

Project Objectives

UpStage is an interactive cyberformance web application that allows users to access live performances via web browsers (Jamieson, 2008). Since 2014, the UpStage project is under a transition from the current legacy technologies towards a totally new design. Our objectives are to:

- Initiate research on possible architecture designs for the new UpStage product.
- Resolve high priority issues and server deployment processes in the existing product.

Rationale

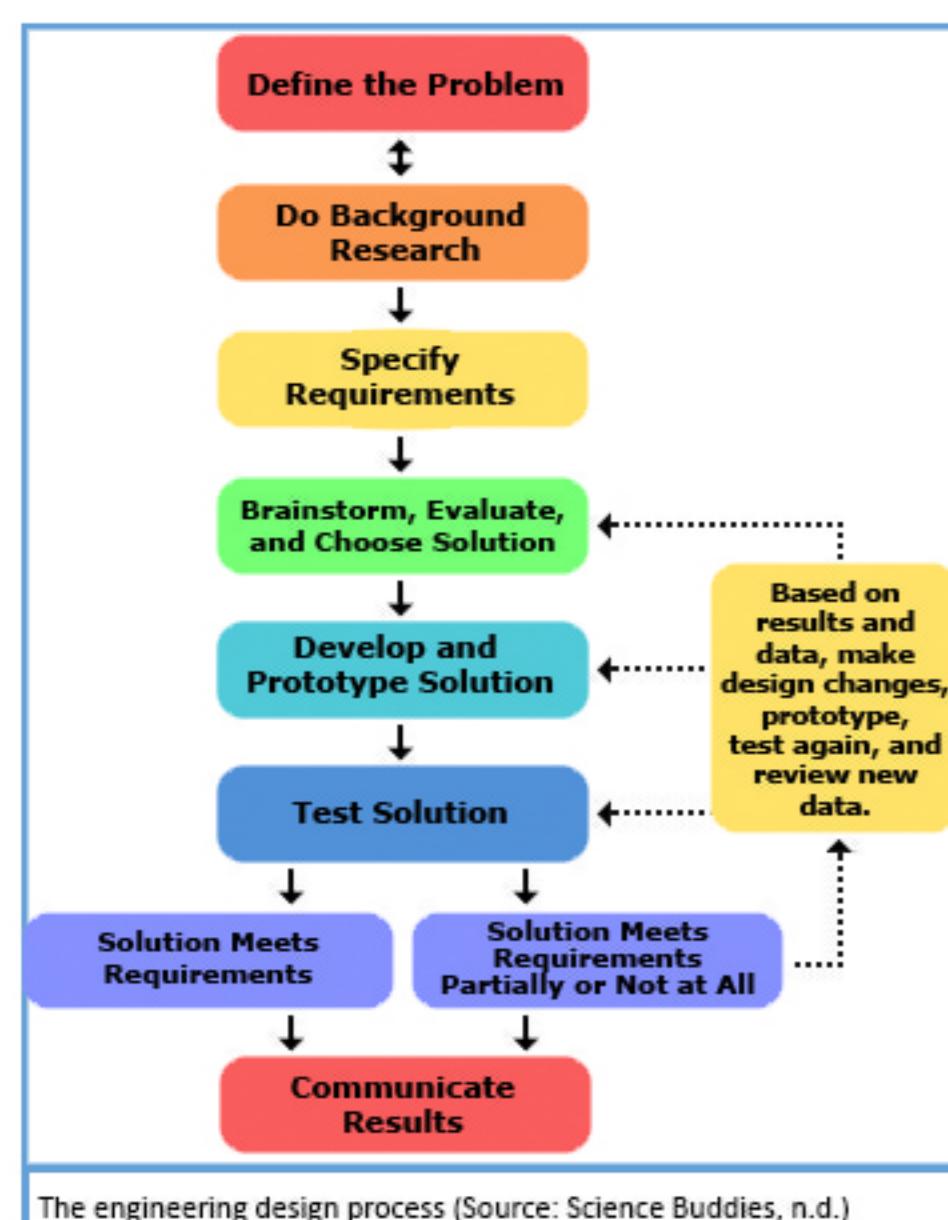
The reasons of supporting UpStage's objectives are:

- To improve the new product's accessibility and portability for users as the current system can only provide access via desktop browsers.
- Unsustainable coding standards and technical debt in the past 10 years.
- Support the current system to meet UpStage community's needs.

