ZOINK ROLLS A AAA HIT WITH
"DICE OPERA" FANTASY

LOST IN RANDOM

The indie's success builds on long partnerships with
Unity and EA Originals.

Zoink!

→ **THE CHALLENGE**
Maintaining multiplatform
performance without
compromising a unique art style

→ **PLATFORMS**
Nintendo Switch™, PC, PlayStation® 4/5,
Xbox One, Xbox X|S

→ **PROJECT STAFF**
50+

→ **LOCATION**
Gothenburg, Sweden

ZOINK STUDIOS: A UNITY CASE STUDY

Game designers and artists can sometimes get carried away brainstorming spectacular features and dazzling settings, and it's usually the developers who bring them back to earth by reminding them of performance challenges and other constraints. But when Zoink started creating the magical world of *Lost in Random*, with its detailed and extraordinarily imaginative fairytale levels, the engineers got as excited as anyone and promised to deliver on the unique vision without compromise.

COMMITTED TO A VISION

After launching a series of increasingly complex games, *Lost in Random* would be, by far, Zoink's most sophisticated project to date. Though a small studio, they resolved to release a AAA-level hit, with support from EA Originals. Zoink had a long history of success with Unity and they fully understood its capabilities, so they set out to realize an ambitious artistic vision and create what Kotaku called "the most innovative game of 2021."
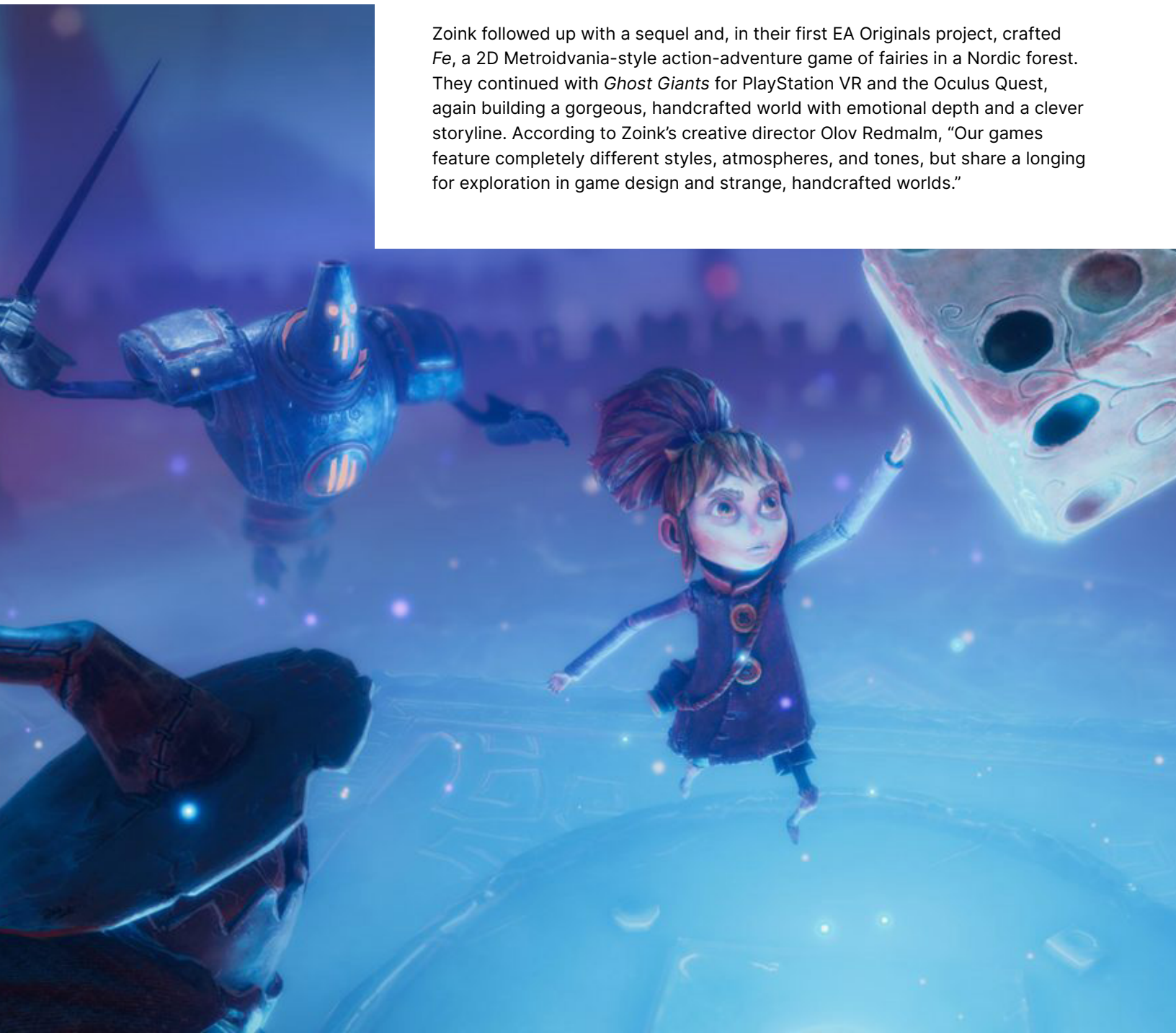
THE RESULTS

