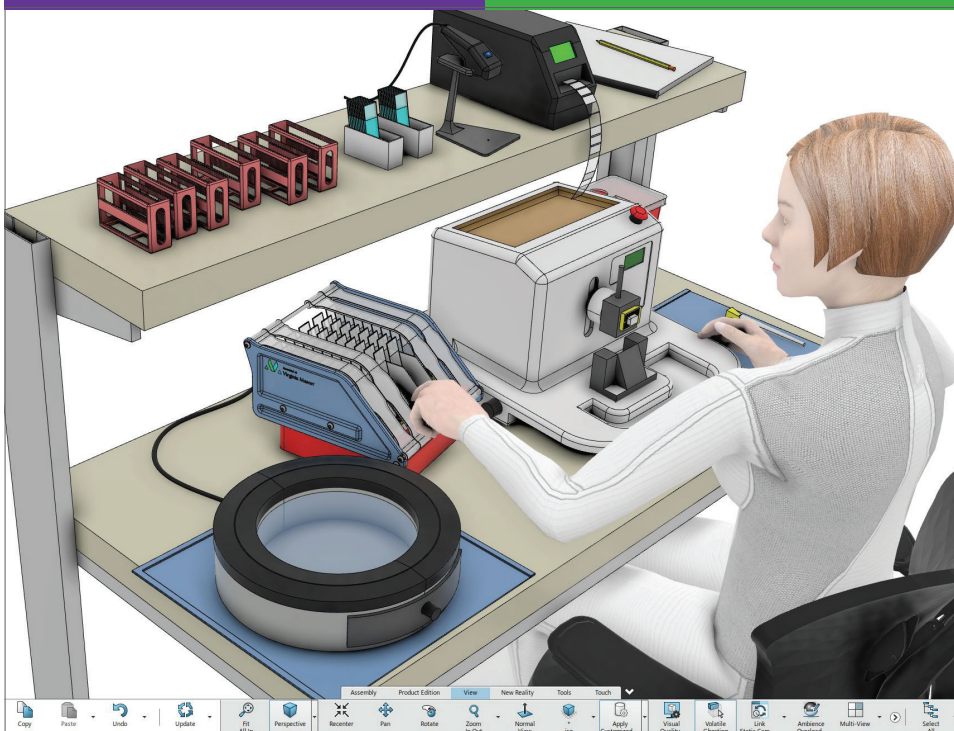




Systems Engineering Tools in Healthcare: Enabling Innovation and Collaboration for Real-World Results

Project Innovation Highlights

How an engineering firm is helping a leader in healthcare transformation to leverage high-end tools for design and simulation



About Full Circle Systems Engineering

Full Circle Systems Engineering, LLC is a Seattle-based consulting engineering firm specializing in human-centered design and simulation. They apply expertise and tools from aerospace manufacturing to make a positive impact for people and organizations in their work.

Contact

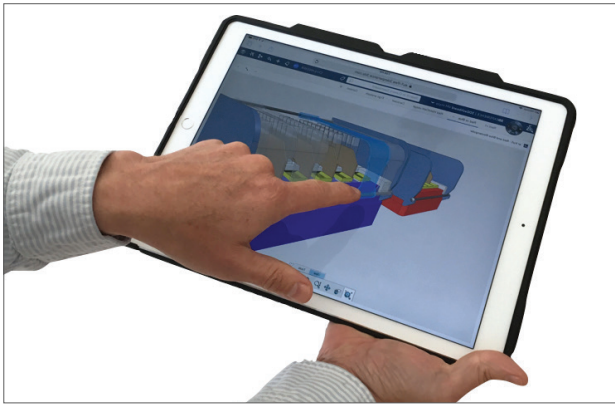
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Solving a Healthcare Challenge

Virginia Mason Medical Center in Seattle, WA is an industry leader in transforming the delivery of healthcare. Much of their success can be attributed to their implementation of the principles of the Toyota Production System. This drive for innovation enabled a Virginia Mason physician leader to envision an improved laboratory workflow with a new tool to organize tissue sample processing.



