

Postmortem: High Voltage Software's *Conduit 2*

By Kevin Sheller

[An extensive postmortem of [High Voltage Software's Wii-exclusive shooter sequel](#) -- in which chief creative officer Eric Nofsinger explains how lessons learned during development "made us a better company, and allowed us to make better games."]



High Voltage Software has been in business for nearly 18 years. While the majority of that time was spent developing successful titles for a number of publishers, we were fortunate enough to have recently started creating our own IPs including *The Conduit* and its sequel *Conduit 2*.

Our first major original IP, *The Conduit*, was an attempt to fill a void in the Wii lineup by providing an FPS aimed at the more hardcore gamer that we felt wasn't being served by the existing marketplace. At the same time, we needed the game to be accessible enough to still appeal to the more casual player that made up the bulk of the Wii consumer base.

In some areas we succeeded and in others unfortunately we fell short. The title had good sales and overall positive reviews, but we knew we could do better.

With Sega already on board for a sequel, that's exactly what we set out to do. Our team rolled right into *Conduit 2* as soon as they had wrapped up the first title and the following article describes how it turned out.

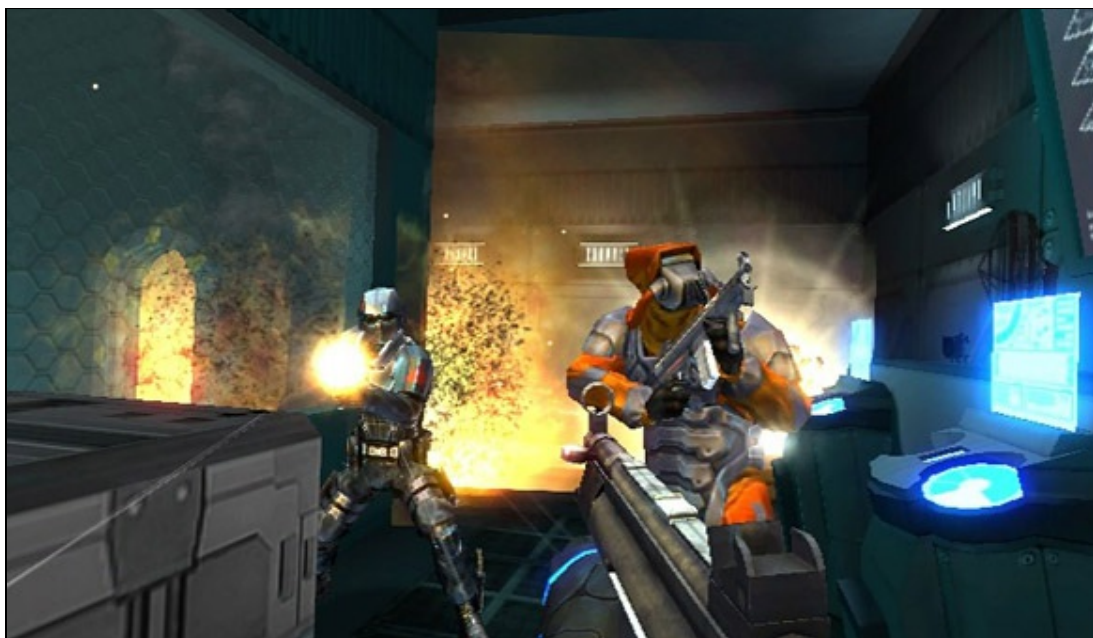
What Went Right

1. The Fans Spoke, and We Listened

During production of both titles, we wanted to show off the game at every chance we could get. We wanted to know what people liked and didn't like. We wanted the gamers to feel like part of the development process because for us, they truly are.

At any press event that any member of High Voltage Software attended, we were actively soliciting feedback and when a comment was made we would immediately write it down. For *Conduit 2* in particular, nearly all core team members were active forum members on many different community sites in order to obtain a sense of what the gamers wanted and expected from the sequel.

