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# ASCENT: A First Person Mountain Climbing Game on the Oculus Rift

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**Abstract**

ASCENT is a first person mountain climbing game on the Oculus Rift (PC). The player attempts to ascend the highest peaks of each continent. Equipped with two ice axes, he challenges the breathtaking slopes of mountaineering legends such as the Eiger, Denali and Mount Everest. His ascents are captured by his GoPro and watched by millions on the web. Thanks to his sponsors and his fans, the player will be able to test himself on new mountains and upgrade his equipment.

**Author Keywords**

Student game; oculus rift; virtual reality;

**Features**

- Feeling of the mountaineer: a precise and fluid climbing mechanic
- 35 missions to reach seven famous summits
- Total immersion in the extreme environments of high altitude mountaineering
- Tailor made for Virtual Reality

**Overview**

- Platform: PC + Oculus Rift
- Genre: Mountain climbing game
- Setting: Extreme sport

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CHI PLAY '14, Oct 19-22, 2014, Toronto, ON, Canada  
ACM 978-1-4503-3014-5/14/10.

<http://dx.doi.org/10.1145/2658537.2662969>

- Target: VR enthusiast, Extreme Sports enthusiast
- Status: Preproduction

## **Intentions**

### **Be a mountaineer**

ASCENT is a mountain climbing game. The ambition of the team has always been to put the player in the shoes of a mountaineer, by using a set of iconic climbing characteristics while neglecting other, as we did not want to make a simulation game. The goal was to make the player live the fantasy. To this end, our core gameplay revolves around the mountaineer's main activity: climbing. This choice is one of the originalities of the project but also its major challenge. Our game system, from which stems the challenge of ASCENT, and that has to be rich enough to fascinate the player for hours, is mountain climbing. Secondary and exotic mechanics do come to enrich the core gameplay, but the game never steers away from what it does best: mountain climbing.

### **The mountain as if you were there**

Before the player starts to feel like a mountaineer, he has to have the impression of being on a real mountain. Several elements in Ascent contribute to this illusion. NASA satellite maps were used to recreate the true topology of mountains such as Himalayas, Alps, Alaska Chain... The visual rendering of ASCENT is realistic. The sound was not neglected with the establishment of a binaural sound system.

This will to enhance the immersion of ASCENT is also one of the main reasons for the choice of the Oculus Rift. From the first test of the virtual reality headset, the team was unanimous in its enormous immersive

potential. But playing demos and games that used the device, we realized we could not simply add a few lines of code to our game to make it compatible with virtual reality. To be successful the game should be tailored for the device as it demands considerations in game design, ergonomics and very specific visual design (motion sickness strongly related to the game design itself and user interface considerations). As of today, most games compatible with the Oculus Rift are not taking into account these new challenges and deliver poor experiences. Our ambition is to create a product that fully exploits virtual reality. As such ASCENT is not playable without the Oculus Rift.

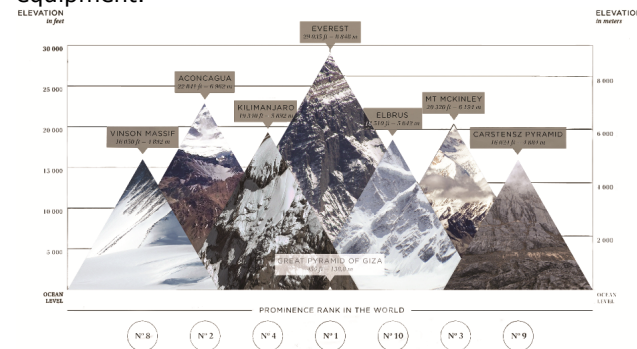
## **Game User Research**

Our research on the usability of the Oculus Rift is charting new territory, as few developers have seriously worked with the device. We spent the necessary time testing the device and benchmarking as much VR games as possible. The two main issues that plague the Oculus Rift experience are motion sickness and accessibility/legibility of information. Consequently we put these considerations at the heart of ASCENT's conception. To this end, it became necessary to emit a new set of guidelines that would frame the game designer's decision model, and underline at each step of the development the importance of usability. In order to observe how much players were affected by motion sickness we chose a questionnaire widely used in the aeronautic industry: the Simulation Sickness Questionnaire by Kennedy, Lane, Berbaum & Lilienthal (1993). The score comparison obtained with this questionnaire before and after the experimentation showed a slight degradation of Oculo-Motor and Nausea dimension (average of +1.25). Those results validated

the design decisions that stemmed for guidelines and in our opinion enhanced the user experience.

