusual happened. Systems became more obtuse over time, not less, and difficult to master, difficult to even understand.

If you're familiar with the series, SimCity was always largely abstract, but it was also an experience that you could rely on to make sense. This fifth iteration promised to be more transparent, with graphical overlays and discrete agents governing play. But, in the absence of any reasonable challenge, over many hours and a variety of plots, there's hardly a reason to access graphical information at all, while interpreting more relevant, agent based data, like the population tab, is an exercise in unravelling obfuscation.

Still, let's start with some facts. Firstly, you don't need to play the tutorial every time you switch servers. Just start it and exit, immediately, to the main menu. I discovered this, accidentally, on my sixth, no less frustrating, tutorial speedrun. A region, or city within a region, will be cloud saved, by location, so make a note of what you are building where. Crashing and losing progress is probably

something that only happened during launch week, we're hoping.

Does this sound unwieldy, already? In fact, many aspects of the interface are awkward, or just plain unintuitive. As the very first point of contact with the game, you have to connect your city to the regional network before you can build or zone, sure. But, you then also have to allow the game to run for a bit, before it recognises the connection. If you're someone who pauses to build, there will be no clue as to why you've failed to adequately connect up.

Also, if you're waiting for your city to start generating taxes after people move in, forget it.

"It's hard to appreciate balance when basics remain incoherent"

The game will not unpause until your budget is balanced, or you can otherwise prevent deficit. Worse, if you're playing more than one city in a region and you require money transferred to the current city, this requires exiting the city, loading the other, gifting the money, waiting an unspecified amount of time for it to be shipped, loading the recipient city again and then waiting again.

We were really hoping that solo, regional play would be viable, but it's pocked by inconsistencies. Like, currently, cities that sell services; power, water, to other cities don't get paid for it. At one point we created a city that

had no jobs, to try to encourage workers to commute to a nearby, polluted, drilling town. According to the population panels, they went nowhere, but weren't too worried about that, not worried enough to stop paying taxes, or shut down the drills, anyway.

Where does this leave Ms Single Player? Well, maybe trapped on one very small plot, building ever higher, depleting her resources and trying to sublimate claustrophobia by worrying why her friends aren't grateful for her gifts of superfluous money, in the absence of "in game chat" functionality. She can't even restart her city, and it's genuinely surprising that the game overlooks these details, required for a coherent experience, multiplayer or otherwise.

There is a half-baked feel to many aspects, really. The music is gorgeous, with entrenched cross rhythms and classical tone colours, but there are only a couple of different tracks. There's no level editor. Disasters can't be turned off, so be ready to rebuild at a moment's notice. Having said this, the only disasters we encountered were aliens, who literally abducted just one small family, and a tornado (read: whirly whirly) which did no damage.

In many other ways, however, the game is quite nicely balanced.

After you build a fire station, for example, expensive but necessary early on, you'll then find that upgrades cost around 60-80% of the original price. They provide meaningful benefits, like a whole extra fire truck, but are cost prohibitive. Whether that truck will actually get to where it is going is a separate issue. This weighing up of cost/benefit is common to all ploppable buildings and often forces tough decision making.

Further, having smart industry, as a result of your university, is beneficial. But, can you afford the very substantial money and effort/specialisation required to develop Hazmat firefighting capability in your city, or a neighbouring one? If you can't, you may find that most of your industrial district has just burnt down, then rebuilt itself and burned down again. With stricter consequences, this example might have shown a real push/pull style of decision making the game surely aims for.

But, it's hard to appreciate balance when basics remain incoherent. As a regional partner asked me, necessarily via Twitter, "Are my commuter buses going around and around in foolish circles in a line? Because that's what yours are doing." Yes, they were. Also, what commuters? The population panel says they don't exist. Given the high pricetag and very significant, enduring connectivity issues, as well as some perplexing aspects to general play, it's a difficult game to recommend.
MEGHANN O'NEILL **PC**

VERDICT Nicely balanced in many ways, but frustrating for the single player. Not detailed/stable enough for interactive, co-operative play yet, either.

5

(numbered markers on screenshot: 01, 02, 03, 04, 05, 06)

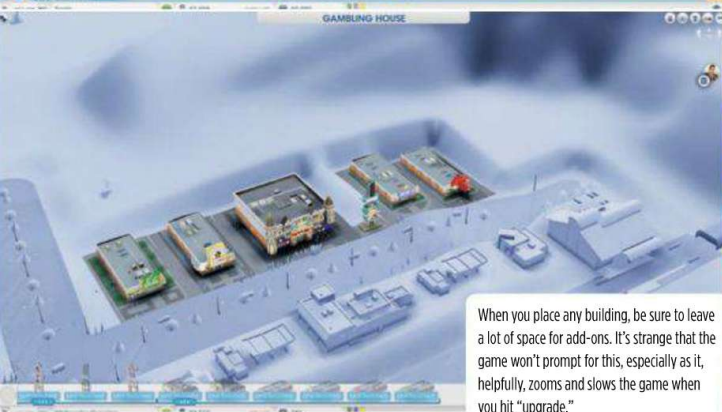City · 6:58 AM · Cottonwood Forest · 5,637 · -1,379 / HR · 67,300

MAKING SIMSENSE

1. Municipal, not international, airport which is bringing 765 tourists/day from a region which has no other municipal airports. (Same with the lone ferry stop and train station.)

2. The University, which is fostering the high tech industry in the top right-hand corner of the screenshot, industry which sets itself on fire rather a lot.

3. Why would you build any city without the Expo Centre? It brings in inordinate amounts of cash, even when my budget clears at -$1,379/HR.

4. Stop zoning residential and watch the high-rises, well, rise, as long as you have enough nouse to upgrade surrounding roads to high density.

5. Inexplicable regional traffic. Seriously, it's 7am and these people are all "returning home," from elsewhere, even though the population panel says no-one is commuting out.

6. The first of two wind farms, the second of which I built because I didn't realise I could extend the first by upgrading the service road with the upgrade tab instead of building onto the service road with the roads tab. Whatever.
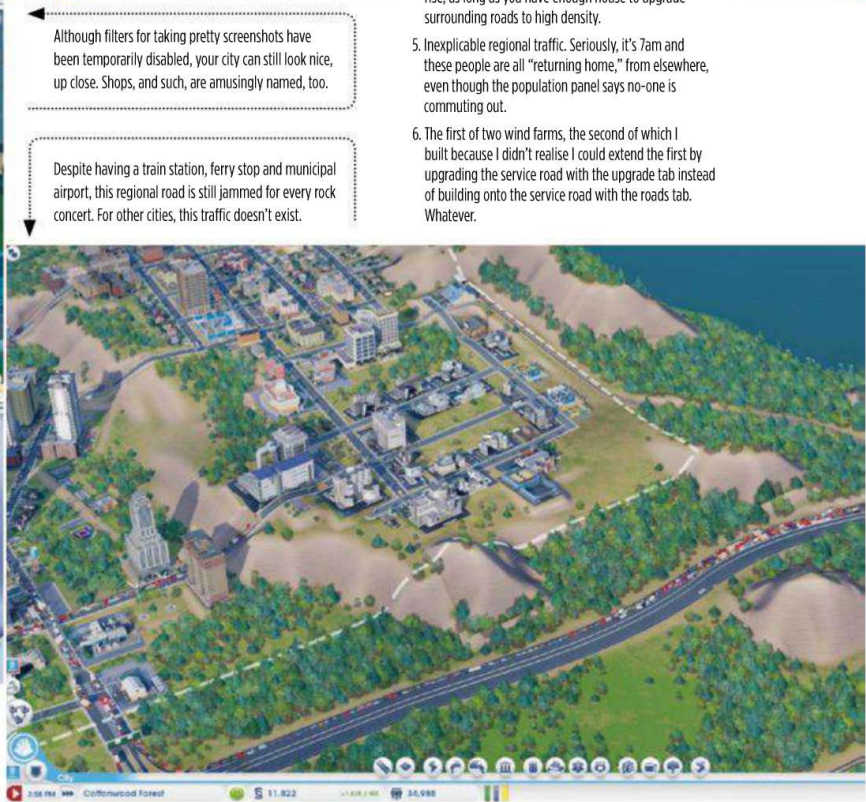
Although filters for taking pretty screenshots have been temporarily disabled, your city can still look nice, up close. Shops, and such, are amusingly named, too.