This was a highly motivating approach for all involved. The fans became more invested in the sequel, the team felt more responsibility to deliver something that would make the fans happy, and we gained incredibly valuable data that allowed us to make more informed decisions on key aspects of the game design before we spent too much time on any one part.



2. The Engine Had Matured

When we set out to create *The Conduit*, we were starting from scratch. Much of our engine technology was new, our art pipeline wasn't defined, and our level design process was theoretical. We had passion and determination, but we really were creating the technology and asset generation pipeline along with the gameplay, which really limited what our designers could do. While all of this was being dealt with, we were also trying to craft a brand new IP, which causes a number of problems for us throughout development.

Fortunately, when we started work on the sequel, our Quantum 3 engine had matured through the development of titles like *The Conduit*, *Tournament of Legends*, and *Iron Man 2*, and was now robust enough to handle the type of game we wanted to make. Also, because so many staff members worked on *The Conduit*, we found ourselves staffed with designers, artists, and programmers who had at least one large Quantum 3 game under their belts. They'd seen our engine grow, worked with it extensively, and knew how to get the most out of it.

As a result of this experience, they could implement features more quickly, craft artwork that took more advantage of the engine's strengths, and create more complex level designs far more efficiently than we were able to do with the first game. This resulted in improvements throughout the game such as less linear level designs, higher quality artwork, more exciting enemy encounters, more intelligent AI, and a higher framerate. This experience is why when comparing *The Conduit* to *Conduit 2* it feels like night and day!

3. We Were Able to Focus on Multiplayer Early

The Conduit didn't acquire the budget for multiplayer until an entire year of development had gone by. Obviously, trying to retrofit major elements such as online multiplayer into a nearly feature-complete game caused its share of problems. For instance, our designers and artists had created final versions of multiplayer maps before the multiplayer system was even up and running, making them difficult to playtest and balance. This led to far too much rework needing to be done.

With *Conduit 2*, multiplayer was a primary focus from the very beginning. We had dedicated personnel that focused on map creation, weapon and game balance, as well as the creation of exciting new multiplayer features like our suit upgrade system and store.

Our designers were able to quickly create gray box levels and try them out in multiplayer within hours, a process which took days to do on *The Conduit*. This allowed them to tweak and balance each one before they were handed off to an environment artist to make beautiful.

Nothing, and I mean nothing, can replace time spent playtesting a game level. That point alone led to so many improvements including level balance, game mode balance, weapon improvements and balance, and a high level of polish that we simply didn't have time to do on the first game.

As I mentioned earlier, because of our focus on multiplayer from the beginning, we were able to design and develop loadout and suit upgrade systems, allowing players to customize their online personas with a vast array of choices. These options are purchased in our store by spending in-game currency that we call "credits". This new economy-based upgrade system allows players to play how they want and look how they want.

In fact, some of our suit upgrades are what we call "game changers", meaning that they fundamentally modify the player's abilities. For example, players can choose to be a field medic by selecting the right combination of upgrades. Perhaps you prefer to be an invisible sniper? Well, you can do that too. We are very proud of this system, but we were able to do these things only because we had incredibly talented developers working on the multiplayer gameplay for as long as we did.

Another big feature for us this time around is competitive splitscreen. We wanted to do it in *The Conduit* but we were limited by the technology and by time. For *Conduit 2*, we were able to include a fully-featured splitscreen mode that allows up to four players to compete in head-to-head gameplay. Every core feature from our online multiplayer is available in offline splitscreen. We did not want there to be any difference in the experience whether players chose to play online or not.



An additional major addition to our multiplayer comes in the form of our four-player splitscreen cooperative mode that we call Invasion. This mode developed out of a single idea that we had while working on our splitscreen competitive gameplay.

The idea was to throw every player on the same team and spawn enemies into the level. Shortly after playing it, this simple proof of concept garnered some very positive reactions from our management team and we were given the directive to make it happen. What resulted was a seriously addictive game mode that is easily one of my favorite ways to play the game.

