Building Trust in Your Critical Care Home Device

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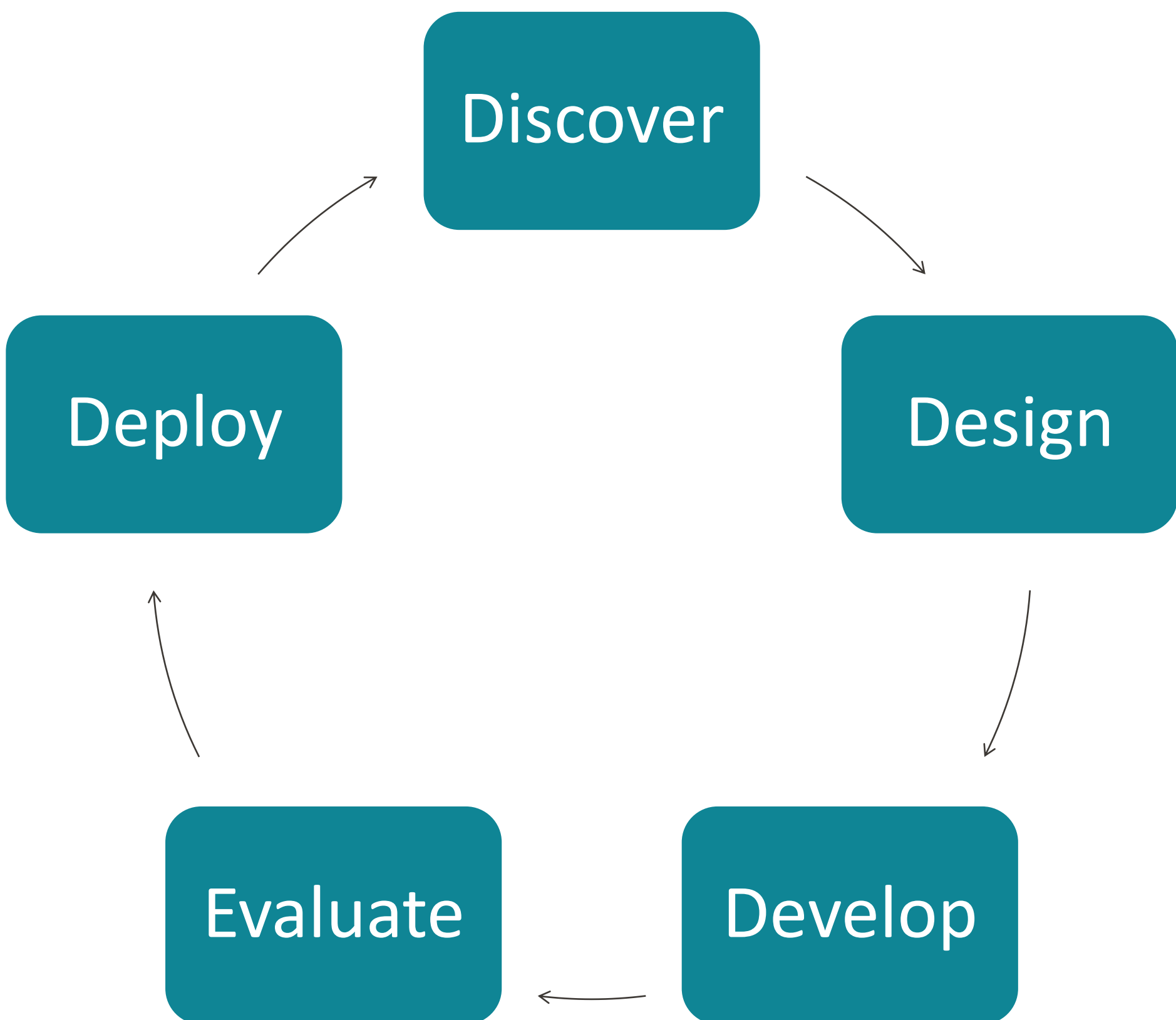
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BACKGROUND

• Critical care home devices are becoming more prominent as people move towards treating at home.

• The critical care equipment market is expected to increase by 6% every year and hit a valuation of 7.5 billion in 2027[1].

• Home "users" may be a patient, caregiver, or family member who may have knowledge that ranges from expert to almost none.

• Human Factors methods were used to determine trust building components for Tablo – a hemodialysis system that can be used in both acute and home settings.

• Hemodialysis, which is primarily needed due to kidney failure, is the process of filtering blood outside of the body, and therefore carries inherent risks.

• Design for critical care home devices should not only provide treatment safely and effectively, but also instill confidence to improve the safety profile of home use and overall user satisfaction.