Despite having a train station, ferry stop and municipal airport, this regional road is still jammed for every rock concert. For other cities, this traffic doesn't exist.

When you place any building, be sure to leave a lot of space for add-ons. It's strange that the game won't prompt for this, especially as it, helpfully, zooms and slows the game when you hit "upgrade."

City · 2:56 PM · Cottonwood Forest · 11,822 · +1,416 / HR · 34,986

REGIONAL RELIANCE

1. In this region, I began by covering the entirety of one plot with roads and zones to generate cash, as well as one of every service building. The Expo centre makes a nightly fortune.

2. Then, I set up a second city, to utilise oil, and provide power to the region. It's accessing all of the first city's services. Inexplicably, it's providing, but not being paid for, power.

3. I started this third city to explore the gambling specialisation, but tourists were only visiting the venues closest to the regional road, despite other transport options, and tourists kept getting lost.

Don't Starve

Or be eaten by grues, or be electrocuted, or get mauled by hounds, or stung to death, or...

The name of the game is survival. Well, the name of the game is Don't Starve, but you get the picture. Plonked down into a randomly-generated world, sanity, health and hunger ticking down moment-to-moment, your simple goal is to get to the next day without keeling over. A surprisingly difficult task. Did I mention that if you die it wipes your save file? Motivation, they call it.

While the basics of the game might well remind you of Minecraft – build fires at night to keep away monsters, craft your own little self-sufficient patch of land out of the rugged wilderness, etc, etc – the specifics, less so. For one thing, Don't Starve is not a creative endeavour. You won't be building a gleaming monument to yourself because you won't have time; you need to focus 100% of your effort on survival. The game's world, strung together out of biomes, resources and roads, uniquely crafted for every save file, is always an intractable challenge. A seemingly non-hostile land that could, with even a single misstep, turn deadly.

Don't Starve is charming, in the way that a well-told fairy tale is charming: the tone is light and somewhat fanciful but there's a gothic edge to it that speaks of darker things. I'm not just speaking aesthetically, although Klei Entertainment (of Shank and Mark of the Ninja fame) clearly knows how to work animations and art styles to its own inscrutable ends. The game is aptly named, but that's only the beginning of the many, many ways to be done in by the world and its no-nonsense brutality.

The game's difficulty, though, arises solely from two main attributes. The first is that it is particularly unforgiving of mistakes. Health and sanity regeneration is slow and enemies hit hard. The second is that it doesn't take time to explain itself, so trial and error is the order of the day. It hints at things – it'll tell you what you might need to craft something, for instance, so long as you unlock that tech level first– but it won't, say, tell you how much something heals, or even how to use something once you've made it.

"Some weird goat-demon with a sack steals all your stuff and runs off cackling into the night"

This lack of information is both a blessing and a curse. It's a blessing because it retains a beautiful sense of discovery that is often lacking in games these days. There's basic finds – food and a campfire make cooked food, for instance, that restores more hunger, health and sanity – and more complex ones, such as the usefulness of the torch's right-click functionality or the best methods to harvest silk. And then there's just that magic of discovering random events out in the world, pig villages with ready-made berry farms, ancient temples with a glowing touchstone or a mechanical door that leads who-knows-where. Even seventeen hours in I was still finding things I'd simply never seen before.

But it's a curse because something you had no knowledge of can screw you over with ease. You might have established a little self-sufficient set of farms over the course of four painstaking hours on a map with useful resources situated a short walk from your base camp, but all of that turns to moot when a giant tree suddenly gets up and starts chasing you across half the map for reasons you can't fathom at the time. Or a pack of hellhounds burst forth from nowhere and burn your world around you. Or some weird goat-demon hybrid with a sack steals all your stuff and runs off cackling into the night.

It's all part of a learning process, it's true, and can largely by mitigated by reference to the plethora of online guides and wikis (or simply by learning from your mistakes). It's not really that much of a problem. But it can be really frustrating to see all your work gutted in an instance. That's roguelikes for you. Of more immediate annoyance is some basic camera issues (though you can rotate the camera around the four cardinal directions, sometimes stuff will just frustratingly be hidden behind other objects no matter what angle you turn to) and some time-related issues.

The clock is always ticking in Don't Starve, and you'll always want to take advantage of whatever time you have available. Unfortunately, because of the way your inventory is organised (or disorganised, as the case may be), you'll wind up spending precious moments fiddling through your belt trying to figure out which item you want at any given time, or which tiny grey icon is the spear. Given the speed of the game in general and combat in specific, these are moments you don't have. There's simply no pausing in the game, or at least no pausing that allows you to realistically evaluate your options and plan ahead accordingly. Life is skin-of-your-teeth. Maybe that's the entire point… but it's still annoying, and something that could easily be mitigated by dedicated item slots, as in Minecraft, or something of that ilk.

Still, the game is addictive as all hell. The longer you survive, the more XP you gain upon death that unlocks new characters with unique characteristics, but frankly that wasn't the drawcard for me at all. I just wanted to keep going, to carve my own little world out of this bleak and unforgiving landscape and get to the point where I felt like I had finally tamed the wilderness, where I could deal with whatever weird stuff the devs chose to throw at me. As the old saying goes: just one more turn… *PATRICK LUM* PC

WHY SHOULD I CARE

- You're cool with dying a lot while learning things
- You long to forge a home from the rugged untamed wilds
- You are a gentleman scientist who is glad to experiment

OR TRY THIS

MINECRAFT
MOJANG • 2009
- Build, create, survive
- Not quite as deadly

TERRARIA
RE-LOGIC • 2011
- Build, create, survive
- More about Sword of +5 smite

MIASMATA
IONFX • 2012
- Stumble around, get hunted, die
- Not enough building

VERDICT Systems interact in mysterious but discernable ways, given sufficient observation. Survival? Possible, but difficult. Fun? Guaranteed.

9

Day 13

HOME IS WHERE THE HEARTH IS

Rabbit Earmuffs

A fuzzy little bit of warmth

Prototype

1. Our intrepid adventurer Wilson, sporting a particularly manly beard because I haven't bothered prototyping a razor. Besides, I'll need the warmth during the colds of winter.

2. Our clock and our sanity, hunger and health levels. It's dusk about to turn to night, and Wilson is not in good shape.