Last but certainly not least is that we redesigned our data messaging systems so that we could proactively deal with hackers, cheaters, and griefers. Shortly after *The Conduit* was released, we started hearing about the problems that some gamers were having and we were dismayed. When we looked into ways to help fix the issues, it became apparent that we were in trouble. A combination of the way that we had created the networking solution for *The Conduit* and the networking system that Nintendo's servers use created a few roadblocks that we didn't expect.

What we ended up with was having to log and block players through some ingenious, but tedious, network snooping. This was not efficient, and we don't recommend anyone doing this, but it was the only thing available to us because of the structure of the systems in place. Luckily, we knew the problems and were able to modify every networking system so as to not simply fix the problems but also allow us to patch and make changes to the code so that we could deal with any unforeseen problems in a more reactionary way.

Overall, we are very proud of the amount of gameplay and refinement that we are able to provide in *Conduit 2* by simply having the opportunity to dedicate enough people and time to our multiplayer.

4. This Time, We Had a Well-Developed IP

When developing *The Conduit*, we had a rough idea of who our characters were and what their world was like, but much of our story and background evolved over the course of the project. This was difficult, since it meant multiple story rewrites, character changes, and lost work. For *Conduit 2*, we had established many parts of the IP and only had to work to refine the parts that we weren't happy with, or fans weren't excited about.

While certainly not perfect, we were fortunate to have garnered a loyal fanbase from the release of *The Conduit*. These gamers were fascinated with the world, the lore, and the characters that we had created and wanted to know more. This encouraged us to spread our wings and take the world farther than ever. We redefined our hero, Michael Ford, into a true badass. Gone were the days of him being surprised by the world. Now he is aggressive, vengeful, and deadly. In *Conduit 2*, Michael Ford is the hero we all knew he would eventually be when playing *The Conduit*.

5. Let's Git-R Done!

So development went on, and E3 came and went. We had reached a crossroads in the project; *Conduit 2* was behind schedule, a lot of work still needed to be done, and things had to be brought back on track, quickly. All the pieces were there, but they weren't getting brought together fast enough to meet our milestones. A company decision was made and *Conduit 2* team received a few new faces. New production staff was brought on board, more team leads were added, and a large group of staff were brought on to help.

Normally you would find a description like this in the "what went wrong" section, but in our case, this turned out to exactly what was needed to put the project back on track.

With budget and time running out, critical decisions about what to focus on had to be made quickly. The new team members were better suited to making unbiased decisions about these things leading to faster, more efficient shifts in direction

This wound up breathing fresh life into the entire team. Old and new team members alike quickly generated a flurry of improvements, dramatically improving the overall experience and presentation of the game. This allowed us to finish even stronger than we did on the first game.

The light at the end of the tunnel isn't always a train, sometimes it's your goal, and it just depends on how you approach it. This team put a lot of effort into making *Conduit 2* as good as it is today and we are very proud of how the entire company came together to get the project done well.

What Went Wrong

1. Poorly Defined Milestones

Members of any team thrive when they have clear goals to accomplish and the deadline in which to accomplish them -- especially when these are defined early and often.

Unfortunately, the milestones were never defined with enough detail, nor given to the team early enough. Instead, many of the goals given to the team were based on meeting requirements for product demos given at various consumer, media, and developer shows and conventions.

Often this resulted in the team diverting from meeting an actual milestone in favor of prepping the game for the next show. This approach resulted in awesome demos at the expense of the completed game. Had the goals been based more on the production timeline, been given better definition, and been revisited throughout development, the team would have been able to focus better and the end of project push would not have been as elongated.



2. The Script

One of the biggest criticisms of the first game was the single-player campaign felt dry and uninspired. It was considered too short, lacking a cohesive narrative or major dramatic moments, and didn't have any memorable boss battles. We did not want to repeat those same issues and while *Conduit 2's* campaign delivers on the elements that were lacking from *The Conduit*, it was a long and difficult battle to get there.

