

Open Virtual Reality Testbed Activities

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UVA-NASA Future Direction of HCI and Its Impact, April 26-27, 1995

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Overview of Talk

- **Manufacturing**
- **Image-based VR as a User Interface - Immersion as an Organizing Principle**
- **Mass Market Technology Prototypes and Entertainment**
- **Integrating the Internet and a VR Environment**
- **Health Care**



Manufacturing

- Investigate use of VR for a variety of manufacturing processes
- Use commercial off-the-shelf software
- Work with “real” industrial partners - Black & Decker

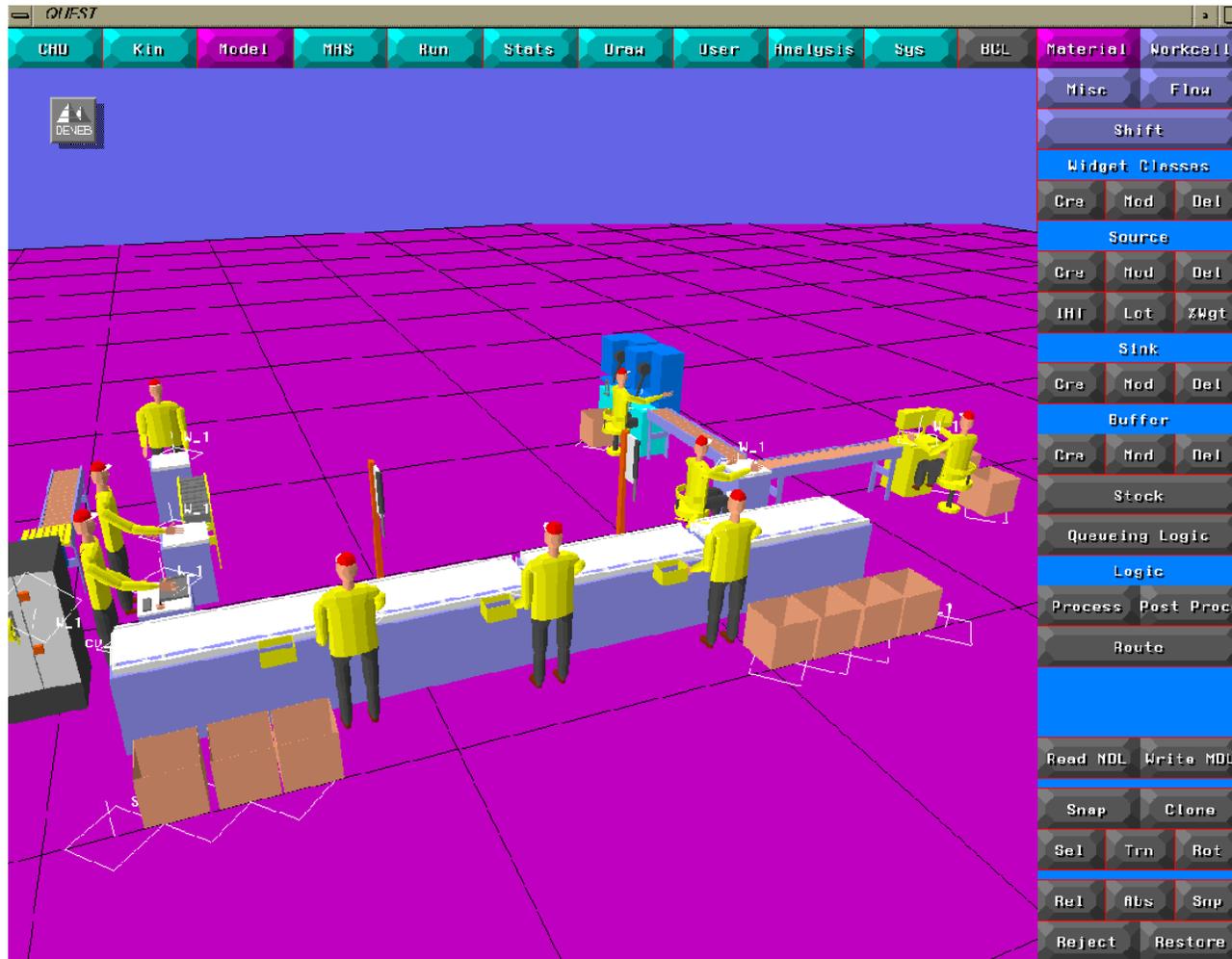
Simulation of a final assembly area at B&D