3. This stone fire pit is more efficient and permanent than any old campfire. The stone below is gathering heat... just in case.

4. A science engine allows Wilson to prototype new technology to unlock it. The menu on the left is where the options pop up.

5. Berry bushes (and grass and saplings, for that matter) don't naturally grow like this; good thing shovel technology allows me to cultivate resources closer to home.

6. We're supplementing our diet with as much meat as we can catch. Rabbits normally need to be baited, but not if you set them up right over their rabbitholes.

Get used to seeing this screen a lot. I unlocked a new character, but nuts to him, he's no gentleman scientist.

A pig village is one random biome. Pigs provide manure for your farms and, if treated correctly, will follow you around and attack stuff for you. You can deconstruct their homes to move to a more convenient location, too.

YOU ARE DEAD!

You survived **17** days

Level 7

XP: 1500 - AT CAP!

Main Menu   **Retry**

Pick Berry Bush

My attempts to bait spiders with berries has unaccountably failed – they're carnivores, apparently. I did manage to set an entire forest ablaze, though.

Pick up Ashes

FOOD FOR THOUGHT

1. Hunger must be kept at bay. We'll check our traps and see if we've caught a fat rabbit or two.

2. As night falls, we throw some stuff into the crock pot and whip something up.

3. Success! Cooked food is generally better than just roasting something over a fire, though you'll want to experiment for efficiency's sake.

SINGLEPLAYER

StarCraft II: Heart of the Swarm

But you deeedn't have to cuuut me ooooahff... etc

Back in the ancient mists of time (1996), Westwood released Red Alert and it was an awesome total conversion of Command & Conquer - which came out only 14 months before. Cromagnon geeks with hex editors and a lot of spare time picked their way through such files as "game.ini" and unlocked a whole bunch of C&C units - notably the Stealth Tank - for use in Red Alert.

It was a hack that completely destroyed the balance of the game. When added to tweaks that made units and structures build instantly, massively boosted the armour of Mammoth Tanks, etc, the result was a zany, goofy, uproariously unfair version of Red Alert that always ended in a map so spammed full of superunits the poor 90s-era AI had considerably less than no chance at all.

This is almost exactly what Heart of the Swarm's singleplayer is like.

You take on a bunch of missions with a bunch of units that feel like Blizzard has been messing around with its own .ini files. Let's give Zerglings wings, the ability to jump up cliffs, and heaps more hit points! Or make them spawn instantly three at a time! Let's give Mutalisks heaps more power against armoured units or make their glaive-thingies bounce to more targets! And every time the player faces a knot of enemies, let's give them Kerrigan and the Q key so she can blast them into smithereens

Squad missions with a single super-powered regens-energy-so-fast-and-has-a-heal-spell-so-might-as-well-be-invulnerable-and-also-causes-reviewers-to-overuse-the-hyphen unit and a whole bunch of generic monsters to kill! Now THIS is the future of singleplayer gaming!

> ## "A bunch of missions with a bunch of units that feel like Blizzard has been messing around with its own .ini files"

and also make her energy recharge almost instantly!

You get to "level up" Kerrigan over the course of the campaign and unlock new "abilities". I've put "abilities" in "quotes" because many of the "abilities" aren't actually things she does but more like further .ini hacks - instant spawn Overlords, faster mining, and other stuff that's less a finely-crafted singleplayer experience and more "ZERG!!!! MAXCASH!!!KEKEKEKJOINJOINJ OIN". Everyone's experience of leveling Kerrigan will be exactly the same... unless you're too crap to get the extra levels from

the bonus objectives.

Back in the slightly-less-ancient mists of time (2001) I used to complain about games that gave you lots of resources and the ability to spawn a million units to stomp a bewildered AI, to David Wildgoose, and he would say, in his quiet way: "Yes, but isn't it fun?"

And that's what I have to admit about this. It is fun. The Aberrations don't really look like a StarCraft unit, but they chop up marines most pleasingly. The Leviathan is comically overpowered, but it looks great raining death over the battlefield.

The story itself is one of revenge, tight techno-jumpsuits, Tricia Helfer trying not to invoke God or Gaius Baltar, and a seemingly indestructible zergling with a broken horn, but... actually it shows us that Blizzard now needs 10 million dollars and half a dozen junk units to do something it used to do better with just the core feature set back in 1998 but hey, dat HD ass.

Anyway, this is StarCraft. It's a shiny new version of a game I used to know. If I'd wanted originality I would have watched Aliens. Or Starship Troopers. Or played some Warhammer 40,000. This won't train you for multiplayer, like, you know, at all, but it will help you break in that new mouse. SPOILERS: The secret is to spam the new unit. Enjoy! *ANTHONY FORDHAM* **PC**

WHY SHOULD I CARE

• You want to punch Zeratul in the face for no reason
• You want to punch Zeratul in the face for a very specific reason
• Until there's a real mutants-cooking-insects Masterchef sim, this will do nicely
• Extreme dreadlocks! Extreme techno-scrunchie!

OR TRY THIS

STARCRAFT: BROOD WAR
BLIZZARD • 1998
↑ We don't need no steenkin' special units.
↓ Attack pre-mixed enemy bases

STARSHIP TROOPERS: TERRAN ASCENDANCY
BLUETONGUE • 2001
↑ It's not the crappy first-person one!
↓ The, uh... abstract graphics?

SIM ANT
MAXIS • 1991
↑ The insect empire will rise!
↓ Yes I'm being a smartarse

VERDICT As a PC gamer you gotta play this. We just wish Blizzard didn't know that.

7

StarCraft II: Heart of the Swarm

We unleash our infernal pre-ignitor. It's not as gross as it sounds

DEVELOPER BLIZZARD
PUBLISHER BLIZZARD
PRICE $49.95
AVAILABLE AT BATTLE.NET, RETAIL
sea.battle.net/sc2

There is little faulting the timing of Heart of the Swarm's release; just as the Wings of Liberty metagame has become stale and stagnant, Blizzard's follow up to the last instalment has arrived to change things up. The three-part approach to StarCraft II's expansion-based campaign may not have pleased every PC gamer, but – for multiplayer at least – it appears to be paying dividends.

If one was to define Heart of the Swarm by reference to the differences between it and Wings of Liberty, two key things stand out: speed and complexity.

While Starcraft is still one of the faster online RTS titles, Heart of the Swarm battles tend to be more protracted than their Wings' counterparts thanks to the larger maps that make up its battlefields.

The complexity, on the other hand, comes courtesy of the new units for each faction that have significant impact on army versatility and demand a more adaptive approach to play.

They also do a wonderful job of plugging some holes in each races' lineup. Terran has a much stronger close quarter force thanks to the transforming Hellbat, the Zerg have a variety of containment options up their sleeves with the Swarm Host, and Protoss, at long last, have a viable unit path through the Stargate.

Each of the new units is a blast to play (a personal favourite being the harassment-focused Protoss Oracle). Even old units have been given a makeover,

The new training mode does an excellent job of preparing folks for multiplayer, even to the point where it offers real-time advice.

> "A wonderful new training mode will not only advise you as to the correct approach to take with any given race, but it also dynamically responds to errors in play"

such as the Terran Siege Tank no longer requiring an upgrade to enter siege mode, and Hydralisks enjoying a speed boost.

