# Close Calls, Hard Choices, and a Dog Named Waffles: Developing *Overland*

Close calls and hard choices punctuate the gameplay of *Overland*, a post-apocalyptic, turn-based survival strategy game from Finji. *Overland*'s interface is surprisingly intuitive, and takes little time to learn. Each random level is a procedurally generated tile populated by strange creatures and an evolving cast of survivors, encountered during a cross-country road-trip that leads straight into trouble. Just how much trouble depends on the choices players make. Some can be deadly. Some help you survive. Some involve a dog. No apocalypse would be complete without a dog named Waffles, right?

In other words, *Overland* is great fun, and has the awards to prove it, including Best Art Design in the 2016 Intel® Level Up Contest.

## The Developers' Journey

Finji was founded in 2006 by Rebekah and Adam Saltsman—two veteran indie game-developers, and parents to two young boys—who run the thriving game studio out of their Michigan home. The Saltsmans had a lot to say about how they turned a 2D iPad*-based prototype into a 3D cross-platform, touch-enabled PC game for the Intel® Level Up Contest. They also shared what it's like balancing parenthood with game development, the role alt-games storefront itch.io played in helping them test and refine gameplay, and the importance of building a game engine that supports fast, iterative prototyping.

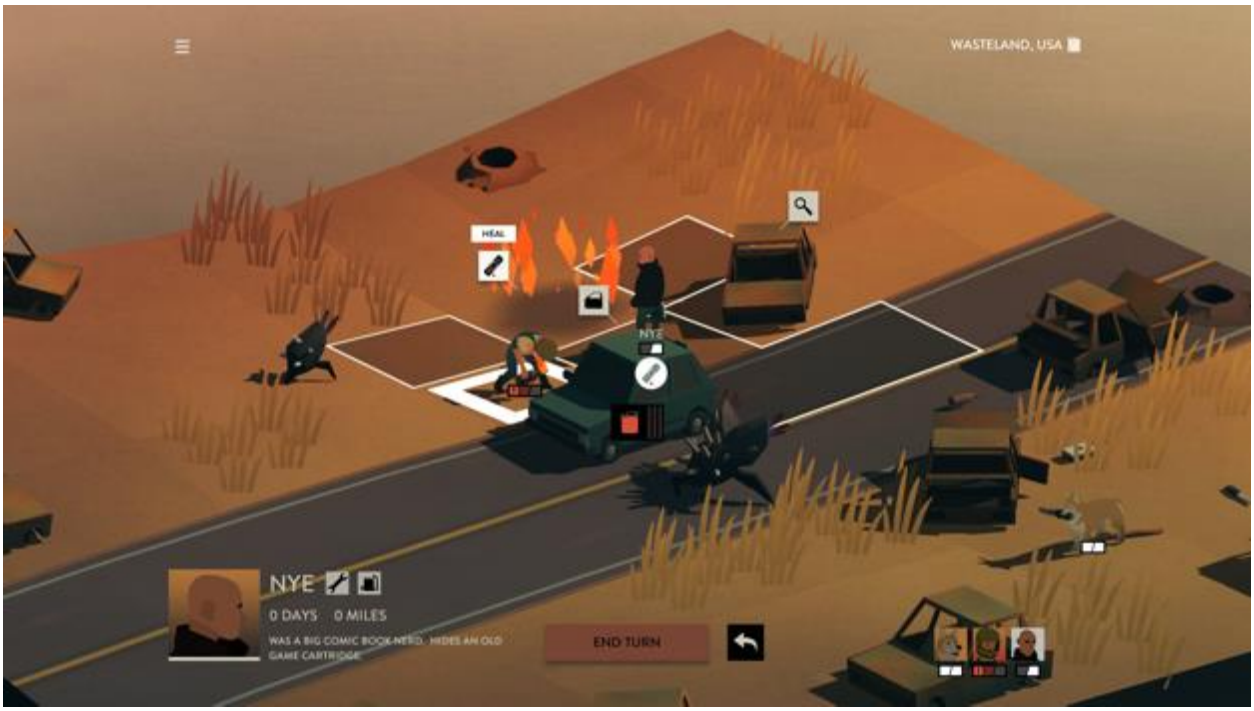


**Figure 1:** *UI elements give players easy-to-understand choices through overlays of icons inspired by US National Park Service signs.*

## *Overland* Origins

"The original whiteboard doodle that inadvertently spawned *Overland* was a mashup of *868-HACK,* by Michael Brough, and *XCOM: Enemy Unknown*, by Firaxis Games," Adam told us. Like many game developers, the Saltsmans are students of gaming. They draw inspiration and take away lessons from every game they've ever played.