DESIGN CONSIDERATIONS FOR TRUST BUILDING COMPONENTS

Consider having **a clear and robust alarm system**
• Alert and guide the user to perform appropriate corrective actions while avoiding 'jump scares'
• Include pictorial support on alarm screens to reduce cognitive load on user
• Use clear and simple language

"If there is a problem [the alarm] doesn't let you go any further until you fix the problem. It keeps you comfortable"
- Test Participant

Consider **step-by-step instructions**
• Guide users through a single task at a time to minimize cognitive and motor loads
• Include video animations to reduce visual load on user
• Break down steps to allow users to be successful at each step so trust and confidence can be built

"[Step by step instructions] does a nice job by taking away doubts of what am I supposed to do here."
– Test Participant

Consider **emotional touches**
• Use personalization to facilitate an emotional connection, such as adding the patient's name on the screen, using upbeat sounds to indicate the completion of different milestones, or including positive reinforcement throughout use

"It gives positive reinforcement: 'Great job!' 'Good for you!' 'You're all set & ready to go!'. People need to hear that"
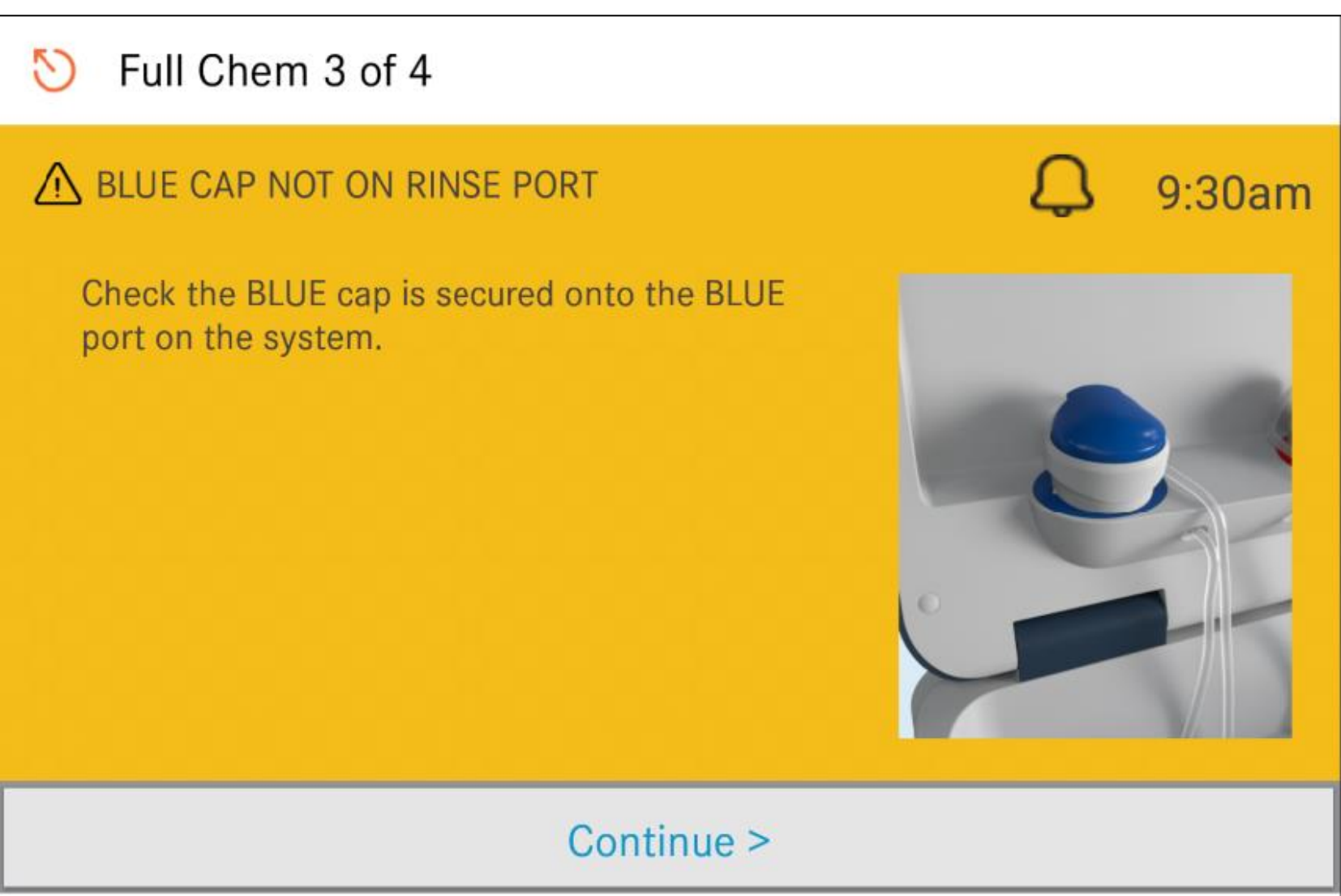*- Test Participant*