To develop and prototype the tool, Virginia Mason Center for Innovation engaged Full Circle Systems Engineering. Full Circle uses software from Dassault Systemès, the industry leader in advanced design software for the aerospace, defense, and automotive industries. Dassault's new Cloud-based 3DEXperience platform enables this powerful software to be deployed in other industries at any scale.



Rapid, collaborative design

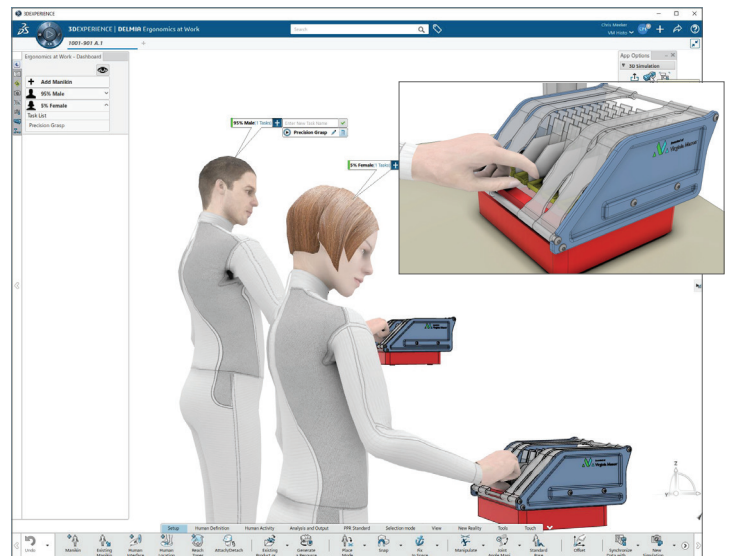
Solution

Virginia Mason organized an Innovation Day to engage lab technicians, physicians and Full Circle to ideate on potential solutions. This workshop resulted in two concepts that Full Circle developed into 3D computer designs. Full Circle then facilitated three design cycles at the lab during the regular workday. During these sessions the team's designs were refined, vetted by the technicians, and analyzed for ergonomic use. The two designs were then 3D printed and assembled for testing. User testing was done by the technicians using simulated tissue samples.

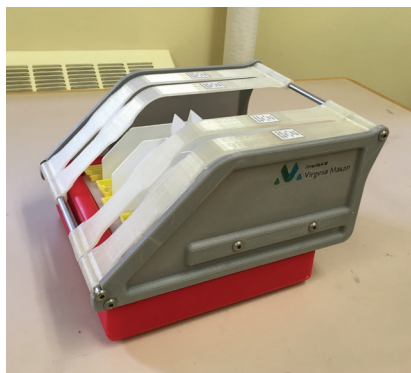
Evaluation and Success

The team leveraged the 3DExperience platform to integrate clinical experience, the Virginia Mason culture of innovation, and engineering expertise. This allowed them to innovate rapidly, iterate efficiently with end-users, and create refined prototypes for user testing. Similar efforts such as 3P workshops typically take large groups of staff offline for five days. This project required only one offline staff day, as follow-on design reviews were efficiently performed within the context of daily work.

This first phase of tool development has created staff engagement by empowering them with ownership of their process and proving their concepts in prototype form. Next steps will integrate the tool design with the work environment through virtual reality and process simulation. With a successful outcome, the laboratory team, together with the Virginia Mason Center for Innovation and Full Circle, will have created a new tool that improves the efficiency and accuracy of the lab process.



Virtual ergonomics



Physical prototype for use-testing

Full Circle Services

- 3D design, simulation, and printing
- Collaborative innovation through stakeholder engagement
- Equipment and facility integration
- Rapid prototyping
- Systems engineering
- Virtual ergonomics
- Virtual reality



Composite image of technician using virtual reality

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