As freelancers, they have more than a decade of experience applying those lessons to game design, art, and code for other studios. They've also released titles of their own, starting with a Flash*-based game called *Gravity Hook*, followed by an iOS* game called *Wurdle*. Between 2009 and 2013, they created six more iOS titles. The award-winning *Hundreds*, a popular puzzle game, relied on the multi-touch interaction capabilities of the iPad.

"When we did *Hundreds*, there wasn't much hardware support for multi-touch interaction outside of an iPad," Adam said. Mobile gaming quickly became a very crowded space to compete in, so Bekah and Adam knew they would need to diversify by creating cross-platform PC games. "We'd spent 18 months collaborating with four other developers to make *Hundreds.* Financially, it did fine, but we couldn't port it to PC [in 2013] because it was a multi-touch game."

If they were going to plunge into the world of PC gaming, they knew they needed more resources. So, the Saltsmans focused on contract work. “We built up a war-chest of money,” Bekah said. “The question was: how far could it get us?”

The Saltsmans knew that what they were about to do was part-and-parcel of being indie developers. They’d seen their friends go through periods of having no health insurance and limited income before finding success. “We had kids and a mortgage. The prospect of investing everything we’d made in a cross-platform title was terrifying,” Bekah said.

## The Prototype

*Overland* started as a 2D iPad game. “We prototyped most of the core gameplay in the current version of *Overland* in about two weeks, for a few thousand dollars,” Adam explained. Then they sat on it for six months. “We didn’t make any significant investments in it during that time. Instead, we kept refining the rules and adding new features. We wanted to get to a point where we could hand it off to a stranger, or a journalist, and have them get excited about experiencing it, even though it was a hot mess of missing elements, UI … the usual stuff.”

