Using Data-Driven Research Techniques to

Define Better Product Requirements

Defining the design-control documentation for new products is a difficult and imprecise task. Translating "easy to use" into concrete product requirements requires a level of precision that can be difficult to achieve. The key is to quickly evaluate these product requirements to ensure that they are accurate and realistic.

Peter A. Sneeringer, MS
Lindsay A. Carrabine, MSIS

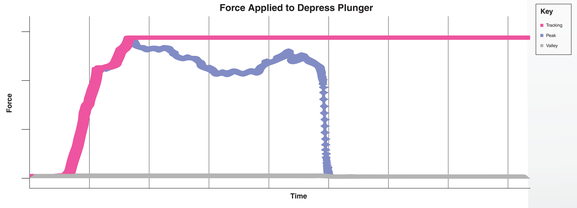
DESIGN | SCIENCE
924 Cherry Street, Fifth Floor • Philadelphia, PA 19107-2405

Force Data Acquisition

Method: Use sensors to measure real-time user force output.

Outcome: A clear picture of the forces required to use a product.

Ex. Requirement: "Needle shall be 27G or larger."

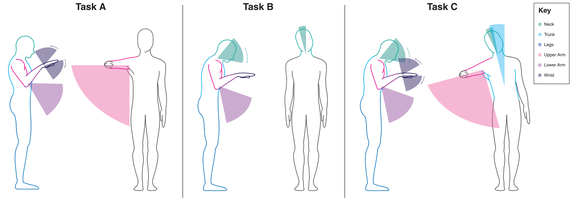


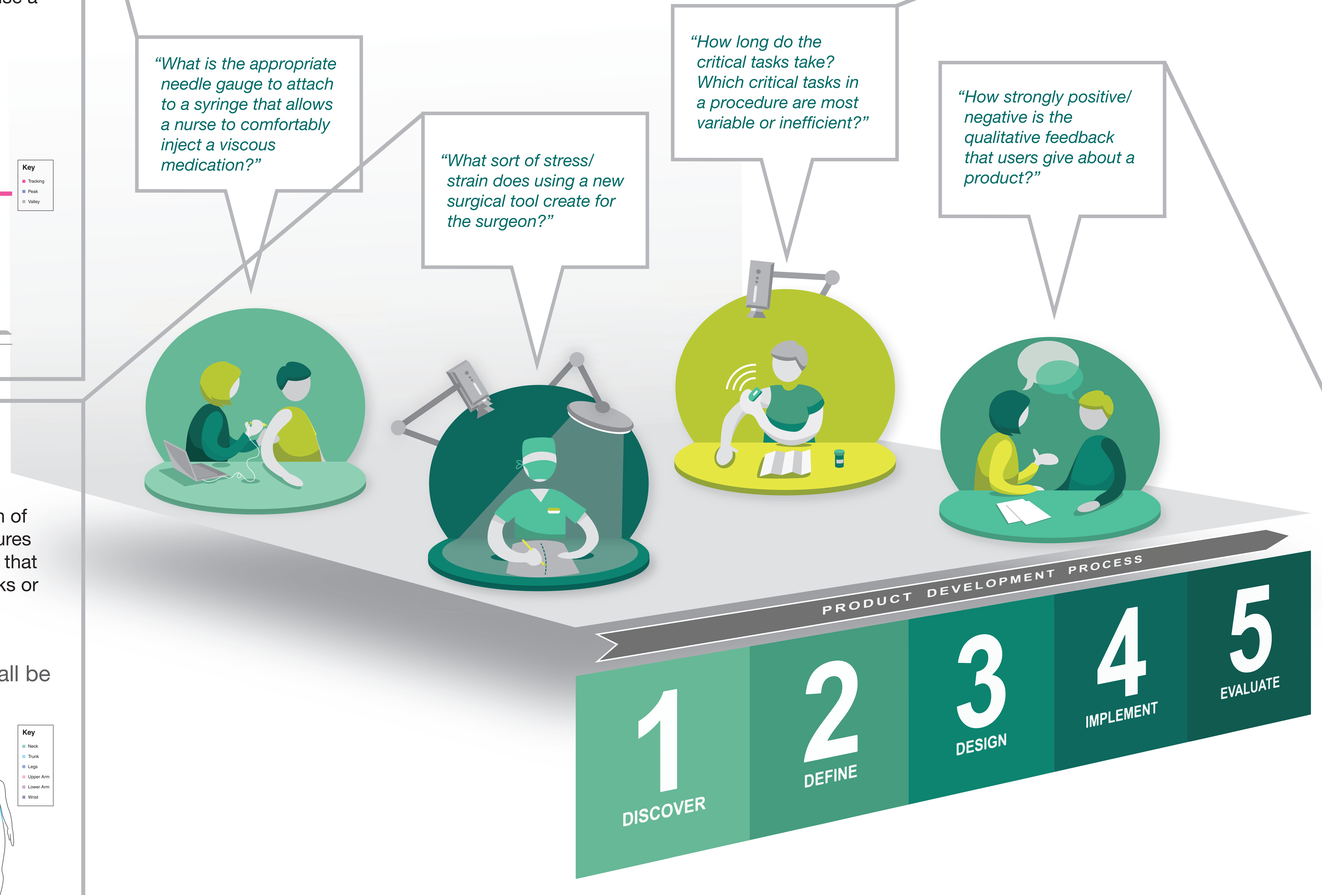
Ergonomic Assessment

Method: Use postural assessment methods (e.g., REBA/RULA) to analyze the body positions and movements of product users.

Outcome: Identification of patterns in users' postures throughout procedures that indicate hazardous tasks or actions.

Ex. Requirement: "The torque required for Task A shall be less than X."



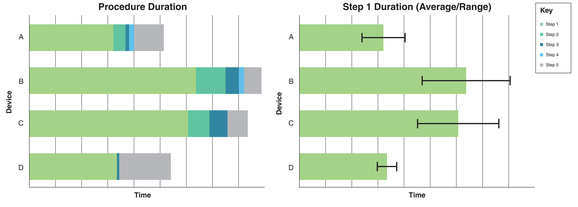


Time/Motion Analysis

Method: Use proprietary timing app on a tablet to record the timing for critical tasks.

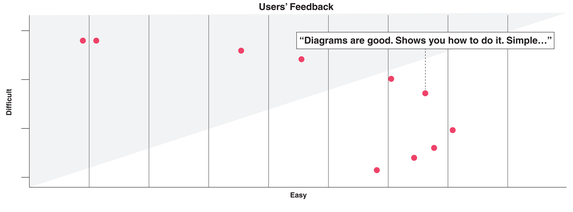
Outcome: Understanding of timing variability within a procedure and comparison across devices.

Ex. Requirement: "Users shall complete critical tasks in 10 minutes or less."



Semantic Analysis

Method: Use dictation software to prevent consolidation of users' feedback and keep emotional nuances. Analyze phrase meanings and plot their similarities/differences.

Outcome: Visual representations of qualitative responses.

Ex. Requirement: "Users' feedback shall be 60% more positive than negative."