Using data to help novice surgeons improve robotic surgery case efficiency

**Context**
Each additional minute in robotic surgery increases patient risk and drives up medical expenses. The operating room (OR), accounting for 60–70% of hospital revenue and with costs of $46 per minute, necessitates a focus on optimizing surgical case efficiency.

A core driver of case efficiency is the surgeon’s skill. However, novice surgeons in many hospitals often lack the infrastructure and resources to evaluate their performance and make actionable improvements.

**Problem**

1. **Unstructured**
   - Without a self-evaluation process, surgeons lack the means to improve, while the absence of a structured tracking mechanism hinders the assessment of efficiency enhancements.

2. **Uninspired**
   - One-on-one coaching to get personalized feedback is rarely available constrained by costs and hospital size. Finding the right resources for self-improvement is challenging, and time-consuming.

3. **Uncontextualized**
   - Unstructured data such as EHR, surgeon’s notes, and surgery videos is abundant but siloed, hindering analysis and utilization for feedback and actionable insights.

**Process**

**Research quarter**
- **Discover opportunities**
  - Method: 100+ literature reviews; 8 interviews
  - Outcomes: User journey from pre to post-op 3 opportunity spaces

**Design quarter**
- **Deep dive in space**
  - Method: 4 more interviews; 2 hospital visits
  - Outcomes: Detailed insights on 3 problem space

- **Identify actions**
  - Method: 3 concept testing sessions
  - Outcomes: Validated concepts and corrected misconceptions

- **Test and refine**
  - Method: User base prioritization; Information architecture; Prototypes
  - Outcomes: An aligned vision and actualization of ScrubSmart

**Expert-inspired Improvement actions**
- Surgeons can access curated playlists of relevant resources tailored to their goals and compare their performance with expert surgeons’ videos.

**Structured Goal setting**
- Surgeons can view their performance, establish long-term goals, and access recommended learning resources for planning short-term actions.

- **Feedback based on operative time, video and notes**
  - Surgeons can effectively track their performance, add contextualized notes post-surgery, and share surgery videos with other surgeons for feedback.