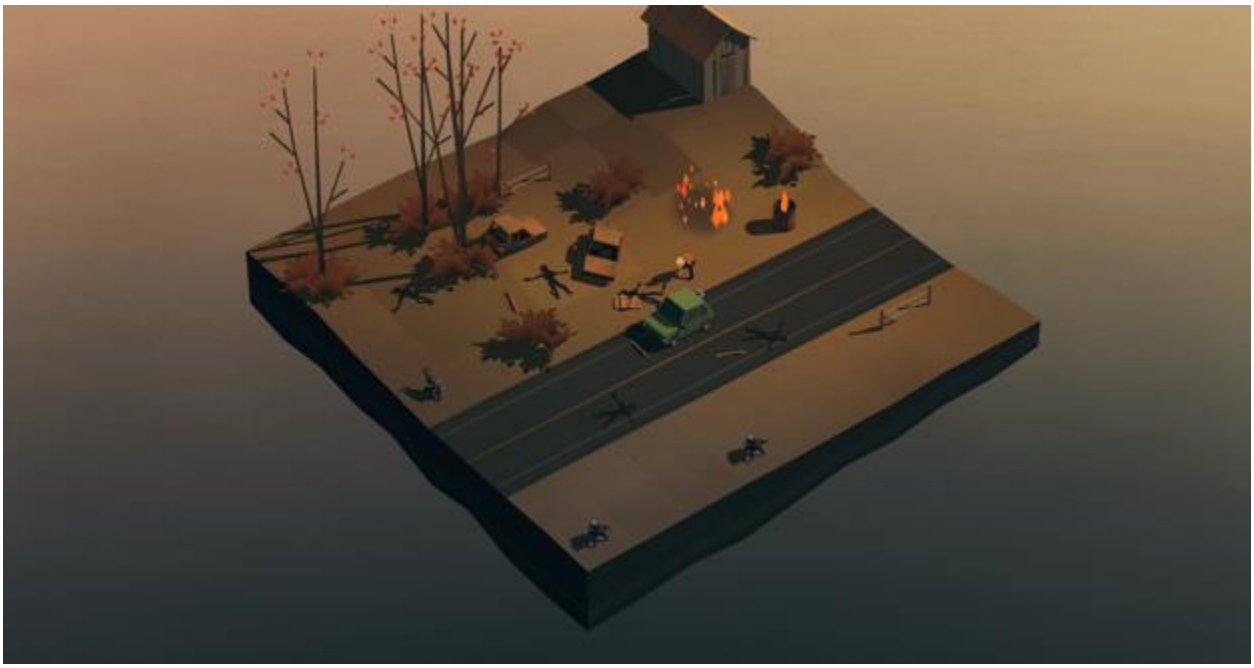

**Figure 2:** *Gameplay takes place on board-game-like tiles where everything is easy to comprehend.*

The couple also knew that to succeed as a PC game, the gameplay had to have, as Adam put it, “real strategy legs.” Art direction, sound, and story would be crucial, because many elements typically used in strategy game designs—RPG elements and tech trees, for example—were out of bounds for this project, for a variety of reasons.

“We were founding members of the Austin indie game collective,” Bekah said. “So we would take the *Overland* prototype—which was this horribly ugly 2D grid—to meetups where game-developers, journalists, and enthusiasts could give us feedback. That was invaluable."

## Rules to Design By

“Weird things happen when you reduce a strategy game down to board-game-like spaces,” Adam said. “It ends up having a lot in common with puzzle games. This is actually reinforced by research that uses CAT scans and MRI technology to look at different parts of the brain during action or casual gameplay.”

According to Adam, however, it was one year into development before he realized that *Overland*’s level generator had a lot in common with a puzzle generator. That discovery led to three core design-principles that drive level creation. “As a post-apocalyptic road-trip game, *Overland* is a big design space—as soon as you tell someone about it, they have five cool ideas to add to the game. We used three design principles to vet ideas, and decide which ones were worth implementing.”

They call the first principle “the Minotaur in a china shop,” after a game in which a Minotaur enters a china shop, knocks something over, and then goes into a rage, destroying everything in the store. In *Overland*, this idea is used to determine whether a design idea will lead to a place where a sloppy move by a player can start a chain reaction that produces interesting consequences.

“It’s a principle that’s more interesting than a design in which you come to a level with three turns. On the third turn, you die. That would be like a poison-gas level,” Adam explained. “That’s not very *Overland*-y. Whereas a level in which an enemy chases you, you injure it, and then get put in a position where it’s a poison-gas level, that’s something you’d see in *Overland*. Because it’s the result of something the player did.”

The other principles go hand-in-hand. Randomness is fine, as long as it’s the player’s fault; the player gets a proportional warning about incoming random events. Each level is created on the fly by the game engine, which randomly combines ingredients to produce a fun and exciting experience for the player based on where they are in the country, and other factors.

“For example, one of the core mechanics of the game is that when you make noise, it attracts more creatures that will try to chase you down,” Adam said. “When that happens, you get a two-turn warning about where a new creature is going to appear. That’s because new creatures can be really bad. We want players to have some windup.”

Another example is that on a windy day, fire will spread, even if there's nothing flammable for it to spread to, so players get a one-turn warning: this tile is heating up. Such "random" events aren't random at all. "They *are* unforeseen, or very hard to foresee, non-random consequences of player decisions. For example, there's a monster here. It's too close to kill with the weapon in hand, so I'm going to kill it by setting it on fire. Except now there's a fire that can spread throughout the tile if weather conditions permit."

All of this creates a lot of opt-in complexity. "Players get to decide how much trouble they want to participate in," Adam said. "Our team was too small to build a game with two-layers of difficulty, one easy, the other hard," Bekah added. "The way people can experience more difficulty in their *Overland* runs, is by choosing to venture further from the road."