→ Deployed in-house to Switch, PC, PlayStation 4/5, Xbox One, and Xbox X|S simultaneously

→ Created AAA-quality visuals across all platforms using the Universal Render Pipeline (URP) and Unity lighting tools

→ URP's shader authoring with ShaderGraph made possible to customize URP's default Lit shader and build new ones used extensively in the game

→ Leveraged Aura2 from Unity's Asset Store to create state-of-the-art volumetric fog and lighting effects on multiple platforms as part of a modular approach to creation with a lean team

→ Game received Best Indie Award at Gamescom and an Official Selection at the 2021 Tribeca Festival

EXPLORING GORGEOUS, DANGEROUS WORLDS

Zoink founder Klaus Lyngeled created his first commercial game for the Commodore platform. He went on to work on Shiny Entertainment's *Messiah*, known for its breakthrough tessellation techniques. After founding Zoink in 2001, he expanded his expertise by producing Wii, mobile, Facebook, and browser titles. In 2013, the studio launched *Stick it to the Man!*, its first multiplatform console game, which is still a popular download. In it, Ray, the hero, sports a giant pink spaghetti arm sticking out of his brain – clearly the product of a highly creative art- and innovation-driven studio.

Zoink followed up with a sequel and, in their first EA Originals project, crafted *Fe*, a 2D Metroidvania-style action-adventure game of fairies in a Nordic forest. They continued with *Ghost Giants* for PlayStation VR and the Oculus Quest, again building a gorgeous, handcrafted world with emotional depth and a clever storyline. According to Zoink's creative director Olov Redmalm, "Our games feature completely different styles, atmospheres, and tones, but share a longing for exploration in game design and strange, handcrafted worlds."
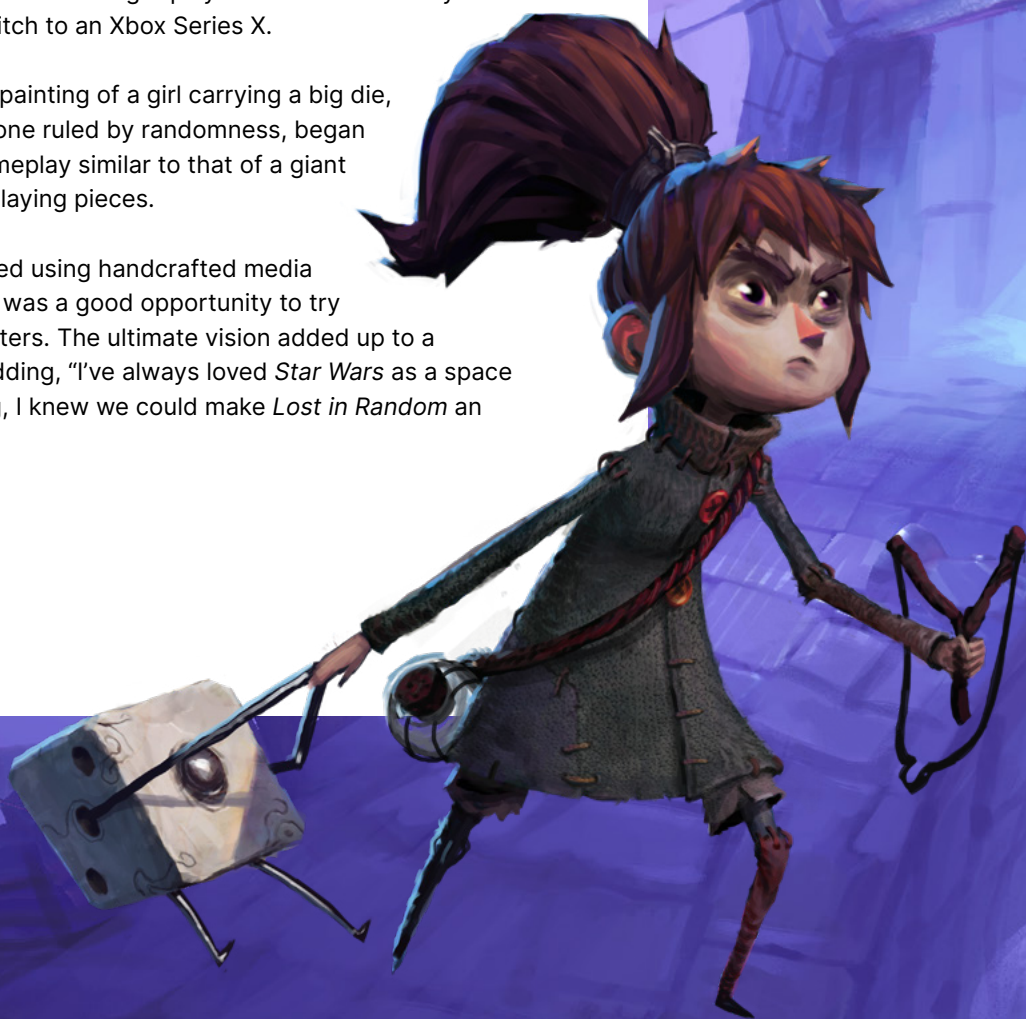
GETTING
LOST IN RANDOM

