



/ Studio 4 of the massive 10-studio Amsterdam-based facility created by Guerrilla as part of a new home for its 400-strong workforce

# Guerrilla Games

*Resolution* heads over to Amsterdam to check out a massive new audio production facility created by games developer, Guerrilla

When games developer Guerrilla moved its headquarters to larger premises in the centre of Amsterdam it was a golden opportunity to bring all game studio dreams to life. Located close to Dam Square, in a building that used to belong to Dutch newspaper *De Telegraaf*, Guerrilla's new studio offers approximately 7,300m<sup>2</sup> of space stretching over five floors — more than enough room to build state-of-the-art facilities to accommodate nearly 400 employees.

The move was a welcome expansion for Guerrilla's audio team, according to Principal Sound Designer Anton Woldhek, who says "We were running out of space at the old premises and

were already looking at ways to expand there. We had four dedicated audio studios, but it was hard to see how we could squeeze in anything else, and we needed additional facilities to accommodate more staff."

The need to expand became critical when Guerrilla, a subsidiary of PlayStation Studios, launched their award-winning action RPG *Horizon Zero Dawn* in 2017. Moving to a new building that could accommodate more staff was an obvious solution, so the management team began looking for suitable premises.

"Our management team knew that the logistics of building audio facilities within a corporate office could be quite tricky," Woldhek explains. "Many

“The acoustic improvements in these rooms were so significant that it was hard to go back

different requirements have to be taken into consideration and, as a result, we were one of the first teams to be involved in redesigning the new premises once the right building had been identified.”

## Workflow

Guerrilla's Audio Director Bastian Seelbach adds: "Game audio has changed a great deal since we built our last studios in 2010 and there were workflow limitations that we wanted to address. This move required us to plan ahead so that we



could futureproof the facility and get it as close as we possibly could to the ideal game audio set up.”

As the design of audio facilities requires a highly specific approach, Woldhek and Seelbach worked closely with Jelle van der Voet, owner of studio design specialists Pinna Acoustics, and Maarten’s Sound & Vision, a company co-owned by Jasper van Eif, which handled the supply and integration of all equipment.

Choosing MSV as a partner for this project was easy, Woldhek says, because MSV had successfully built Guerrilla’s previous studios. He also believes Pinna Acoustics was another great choice, as they are known for the quality and breadth of their work.

“We saw two rooms that Pinna Acoustics had designed and were very impressed by them,” Woldhek says. “The acoustic improvements in these rooms were so significant that it was hard to go back to the rooms we were in. Jelle also brought in a ton of experience and was definitely the right choice for us.”

With the team in place, 18 months of intense collaboration and consultation followed. Many meetings and discussions were held to identify all the requirements and wishes of the Guerrilla team.

“Everything about this project was tailor-made and engineered in full consultation with Guerrilla,” Jelle van der Voet says. “The acoustic contours of the studio were determined by Pinna Acoustics, but the interior was a collaboration between Anton, Bastian and myself. They made a mood board to convey an impression of the colours they liked and the homely atmosphere they were aiming to create. They wanted a studio space where you would feel at peace and could easily spend eight hours a day.”

### Preparing for Collaboration

One of the main issues with the old Guerrilla set-up was not having the ability to collaborate. Resolving this became a key factor in the design of the new facility.

“We used to be in small, single-person rooms and, even before COVID, it was tricky to



/ The team behind the project (L-R): Jasper van Eif of Maarten’s Sound & Vision (MSV), Jelle van der Voet (Pinna Acoustic), Jelte Zeilstra (MSV), Bastian Seelbach (Audio Director, Guerrilla) and Anton Woldhek (Principal Sound Designer, Guerrilla)

communicate,” Woldhek explains. “We wanted to create a central area where everyone could come together to discuss projects, experiment and cooperate more easily.”

An entire wing of the new building was set aside for audio production and 10 different studios were built. The studios were initially drawn in 3D and the designs developed gradually to suit the team’s vision.