### Game World

The Seven Summits are the highest mountains of each continent. There are seven of them (from the highest to the lowest): Mount Everest, Aconcagua, Mount McKinley, Kilimanjaro, Mount Elbrus, Mount Vinson, Puncak Jaya. To have a chance of accomplishing this feat, the player will have to complete missions to legitimize his status, attract sponsors, develop his fan base and upgrade his equipment.



### Global Structure

Player progression in ASCENT is relatively linear. Once the player reaches the summit of one mountain, he goes on to tackle the next one. Each mountain constitutes a chapter of the game. A series of missions kicks off the chapter. The player must complete these to unlock the "Summit Push", the grand finale during which the player reaches the summit. The missions underline different aspects of the core climbing mechanic and introduce new challenges. The "Summit Push" is the heart of ASCENT: the player will

have to apply everything he has learned during the missions.

### Main objective

The main objective determines the behavior the player is going to have to take during the mission, while informing him of the various choices he can make. The main objective can insist on different player skills (precision, reflexes, management, tactical). The forms of the mission and its mode have a great influence on which player skills will be tested. If the player doesn't complete the main objective he fails the mission. Special variables can affect a great variety of elements. They enable us to propose new challenges to the player and call forth his mastery of a specific skill:

- Stamina: lower/augment the player's base amount of stamina
- Surface properties: change amount of swings it takes to anchor ice axe, not allowed to anchor in soft surfaces
- Focus system: modify regen of streaks and stamina loss mitigation, player must reach streak 3 and never break it.
- Consumables: limit use of consumables (energy oxygen)

### Precise and fluid climbing

In ASCENT, climbing can be reduced to a succession of ice axe anchors in the mountain face. An ice axe anchor is the positive output of an ice axe swing, where the player securely attaches himself to the mountain face. Through this sequence of actions the player can explore the game environment.

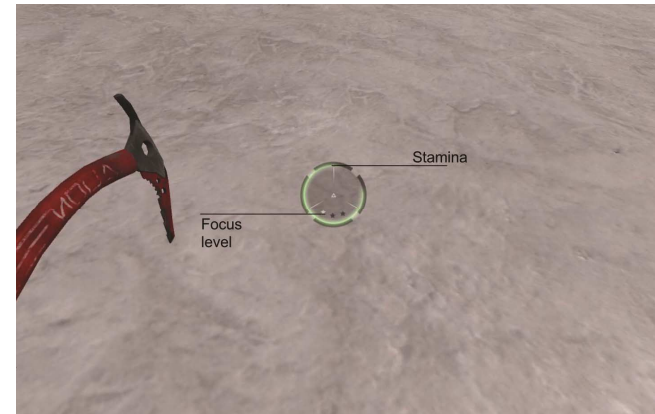


Because the player embodies one of the world's finest mountaineers, the game feel of climbing has to support his expertise. Through our controls we have attempted to convey a feeling of mastery. The control scheme of ASCENT (in vertical situation) is original. It relies on the gyroscopes and accelerometer of the VR headset for camera control and ice axe aiming. The rest of the inputs, like the jump, are mapped to a gamepad, in this case an Xbox 360 controller.

#### **Managing your effort: stamina**

Mountaineers must be careful not to burn all their energy before reaching the summit. Exhaustion can have dire consequences high up on the mountain. We wanted to incorporate this aspect of the sport in ASCENT.

To this end we implemented a stamina gauge. When the gauge is depleted the climber is in a state of exhaustion and will fall off of the mountain. Because each of the player's actions have a stamina cost, stamina management is often required of the player if he hopes to reach the end of the level.



Through the necessity of stamina regeneration we also introduced a system that rewards mastery of the primary climbing mechanic. Each time the player performs five successful and swift ice axe anchors, his stamina is regenerated and he enters a level of Focus. To reach the highest Focus level the player must perform fifteen consecutive perfect ice axe anchors. If the player ever slows down or misses an ice swing, his Focus level is reset.

The Focus system incentivizes risk taking. The higher Focus level the player reaches the faster he goes, the more views he gets but the more stamina his actions cost. This means that an error at a high Focus level is more costly than an error at a lower level. The increase in speed also raises the difficulty of the game, as the player has less time to aim (precision skill), must be quicker at dodging rock and snow fall (reflex skill) to determine his route (tactical) and to watch his stamina (management).