The Zoink team had several goals when they started brainstorming their next game. After the cute and colorful *Ghost Giant*, they wanted to build something darker with a grander narrative vision. They planned to combine the mystery of *Fe* and deep emotion of *Ghost Giant* with sharp, funny dialog written by award-winning comic book writer Ryan North. And they wanted a stunning art style that would delight players and run smoothly on everything from a handheld Switch to an Xbox Series X.

After one of the artists found a painting of a girl carrying a big die, a macabre yet beautiful world, one ruled by randomness, began to take shape. This inspired gameplay similar to that of a giant tabletop with dice, cards, and playing pieces.
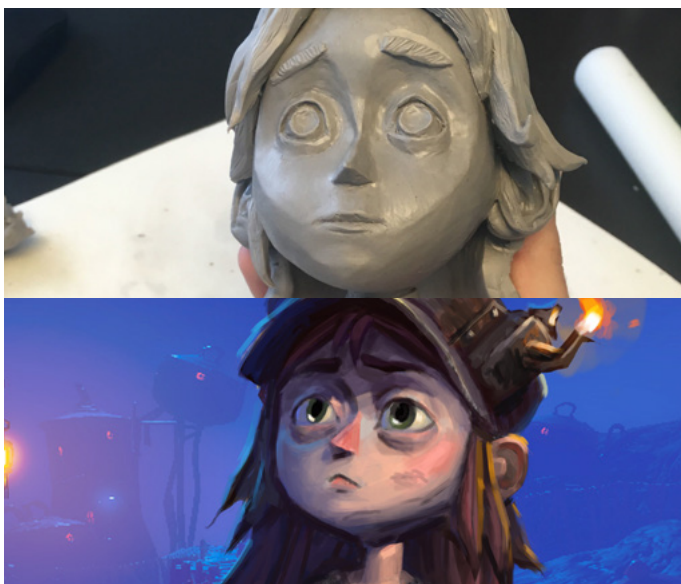
CEO Lyngeled had long promoted using handcrafted media for stylistic inspiration, and this was a good opportunity to try realistic, claymation-like characters. The ultimate vision added up to a potential epic, with Redmalm adding, "I've always loved *Star Wars* as a space opera, and with Ryan's scripting, I knew we could make *Lost in Random* an amazing dice opera."