To meet the above conditions, UpStage must include new software design and current software maintenance for ensuring a smooth transition.

How Proof of Concepts Produced

Johannesson & Perjons (2014) introduced Design Science as a research methodology in *An Introduction to Design Science*. Using the identifying stages from Design Science, we can validate the feasibility of the technologies for future.



In semester 2, 2014, the team updated the existing software requirements and identified three existing problems for the new design. The team used the identified problems from the requirements to align with the "Define the Problem" stage. Then during the background research and requirement specification stage, the corresponding functionalities in the new design were confirmed against the current system. Then, chose suitable technologies and brainstormed the requirements into a set of solid actions according to the product of these steps.

Iterative Approach

In the next stages of Design Science, the team is to implement different proposed solutions until the solution meets the criteria from the defined problem statement. During the above processes, Proof of Concepts were produced as to show functioning examples of the replacement technologies. Meanwhile, in the end of each iteration, the test solution must be recorded as an evaluation for team members to communicate results. In such way, UpStage will gain design inputs over time.

Achievements

Semester Two 2014	
Motivational Document	Complete
Comparison Matrices of Research Topic	Complete
V3 Minor Issue Ticket #200	Resolved
Semester One 2015	
Update Server Deployment Manual	Complete
UpStage Public Server Deployment	Complete
Flash Front-end Analysis Report	Complete
Video Streaming Analysis Report	Complete
Text-to-Speech Analysis Report	Complete
POC: Concurrent Drawing & Chat	Complete
POC: Local Video Display	Complete
POC: Text-to-Speech Stream	Complete
V3 Minor Issue #258	Updated Requirement
V3 Major Issues #234, 243, 256, 268	Resolved

The POC(Proof of Concepts) are prototypes created as part of Design Science to show our clients an example of the replacement technology. The technologies were chosen based on the updated requirement document. The V3 Issue Tickets seen are our resolved bugs throughout our project duration, however UpStage continues to identify new bugs and many issues still remain unresolved.

Team

Members

Charlotte Paterson, Gaoxin Huang, Yue Li

Supervisor

Anne Philpott

Clients

Helen Varley Jamieson, Vicki Smith

Challenges

Technical

The technical skills required for UpStage including Python Twisted, CSS, HTML, XHTML, JavaScript, ActionScript2, Bash, Apache Ant, and Debian server, and UpStage Daemonization Processes. The unfamiliarity of the existing technologies proved to be an obstacle to obtain adequate understanding from the current software.

Remedy: Pair programming and discussions with various project stakeholders helped us to improve our understanding of the existing system. When technical issues arose we shared the difficulties and resolved them as a team.

Non-Technical

The greatest challenge for the team was planning. The AUT UpStage team is composite of one existing team and one new team. Frequent class time clashes and job commitments sometimes caused team coordination to be a very difficult problem to solve.

Remedy: In semester 1, 2015, team members firstly reduced their part-time jobs working times, and had more meetings to discuss issues and align team's knowledge at the same level. Secondly, team had frequent client meetings. Team was able to prioritise issues with its clients, and update project status frequently. We observed a huge difference between semester 2, 2014 and semester 1, 2015. Having frequent meetings definitely helped team's progress.

Lessons Learnt

Adapting our Plan

The way Design Science was used in our plan allowed research workflow to be flexible; however, the high flexibility caused confusions among team members on how and when to accomplish tasks. In addition, issues with the existing server arose which required a lot of unplanned work fixing the server and also documenting the changes for future developers. Due to the instability of the server we also had to ensure our other team members could re-deploy the server if any issue arose. These issues were discussed with the clients, and both the team and clients agreed to add server-side technologies as an additional research for the redesign.

Client Communication

We found a great difference in productivity over the two semesters when we increased communication with our clients in the second half of our project. With frequent communication we were able to achieve more tasks and adjust our clients requirements correspondingly.

Collaboration

By working in pairs or a group during team meetings we were able to pass knowledge from existing members to new members. We were also able to get different perspectives by working with developers outside of our own team, such as the server maintainer and former UpStage developers.

References

- Jamieson, V. H. (2008). Cyberformance. Retrieved from <http://creative-catalyst.com/cyberformance>
Johannesson, P. & Perjons, E. (2014). *An introduction to design science*. Sweden: Springer.
Science Buddies. (n.d.). *The engineering design process*. Retrieved from <http://www.sciencebuddies.org>