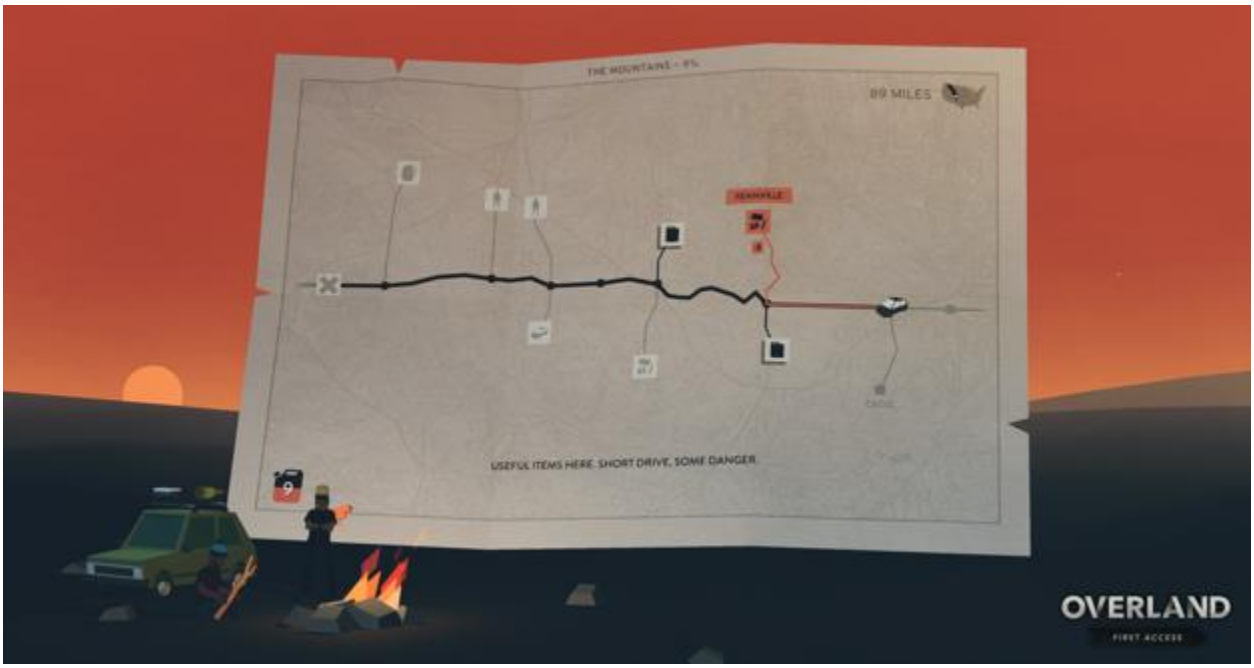


**Figure 3:** *Opt-in difficulty is based on whether a player chooses to drive into more, or less, danger.*

Building complexity into the core gameplay ratcheted up the tension. "I love that a slow-paced game can give people adrenaline jitters," Bekah said. "Even when a player dies in *Overland*, they're laughing about it."

## Team-Based Collaboration, Fast-Paced Iteration

*Overland*'s art, coding, sound, and gameplay are the collaborative effort of a core team of four—Bekah, Adam, art director Heather Penn, and sound designer Jocelyn Reyes. "I think of our design process as old-school game design," Adam said. "We all wear multiple hats, no one works in a silo." It's an approach that encourages cross-discipline

collaboration. For example, Penn's art influences Reyes' sound design, and vice versa. Everyone contributes gameplay ideas.

"If someone has an idea, we prototype it to see if it works," Bekah said. Pitching solutions instead of ideas is encouraged. "We try to craft solutions to nagging issues—for example, a graphics problem that will also solve a gameplay issue." A value is assigned to how long it might take, and if it's within reason, it gets developed. "We all contribute to this very iterative, prototype-intensive process," Adam said.

The *Overland* team isn't afraid to spend development cycles making pipeline course corrections. "I'd rather spend a week fixing the system, than two days building a system Band-Aid," Adam said. "Having a game engine that allows us to quickly prototype in this really cool iterative way, with a team of people, is invaluable to how we're building *Overland*."

## Tools

*Overland* is being built in Unity*, which Adam estimated would save them two years of 3D engineering work. "The tradeoff for using a closed-source tool was worth it." They're running Unity under Mac OS* on their development system, a late 2012 iMac* with Intel inside. Unity also gives them easy cross-platform portability.

They use Slack* for team collaboration. Or as Adam put it, "*Overland* would not exist without Slack, period." They're using SourceTree* and GitHub* with the Git LFS (Large File Sizes) extension for audio and graphics source file control; while mainstay art tools such as Adobe* Photoshop* and Autodesk* Maya* are being used to create the assets that Unity's game engine pulls into its procedurally generated levels. Wwise* from Audiokinetic is *Overland*'s interactive sound engine.

