Le Moteur de Jeu de V Rising et la Technologie de Pointe

Bienvenus les amis à cette nouvelle édition de l'InfoDev!

Cette fois-ci nous allons plonger dans le cœur de V Rising, en vous montrant un peu les aspects plus techniques du jeu. Certains d'entre-vous étaient curieux de savoir quel moteur de jeu nous utilisions pour développer V Rising. Il y a aussi eu des interrogations à propos des défis techniques que notre équipe a surmonté ces derniers mois, parmi tant d'autres choses qui se passent en coulisses. Continuez à lire si vous voulez en apprendre plus sur l'équipe de programmation de Stunlock Studio : le coeur battant de V Rising

LES ENGRENAGES DERRIÈRE V RISING

L'équipe d'ingénieurs à Stunlock s'est inspirée de l'expérience et du savoir des programmeurs expérimentés, qui ont travaillé sur Bloodline Champions en tant que projet d'école en 2009, ainsi que sur les idées neuves et les talents innovateurs des embauches plus récentes.

Vous avez peut-être déjà parlé à certains de nos programmeurs sur Discord ou les connaissez-vous depuis nos jeux précédents. Le visage le plus nouveau est Filipa, qui travaille sur les nuanceurs (shaders), les effets et l'art technique tandis qu'elle apprend toutes les astuces sympas de l'un de nos programmeur expérimenté, Temps. Travaillant sur l'IA, la Physique et le gameplay, c'est Jonas. Prog a aussi passé un peu de temps sur le gameplay, mais aussi les outils

développeur et l'interface utilisateur. KHCT a joué un rôle clé dans le développement du site web de V Rising et a aidé l'équipe marketing avec les aspects plus techniques de nos différentes plateformes. Zec a travaillé sur les châteaux et la construction de l'univers, le réseau et les outils développeur. Smurf fait un peu de tout, avec la construction de château, le réseau et le gameplay pour sa part. Il en va de même pour Phalanx, qui s'occupe en plus des tâches de planifications.

Pour cette InfoDev, nous avons le point de vue exclusif depuis l'intérieur de l'équipe technique elle-même. Fredrik Haraldsson, Zec, a révélé des informations sur le nouveau moteur de jeu qui a donné naissance à V Rising, et pleins d'autres détails croustillants à propos de fonctionnalités mystérieuses que nous avons hâte d'essayer pendant la bêta fermée.

PRESENTATION : ZEC

Salut! Je suis Fredrik et je suis connu à peu près partout sur le nom que j'utilise en ligne de Zec. Hi! I'm Fredrik and I go by the online nickname Zec more or less everywhere. I'm one of the original founders of Stunlock, so I've been here since we started out in our university's basement more than ten years ago. I've been working in most programming-related areas throughout the years, both backend and frontend, but my favorite areas are probably networking and making developer tools. In Bloodline Champions, I worked a lot with UI development. In Dead Island Epidemic and Battlerite, I focused a lot on the game engine in general, particularly on networking and analytics. Today I'll walk you through some of the new tech we have been using to develop V Rising, and the challenges we've encountered.

CUTTING EDGE TECHNOLOGY

V Rising has been developed using Unity's latest technology: their Data-Oriented Tech Stack (DOTS). Its focus on "performance by default" allows us to spend less time on coding to get a performant result. DOTS allows us to utilize the threads and cores of the CPU in a simpler but still very efficient manner. This means that games can run faster and with more FPS.

These improvements have been an excellent foundation for us when creating and supporting the vast world of V Rising. We decided to make a significant part of the world dynamic, where a ton of the environmental objects are interactable or destructible. Currently, the world consists of more than 100.000 interactable objects, and that number will just keep on growing. Being able to break things such as trees, rocks, bushes, chairs, flagpoles, fences, tables, and a ton of other objects make up for an interesting and dynamic gameplay experience.

A vampire destroying a crate in-game.

Being at the forefront of using new technology like DOTS brings a certain set of challenges related to maintaining and upgrading our code as Unity's new engine develops. The advantages far outweigh the difficulties, however, and we've found ourselves able to rely on a foundation that is both stable and flexible!

A FRESH START WITH A FRESH GAME ENGINE

For all our previous games, we separated rendering and gameplay into two different areas. We used XNA (Bloodline Champions) and Unity (Dead Island Epidemic, Battlerite) for rendering, which displays the graphics on your screen. In the background, our custom in-house engine handled all gameplay, combat, and network-related logic. This separation would allow us to switch rendering engines to port the games into new platforms if we wanted.

As useful as this setup was, these decisions came with limitations. We were unable to do everything we wanted in Battlerite due to technical constraints. One of the main issues we had was the lack of engine support to multi-thread the game and it mostly relied on single-threaded operations. This is why a few Battlerite players were frustratingly bottlenecked on the CPU and experienced a mediocre amount of frames per second (FPS), despite having a top-end computer. To prevent this from happening again, we decided to switch to DOTS.

With V Rising, we decided to go all-in and implement it all in Unity with no restrictions, which

has given us a lot of freedom to create the vampire realm of our dreams.

