

New Concept For Sponge Accounting System In The OR

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Background

- Unintentional Retained Surgical Items (RSI) in the operating room were ranked as a top sentinel event occurrence in 2018 (Steelman, 2019).
- An RSI is any foreign item accidentally left inside of a patient after a surgical procedure. When an RSI is left in a patient during a surgery it can result in negative patient outcomes such as “reoperation, prolonged hospital stays, readmission, infection or sepsis, visceral perforation and death” (Steelman, 2019, p.92).
 - The concept for a new Sponge Accounting System (SAS) developed after a root-cause analysis was conducted in 2019 in response to a RSI. One action item was the identification of a product that would eliminate the need for the RN to stack sponge holder bags as seen on the original SAS (Figure 2).
 - After failing to find a commercial product, Lorie Hassel-Chuang, Unit Educator (UE), created a design for an expandable product which could be used with larger numbers of sponges and improved visibility of all sponges in the case.
- This concept idea was submitted to the Innovations Team at the University of Kansas Health System (TUKHS) using a new product development process (Figure 1).
- A small team including the UE, Innovations team members, and operating room nurses met to review and improve the concept design.
 - The SAS prototype was then manufactured and delivered in May 2021.
 - The next step was testing and evaluating the prototype to determine if it would meet the needs for a variety of surgical cases.

Methods

- The UE and another surgical nurse tested the original SAS prototype (Figure 3) in an empty OR. We tested the SAS prototype for the following:
- Visibility of sponges
 - The functionality of the telescopic arms
 - Movement of the IV pole when heavily weighted with saturated sponges
 - Sponges improperly loaded to show safety
- Staff were shown the prototype being tested (Figure 3) and were asked to provide feedback regarding the current sponge holder using a standard tool (Figure 4).
- Concerns with the existing device included stacking of multiple SAS devices to hold all sponges which could lead to miscounts or distract the nurse from the operating field.
- The staff were informed the prototype would be available for testing in four OR areas starting February 2022.