## Early Access Play Testing

Another crucial element in honing *Overland*'s gameplay came in the form of itch.io, an alternative games platform that provided Bekah and Adam the ability to dole out limited early-access to builds, and get feedback from users. One of itch.io's benefits was its automatable command-line utility for uploading code patches. "Itch.io uses code assembled from open-source components like rsync that can generate a patch and upload it for you," Adam explained. "The whole build script to generate a build for Windows* 64, Windows 32, Linux* Universal, and Mac OS Universal, and then upload it to itch.io, took an hour or two. And half of that time was spent figuring out how to print a picture in ASCII."

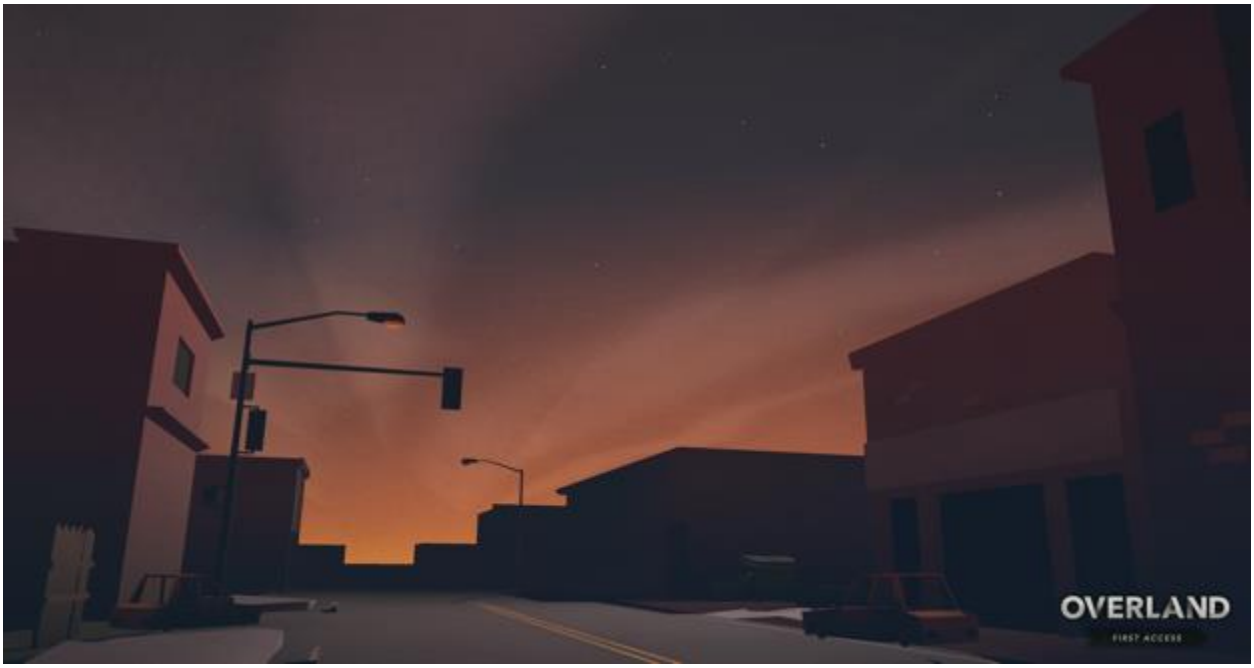


**Figure 4:** *Heather Penn's award-winning art design drew on a variety of influences, including American artist Edward Hopper. Scenes were crafted to take advantage of shaders that would look great across a variety of systems.*

## A Level Up

The Saltsmans learned of the Intel Level Up Contest through friends who happened to be former winners. Those friends reported having great experiences with the contest, and working with Intel. As a result, the Saltsmans didn't hesitate to enter, even though *Overland* was a work-in-progress that still used a lot of placeholder art. That art was so gorgeous it earned *Overland* top honors in the Art Design category, in a year that saw more entries than ever before.

The Intel Level Up Contest required entries to be playable on a touch-enabled Razer* Blade Stealth, which has a 4K-resolution display. Unity 5.3.6 was instrumental in enabling *Overland*'s 4K shadows, which on some systems were blowing out video memory at that resolution. *Overland* makes use of Intel HD graphics, because, as Adam put it, "we want our work to be accessible to as wide an audience as possible. Part of that is game design, but part of it is supporting as wide a range of hardware as we can."

