MIS 4596
Project Charter

Project Title	***Clarity + Floating Bridges***	***Product/Process Impacted***	***Civil Engineers assessing structural needs of bridges***
Start Date	***2/2/17***	***Organization/Department***	***U.S. Department of Transportation***
Target Completion Date	***4/25/17***	***Champion***	***David Schuff***

	Description
1. Project Description	Over 10% of the nation's bridges are structurally deficient. This makes around 60,000 bridges that are not structurally sound for passing vehicles and need repair immediately- but how does the government know which ones to focus on first? The US government needs to spend around $300 billion dollars to fix these decrepit bridges and unfortunately they are running out of time and resources to fix them all. On average, it takes an expert at 3-6 weeks, depending on size and complexity, to properly assess a bridge's structural needs and report these findings to the local government. With that said, it costs at least $50,000 dollars to inspect and assess each bridge, including time-labor-and materials. Our idea is to bring 3D mapping drones, bridge assessment algorithms, and Augmented Reality to a professional level. This idea would be able to capitalize on this growing concern and give experts a cost effective way to quickly and easily assess a bridge in a matter of days rather than weeks. The bridge assessment algorithm takes the 3D mapping information and runs an auto-analysis to identify structure deficiencies. Then, the expert would be able to 'scale' the foundation of a bridge through an Augmented Reality headset, Microsoft Hololen, in order to review the auto analysis, make comments, highlights, and to rate the bridge on a scale of importance, cost, and other relating factors. This data would then be easily distributed to colleagues and others in order to make sure the assessment is final. With this application, local governments would be able to make a listing of most-to-least important bridges to fix in their area and maintain these bridge assessments on a yearly or even monthly basis.
2. Project Scope	**In scope:** • Build AR view, remote, dashboard, and collaborative reporting system in JustinMind. • Consult SMEs • Conduct cost/benefit analysis, competitive analysis • Design system architecture • Develop business case **Not in scope:** • Determine how product with interact with drone 3D mapping system.

1. Project Goal and Deliverables

The team must deliver:

- The problem
- The solution (prototype)
- Competitive market analysis
- System architecture
- Basic company financials
- Detailed process & data models
- Website
- Slide deck

Metrics	Baseline	Current	Goal
Shorter downtime	3-5 days	3-5 days	**Max. 24 hours**
Faster inspections	3-6 weeks	3-6 weeks	**2-3 days**
Faster assessments through algorithm	Min. 14 days to complete	Min. 14 days to complete	**24 hours**
More frequent assessments	Every 24 months	Every 24 months	**Every 6 months**
Less expensive	$50,000+ per bridge	$50,000+ per bridge	**$20,000**

4. Business Results Expected	Streamline the process of assessing structural deficiencies in bridges by: • Decreasing downtime • Increasing inspection speed • Increasing assessment frequency • Increasing assessment speed • Increasing quantity of assessments
5. Team members	This team is comprised of Alexandra Iacovetti, Nicholas Rivera, Bridget Silk, and Benjamin Sulaiman. The project champion is David Schuff; the team is accountable to David Schuff. The team can turn to Jake Loosararian (Gecko Robotics) and Micah Sulaiman (Building and Bridges Civil Engineer II Septa) for expert guidance.
6. Support Required and risks	**Additional resources:** • SMEs - civil engineers **Obstacles:** • We have little working knowledge of engineering processes • We will have to rely on the expertise and availability of others **Resolution:** • Consult Jake and Micah for expertise.
7. Customer Benefits	Our customer will benefit from streamlining its bridge assessment process through using our system. The Government be able to shut down bridges less frequently, increase how often it assesses each bridge, increase how quickly each assessment is completed, and increase the overall number of bridges it surveys each year.
8. Technology Architecture	We will use JustinMind and Google Sketchup. Team members have moderate experience with JustinMind. We have no experience with Google Sketchup.

9. Overall schedule/Work Breakdown Structure (Key milestones & dates)	**Responsible individual**	**Output (notes, diagrams, interviews, screen prints)**	**Date started if in progress Or Expected completion date**	**Date completed or date completion is expected**
Planning	Bridget	Notes, Scheduling,	2/2/17	2/8/17
Analysis	Ben	Interviews, Meeting Minutes	2/9/17	2/15/17
Design / Architecture	Nick	System Overview, Flowcharts	3/1/17	3/08/17
Implementation: Prototype Construction	Alex	JustinMind	3/10/17	3/31/17
Implementation: Prototype Testing	Alex	Conditions Testing	4/1/17	4/9/17
Installation (Final Deliverables, Presentation, Project Close)	Bridget	Document Control, Slide Creation	4/10/17	4/25/17