**APOLLO**

**RISK ASSESSMENT**

**VERSION 1.0**

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# Revision Tracking

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| --- | --- | --- | --- |
| Version | Revisions | By Whom | Date |
| 1.0 | Document Created | Tarl Raney & Dave Hasle | 7.15.09 |

# Design

## 3rd Person Viewpoint

Our skill set has been first-person and we are moving to third-person.

Camera: This is a huge problem for a lot of games, and it often seems to take studios a few cycles iterating on their system to have a truly fluid, usable 3rd person camera.

Mitigation: This was one of the first things we tackled to get it in front of people early to ensure we have as much iteration time as possible.

Movement: We’re overhauling our whole animation system to cope with this (which carries risks of its own). We’ve never had to make the player movement responsive, extremely fluid and externally beautiful before.

Combat: 3rd person brawler combat is another area that many studios have mastered over many game cycles… this will be our first try. We also recently lost our only team member with extensive experience in this.

Mitigation: *Movement and Combat*: Both of these systems were something we started working on right away as we realized what a large risk they were. We will be playtesting and iterating at every step to ensure the game feels great.

Environment: Our artists have gotten extremely good at knowing where to draw the line on poly count of props, how many props to place in a space, etc… but third person view changes the rules of thumb that our art team has grown comfortable with in first person.

Mitigation: World Art/Tech Art and Engineering have been working very closely together to define the systems that are being used to build the environments in the game. A lot of great stuff has already come out of this close collaboration; LOD system, transparent glass fading, etc

## Stealth Game Play

Technical limitations of our lighting model combined with levels that are larger than anything Monolith has created before makes this a difficult feature to implement and still maintain the fun factor.

Mitigation: Engineering and Tech Art are prototyping new lighting options to allow for better control and more efficient placement of lights. Design is working with them to help understand the gameplay implications of these prototypes. As progress is made, the system will be put into playtesting and iterated upon.

# Overall Scope

With so many new systems, it is going to be very difficult for any discipline to accurately estimate their workload. This has already manifested in poor estimation accuracy on some of the concept/pre-production work done thus far.

Mitigation: We have prioritized the features we are planning so that if things are not getting done as fast as hoped, we can cut smaller low priority features to avoid missing the schedule altogether.

## Vehicle Game Play

We’ve never done vehicle gameplay to this extent and we’re started it later than ideal. Making it fun and making it work will be a challenge.

Mitigation: The unknowns of vehicles are largely mitigated by the addition of a few key engineering hires. Both came from the Mercenaries 2 team and had extensive experience in building and maintaining that game’s vehicles. This also helps us make up for the late start. Using prototype code from the Zulu project and by taking someone experienced we have been able to get vehicles up and running rather quickly. The system is being designed to give the designers as much control as possible to minimize the need for engineering time while iterating/balancing.

## New gameplay systems

The core competency of Monolith's game engineering team has largely been in first person action titles. Apollo's primary focus will be a 3rd person action/brawler title. Because of the switch in genres, a lot of our legacy gameplay systems will need to be updated to support 3rd person. Since the team has little experience with 3rd person we will likely discover new challenges that have not been encountered amongst much of the team, requiring additional research and iterations on features.

Mitigation: While the majority of the game engineering team has no 3rd person experience we do have a few engineers that have worked on titles such as The Matrix Online and Destroy All Humans. Major systems, such as the camera and player movement systems, that we know will have to be modified for 3rd person action games will have work begin as soon as possible.  
**Update:** We have a working first pass at a third person camera. Additional work will be done in pre-production for adding different camera states for different player states as well as improved world collision.  
We have completed a first iteration of basic player movement changes that work with a 3rd person camera. During pre-production we will continue to iterate on the basic movement as well as add in more advanced player movement.

# Engineering

## Expansion of technology to larger spaces, including streaming, visibility and LOD.

In order to be more competitive and differentiate ourselves from similar games we are working towards creating technology that allows for larger spaces for our games. There are many changes that must be made to our technology in-order to reach that goal. With limited resources, exacerbated by our hiring issues, we run the risk of not being able to make all necessary changes to accommodate larger game-play spaces.

Mitigation: During pre-production we will be prototyping larger levels with our current technology. Modification to the visibility system will be made to allow for better occlusion. An improved LOD system will also be made (dependant on hiring a senior graphics engineer). These changes will allow for larger spaces and will help determine the actual size capable for the game.

## Migrating technology to multithreaded architecture.

With the proliferation of multi-core architectures in PC and game console hardware we must move towards a much more multi-threaded architecture. This is a multi project endeavor that must be completed in-order for our technology to remain competitive

Mitigation: A multi-threaded architecture will be designed and built to allow systems to be converted individually. Systems will be identified as primary candidates for multi-threading for Apollo and work will be started immediately on those systems.

## Animation system to allow for fluid 3rd person animations.

Our animation system, tools, and workflow have been identified as problem areas from previous project's post-mortems. Integrating of 3rd party packages has been evaluated, but none of the available packages fully met our needs. Creating a new animation system, tools and workflow was determined to be our best option. A new animation system has the potential to cause large changes to workflow, existing content and legacy tools, runtime and game systems. We need to be careful that we are not exchanging one problem for another. This is a time intensive endeavor that needs to be completed early in the project in order to retrain the animators, modify existing game play systems to work with the new system and allow animation intensive new features to come online in time.