TURNING HANDCRAFTED CLAY MODELS INTO 3D GAME ART

The artists started modeling assets for this dark and strange world out of tangible materials like clay, metal, and wood. The main characters' faces were all first sculpted in clay to hone their style and feel, while different level components such as houses and kitchens were sculpted in Zbrush.

After rendering in 3D, environment artists could layer on customizations as needed. This enabled Zoink to take a modular approach to environment art while keeping it performant and cost effective. For example, many elements, such as planks, iron plates, pots, and more, could be combined into different sorts of constructions and environments. Not only was this cost- and performance-effective, but it also added to the handcrafted feel of the world, since it looked like everything was assembled by someone giant compared to the protagonist.

Despite Zoink's rapid headcount increase after *Ghost Giant*, Lyngeled, himself a clay sculptor, organized small workshops to encourage creativity. This spurred detailed clay and other handcrafted models and, as they proliferated, so did the detail of the levels. The team ended up quite large, with a considerable number of assets. This pushed rendering times, but it also fostered developer creativity.

Working on *Ghost Giant*, they had devised a number of techniques to deal with the performance challenges of VR. The techniques weren't all applicable for *Lost in Random*, but Redmalm says, "We had confidence we could solve it in Unity without compromising on the art style." They ended up unnoticeably parsing scenes into smaller sections while maintaining full graphic complexity.

CONJURING TOP GRAPHICS AND DYNAMIC LIGHTING

Zoink started off using the High Definition Render Pipeline (HDRP), assuming they'd need it to get the level of detailed realism they wanted. However, with the goal of launching on next-gen, Switch, and older consoles simultaneously, they took a closer look at the results they could get from the URP with its much-lower overhead. Between tweaking and experimenting throughout the process, environmental artist Leo Brynielsson would test screenshots on colleagues until they couldn't tell the difference between URP and HDRP.

Zoink continued the work using the URP with tools from the Unity Asset Store to selectively optimize ambient occlusion and enable decals. Brynielsson says, "Unity is very extendable and adjustable, so it was fairly easy for us to quickly adapt some of our original HDRP work for the URP."

Another important change was moving to dynamic lighting. They began the project with baked lighting, but many of the darker scenes with crucial highlights required much larger files and, again, too much overhead. To make dynamic lighting work, they devised a way to use invisible meshes to selectively block light instead of creating shadows. Again, the results were nearly indistinguishable from baking, and the performance gains were considerable.