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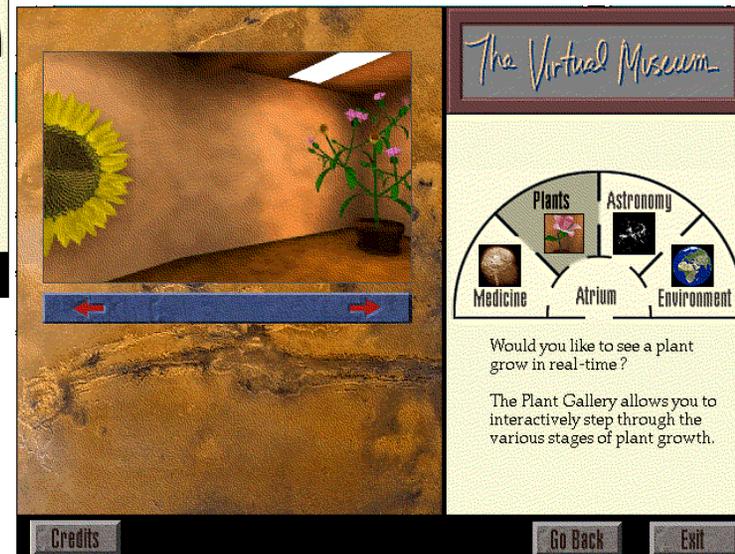
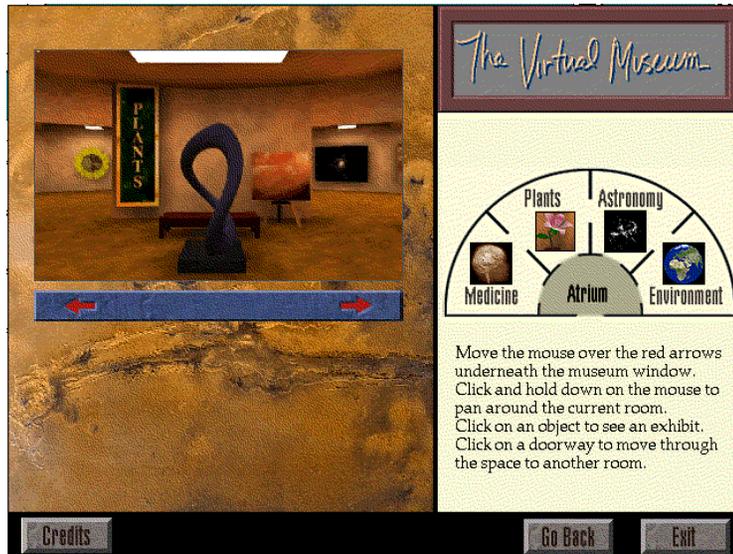
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Mass Market Technology Prototypes/Products

- Apple's Virtual Museum



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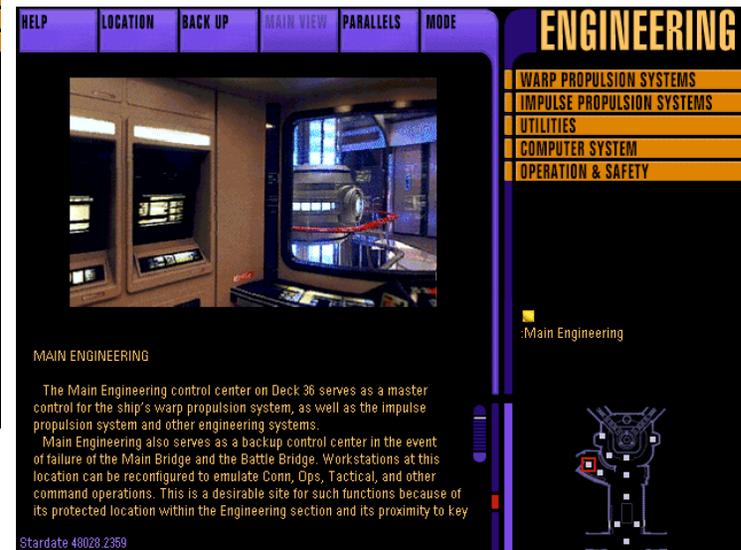
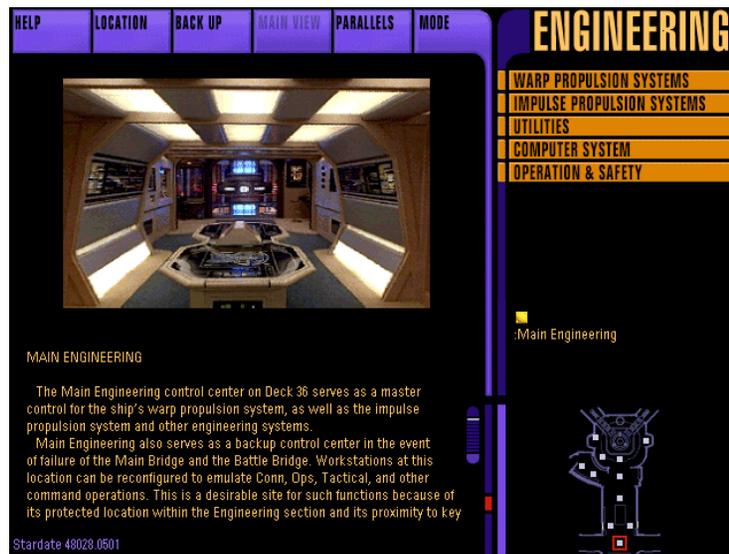
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Mass Market Technology Prototypes/Products

