Project Proposal:  
ConstructAR

By RIT(Relatively Interesting Technologies)



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# Cover Letter

Dear SIT Exectutives,

The document outlined below highlights RIT’s overall view for the project along with the value we believe it will provide our company and, by relation, SIT. RIT is very excited to pursue this new project and hope that everything outlined in this document meets your qualifications for the project envisioned.

We have moved forward with the project design after receiving the formalized project requirements and have addressed them in the related sections enclosed in this proposal. All requirements given to RIT have been implemented by the various features addressed in the project proposal.

We believe that this new product can heavily influence the construction industry and provide value for the company in both the financial and technical sector. By becoming an early industry lead in AR construction, SIT will position itself as a leader in the development of new technologies and AR platforms.

We hope that this project proposal meets your satisfaction and that all of the content within are adherent with the design requirements previously outlined.

Thank you for your time.

Project Manager,

Andrew Tarkin

# Executive Summary

## Project Overview

ConstructAR’s is an Augmented Reality solution for construction companies to visualize a completed construction project during the course of construction and to provide aid in in the form of tools during various steps of the building process. These tools will be provided via an AR supported device with camera passthrough to view the visualized area of interest. The user will be able to display the completed building, utilize various construction tools during the construction process, and modify the in-progress construction model on any AR supported hardware device. There will be two major layout modes of the application, the viewer and worker mode which will separate the two major use cases of the application for isolating user permissions. We believe that this application will provide a unique value to the construction process and transform the way the construction process is taught and performed.

## The Objective

ConstructAR provides a unique innovation in the construction process and can streamline the construction and visualization process. This application aims to be the primary companion application for construction companies, by allowing the viewing, modifying, and deletion of construction components while also providing training tools for the employee construction workers.

## The Opportunity

* To provide AR visualization tools to view an overlay of the construction site.
* Tools to modify the construction model via the AR application,
* The new construction model will be shared among all users.
* Two modes for the application for the two major use cases, viewer and worker.
* Providing training tools and assistance for employee workers.

## The Solution

The default application mode, “viewer” will primarily be used for the visualization of the construction site, however their will be an additional mode in this “viewer” mode which will allow the editing of the componentized sections of the construction model. Once saved, the model will be shared via cloud technologies to all other users to keep an updated model for further visualization/editing. The “worker” mode will provide assistance in the construction process and limited job training depending on the role of the construction worker. The “worker” mode will show limited visualization to the areas-of-interest to assist in placement and orientation of placed materials.

# Our Proposal

SIT has proven itself to be a superpower in the field of software engineering after it experienced rapid growth during the third quarter of 2017. Since then it has been involved in the development of technologies in a wide range of software dependent industries. However, SIT has yet to explore the growing applications of artificial reality in the workplace. If SIT fails to break into this discipline now, it may fall behind its competitors in the future.

We at RIT would like to propose a venture into this technology as we develop an app named, ConstructAR. This app will be used in the construction industry to help plan, describe, and design projects by viewing and manipulating a model in a real environment. ConstructAR will prove itself to be an in-demand product once it is developed. More importantly this project will allow RIT to experiment with AR technology to find its future potential and learn how to design it. These discoveries will be shared with SIT to help it decide whether or not to participate in the market while additionally providing value in the development of a new marketable application in a sizeable industry.

## Rationale

* Allow RIT and SIT to expand in a new and growing market.
* Produce a product that will be in demand with constructors and architects.
* Produce reusable assets and lines of code for future AR projects.
* Make RIT and SIT more marketable to future clients by adding products to the software catalog.
* Produce a unique software solution to expedite on-site training and construction planning.

## Execution Strategy

Our strategy is rooted in the fact that this project is meant to experiment with and test the potential of AR technology. The managers and employees of RIT will approach this project with a flexible mindset in order to compensate for any unpredictable circumstances created by the unfamiliar technology. Deliverables will be submitted regularly and recorded in depth for future review of the experience. The included timeline is a more in depth examination of RIT’s plan for the project.

## Technical/Project Approach

Our project will be managed largely in line with the agile approach. After some basic training in AR technologies, our developers will quickly begin development after our team collects the basic requirements. Further requirement will be added to the project as it is developed and the team learns about AR’s capabilities and limits. Weekly progress reports will be delivered to SIT as the project progresses. We will accept new requirements from SIT after we discuss the additions to promote clarity and understanding of the projects goals. Our project will be considered a success if SIT can come to an educated decision on the company's future in AR technology. The project will be a failure if SIT does not arrive at a definitive answer on their future involvement in the industry, or if the cost of development exceeds the product’s developmental value with the overall product sales.