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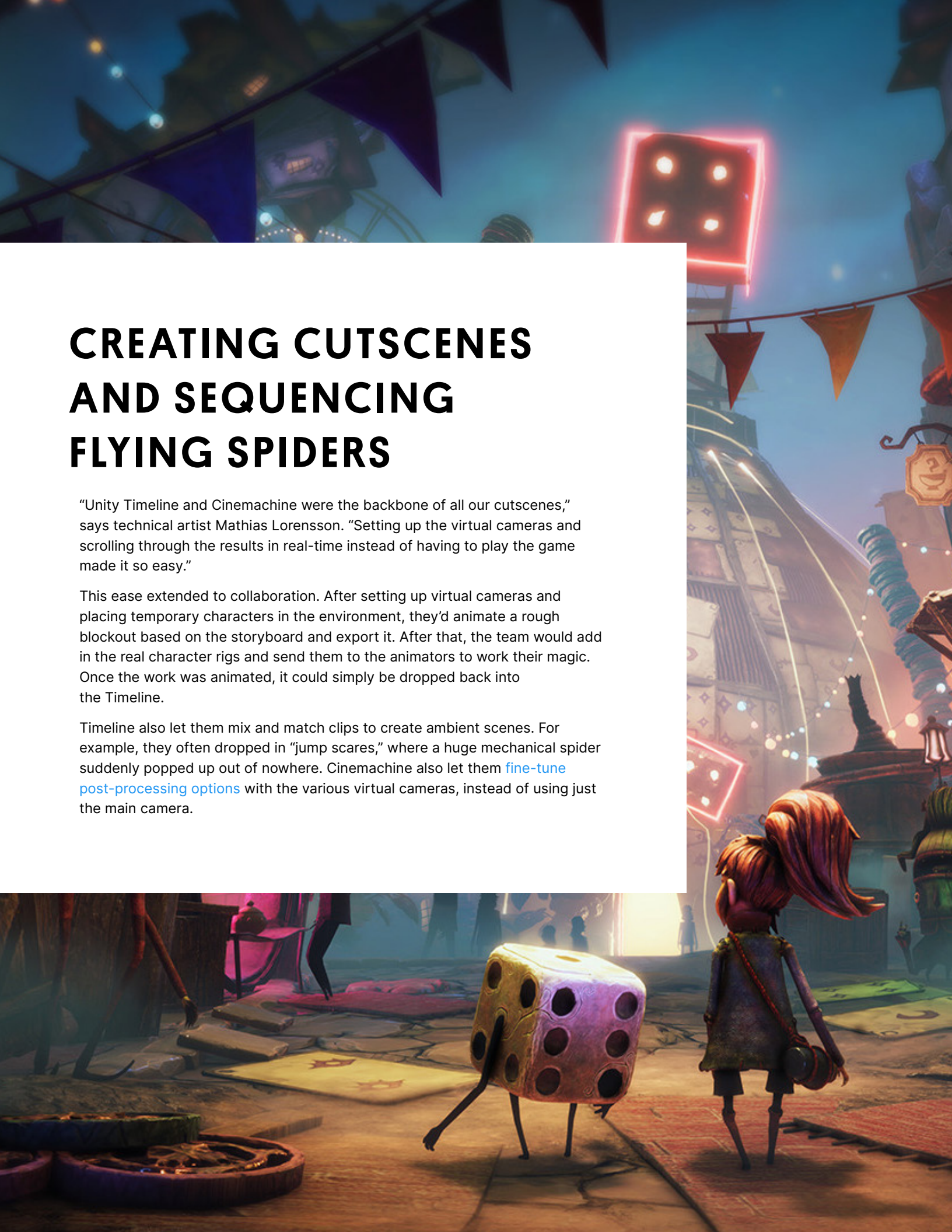— Leo Brynielsson, Environment Artist, Zoink Studios

CREATING CUTSCENES AND SEQUENCING FLYING SPIDERS

"Unity Timeline and Cinemachine were the backbone of all our cutscenes," says technical artist Mathias Lorensson. "Setting up the virtual cameras and scrolling through the results in real-time instead of having to play the game made it so easy."

This ease extended to collaboration. After setting up virtual cameras and placing temporary characters in the environment, they'd animate a rough blockout based on the storyboard and export it. After that, the team would add in the real character rigs and send them to the animators to work their magic. Once the work was animated, it could simply be dropped back into the Timeline.

Timeline also let them mix and match clips to create ambient scenes. For example, they often dropped in "jump scares," where a huge mechanical spider suddenly popped up out of nowhere. Cinemachine also let them fine-tune post-processing options with the various virtual cameras, instead of using just the main camera.

PLANNING FOR MULTIPLATFORM FROM DAY ONE

Lost in Random versions for all platforms (Nintendo Switch, PC, PlayStation 4/5, Xbox One, Xbox Series X|S) launched simultaneously, and, thanks to Unity, all of the porting was accomplished in-house.

"Unity does so much of the heavy lifting when you're porting to different platforms. It gave us much more time to concentrate on the game itself," says Redmalm. Although Zoink originally wasn't sure a Switch version would be worth the effort, Unity let them quickly organize assets and test quality settings in real-time. "I remember running the first tests on Switch," he continues. "Having such a big fairytale on a handheld device felt amazing! It was just like holding a living storybook, making it a perfect fit for the game."

Brynielsson added that regardless of how convenient Unity made it to manage a multiplatform launch, it's still vitally important to decide on platforms early in a project and to test iterations early and often. "It's hard to keep within strict performance guidelines, but you can't skip them. They have to be a top priority," he says.

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EMPOWERING INDIES

For years, Lyngeled has worked to empower indie developers in southwestern Sweden, and Zoink recently joined Thunderful Development, a conglomerate of studios and investment, distribution, and publishing groups. This models Lyngeled's belief in supporting small, highly creative teams within a much larger organization. It also mirrors the core philosophy of EA Originals, which aims to work "with the best and boldest independent studios across the world to make sure these games get the scale of audience they deserve, with zero compromise on vision."

With Lost in Random, everyone rolled a winner.