Mitigation: Research into the animation system began before we started the concept phase for Apollo. Work has already begun on the runtime and tools changes for the new animation system. In order to reduce the risk of this system we would like to get the new animation system working for the player as soon as possible with the goal of having key player systems using the new animation system by the end of pre-production.   
**Update:** Our ModelEdit tool and model have been updated to support creating of parameterized animations as well as seeing changes to animations in realtime using our remote communication system between the tools and running game. Several debugging tools have also been added in pre-production. An additional tool for creating blends between animations will be researched and worked on during pre-production.

## Tool extensions to allow for rapid development and iteration of large quantities of content.

A consistent theme of recent post-mortem discussions has resulted in the desire to enhance our toolset for zero-time iteration and WYSIWYG editing capabilities. This work is time consuming and calls for many modifications to our tools, runtime and game systems to fully support the desired goal. We need to be aware of diminishing returns where trying to achieve zero-time iteration for some tools or systems takes too long to develop and takes time away from other work that could possibly better increase productivity for content creators.

Mitigation: The most time consuming and bottlenecking tasks will first be identified as the tools or systems that should be modified to support zero-time iteration or WYSIWYG editing. Time estimates for those modifications will be weighed against other possible features that could boost productivity for content creators.  
**Update:** The ability to modify game database values in our GDBEdit tool and have the value immediately be updated to a connected running game has been implemented. It is up to the game teams to identify which values from legacy game systems should be exposed as editable and weigh the cost of making them editable vs. the benefit. All new game features will be implemented with this functionality in mind.  
The work on FxEdit, CRCL and RemoteView are mostly complete and allow runtime viewing and live editing of values and remote communication with multiple connected instances of the game, including the embedded RuntimeShell.

***Difficulty obtaining a license for PathEngine***

Work has been complete on the evaluation of licensed technology for our NavMesh generation and AI Navigation for quite some time. The decision to proceed with PathEngine was made and the only remaining issue was acquiring the license with PathEngine. This has largely been out of our control and left up to the legal departments of WB and PathEngine to come to an agreement. The time taken on trying to acquire a license has been enormous and the talks between the two parties have deteriorated to the point that it’s possible they won’t come to an agreement, leaving us without a license for our chosen solution.

Mitigation: We have tried to interject ourselves into the conversation where possible to try and inform both parties that we would very much like this deal to go through. While we hope the deal will still complete, we have begun looking at other licensed technology possibilities as listed in the Technology Licensing Plan. Kynapse might be a possibility due to the acquisition of Midway which had several Kynapse licenses we are looking into the possibility of transferring the licenses to Apollo. Our Senior AI Engineer has begun minimal research into Kynapse and NavPower.

# Content

## A workflow to enable for construction of such large and dense environments needs to be established and tested as soon as feasible.

Mitigation: World Art and Tech Art have been working very closely to build tools to allow for the fast creation of city blocks and all of the LODs associated with those buildings.

## New animation system is not finished, making it difficult to understand and judge the Animation team’s workflows.

Mitigation: Engineering and Animation are working together as closely as possible to stay on the same page as these new systems come online.

# Production

## Hiring of specialized senior staff such as rendering and tools.

Several open senior engineering positions have been open for over a year. Filling these positions is crucial for us to advance our technology and tools to a more competitive level. If these roles are not filled in time we risk being un-competitive.

Mitigation: We are actively interviewing candidates for all open positions. WBG's new recruiting manager has a lot on his plate (WBG and Snowblind hiring efforts, work relating to the two Midway Studios, shoring up our recruiting infrastructure and streamlining our interview process) but will hopefully move on to increasing our recruiting efforts soon.

Update:We have filled two important roles. Our mid-level graphics engineer and senior network engineer have started and are currently contributing to the project. An offer has been made and accepted for our Senior/Lead Graphics Engineer position and we are currently going through the necessary steps to obtain a working visa for him as he is a Canadian citizen. We still have open positions for senior runtime, tools and plugins engineers that we would like to fill as soon as possible.

## Strike Teams risk creating randomization and overlapping schedules while working with all disciplines.

Mitigation: Content, Design and Engineering all have designated schedule representatives that meet throughout the week to ensure that individual’s schedules do not get overlapped.

**Update:** We are evolving our team management structure to allow for easier coordination and more flexibility between design, content and engineering.

# Publisher/Filmmakers

## We don't know if we will have an approval entity in place (Nolan’s people, WB, or DC) within time for it not to affect us negatively.

To make our ship dates and project goals, at specific times throughout production we will need to make decisions about design, art, audio and story that we will not be able to reverse without impacting time, money and resources.

Mitigation: The first meeting with DC Comics was held 7.21.09 and was encouraging. More corporate level talks are needed before we will be able to begin using them as a sounding board for our ideas, but the foundation has been laid. Nobody seems to know anything about Christopher Nolan’s involvement at this point, but everyone knows we need his feedback on everything and are anxious to find out more.

Apollo perceived as too similar to Arkham Asylum 1 and 2.

Mitigation: We’re adding vehicles, allowing the player to traverse larger sandbox style areas of Gotham City and we’re tied to the theatrical release of the 3rd Christopher Nolan Batman film. These are the obvious differences, but there are many smaller details that will be very apparent once the vertical slice is finished.