However, the changes aren't perfect. There is a genuine sense that Blizzard has overcompensated for Protoss' previous air inferiority; the new Skytoss approach feels a touch too effective. But these are just balance niggles that are par for the course until the game has had time to evolve in the wild.

One definite concern is that, while the game has certainly changed for the better, we are not so convinced this will be as

impactful on Wings of Liberty as Brood War was on the original StarCraft. That said, it remains to be seen how the game will evolve once the pros start experimenting with the new setup.

Special note must also be made of the efforts Blizzard has made in transitioning fans of the singleplayer campaign to the thrilling world of multiplayer. There's a wonderful new training mode that will not only advise you as to the correct approach to take with any given race, but it also dynamically responds to errors in play, such as building a structure too early. While we found

it a little conservative in some of its timings, there's no doubt that Heart of the Swarm has made dipping one's toes in to the waters of competitive multiplayer that much easier.

If the stagnation of Wings of Liberty's multiplayer has kept you away from the world of StarCraft, then you can be rest assured that Heart of the Swarm has what it takes to bring you back. It might not be the Brood War-esque revolution we'd hoped for, but it still breathes some much needed life back into a well-loved multiplayer experience. *NATHAN COCKS* PC

WHY SHOULD I CARE

- You still love StarCraft's particular brand of multiplayer, but have grown bored with Wings of Liberty
- You've always wanted to rule the skies as a Space Elf
- You've been grinding your teeth over slow hydralisks for the past two and a half years

OR TRY THIS

STARCRAFT: BROOD WAR
BLIZZARD • 1998
- The single greatest thing to happen to eSports
- If you aren't pro now, you'll never be

WARHAMMER 40,000: DAWN OF WAR II
RELIC • 2009
- Play as the original Pro-Eldar-toss
- Terrified of my editor kicking my arse.

BATTLE REALMS
LIQUID ENTERTAINMENT • 2001
- Most clever RTS ever?
- Sacrifices aliens for samurai - or is that a pro?

VERDICT Just when we were running out of reasons to come back to StarCraft II, along comes Heart of the Swarm.

8

Driftmoon

Raising questions about eternal life, alongside the dead

Death, by poison, in the first five minutes? Wait, how many things are poisonous around here? Seriously, not a lot of games these days have the guts to poison you so quickly, and so decisively. Oddly enough, Driftmoon combines hardcore elements – only the charming ones – with an entirely comfortable and efficient interface. It's like coming home to your 90s RPG, but after someone has carefully decorated it with one of everything fun.

Indeed, "making games fun again," is the aim cited by Finnish couple, Anne and Ville Monkkonen, who spent a full seven years developing Driftmoon. It's rare to find RPG mechanics so polished and detailed, with easter eggs aplenty, and balance that just works beautifully over four difficulties. Underpinning the entire experience is a buoyancy and optimism that drives the player forward, resting on a foundation of quirky, but clever, narrative.

The action begins with your mother pushing you down a well. While you're learning how to light a torch and find a secret passage out, everyone in your village is inexplicably turned to stone, except Word, the boy who was named for his father's inglorious pickup line, "Can I have a word with you?" It's a surprisingly effective way to imbue the setting with vibrant life, without actually having to create lots of people to talk to. Besides, it's mostly wolves, ghosts and disembodied hands

that you actually converse with. Well, Mitten just gives you the finger, but this neatly illustrates that special "oddball character" appeal. Although NPCs have their troubles, the tone remains light.

As you, male protagonist, will soon discover on your quest to free the villagers, an ancient evil is afoot. Along with several human companions, who come and go, you'll join forces with a sweet firefly and a panther queen. You can converse with them on a range of topics, or about their assessment of the situation, as you travel, and they come in handy in combat. There are familial relationships, too, which make for easy banter.

when you are about to make a journey you can't return from immediately, and hovering over each location neatly reveals the number of local quests and how many you've solved. There's a variety of locations to explore, from snowy seaside town to skeleton-filled dungeon.

Within each area are locations you can teleport to by using the minimap after you've discovered them. It's a satisfying mix of exploration and quick travel, when you're simply reporting back, or after you know where to find what you need. It's as if the designers intuitively knew exactly how to make things really comfortable, but only when the timing is right,

"Underpinning the experience is a buoyancy and optimism that drives the player forward"

Progression is essentially linear, but if you kill someone for their key instead of paying 100 gold pieces, for example, you may have lost an ally or useful merchant later. So quests generally play out similarly, but there may be alternative routes to your goal. Mostly, the next location is unlocked directly after the current is solved. There is some backtracking, though, and a smart player will notice that tying up loose ends often provides the good loot.

Discrete areas are accessed from an area map, much like a small Baldur's Gate II. The game explicitly warns you

like providing a back exit at the end of a long dungeon crawl.

To further illustrate this, if you want to survive on the highest difficulty, you'll have to quaff health potions. If you want to craft health potions you'll have to collect reagents. What makes all of this really work, however, is that you don't have to walk close by to pick them up. You can just grab far away reagents with the mouse as you run past. And there is an abundance of items to collect but inventory space to house, literally, everything.

So, it's an easy-to-play RPG in which you'll never be required to drop a single silly hat. As such,

it's joyous, but perhaps one area which could have been further fleshed out is combat. Enemies tend to be either ranged or melee based, with only the occasional caster, and encounters are usually a fairly simple matter of engaging archers first and mopping up the rest. It's a turn-based system with damage displayed and simple calculations made for your gear and stats.

Sometimes you'll find easy-to-strategise-for variations on enemies, like wolves who will tolerate your presence for a short time before attacking, or something that is resistant to ranged weapons or poisonous when engaged. With a smallish array of abilities to choose from a tree, there won't be a vast difference in character builds either, but options are still meaningful and nicely balanced for the game's gently-mounting challenge.

Instant Kingdom has shipped its toolset with the game and even built a "one-touch" system for downloading and playing mods from the main menu. Initial experimentation suggests the tools are intuitive and will allow for a range of plugins, like visuals and sound. At the time of writing, the toolset is not well documented, but a wiki is under construction. So, after you've breezed through this charming game, there'll be more fun to enjoy. It's this lighthearted inclusiveness that should make the old style of RPG worth revisiting, for more than just the oldies. *MEGHANN O'NEILL*

WHY SHOULD I CARE

- You can appreciate a glut of gratuitous hats
- You like your ladies equipped with spanners
- You've always wanted a firefly for a friend
- You can kill a man, then read a love letter from his wife

OR TRY THIS

ULTIMA VII
ORIGIN • 1992
- You can bake bread
- Iolo is always hungry

BASTION
SUPERGIANT GAMES • 2011
- Dynamic, action-based combat
- A lot less hats

MAGICKA
ARROWHEAD • 2011
- Multiplayer and more magic
- Vampires are scary

VERDICT Hardcore aspects combined with uncomplicated play make for an intoxicatingly enjoyable and nostalgic journey.

8

Arabella
◉ Find a way to show a bigger Stone Giant to Arabella.

Annie and William: Annie asked you to return the family heirloom to the novice monk William.

