L'Archer D'Amiens

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Abstract
This article describes the game design and prototyping of *L'Archer D'Amiens*. While picking a known genre – RTS; and an unknown platform – iOS; the team strived to approach the design and development process focusing on the player and trying to uphold 4 design pillars. The prototyping culminated with a play testing event (MoJo), and a posterior analysis of the results.

Author Keywords
Game Design; Game Development; iOS Development; Design Documents; Prototyping; Play Testing.

ACM Classification Keywords
Design

Introduction
L'Archer d'Amiens is a 2.5D game where the player must defeat incoming waves of enemies in a single-player game with tower defense elements.

Our intended target audience for this game is players interested in Tower Defense / Strategy games looking for fast paced experiences. These would fit the archetype Achiever-Conqueror defined in the Brainhex Model for player satisfaction [1].

With this project we wanted to create a nice, clean, simple fast-paced game that is easy to pick up, fun to play while

increasingly hard to master and full of rewarding experiences that drive character and level progression. In a way we wanted to apply to a well-worn genre knowledge we had previously acquired about Game Design and Development, while learning a new technology, and making it as appealing as possible. In order to do this we were encouraged at picking 4 design pillars, which helped us defining the purpose of the experience we were trying to evoke: **Fast Pace**, a **Sense of Mastery** (in-game progression), **Character Progression**, and **Rewarding Sensation**.

This document is organized in four main sections. First we will introduce our concept. Then there will be an overview on the development of the prototype. The third section will revolve around play testing. To conclude we will present some of our results and a brief reflection.

L'Archer D'Amiens

In L'Archer D'Amiens, the player will make a stand against waves of foes in a fight for his survival. It is a single-player RTS (real time strategy) game with tower defense elements.

Castle Wall – Depending on the Health of the wall, the wall will appear in various stages of

Yuri – This is the character. Throughout the game his visual aspect will evolve upon level up, representing some passive abilities that will increase as well, such as recoiling speed.

Empowered Arrow – The arrows are modified by using spells/ powers. We strived to create a rewarding visual experience using particle effects to emphasize different powers

Wall Health – The level is lost when this is depleted.

Resources – Ammunition must be managed and gold can be used to replenish the wall and the arrow stock.

Enemy Health – A Health bar provides feedback to the player on the enemy health.

Figure 1 L'Archer D'Amiens screenshot featuring gameplay

Enemy Wave – There are various types of enemies with different weaknesses, resistances, health points and damage. Dragons are resistant to fire and are

Mana – Used by the powers. Regenerates over time.

Powers/Spells – When active the power stands lit and each time a arrow is shot mana is spent. Here, the Fire power is active.

Skill Tree

There are 4 main branches on the tree:

Fire – this sub-tree will unlock the Fire Power, which has damage over time properties. This branch also features area of effect arrows;

Ice – this sub-tree will unlock the Ice Power, which decreases the movement and attack speed of the targets;

Marksmanship – this sub-tree provides passive boosts to Yuri's base stats and unlock a Push Back power;

City – this sub-tree privileges defense. Wall regeneration and defensive moat are some of the examples of what the player can get by spending skills points in this branch.

This game features resources like ammunition, coins, wall health, and mana in order to provide the player a simple management experience that will amplify his choices. It is possible to use multiple spells with different effects such as damage over time, freezing and push back. There are various paths in the skill tree that will allow the character to become more powerful, cunning, and more able to stand against the hordes of evil. Thus, enforcing the idea "from zero to hero".
The Skill Tree allows multiple combinations that will affect the gameplay; we decided to sport a puzzle-like aesthetic in order to instigate completion.

We strived to explore various kinds of rewards. From sensory rewards (by incorporating sound and particle effects), to the more concrete achievement badges and performance indicators at the end of the level.