New Product Development Process

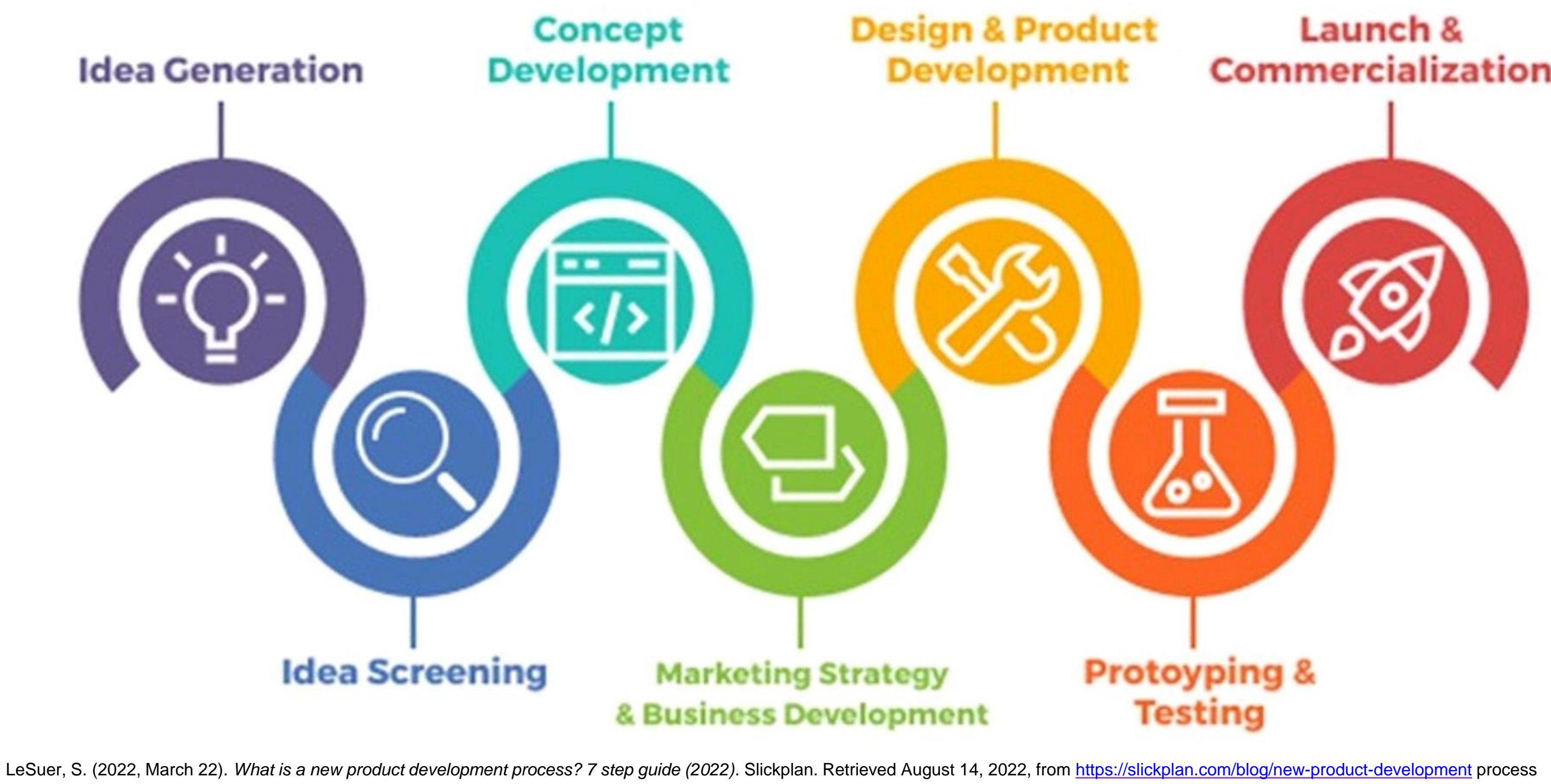


Figure 1: New Product Development Process

Original SAS



Figure 2: Original SAS

SAS Prototype



Figure 3: SAS Prototype

Figure 4: Pre-Pilot Evaluation Tool Link



Figure 5: Prototype Evaluation Tool Link



Results

- In early 2022, 7 SAS prototypes were delivered to TUKHS for a trial in 4 different OR towers.
- The prototypes were approved by the Infection Prevention team prior to use in the OR setting.
- Feedback from the OR staff was solicited using a standard evaluation tool (Figure 5).
- Feedback from OR staff has been overwhelming positive and points to the following:
- Increased visibility of sponges during counting
 - Increased Safety
 - Increased Staff Satisfaction
 - Increased ease of Use & Durability

- Comments from the evaluations which demonstrate the early success:
- “They are an absolute must for any trauma cases, DIEPs, certain Spine cases, & large open belly cases like cystectomy/nephrectomy”
 - “I love this design we had a lot of sponges used in this case & it was comforting to visualize them at once “

- Next steps in the evaluation include:
- Working with the Department of Nursing Practice, Research and Professional Development (NRPD) Nursing Research Scientist to evaluate the prototype for specific safety metrics:
- Reducing the chance of miscounts in the OR
 - Decreasing the risk of RSIs.
- The expanded prototype pilot is expected to run through the end of 2022.

Conclusions

The expanded pilot program will provide both user-feedback and a data-informed assessment of the value and efficacy of the SAS.

If the results are positive, the next step will be to identify an industry partner capable of manufacturing at scale, and the health system will provide the SAS to all operating suites.

With the benefit of wider-scale use, the health system will evaluate the broader commercial potential of SAS, with a view to making it available nationally and internationally.

After reviewing the feedback from the prototype pilot, the Innovations team will assist in determining if we move forward in the next phase.

References

Steelman, V. M. (2019). Retained Surgical Items: Evidence Review and Recommendations for Prevention. AORN Journal, 110(1), 92–96. <https://doi.org/10.1002/aorn.12740>

LeSuer, S. (2022, March 22). What is a new product development process? 7 step guide (2022). Slickplan. Retrieved August 14, 2022, from <https://slickplan.com/blog/new-product-development-process>