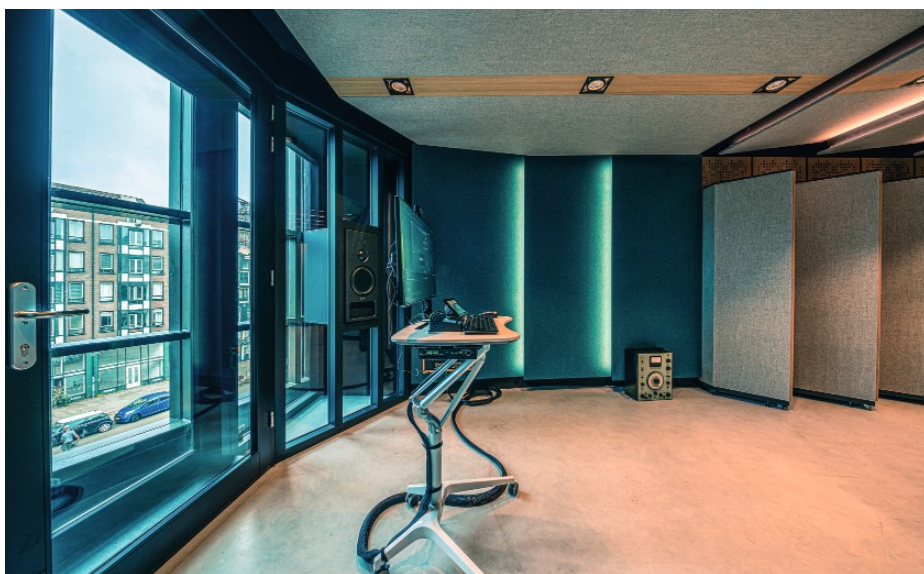
“The studios are divided into three types — A, B and C,” van der Voet explains. “There are six A studios for sound design and mixing projects, and these are equipped with 7.1 monitoring. One of the A studios has an immersive audio 7.1.4 monitoring system, which was installed in readiness for 3D audio productions. There are also three B studios,

which are smaller and designed for more analytical work. These have 5.1 monitoring systems. Finally, there is Studio C — a much larger studio with stereo monitoring and enough space for team members to work together. Studio C has control room acoustics at the front and live room acoustics at the back so that it can be used for recording instruments, synth patches and foley, as well as mixing. In addition to the audio studios, we designed and installed a cinema room where work can be reviewed by larger groups of people.”

### Prefab preparations

All 10 studios were completely prefab-designed and were lifted into the building, one at a time, through a recess in the facade located 10 meters

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/ All the studios feature PMC monitoring, and are network connected so that they can be shared by the whole team in collaboration

above the ground. With each studio weighing approximately 30,000 kilos, the combined weight meant that the actual structure of the building had to be reinforced with steel in order to take the load.

"The first step was to pour 10 floating steel plate concrete floors, accurately calculated on Sylomer vibration decouplers," van der Voet says. "This made the floor plan immediately visible. Pinna Acoustic construction teams were used for the structural work and the acoustic finishing, and everything was 3D engineered and prepared in our workshop. In terms of acoustic performance, Guerrilla wanted the same specs as the other Pinna studios they visited because they were impressed by what they heard there. In the end we delivered an acoustic response that runs flat to 22Hz with a

sweet spot as large as the room itself."

Seelbach adds: "It's true that the size and shape of the studios was dictated by the limits of the building, and it was a puzzle. We were careful not to damage any historic parts of the building, which meant working around original structures. Even when we had a layout that worked acoustically, there were still considerations such as fire escapes and weight limits that had to be overcome. We also had a very tight building schedule to adhere to, so we needed partners who understood the constraints of the building but could still deliver the quality we wanted, on time and within budget."

A year before Guerrilla moved into its new premises, Pinna Acoustics and MSV built a working example of a Studio A room — complete

with concrete floating floor — in the Pinna Acoustics warehouse. This 1:1 mock-up was used to test and determine the acoustics, speaker selection and ergonomics. This unique experience gave everyone the opportunity to experiment and finetune their decisions.

"We took the entire team to the mock-up studio and tried numerous different speakers using the actual room acoustics that we would be working with," Woldhek says. "It was an amazing experience. We tested them using our own work — music and some general post-production material. When we compared notes, everyone was in complete agreement that the best speakers for our requirements were PMC."

To this end, the six A studios and the larger C studio are now equipped with PMC IB1S passive monitoring systems with PowerSoft amplifiers, while the three B Studios have KS Digital monitors.

"The B Studios handle projects that don't require a three-way main system, so we picked KS Digital because the speakers were smaller and more cost effective," Woldhek adds.

A new addition is the incorporation of a sophisticated AoIP and AVoIP KVM control network.

## Networking

"There were two reasons why we wanted the facility networked over AoIP," Woldhek says. "Firstly, for aesthetic and space reasons we didn't want equipment in the sound studios themselves — we wanted it located in a separate machine room. Secondly, as a function of our workflow, we wanted the ability to move between rooms so that we could collaborate seamlessly and with no obstacles."

"It was really important to us that audio staff didn't feel isolated, and that they felt comfortable about using the large studio as and when they needed it. By using AoIP technology, we have ensured is that everyone has access to our larger C Studio, so if they want to check something on bigger monitors — listen to more bass for example

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/ Each of the 10 rooms was prefabricated and delivered to the studio complete

— they can do it quickly and easily.”

Woldhek adds that when it came to choosing networking technology, Guerrilla relied heavily on MSV’s AV/IT Systems Engineer, Jelte Zeilstra.

