Augmented Reality Electronic Procedure System (AR-eProc)
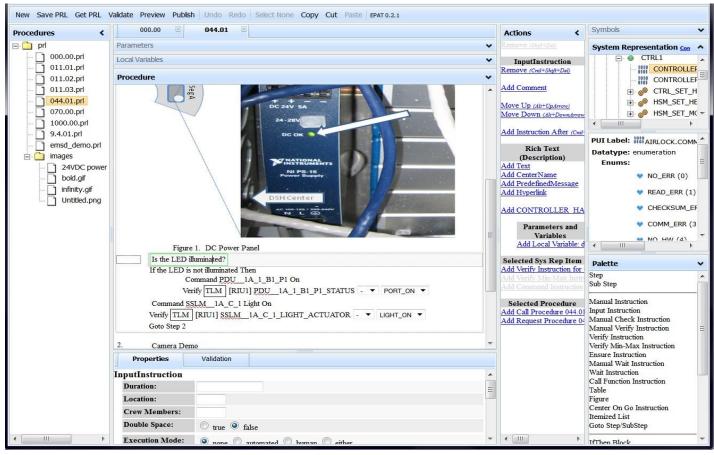
Lui Wang / ER6

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Web based Authoring Tool
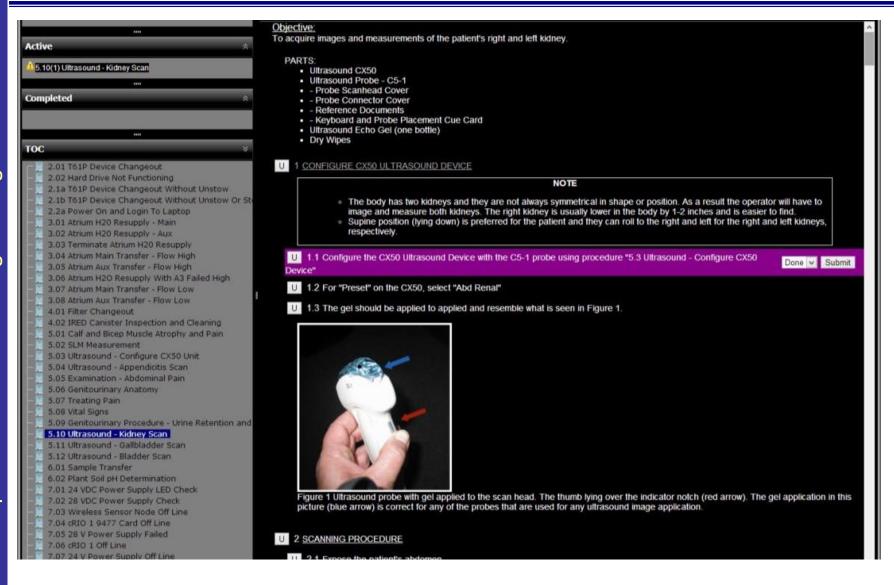
- HTML5 Technology

- Drag-n-drop user interface.

- Supports the full Semantics of the Procedure Representation Language

Web Based Viewer/Display

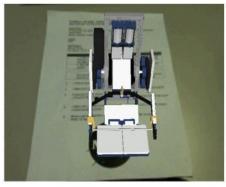Spacecraft Software Engineering Branch/ER6

- Prototypes of AR-eProc for Maintenance of Devices on the International Space Station, Deep Space Habitat and UnderSea Lab
    - Advanced Resistive Exercise Device Maintenance (ARED)
    - Total Organics Carbon Analyzer (TOCA) Cartridge Replacement Procedure
    - Miniature Exercise Device Assembly (MED) Procedure
    - Augmented Reality Ultrasound Medical Procedure Assistant
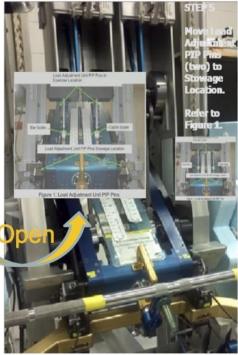   - Deep Space Habitat (DSH) Assets Locator
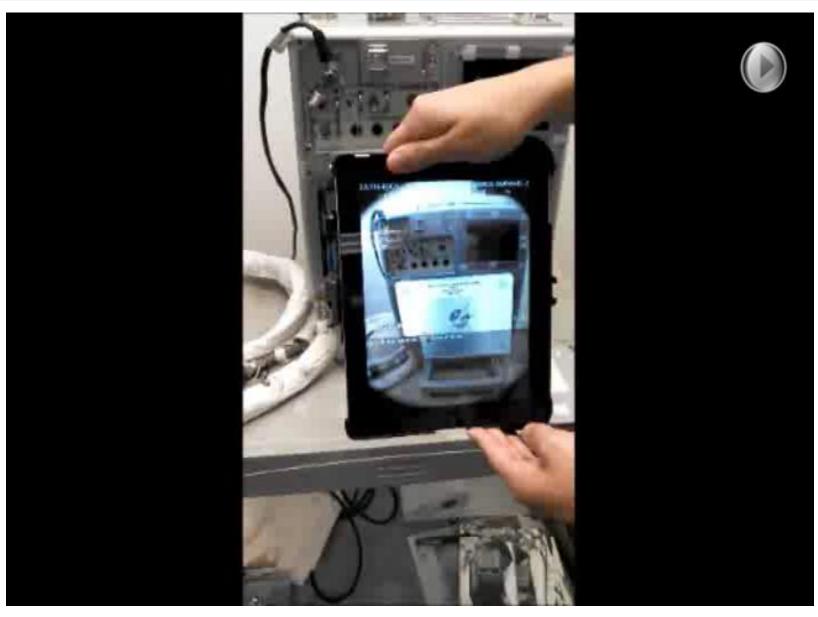
Augmented Reality (AR-eProc ARED)

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Assembly Procedure Intro
This procedure details the assembly of the MED (Miniature Exercise Device)

Duncan pert

Page 1   4 days ago

Miniature Exercise Device
Assembly & Dis-assembly Tasks

Sani-tank Purge Glass
Procedure

Pressurize Tank
Main Lock: Sani Tank
Control Panel: Sani
Control Valve – Toggle
between OFF and
FLUSH as shown until
Tank P = 50 psi.

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3D Cue

Target Image

Adjust the transducer according to the liver's short axis by translating the probe towards the chest

Current Step

Camera

Ultrasound

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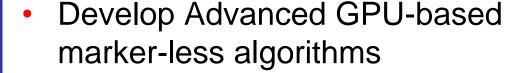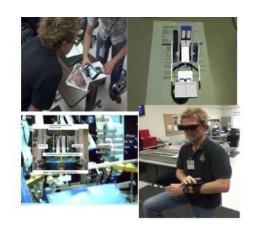
- AR-eProc Applications Types
  - Marker-less Registration
    - Augmented Reality Advanced Exercise Device Cylinder Evac Proc.
    - AR TOCA Buffer Change out Proc.
  - Marker Registration
    - Deep Space Hab AR Assets Locator
    - AR TOCA Buffer Change out Proc.
  - No Registration
    - Autonomous Ultrasound guidance
    - GlassProc Just-in-time training for SEATESTII

- Develop Advanced GPU-based marker-less algorithms

Benefits

- Astronauts & Astronauts trainers identified the following benefits of the use of AR-eProc technology:
  - More efficient just in time training
  - Faster learning curve
  - Less prone to error
  - Faster procedure execution
  - More intuitive direct object annotation