## Resources

## **-** Personnel

* A Technical Lead
* 2 Front End Devs
* 2 Senior Unity Engineers
* 2 Junior Unity Engineers
* 2 Database/AWS Engineers
* A UI Artist
* PR/Sales Manager
* 3D artist
* Project Manager

**- Technologies**

* 6 Unity Licenses
* AR hardware(Experimental HMD/AR supported mobile device)
* Licenses for artwork software and managerial solutions

**- Facilities**

* Construction sites for on-site testing
* Workstations for each employee

## Project Deliverables

The following is a complete list of all project deliverables:

**- Formal Deliverables**

|  |  |
| --- | --- |
| Deliverable | Description |
| Basic Requirements | Early goals and user cases. |
| Basic Training Report | Document detailing the results of developer AR training. |
| Glossary | Terms and definitions for future use in the project. |
| Research Report | Result of background and market research. |
| Updated Requirements | Updated requirement derived from the training and research. |
| Weekly Reports | Reports detailing the current state of the project, changes made to requirements, and new relevant information. |
| Project Review | Document detailing the experience, benefits, and costs of the project. |

**- Technical Deliverables**

|  |  |
| --- | --- |
| Deliverable | Description |
| ConstructAR v0.1 | Basic visualization of the construction model(Basic app UI) |
| ConstructAR v0.2 | Added construction tools to the viewer mode |
| ConstructAR v0.3 | Main UI pass for viewer mode |
| ConstructAR v0.4 | Finalize edit module of viewer mode(construction tools) |
| ConstructAR v0.5 | Worker mode added to application |
| ConstructAR v0.6 | Worker mode add visualization for worksite |
| ConstructAR v0.7 | Worker mode add training tools for worksite |
| ConstructAR v0.8 | Main UI pass for worker mode |
| ConstructAR v0.9 | Network interactivity for both app modes |
| ConstructAR v1,0 | User privileges and final design pass for final iteration. |

## Timeline for Execution

Key project dates are outlined below. Dates are best-guess estimates and are subject to change until a formal timeline is agreed upon.

|  |  |  |  |
| --- | --- | --- | --- |
| Description | Start Date | End Date | Duration |
| Project Start | 10/12/18 | 9/12/18 | 11 Months |
| ConstructAR v0.1 | 10/12/18 | 11/12/18 | 1 Month |
| ConstructAR v0.2 | 11/12/18 | 12/12/18 | 1 Month |
| ConstructAR v0.3 | 12/12/18 | 1/12/19 | 1 Month |
| ConstructAR v0.4 | 1/12/19 | 2/12/19 | 1 Month |
| ConstructAR v0.5 | 2/12/19 | 3/12/19 | 1 Month |
| ConstructAR v0.6 | 3/12/19 | 4/12/19 | 1 Month |
| ConstructAR v0.7 | 4/12/19 | 5/12/19 | 1 Month |
| ConstructAR v0.8 | 5/12/19 | 6/12/19 | 1 Month |
| ConstructAR v0.9 | 6/12/19 | 7/12/19 | 1 Month |
| ConstructAR v1,0 | 7/12/19 | 9/12/19 | 2 Months |

## Supplied Material

The following materials are to be supplied by Client’s Company for this project. For Your Company to meet project milestones, this material must be supplied on schedule. The due dates included in the following table represent our best guess based on current proposed project dates:

|  |  |
| --- | --- |
| Materials to be supplied by Client’s Company | Due Date\* |
| Basic Requirements | 10/12/18 |
| Finalized requirements | 11/12/18 |

*\*We cannot be responsible for cost overruns caused by client’s failure to deliver materials by agreed-upon due dates.*

# Expected Results

We expect the development of ConstructAR will provide the following results:

## Financial Benefits

* Obtain a new in-demand app for architects and contractors.
* Obtain assets to reuse in future projects.

## Technical Benefits

* Gain data about a potential future in AR development.
* Acquire a reputation in a new field of technology.

## Other Benefits

* Build a relationship with the construction industry.
* Establish business contracts for additional AR applications.

# Pricing

|  |  |
| --- | --- |
| Total Project Cost: | $1.2 Million |

Note: This value is calculated off of projected employee salaries and license fees, further detail will be outlined in the financial proposal.

# Qualifications

SIT/RIT is continually proven to be an industry leader for high quality/guaranteed product/service in the following ways:

* SIT has a long history of product deliverables and services.
* RIT has a unique workforce centered around R&D procedures.
* An extensive client-oriented development process.
* RIT provides ongoing formal documentation alongside technical deliverables.
* SIT has successfully developed software solutions for various different technical industries.
* SIT has abundant resources to ensure project success and management.

# Conclusion

AR will eventually play a major part in the delivery of construction projects once the key blockers are addressed and the use cases are fully understood. Ultimately, it will be an invaluable tool across all the construction supply chain to augment the construction sites with business and safety critical information allowing on-site teams to deliver projects more efficiently and safely. This project will serve as the basis for advancement in the construction industry while also providing value to the company in the form of Augmented Reality development expertise. Technological advancement within the AR industry is growing rapidly with more capable products being released on a regular basis. Given the size and number of technology companies investing in the AR industry, it is a certainty that technological trends will continue to grow and have a profound effect on our lives. By transforming traditional work instructions into “smart” instructions, users are immersed into an intuitive AR environment which will facilitate planning, managing, and performing necessary tasks in the specialized workplace.