“We told Jelte what we wanted and left him to come up with a solution. The result is very intuitive and ticks every single box on our wish list. For example, if I want Bastian to hear an amazing new mix, he can just listen from his own room because everything is networked. He can use his Crestron console touch screen to grab any screen from my studio, look at it and use his own monitor

controllers to select the output from my console. He gets the exact same output and we can compare notes without leaving our own rooms.

“The same thing applies to recording. We have way more I/O than we will ever need and it’s all available to everyone. We can record simultaneously from any room so if, for example, I’m recording cool synth sounds in Studio C, I can get my Nuendo session lined up and then let other colleagues know so they can grab whatever they want directly from it. In Studio C you also have complete keyboard mouse control over the PC in



/ The Cinema is part of the AES67 networked audio distribution system, and can be used to review work



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/ The massive new site occupies a building that used to be home to Dutch newspaper, De Telegraaf

your own studio, which makes it very easy to check how a game sounds in stereo. All you do is grab your PlayStation controller and you're immediately in there playing the game."

MSV's Jelte Zeilstra specified much of the equipment and says meeting Guerrilla's wishes was complex.

"The KVM part of the project involved a long process of searching, demos and testing," Zeilstra says. "The requirements for the KVM system were 4K60, low latency, no visible compression and fully

transparent USB. Initially, there was no system that met all the requirements but at IBC 2018 we found the Crestron NVX series and decoder, which was capable of meeting all the conditions so we specified over 50 of them."

For the AV/IP network, Zeilstra specified a Netgear M4300-96X core switch, with one M4300-28G per two studios, because these units supported all necessary protocols 'out of the box'. It was also agreed that Ravenna/AES67 was the best option for Guerrilla and this decision allowed Zeilstra and

“We have way more I/O than we will ever need and it's all available to everyone. We can record simultaneously from any room

Van Eif to embed Merging Technologies Anubis monitoring solution into the design. Anubis was a good option because it can handle an unlimited number of sources, and operates as an immersive audio or 5.1 controller with downmix options. In addition, Merging's MAD allows for multi-client ASIO connection and combined WDM support, which was exactly what Guerrilla wanted.

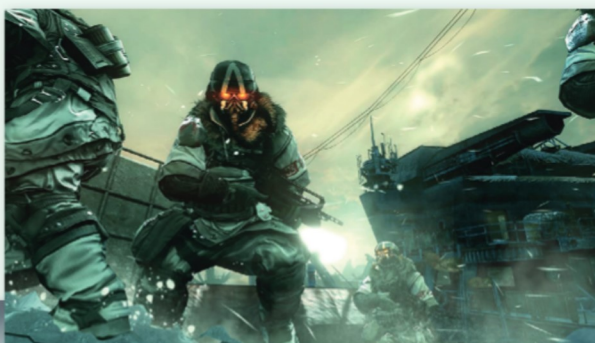
The systems run through Madi to a big matrix with all the I/O boxes connected to it. On top of each studio, there is also a Direct Out PRODIGY. MC modular audio converter that bridges the gap between the worlds of analogue, digital and AoIP.

With *Horizon Forbidden West*, Guerrilla's highly anticipated upcoming title, and with more staff being recruited throughout the company, it seems that Guerrilla is definitely the place to make some noise! 🎮

## GUERRILLA HISTORY

Guerrilla Games originated as three separate Dutch video game companies — Orange Games, Digital Infinity, and Formula Game Development — which all began in the early-to-mid 90s. The original merger of the three at the very start of the millennium formed Lost Boys Games, bought together as a subsidiary of the Dutch digital marketing and web company Lost Boys. When the wider Lost Boys concern merged with Swedish media company IconMediaLab in 2001, the games arm was spun off into an independent entity. After making a name for itself developing Game Boy titles, Lost Boys Games rebranded to Guerrilla in 2003 — under the umbrella of its owner's new media company, Media Republic.

It was at this point that the company began to work on one of its signature titles, *Killzone*, for Sony Computer Entertainment (SCE)'s PlayStation 2. That title went on to sell 1m+ copies worldwide, and Guerrilla subsequently began an exclusive development partnership with SCE working on



games for the PS2, 3 and PSP. Ultimately, SCE would buy Guerrilla 2005, and task it to create further entries in the *Killzone* franchise (*Killzone 2* and *3* for the PS3 in 2009 and 2011 respectively, and then *Killzone: Mercenary* for the PS Vita and *Killzone: Shadow Fall* for the PS4 in 2013) and expand its portfolio.

That expansion took form in 2017, when Guerrilla released *Horizon Zero Dawn* for the PlayStation 4, and then later its *The Frozen Wilds* expansion, to critical praise and commercial success, moving over 10m units. The company followed up 'Zero Dawn with *Horizon Forbidden West* in February of this year — this time for the next-gen PlayStation 5 — which has also been widely praised, and currently has an 88% score on Metacritic.

Announced in January, the next Horizon title — *Call of the Mountain* — is already in development for the PlayStation VR2 virtual reality system.