This change also meant that we had to create a whole new engine core for V Rising, as very little code from Battlerite could be ported or re-used. While the tech team worked on this, our design team prototyped in the old Battlerite Engine, exploring the basic concepts of our new project. Thanks to our several years of experience from previous titles with similar gameplay, we could replicate core functionalities and bring the design team over to the new engine relatively quickly.

Early V Rising Prototype. Not actual in-game content.

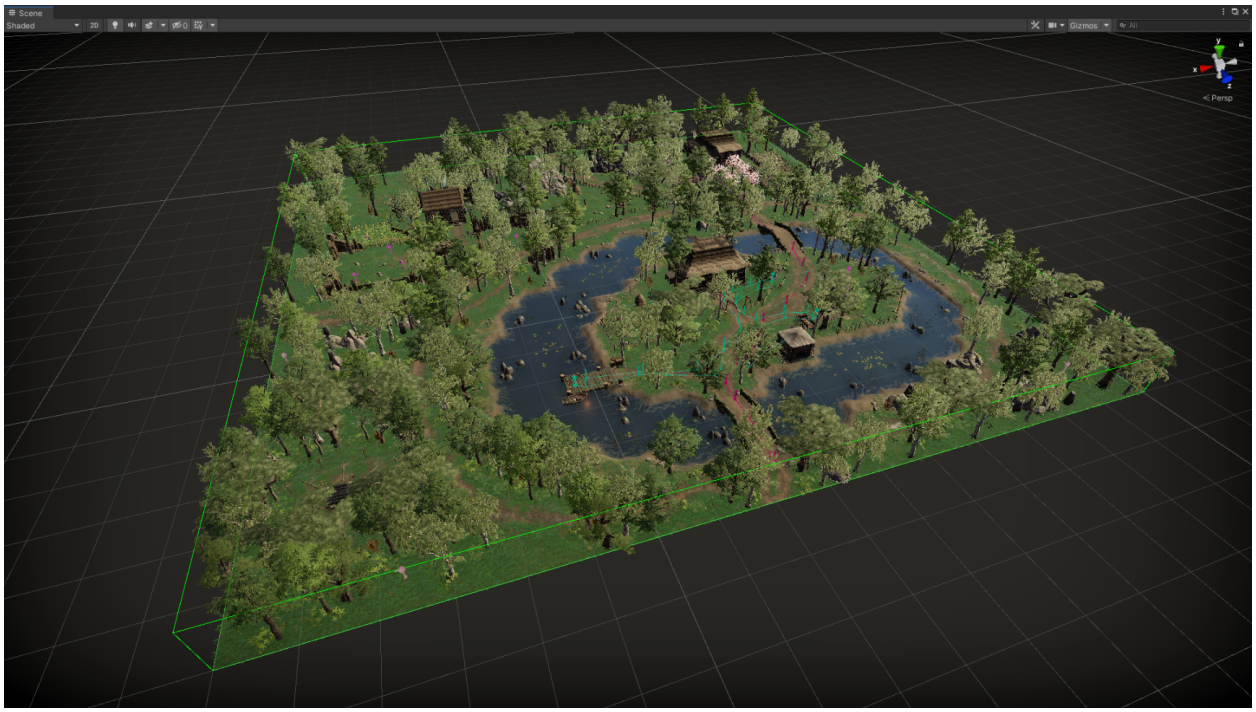
(Note: Will be sized down)

THE LARGEST WORLD WE'VE EVER CREATED

The world of V Rising is planned to be much vaster than any game we've previously developed, which is a challenge in itself. The world is currently more than 4.5 square kilometers (or 1.7 square miles), and it's constantly growing. You will be able to explore all of it at your own pace, and we are looking forward to watching your videos of encounters with strange creatures and hostile factions.

The world's layout is pre-defined, but we've always wanted to keep the door open to make the map more procedural and dynamic. This is why we're constructing it using enormous puzzle pieces that we internally call "*Chunks*". These *chunks* are streamed in and out as you move through the world, making the experience smooth and seamless. This means there won't be

loading screens while exploring the secrets hiding within V Rising.



An example of a "Chunk."

BIG FOCUS ON DEVELOPER EFFICIENCY

This is our most ambitious project so far and has been both a technical and a content-producing challenge, given the great scope of the game. We have invested a lot of resources into developing tools that enable the other teams to efficiently work with V Rising.
One of the biggest issues we encountered while using DOTS is that coding is more complex and technically challenging. It has been a test for the design team to adapt to these more restrictive ways of programming. Vampires have an intense combat style, and our designers need flexibility when trying out the different weapon and spell combinations. This allows them to create and polish the combat mechanics to include that characteristic gameplay feel our studio is known for.