- Simon & Schuster Interactive's StarTrek Next Generation Interactive Technical Manual (first commercial use of Apple's QuickTime VR)



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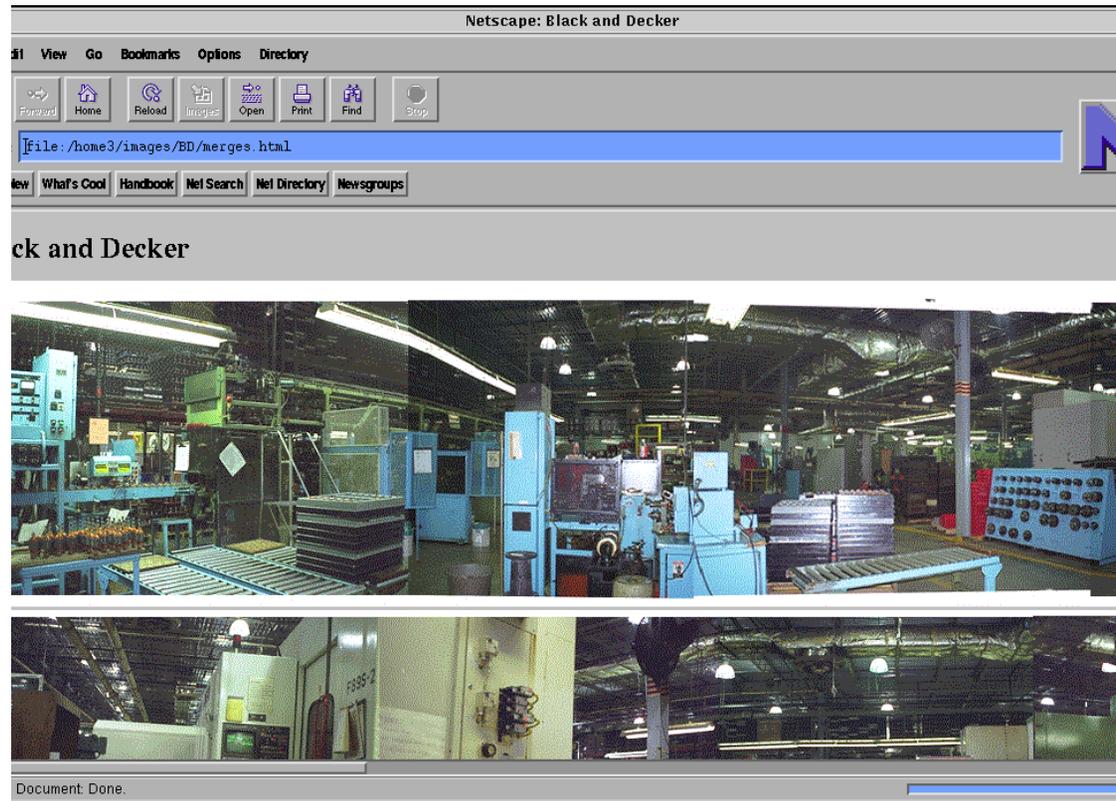
Entertainment as a Technology Puller

- **Nintendo/Sega - Jurassic Park**
Alternates between typical 2D video game and 3D POV views for interior scenes, cartridge based.
- **Broderbund/Cyan - MYST**
Move around environment, sync sound highly photorealistic.
- **Virgin Games/Trilobyte - 7th Guest**
First person POV plus active elements (actors/agents)
- **Id - Doom**
Highly responsive real time POV and networking

Entertainment as a Technology Puller

- All of the games provide First Person POV
- All synchronize sound with the action and environment of the moment.
- Level of interactivity is highly variable ranging from no time dependence to real time requirements (i.e. you die if you don't do anything).
- Increasing level of autonomous sophistication, actors/agents.
- Autonomous agents can be carried into more "serious" applications for information grazing/retrieval.
- Tools for information discovery with increasing degrees of intelligence embedded in natural spatial environments.

