

## **Thesis Project Portfolio**

**User Experience Design To Synchronize Government Acquisition Strategy and Schedule**

(Technical Report)

**The Social Construction of Technology and Robotic Process Automation**

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

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## **Sociotechnical Synthesis**

New technologies are constantly being discovered and adopted. This reality underlies technical work as well as the STS research. The technical work was a direct reflection of the technology adoption process as it sought to ease the introduction of new technologies into the government contracting domain by creating more intuitive user interface designs. The STS research explored the underlying mechanics of the adoption process by investigating the necessary requirements for the successful introduction of novel technologies into the workplace. Ultimately, both projects were able to explore different aspects of the process by which working professionals take up and learn new technologies that can benefit and accelerate their work.

In the technical work, the objective was to create a new task management and scheduling application for the government contracting process. Federal government contracting is a major activity through which billions of dollars are distributed every year. Selecting the best contractor bid for each project is a difficult process and the current technical tools to assist the government acquisitions personnel managing the process are outdated and insufficient. The technical project team was asked to design a new task management and scheduling application for the project that would meet the needs of acquisitions personnel. The final design delivered by the team accomplished that objective by incorporating new visualizations for scheduling and task assignment while being more intuitive and engaging by incorporating aspects of gamification.

The STS research focused on the adoption of automation technologies in office settings and demonstrated how the theory of Social Construction of Technology (SCOT) was the ideal framework to illuminate the conditions under which the technology adoption would be successful. Analysis centered around one specific automation technology, Robotic Process Automation (RPA). The paper examined a particular case of successful RPA adoption in the London-based technology outsourcing firm, Xchanging. SCOT was used to illuminate how the success of the RPA adoption process was due to the efforts of the Xchanging management and RPA teams to engage the relevant social groups within the company early in

the process. Finally, it was argued that SCOT was particularly suited towards analyzing these cases of technology adoption due to its focus on breaking down organizations into a set of competing stakeholders rather than treating organizations as an aggregate.

Working on both projects simultaneously was very useful in understanding the technology adoption process. Working on the technical project and collecting information from clients to develop the design provided a first-hand perspective of how technologies are adopted in office settings and the stakeholders that have to be satisfied at each step. This significantly influenced the STS research and led to the use of SCOT rather than Actor-Network Theory as the central framework of the paper. Overall, the STS work was greatly enriched by the technical work.