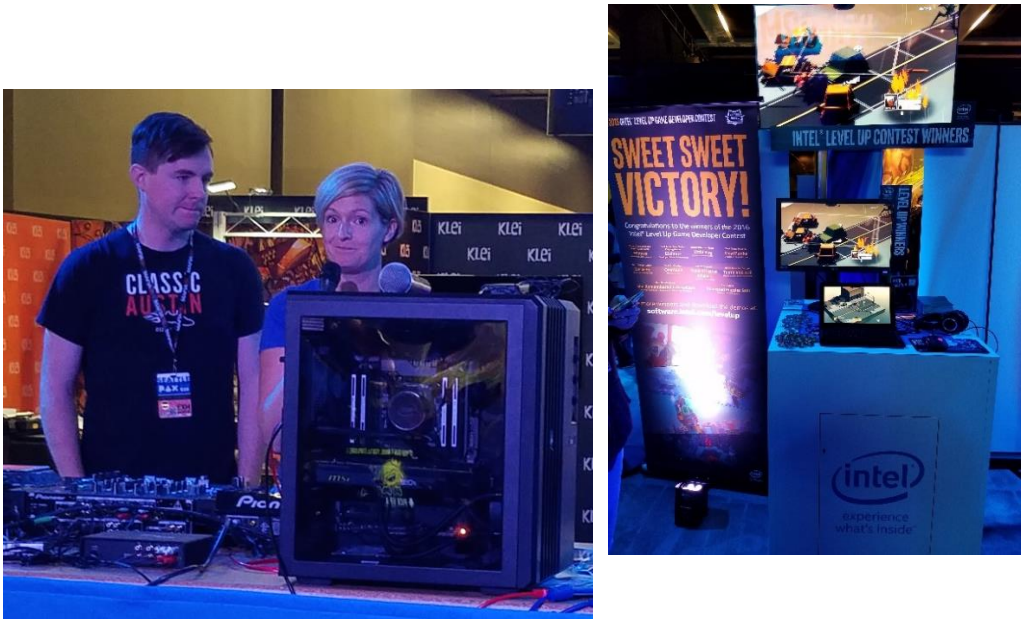


**Figure 5:** *Adam and Bekah Saltsman demo* Overland *in the Intel Level Up booth at PAX West, in Seattle.*

As part of that philosophy, Adam wants his games to look equally great whether they're played on a state-of-the-art VR rig, or on an aging desktop. "Ninety-five percent of *Overland* runs at something like 500 fps on a five-year-old Intel® Core™ i3 processor, which I know, because that's what's in my dev system." As they get closer to release, Adam plans on optimizing his code to spread the workload across cores.

Another key requirement of the contest was that games needed to be touch-enabled. *Overland* was touch-enabled from the start. "It was a mobile game, with mobile game controls," Bekah said, before admitting that the current builds are no longer touch-screen friendly. "Touch was a fundamental part of the game's design for the first 18 months," Adam explained. "I'm a touch-screen interaction perfectionist, and there were things about our focused state and information previewing that needed attention. I'm looking forward to bringing it back."

## Balancing Game Development and Kids

With two young kids at home, Bekah and Adam built Finji with raising a family in mind. "When we both had 'real' jobs," Bekah said, "each of us wanted to be the stay-at-home parent. It took a really long time before we could introduce children to our chaos." Bekah describes balancing work and kids as being "different all the time. They're five and three. The youngest is about to start pre-school, so this will be the first year both kids won't be home during the day."

The studio where Adam works is downstairs in their home, facing the back yard. Bekah's office faces the front yard. "If the kids are outside, one of us can keep an eye on them while we're working. There are always times when one of us has to jump up mid-whatever we're doing, and stop them from whatever mischief they're getting into. In that way, we need to be flexible."

## Conclusion

*Overland* is a work-in-progress that started life as a 2D tablet-based prototype. Winning Best Art Design in the 2016 Intel Level Up Contest has not only raised *Overland*'s profile among the game community, but also opened the door for access to Intel software tools and optimization expertise, particularly in multithreading code. Although no release date has been set for *Overland*, Finji has big plans for Q4 2016, when they will begin implementing new levels and features. The game has garnered plenty of awards in its pre-release state—who knows what accolades might follow?