01

02

03

06

04

05

Karma: 5 (8% off)   180

Diblath   ✕

Turtle Helmet
97

Piece of Meat
12   11

Dried Tomato Fish
11

Food Can
15   10

Evil Berries
10

Evil Berry Juice
10   9

Mushroom
5

FOOD COURT

1 The journal shows active quests and updates as each step is completed, for the forgetful among us.

2 Precious, precious loot, categorised as items, documents and crafting reagents/recipes. Green items are equipped.

3 Diblath is selling food. Sparkly items can be "taken" but, when they belong to people, that's called "stealing."

4 You might think that this talking panther is one of your companions but she's not. You're one of hers.

5 Basic feedback on health and mana is found here, as well as a toolbar to fill with your combat abilities.

6 Food isn't optional if you intend to ever regenerate any health. Diblath's high prices reflect this.

We all live in a Steampunk submarine. Well, for a section of the game, anyway. It's an exciting way to move between locations.

There's a generous amount of dialogue to read through and many topics to discuss, even if the structure is fairly linear.

Wow, this mist is like porridge!

Butterflies
◉ Help Hannah find peace, so that she can leave her ghostly existence.

The Tomb: Meet Eldar.
Found Eldar's Chamber.

Morgan - "Father was taken by lizard warriors. The other villagers have been turned to stone!"

Eldar - "Then it is exactly as we feared had happened! The Undead King Ixal has found out about your family's connection to the Gem of Avarion! He has clearly realized that your father, you, and Robert are the only human Guardians of the Gems still alive. Winston must have been taken to Ixal's impenetrable fortress, Mors-Sarmeth! I shudder to think what would have happened if Winston had not chosen to entrust his Gem to Robert."

1: "Do you think my father is still alive?"
2: "Do you think there's a way to unpetrify my mother and all the other villagers at Northrop?"
3: "But wasn't King Ixal conquered ages ago, when his unholy pendant was dismantled and the gems hidden?"
4: "Where are the gems of the Pendant, and how many are there?"
5: "Where is the Impenetrable Fortress?"
6: "You said Robert was here?"
7: "Do you know anything about these mysterious silver feathers I keep finding?"

Level 19 reached!
Choose a talent:

Talents left: 0   OK

The talent tree is small but meaningful. By the end of the game you will have specialised in a couple of things and eschewed others.

DON'T YOU OPEN THAT TRAP DOOR

(With a creaking noise, the mechanism breaks.)
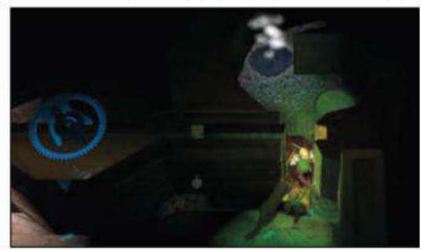
1. "Oh no, this sliding valve mechanism doesn't open long enough for us to get through without being squished."

2. "Don't worry. Puzzling in this game often relies on physics, rather than timing. It's actually pretty neat."

3. "I see. Now, how do we get past these steamy geysers?"
"Run!"

Monaco

25 percent just became 33 percent

It was the perfect job. The Locksmith made getting in through the back door nice and simple. While the Redhead "distracted" the fat, balding guard at the security console, the Hacker – fingers leaping across the keyboard – disabled the security cameras. The crown jewels were as good as ours.

But then the Cleaner just had to go and start hitting people.

Welcome to Monaco: a game that proudly professes "What's Yours is Mine", though fails to communicate just how difficult achieving so complete a state of possession actually is. It's a four-player, top-down, co-op stealth heist simulator that's less Danny Ocean and more Jacques Clouseau. Every level inevitably descends into an elaborate slapstick farce, with bumbling French guards waving their night sticks and yelling "Vous arrêtez!" as you flee in desperate circles to the tune of a dynamic ragtime soundtrack.

There's more character packed into the low-fi stylings of Monaco than any game we've played this year. Facilitating this is are simple, arcade-like core mechanics which play upon the power balance of Pac-Man. Guards can be seen as "ghosts" themselves, whilst the powerups aren't so much pellets as they are shotguns, smokebombs, disguises and sticks of dynamite that blow chunks out of a mostly-destructible environment. Add to those guards a cone of vision, sound sensitivity and multiple levels of alertness,

and you've got the basis for some thrilling arcade stealth mayhem.

The environment is a tricky mistress, too. Automated security systems escalate in complexity and lethality with each level. Simple trip-lasers go from setting off an alarm, to activating automated turrets. Locked doors, which any player can open, become replaced with hand-print scanners that require a security system hack before they can be opened. Those bumbling guards become elite commandos that trade in their night sticks for AK-47s and tranquiliser crossbows.

Player abilities escalate accordingly, giving each character access to new items that can be

"Any game that makes failure this entertaining already has a lot going for it"

used to manipulate the AI or the environment. All-new criminals are added to the lineup, each with their own equally-useful ability that makes no four-player party the perfect selection.

The most deceptive aspect of Monaco is that it's almost two games in one. Playing alone offers an experience akin to a slow, tense stealth game – one with a wild variety of approaches thanks to the different characters. Though multiplayer allows KO'd players to be revived by teammates, the same ability is obviously not afforded to sole players. Instead, the game offers them three lives, with the chance to select a new

character upon each death.

You'd think reviving each other in co-op play would make Monaco too easy, but you haven't attempted to rob the Banque Albert with Nathan, Terrence and Patrick. What possessed Terrence to wander directly in front of the security camera, seconds after we'd warned him about the security camera? Attempts to 'ghost' a mission ended in immediate detection, whilst a mansion infiltration saw us not even making it through the front door before guards came swarming and filled us with shotgun pellets. We spent half of one heist hiding in a bush, waiting for Nathan to lose his tail around a corner. Any game that makes failure this entertaining already has a lot going for it.

One of the smartest design decisions Monaco makes is never allowing players to fully engineer a safe state in each level. This isn't Thief, where you can systematically knock out every guard and put out every torch then steal in total safety. Here, knocked out or tranquilised guards will eventually wake up. Guards killed by bullets can be revived if another guard finds the body. All pickups are consumables with temporary effects. Hacking a security computer creates a "hack node" that follows the player around and disables the nearest

security device, then disappears after a short time. Abilities need to be used in tandem, with each creating a window of opportunity that others must then exploit.

Thus, communication is key. Though, communication generally deteriorates into yelling, screaming, laughing, and the entire spectrum thereof, all at once. The manner in which the music escalates alongside the calamity is perfect. No situation is unsalvageable, however – the Cleaner's burning desire to start hitting people can be the cause of trouble, or the perfect way out. Monaco is not a game about the perfect job; it's about the wildest recovery, the most daring escape, and figuring out how to do it better the next time around.

There's a healthy selection of available heists in the first campaign, with a full second campaign unlocking super-hard 'expert' variations on the missions as each are cleaned out. The story itself is even a tricky, multi-perspective affair; something cheeky and interesting, but never interrupting gameplay.

The only flaw is the lag that comes with online play. Peer-to-peer hosting requires a super connection, and though it's playable without one, it's not the ideal experience. Still, there's LAN play, and even support for four players on the same PC, provided you have three controllers.