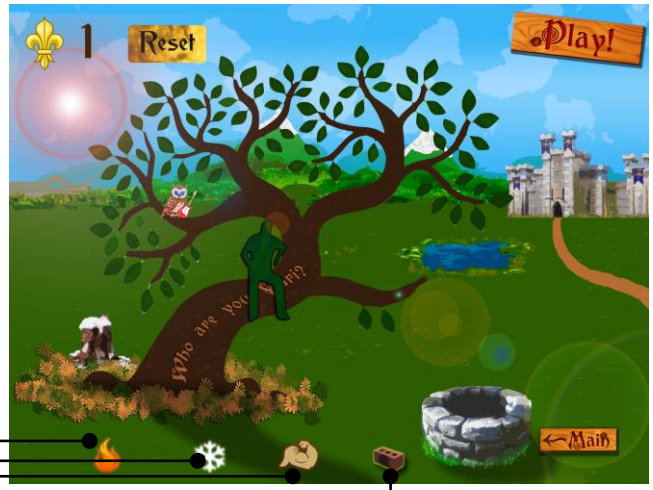

Figure 2 Outlook of a completed Skill Tree.

Figure 3 Examples of achievement badges. We coupled the achievements with humorous titles such as "Le Coq Sportif" or "Robin des Bois".

Prototyping

This prototype was developed in iOS, using Cocos2D and Objective-C in the Xcode IDE. The rationale behind this decision was that none of the team members had had any contact with these technologies beforehand and all were interested in devoting the time to overcome the technical difficulties of such endeavor.

To build this prototype we explored some auxiliary tools such as Cocos Builder (mainly for interface building), Zwoptex (to optimize texture usage by creating spritesheets), Particle Designer (to build and preview special effects).

Having the game concept defined, we compiled a Technical Design Document, where the basic gameplay was specified. This document was helpful to point possible technical issues that could potentially affect our game concept, given the fact that we were new to the platform. Before starting to prototype the game we found that we wanted to make sure how would we implement collisions, sprite animation, particle effects, and which would be the best interaction with a touch device.

Regarding collisions, we tested methods of simple collisions (aligned axis bounding box collisions), and pixel perfect collisions. The latter proved to suit our

desired fast-paced gameplay experience, and the detail. While we were afraid this method would greatly increase the computational weight of our game, it did not as the iPad tablets were more than able to handle the processing of this kind of collisions.

Despite the lack of information on pixel perfect collisions applied to iOS development, we found a simple library inside the Kobold2D framework that would enable pixel perfect collisions. Although we had previously opted for not using Kobold2D (in order to privilege the learning experience), we detached this single functionality. We ended up extending the basic functionality of the library to meet our needs.

Having animated sprites proved to be very straightforward, the main issues being to create optimized sprite sheets that would be loaded as textures. Tools like Zwoptex and TexturePacker will simplify this step. Also practices like cleaning the texture cache in between menu/game transitions are important to reduce memory usage. Particle effects were also deployed and tested without major difficulties. We used wireframe prototyping to sketch the interface.

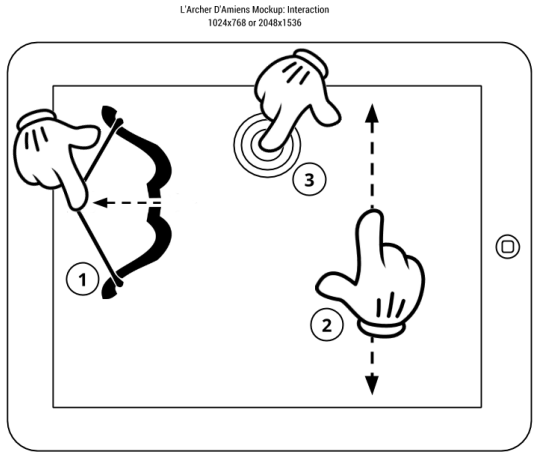

Figure 4 Mockup regarding the possible types of interaction we thought relevant to test.

Playtesting

Montra de Jogos (MoJo), is a public showcase of game prototypes developed by the students of the IST Game Development courses.

This event provided us an opportunity to have important feedback; this meant a careful planning in order to obtain relevant play sessions. The preparation for this event meant building a promotional poster, we also offered hard candy to make the environment more relaxed and appealing to the volunteering testers. In the end our play testing sessions had 3 main data collection steps:

- 1-on-1 subjective evaluations - while watching the testers playing;
- Filling a form about their experience;

- Integrated application metrics – using TestFlight.