To address the problems from the first game, we hired an external writer to focus on crafting an epic storyline. We brought him into the studio and had him spend multiple days every week with the team. He played the build, interacted with our team members and fully immersed himself in everything *Conduit*.

Unfortunately, his vision was unrealistically grandiose. The combined length of the cinematic sequences would have been well over that of multiple feature films. We simply didn't have the budget or the manpower to dedicate to creating that many hours of story. Additionally, the tone was extremely serious and heavy-handed, which didn't go over well with anyone in our initial showings of the game. In fact, they celebrated the occasional humorous element, leading us to the realization that things needed to be lightened up significantly.

As we got closer and closer to our deadline, despite our writer's best intentions, the cinematic sequences were still too long and too serious, missing the lighter tone we were hoping for. Consequently, we were forced to do a massive edit and rewrite -- working at all hours of the day and night -- to get the script polished in time for the final recording session. If we had only given the light-hearted direction to the writer

initially, we could have saved a lot of time and effort.

3. Attention Elsewhere

2010 was a very busy time for the studio. Along with our various publisher and licensed titles, we were developing two more original IP: *Tournament of Legends* and *The Grinder*. Their teams were exploring new game genres, working under strict deadlines, and had extensive management oversight.

Meanwhile, the *Conduit 2* team was trusted to essentially manage themselves. It was felt that, since it was the second version of a successful title, they could be given more flexibility and freedom in terms of running the project.

It was only when the project started to fall behind schedule that upper management started taking a closer look at the overall state of the project. They quickly realized that it was not becoming the type of game that they had intended, and with deadlines looming, drastic action was taken, as detailed previously.

4. Reduction in Force

Like the rest of the gaming industry in 2010, High Voltage Software wasn't immune to hard times. With publishers mitigating risks and the economy in trouble, we had to take financial action.

What's especially difficult about this is that our culture is an aberration in the game industry. In the nearly 18-year history of the company, we'd only had one layoff of any significance -- but that is what happened to us in 2010. This had been a corporation built on stability and longevity, and our employees had come to expect it.

Unfortunately this affected the *Conduit 2* team dramatically. Not only did the company take a huge morale hit from the loss of dear friends and colleagues, but the *Conduit 2* game team was heading into a crunch that would not end until the game was to be delivered for final Nintendo submission.

There's not much that can be done to lift the collective mood of a company facing all of these odds, but we did what we could. We reached out to our employees as often as possible to let them know how valuable they were, we offered assistance to those who needed to land new employment opportunities, and we rewarded the *Conduit 2* team when they reached newly-defined targets that got us closer to submission.



5. Rushing Through Development

Early on in development, the *Conduit 2* development team implemented new features to the point where they could be demonstrated, but were not complete. When much of the project is composed of partially-implemented systems, it makes the game code's structure unstable and hard to work with.

What's worse is that after the layoff, we were left with unfinished systems combined with team members that didn't fully understand how to work with them. This added months to the development cycle as each fixed bug can potentially spawn or expose multiple new problems.

Conduit 2 is a huge game, much larger than anything our company has ever developed before. The time needed to complete a project of this scope was definitely underestimated.

Conclusion

We have always been passionate about making games, but the experience of creating *The Conduit* and *Conduit 2* has truly redefined and improved High Voltage Software. The excitement generated by the series has earned us multiple E3 awards, gave us a powerful fanbase (we love you guys), triggered a bidding war among publishers for future projects, given us the freedom to create additional new IP, and has given our studio a much higher profile than ever before.

But even more important than the attention that the *Conduit* series has given us, are the things that we have learned while developing the two games. We faced, and conquered the challenges that each title gave us, learned to make hard choices, and forged strong connections to our fanbase. All of these things have made us a better company, and allowed us to make better games -- a fact that you can see for yourself in *Conduit 2*.

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