So what are you waiting for? Monaco is deep. Monaco is magnificent. Monaco is mine. Go get your own. *DANIEL HINDES* PC

OR TRY THIS

SPLINTER CELL: CHAOS THEORY
UBISOFT MONTREAL • 2005
⬆ Co-op stealth action
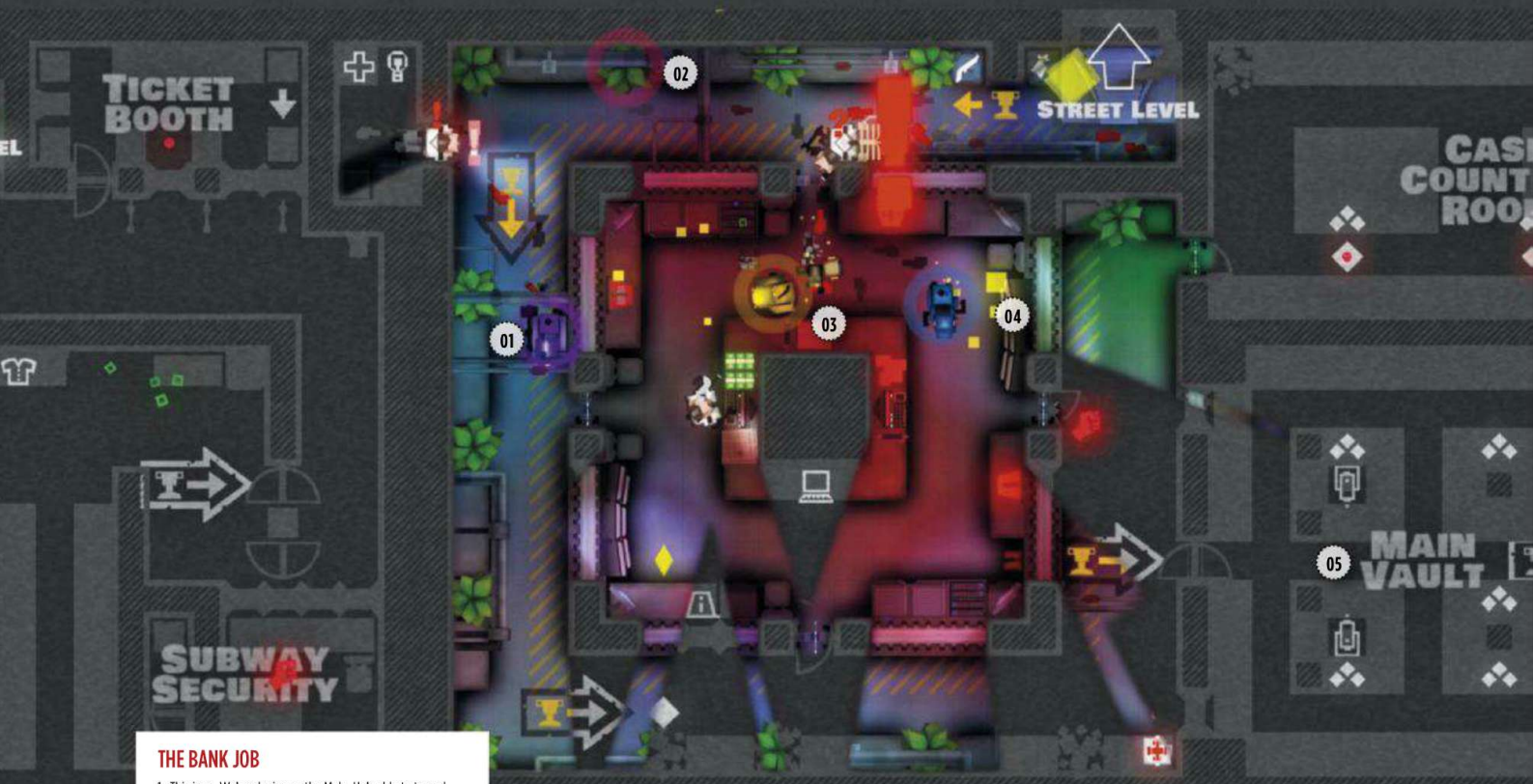⬇ Leaves players too in control?

METAL GEAR SOLID
KONAMI • 2000
⬆ It's actually Pac-Man
⬇ Can be played entirely in-radar

PAC-MAN
NAMCO • 1980
⬆ It's actually a stealth game
⬇ Think about it!

VERDICT Monaco offers a new and unique kind of chaotic co-op stealth gameplay, resulting in a work of indie art worth stealing.

9

THE BANK JOB

1. This is us. We're playing as the Mole. He's able to tunnel through most parts of the level, though it's quite loud to do so. We'll need to tunnel a way out of here soon.

2. After shooting a man dead, Terrence is hiding in the bushes like a coward.

3. This has made life rather difficult for Nathan, who – along with his Pickpocket class' pet monkey – is about to be hounded by that guard watching the bank notes.

4. Patrick, meanwhile, is about to walk head-first into a guard on the other side of the door, as denoted by the red fist icon which he clearly isn't paying attention to.

5. The vault. So close, yet so far...

This goddamn cat will alert the guards if I leave the bushes. Not to mention those whirling lasers...

Hectic situations can produce minor readibility issues. It takes a few heists to understand what every icon and graphic represents, and how they all interact.

Each class provides for a significantly different playstyle, making for a fantastic variety of four-player combinations.

VAULT HUNTERS

1. The parking lot. No one has been spotted yet. Good. Let's move over and open that safe.

2. Oh, there's another one on the other side of the wall. No problem! We'll just tunnel on through.

3. But how can we get the coins without alerting the... oh, Nathan's monkey is already on it. Job well done, gents.

SUBSCRIBE

A STATE-OF-THE-ART
HOME THEATRE PACKAGE!

He thinks his mum might be dead. I hurl a wicker basket at his head. Denton: Wicker Bastard.

The guards in Deus Ex just do not give a shit about their dead colleagues. So it goes.

Yep, just sneaking. No further caption necessary.

Deus Ex's graphics have held up better than you might expect, but oh man, these textures.

Deus inExperienced
Part 8: The Wicker Man

JAMES O'CONNOR explores the mysterious catacombs under Paris in Dan Brown's latest thriller

Shortly after arriving in Paris, I find myself facing a situation that could have, I suspect, meant 'game over' were I ill prepared for it. Is there a way through this opening section that doesn't involve running through a room full of poisonous gas? I wore a hazmat suit, but without any sort of sprint augmentation I come out the other side with my chest down to 8% health. I wonder whether there was a health pack hidden in the previous area (there's one IN the poison room, which is super inconvenient), because had I gone in with low enough health I surely would have died. One of my secondary objectives encouraged me to go back and inform a woman I encountered earlier that I'd rid the next area of greasels, but I don't see how I could possibly survive the trek through that room and back again, especially once my hazmat suit wore off (and is it possible to take those bloody things off after you've put them on?)

The catacombs, with their wonderfully basic skull-pattern texture mapping and horrible French accents, have a way of reminding me that I'm not very good at Deus Ex, or most PC shooters. I engaged in a number of incredibly awkward skirmishes in

my quest to free the Silhouette hostages, switching to the wrong weapons constantly and forgetting, in a panic, to toggle off crouch when I try to run away. I wish that Deus Ex had more sections where you wander around a hub area, chatting with folks and keeping your weapon holstered, which Human Revolution had in spades.

I manage to keep a low-ish profile under Paris, shooting a mere two soldiers in the face with my GEP rocket launcher. The

found anything heavy worth lifting in ages.

This was a pretty successful mission for me, and one that I very much enjoyed. I got the cheap LAMs by clearing out the area outside the mall efficiently, I got the hostages out safely, and although I probably missed a whole heap of stuff, no one yelled at me.