TRUST BUILDING OPPORTUNITIES

The opportunity to discover trust building components and build trust can occur at any stage of the Human Factors Engineering cycle.
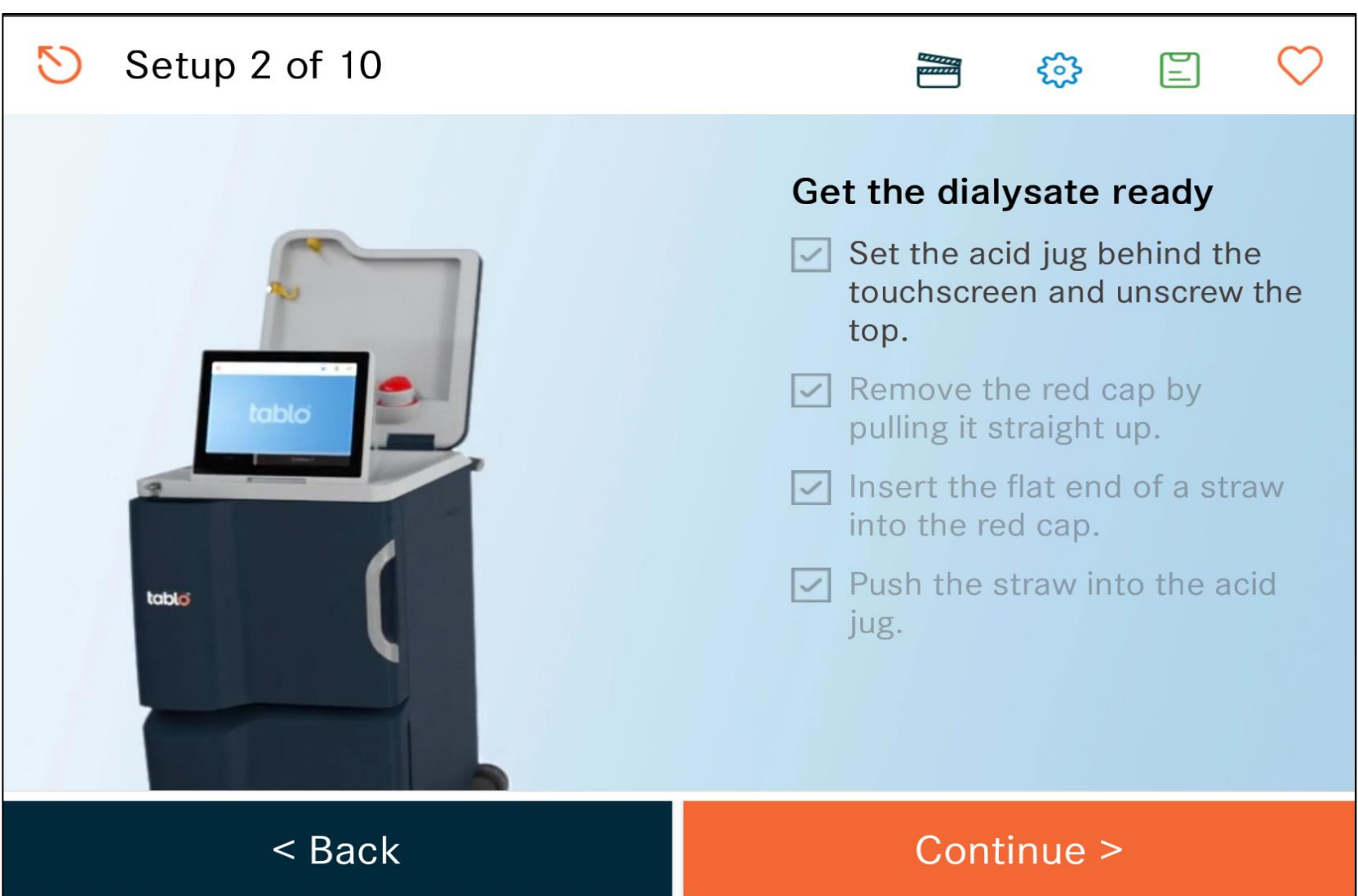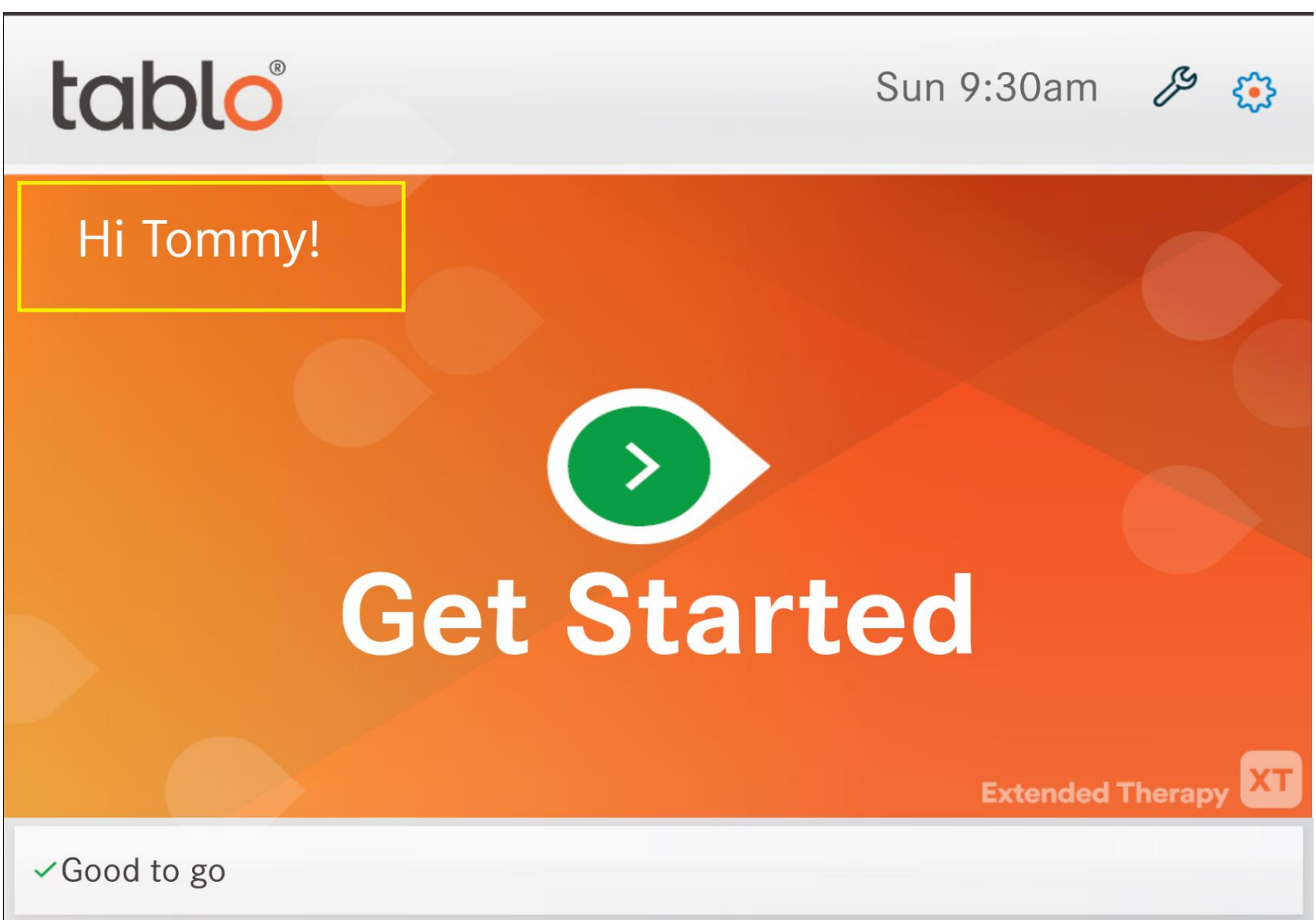

• User research methods such as contextual inquiry and user interviews allow users to provide their insights and feel connected to the company's design decisions.

• Formative testing and validation testing create trust by showing that the company is keen on improving their product and producing a safe, high-quality product.

• Training is often the first exposure to a device, so robust training and empathetic trainers can be used to prompt initial trust in the device.

• Great customer service and easy feedback forms allow users to feel heard whenever they have concerns or feedback.

• Sharing current user stories and experiences with other users builds trust as users can relate to others with similar experiences.

DISCUSSION and CONCLUSION

• Critical care home devices are a need, not a want, for users, so it is important that they provide a seamless experience that they can trust.

• Critical care home devices should help minimize the burden on the user, in order to improve user safety and user satisfaction.

• Designing a system that instills confidence in its users creates one less thing for patients to worry about when thinking about their care and helps build trust.

• The ideas presented here can be used by human factors professionals and product development teams throughout the healthcare and medical device sectors to help build that trust.

• Furthermore, these examples may be generalized to a broad range of therapeutic areas, device types, users, and use environments to guide the design of devices.

[1] "Fact.MR – Critical Care Equipment Market ." *Fact.MR, Market Research Company*, https://www.factmr.com/report/critical-care-equipment-market