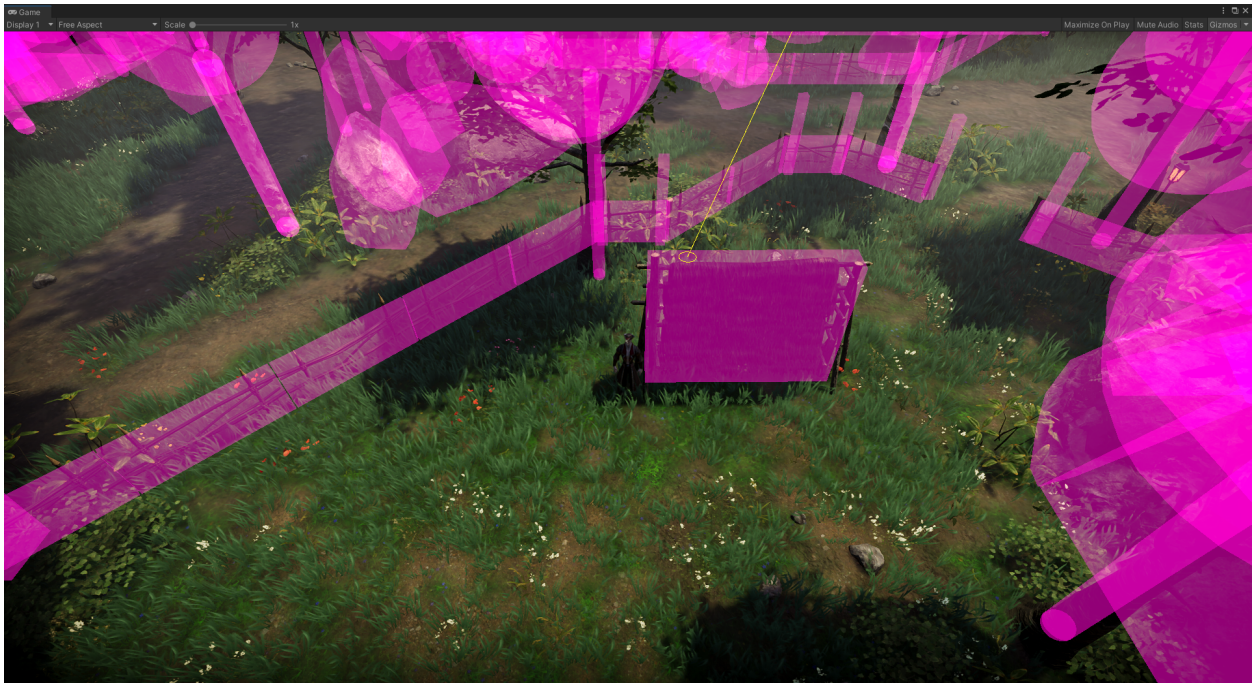
We in the tech team provide our artists and designers with all tools and basic functionality that they ask for. They often surprise us with the content they produce, exceeding our expectations of what is possible to create based on what they are given. Therefore, we focus a lot on enabling our colleagues to do what they do best, which is developing exciting games.

NEW COLLISION AND PHYSICS

Our previous games have primarily relied on 2D physics for all our gameplay and combat, despite being 3D games. We have long worked with 3D physics for things such as ragdolls, visual effects, and non-gameplay elements, but with V Rising, we also bring our gameplay to the third dimension.

You can now shoot above players and objects if you're standing on a higher elevation. You can jump up and down from cliffs or platforms in the game, either on your own or while riding on your trusty steed.

One of the main features we utilize this new 3D collision for is a core mechanic of V Rising; **the sun!** The sun is an actual moving object that orbits the world of V Rising throughout the day. To keep safe, you need to stay in the shadows. The way we calculate if you're in the shadows or not is to cast rays from the sun onto your character. If there are any "Sun Blocker" tagged colliders between you and the sun, then it means that you are safe. For a while, at least.



This image showcases how colliders work. The sun rays are blocked by the hayrack before reaching the player.

As most objects you see in V Rising are highly dynamic, their collider representation also needs to be networked and synchronized to your game client, and this brings a fun element to the gameplay. You could be hiding from a hungry bear while taking cover from the sun behind a large tree. While in pursuit, the bear crashes into it and breaks it, fully exposing you to the sun just a few seconds before nighttime. It's happened to me multiple times, and I love the panic I always feel when I suddenly see the rays from the sun striking my character, wondering if I can survive until it gets dark.

The shadows of trees moving in relation to the position of the Sun.

INTO THE FUTURE

Using DOTS opened many opportunities for us. We are continuously pushing our limits on how huge we can make the world or how many players we can cram onto each server while still having good performance.

One of the features that we are continuously expanding upon is the castle building system. We have the goal to make it a more user-friendly and exciting experience for the player with every iteration. With the addition of a new graphics programmer to our team, we also want to find new ways to work with our game's graphics for further development.

We still have a lot to do, but we are more motivated than ever to deliver the best game we can. We are optimistic about how far we can go with V Rising and are looking forward to watching you try the game during the beta to test our work.

Zec, looking good.

That's all for now! We will open a channel in the official V Rising Discord server after the summer where you will have the opportunity to ask questions to our programmers for a future dev blog entry, so make sure you don't miss out on this opportunity by joining the server here.

Please keep an eye out for more V Rising news and content by following our social media and subscribing to our newsletter!

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Lots of love and a pint of blood,

The Marketing Team