Having said that, on my way out I noticed that I'd left one of those tough ol' rocket launching bastards alive near

"I got the hostages out safely, and although I probably missed a whole heap of stuff, no one yelled at me"

Dragon's Tooth has been my weapon of choice ever since I got it, although as I enter the Catacombs I check and realise that I'm utterly untrained with swords (I'm not 'trained', which possibly doesn't make any difference at all considering the weapon's efficiency, but there you go). I wish like hell I'd spent more time searching for augmentations early on though, just so that I could have a bit more variety. My cloak barely seems to work at all and I haven't

the bunker where the hostages were being kept. I snuck past him, somewhat uncharacteristically, but once I reached the sewers I started to worry about the implications for Silhouette – as unlikely as the game is to follow up on this, it's not hard to imagine this one guy finding the numerous corpses of his allies and flipping out a bit, calling in backup and finding Chad and his mates in their incredibly poorly hidden hideout. **PC**

MARKS OF MADNESS

ANDREW GRAY gets sent batty by Mark of the Ninja's stealthy sanity revelations

To say that Mark of the Ninja's first few cutscenes foreshadow its ending is an understatement. If anything, they cast a total eclipse over its Japanese setting, blatantly telling the player that the tattoos bestowing them with superhuman abilities will eventually drive them to insanity.

Games have already explored delirium in a number of ways. Representing it as surreal worlds inside the player character's mind is popular, as seen in the Alice series or Sanitarium. Then there's Vampire: The Masquerade – Bloodlines and its Malkavian race, who tend to get into arguments with stop signs.

Naturally, this resulted in many players attempting to predict how the madness would manifest itself this time around. Would they battle demons? Would the ghosts of slain foes haunt them? Or would they vote for Tony Abbott?

Yet few expected the psychosis to be so intertwined with what we expect from games, that it was barely noticeable despite constant hints dropped by Klei Entertainment. To truly discuss what Mark of the Ninja does brilliantly, we're going to have to start near the end and work backwards, so be warned, this piece is laden with spoilers.

With that out the way, let's paint the scene. The nameless player character, who we'll refer to as Mark for convenience, has returned from the desert with evidence that his master, Azai, has deceived the clan. When Mark finally confronts him, his slaughter-happy female companion, Ora, tells him to finish off his teacher.

But before this happens, Azai claims that Ora is a figment of Mark's imagination; a physical manifestation of his insanity.

Some players may have suspected so by this point, but thinking back through the game's events, hints were dropped from the very beginning. They're easy to miss, however, and the cunning folk at Klei did a fantastic job of nudging players toward the opposite conclusion if they did not pay close attention – so much so that, even with all facts in this piece considered, the game's final choice is not an easy one.

For example, when Mark is sent to assassinate an enemy leader, it's in response to an unprovoked attack. Yet, during this mission, two enemies can be heard saying that the ninjas were first to strike. So, Azai was lying, yes?

After the mission is complete, Mark and Ora return home only to find that the ninjas

are now using technology stolen from the enemies. Ora accuses Azai of deceiving everyone to procure these items. The evidence was certainly stacking up against Azai, but a major clue hinting that something isn't quite right is also featured in this scene.

When Ora makes these accusations, Azai completely ignores her. Instead, he waits for Mark's response. It's a clue to her nonexistence, but one that's easy to miss or dismiss as poor direction.

Following this incident, Mark flees to the desert to find Dosun, his tattoo artist who went to find answers. When he's found, Dosun reveals that Azai was responsible for the destruction of the flowers used to create the tattoo ink, and stole the equipment to make up for this loss of power. Again, the evidence continues to pile against Azai.

But wait. Can we trust Dosun? He's not a delusion since he's been inking Mark's tattoos from the beginning, but he's been exposed to the ink for years. Could it be that it's taken its toll on his mind, and that he and Mark are suffering from a folie à deux? A shared hallucination?

Another clue is dropped throughout most missions. Ora can talk to Mark even when she's off-screen and when, realistically, the two should be completely isolated from one another. But it's easy to shrug this off. We as gamers are all too used to hearing a disembodied voice telling us what to do.

And all these little clues seem irrelevant when the scrolls are considered. These items are dotted about each level, serving as collectables that reveal the history of the clan, and eventually, Azai's confession. How can anyone possibly challenge that? It's concrete evidence!

But again – why are these scrolls randomly placed about the levels in hard to reach locations? Why are they spread around these environments, including structures belonging to enemies? Why do they teleport Mark to an abstract challenge

room? And why would Azai document his confessions in them? It's lunacy!

Then it becomes obvious. The scrolls aren't real. They're another figment of Mark's imagination, serving only to further his descent into madness. But like Ora's constant presence, few would question these scrolls. We're so accustomed to finding contrived, collectable logs that conveniently reveal the story.

"Would players battle demons? Would the ghosts of slain foes haunt them? Or would they vote for Tony Abbott?"

As the game approaches its climax, enemies even start transforming into Mark's brethren, outright telling the player what's happening. But Ora asserts that these are the hallucinations; something that's easy to accept because it's the representation of insanity we're used to.

And that's where the brilliance lies with Mark of the Ninja's approach to madness. It hides it through insanity that we've become so familiar with that we no longer see it.

The vast majority of games are power fantasies, and that's the key word: fantasies. They're crammed with nonsensical rules that ignore the real world, creating a place that could very easily all be in the mind of a lunatic. So, of course we couldn't easily see Mark of the Ninja's madness. When madness is an everyday occurrence, it becomes normality.

Time to face facts: we're a bunch of maniacs. PC

The demonic visions in the game's opening cutscene should set of warning bells as to the fact that something is not right.

The initial attack by the soldiers on the dojo. Not entirely unprovoked.

Ora whispers in Mark's ear, whether she's on the screen or off it.

Azai reveals his hand, having stolen the high-tech equipment and upgraded the other ninjas.

The final choice is a difficult one. Azai is in the wrong, but Mark is definitely insane...

XCOM: Probability Unknown
Part 3: The Dice Have No Memory

NEIL BROWN streaks through a Monte Carlo casino in pursuit of the true meaning of probability

One famous problem with probability versus people's expectations is known as the gambler's fallacy. A simple phrase to sum it up is "the dice have no memory". If you have a fair six-sided die, and you roll four sixes in a row, the chance of getting a fifth six is… one in six. It's no more likely (the streak continuing) or less likely (some sort of cosmic balance) than at any other time. But people do tend to believe that streaks shouldn't happen in random events, or should be somehow balanced out by a reverse streak.

I think that part of the problem is that we tend to look at odds from a historical perspective, not based on our current knowledge. The chances of getting five sixes in a row is slim, but once you've observed four sixes, the chance is down to one in six. However, we keep thinking of how unlikely it would have been at the start — that doesn't matter now! What's happened has happened, and in the case of independent events, it has no bearing on the future.

August 18, 1913. The Monte Carlo casino. A roulette wheel turned up black 26 times in a row. Lots of patrons lost money betting red during the streak, reasoning that red must come up soon. But red was no more likely than at any other time, so the house cleaned up.