At the 1-on-1 phase we tried to make the user feel comfortable and explore the game at her pace. The end of each play session was marked by of offering a "Thank you card" personalized with the name of the tester. This step was cherished by a few testers that volunteered to help again if needed. We also asked some questions in order to estimate if the tester would be a potential target audience (a Brainhex Achiever-Conqueror player).

In the end we collected 31 individual complete testing sessions.

In a scale from 1 to 5, 1 being "Do not agree at all", 5 "Agree", 74% of the enquired users felt clearly a sense of progression while playing (answered 4 or 5), and 90% considered that the Skill Tree played an important part in the progression (answered 4 or 5). Furthermore only 3% of players manifested a dislike for the aesthetics of the Skill Tree.

The TestFlight API provided us with flow information mainly. From the analysis of the data collected it seemed that the majority of users did not reveal major navigation problems. 5 users in a universe of 31 tried to skip the initial Skill Tree set up on the first contact. These users performed the step on the second try without any intervention.

Conclusion

The analysis of the data collected at MoJo provided a relevant insight on *L'Archer D'Amiens*.

Our results point that having feedback early on the development is crucial to achieve a satisfactory user experience.

While prototyping we encountered some examples of non-intentional features that increased the rewarding factor. For example, leaving the remains of the waves in the screen triggered a positive reaction in our primary testers. From a technical perspective we ended up optimizing the remains of the enemies to avoid performance problems. Without the remarks of the testers we would have simple cleaned the remains. At MoJo we could confirm this initial feedback because only 13% of players manifested a dislike for this aspect (answered 2 or 1 in a scale from 1 to 5). Having "Rewarding" as a design pillar this details are extremely important to the overall experience.

Prior to MoJo our testers became increasingly proficient, and ceased to have an unbiased view of the game. With feedback from inexperienced players usability problems are easier to detect, and fix. This leads us to the conclusion that bringing in new testers when designing the interface is extremely important to support the usability of the product.

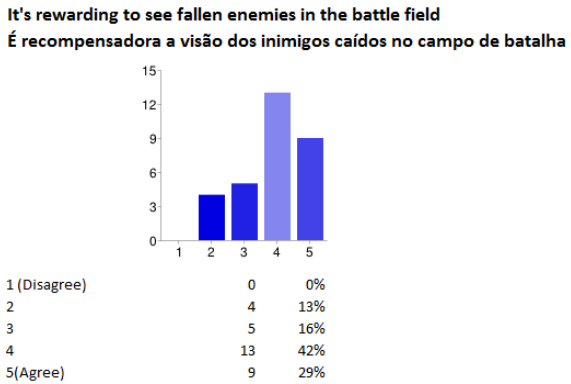

Figure 5 Response from the form filled at the end of the testing session. We wanted to confirm if our decision of leaving the remains of the enemy wave felt rewarding.

The next steps for L'Archer D'Amiens project would include a refinement on the user interface; iterating on this aspect is imperative to achieve a better game experience, and while navigating the menus. We also identified the need to rebalance the game, upon verifying that the Fire power is too powerful in comparison with the other powers, which made players tend to build their strategies around this branch of the Skill Tree, in particular those who had a profile closer to our target audience. According to some play testing sessions the wall repair and ammunitions may need to be cheaper.

The feedback relative to the storyboards (which served as a tutorial and help us establishing a rudimentary narrative), left us with the impression that they would be a great feature to polish our game thus consolidating its identity.

We cannot stress enough the importance of play testing in order to support the experience design. In that regard we think we had a good approach towards the testing process. We emphasized empathy in order to get the testers to criticize, and we parted with a thank you card. It would be interesting to bring this approach to testing in order to build a database of testers.

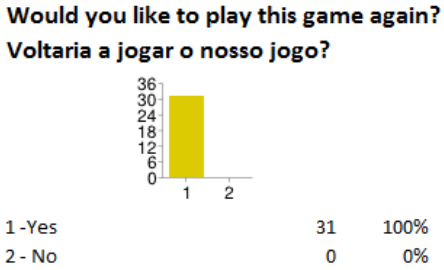

Figure 6 All inquired testers would like to play L'Archer D'Amiens again.

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References

[1] Brainhex Model. http://survey.ihobo.com/BrainHex/.