This has implications for playing a game like XCOM. Let's say you have an alien in sight, with soldiers lined up to shoot it: one with 85% chance to hit, one with 75% and one with 65%. The alien is dead, surely! You shoot with the 85% first, and miss. You shoot with the 75%, and also miss. So you line up the 65% — it must hit, right? The chances of all three shots missing was:

$$0.1 \times 0.25 \times 0.35 = 0.013$$

So, about 1%. I think many people choose to take that final 65% shot, effectively thinking that it must have a 99% chance to hit. But it doesn't: it has a 65% chance to hit! What has already happened doesn't matter; the events are independent, so by now you only have exactly a 65% chance to hit.

SHUFFLE THE DECK
This problem of streaks and randomness cropped up in software design a few years ago. People complained that their iPod shuffle algorithm was not random enough:

they were getting streaks of songs by the same artist, or somehow related songs. Steve Jobs said Apple would change the algorithm: "We're making it less random to make it feel more random." The problem is that the human brain is an amazing pattern recognition system, even going so far as to find patterns when sometimes there are none. Presented with a stream of random numbers, the brain can probably pick out a pattern. So what people usually mean by "I want it to be random" is actually "I want there to be no discernible patterns" — a completely different thing!

One way to "fix" a game like XCOM to aggravate the players less would be to alter the random number generator algorithm, to remove streaks of high numbers (or of low numbers). Technically, this makes it less random, and removes the independence of events. The advantage is that players would feel happier that the game wasn't out to kill their soldiers — but the disadvantage is that players could start gaming the system.

If you hit three unlikely shots in a row, you could know that the next shot is becoming likely to miss, and act accordingly. Much like the save-scumming strategies covered in PCPP#213, a deviation from truly random events is an invitation to play the system. Plus, as soon

as you actually deviated from truly random numbers, investigative players would decry the broken random numbers. Players want to win, but they want to win against a fair challenge. And no-one suspects foul play more than an aggrieved player.

MAKE IT EXPLICIT
Rather than fiddle the random number generator in the background, you could build anti-streak protection into the game mechanics. You could introduce a bonus into the game, called something like "Justice" or "Concentration" or "Determination". Whenever any soldier misses a 90%+ hit, the next soldier to shoot receives a 10% bonus to hit. Miss two 90% shots in a row, and the third soldier gets the cumulative bonus of 20% (and so on). This protects against streaks of bad shots (by altering the probability of subsequent hits during a bad streak), and softens the blow of a high-probability miss. (It's not even totally unrealistic: a team taking consecutive shots at an alien are probably not independent.)

Obviously, you would need to reduce your overall chance of hitting slightly to balance out this bonus, but it could make the players happier, while keeping the probabilities explicit and completely accurate. **PC**

85%

75%

65%

THE EAGLE HAS LANDED

Returning to the beginnings of Battlefield before 1942 with CODENAME EAGLE

DEVELOPER REFRACTION GAMES
PUBLISHER TAKE TWO
RELEASED 1999
www.refraction.se

Refraction Games AB isn't exactly a household name. The developer's website just brings up a generic domain host/advertisement page. The lack of historical document could come down to the fact that Refraction was only responsible for developing a single, not particularly well received game, but given the impact and legacy of that game it's somewhat surprising that Refraction don't have quite a bit more fame.

Released in 1999, Codename Eagle is an extremely ambitious game. Comprising of both a singleplayer campaign and vehicle-focused multiplayer modes, Codename Eagle was set during an alternate history in which World War I never happened and, instead, Russia's expansionist war machine threatens to throw the world into bloody chaos. Playing the singleplayer campaign, it's easy to see why the game met with such a mixed reception. The first mission plays out more like an old-school Sierra adventure game in that it necessitates the player finding a bunch of non-signposted and seemingly pointless items to complete the puzzles necessary to advance the scenario.

The first mission involves murdering a Russian, stealing his miraculously bloodless uniform, finding a bottle of vodka in a crate, trading said vodka with a drunken, fez-wearing midget for a truck, driving the truck over some cargo to pick it up, waiting patiently for a Russian guard to raise a gate so you can drive through, raiding the guard house for some papers, using them to get into a secure airbase, parking the truck in a hangar, breaking a nearby crate to get a piece of wire, using that wire to pick a locked door, turning a mounted moose head to reveal a safe combination, opening said safe and then retracing your steps back to the beginning. Fail one of the early steps and everything turns into a shooting match. Fail one of the later steps and you're left scratching your head wondering what you did wrong.

Avoiding the mission becoming a shooting match is difficult. The AI is stupid, so walks in front of your truck at every opportunity. Hitting a civilian or soldier instantly sets them to hostile. Drive through one of the sets of boom-gates at the wrong angle and you'll break it, alerting the guards. When the mission does devolve into a shooting match, the flaws in the singleplayer campaign become even more apparent. Rather than using cover, the enemies stand out in the open, making easy targets for the eerily accurate shotgun and pistol. To make matters worse, the AI seems to be keyed towards running straight at the player, and due to either a quirk in the animations or the AI, the enemies can't run and shoot at the same time, making them very easy pickings.

It's obvious from the outset that the singleplayer campaign is a roughly attached and superfluous appendage. According to Mats Dal, Co-founder of Refraction Games and Lead Programmer on Codename Eagle, "our backer said we needed a character and a story, so we had to build that. But our first idea had been to make the 'Virtual Battlefield' game that we already had a concept for. It was supposed to be all war and no story. But then we had to fit in some kind of cool hero with a red cap."

Jump into the multiplayer and all of the ambition to create a "Virtual Battlefield" sometimes paid off. The singleplayer maps were huge and open and the multiplayer maps used mostly the same template, giving players ample room to hoon about in the myriad vehicles available to them. There was a sense of freedom not seen in any other multiplayer shooter around at the time, a sense that rather than a game map, each area was a fully realised battlefield. Unfortunately, the resources diverted to creating the rough singleplayer mode took their toll - upon release, Codename Eagle multiplayer was a bug-ridden mess. Of the three available maps, two of them were reputed to crash so often they were virtually unplayable. The vehicle controls were wildly inconsistent, with some using arcadey mouse and keyboard controls and others utilising a much more simulation-like approach, such as the biplane, which used complex pitch and yaw mechanics but forced the player to only use the keyboard for control.

Despite the bugs and quirks, Codename Eagle multiplayer found a dedicated fan base. Although the game sold only 200,000 copies, Refraction Games garnered something more valuable than a best-seller. The team found other developers who saw the ambition behind Codename Eagle and had a vision of where it could go without the interference of backers who demand singleplayer modes and heroes in red hats. Soon after the game was released, Refraction Games was bought by another, altogether more famous Swedish development Studio, Digital Illusions CE – aka, DICE. Two years later, the "Virtual Battlefield" dream that had inspired Codename Eagle became a reality. Using technology and concepts designed by Refraction Games, DICE created Battlefield 1942, the first in a series of hugely popular open world, vehicle based multiplayer shooters. To date, the series has sold more than 50 million copies, vindicating the original design concepts dreamed up by the Refraction Games crew over 15 years ago.

Oddly enough, with Battlefield 4, DICE are determined to emphasise their singleplayer campaign and the fact that they really want to tell a story. Whether they'll succeed this time is still up in the air. One thing's for sure: we haven't seen any red caps. *DANIEL WILKS*

Back in my day we only lived in houses built of THREE polygons

Why are we getting a No One Lives Forever vibe?

Power lines: the most dangerous enemy on the battlefield of all

"WHAT DOES ONE LIFE MATTER?"