Factory floor images for image-based VR



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VR as a User Interface - Immersion as an Organizing Principle

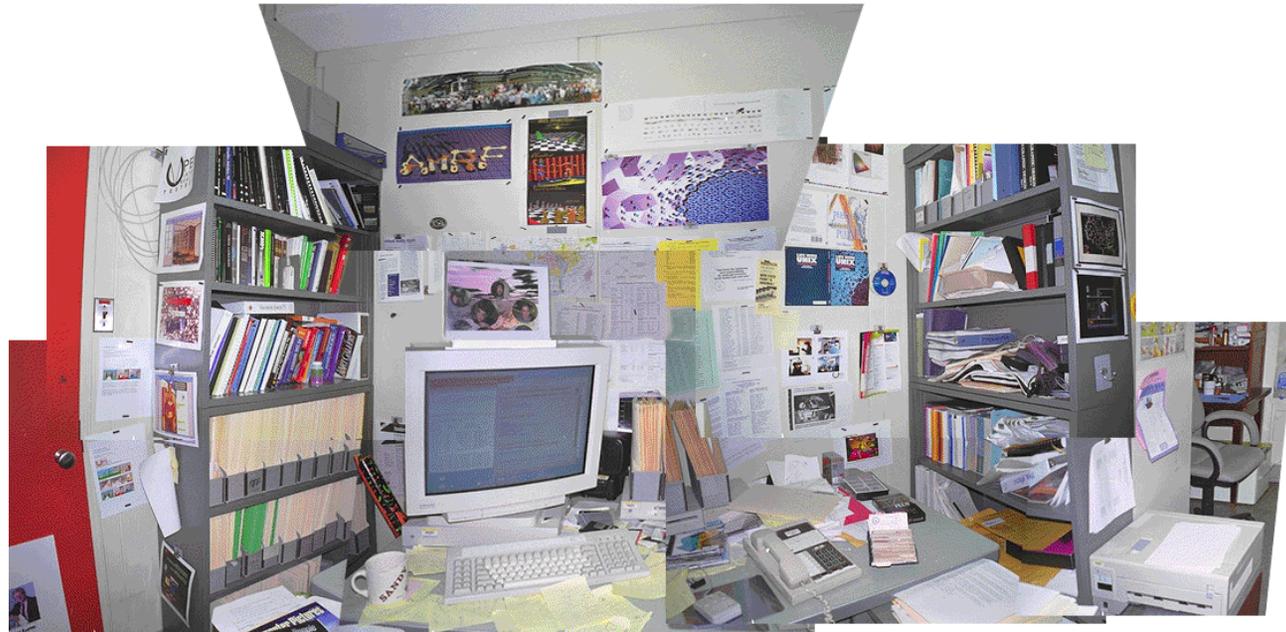
- First person point-of-view (POV) environments are natural - we are in them every day.
- Computer based POV environments attempt to move users from the real world to a virtual world.
- Movement in the virtual world is not natural and must be learned.



VR as a User Interface - Immersion as an Organizing Principle (cont.)

- Arrangement of items in and around the user can be highly personalized. (I can find stuff in my messy office because I've internalized the location of objects).
- Spatial metaphors can be tailored to the individual, office, building, city, maps.
- One can “objectify” locations - i.e. turning locations of interest into objects (a la 3D clip art) and placing them in memorable locations.

Familiar space as organizing device



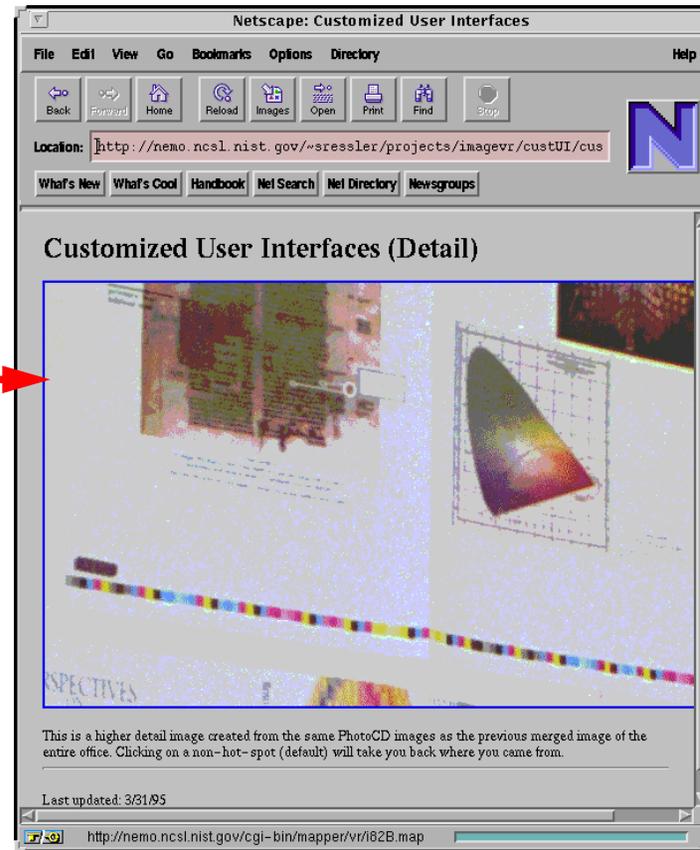
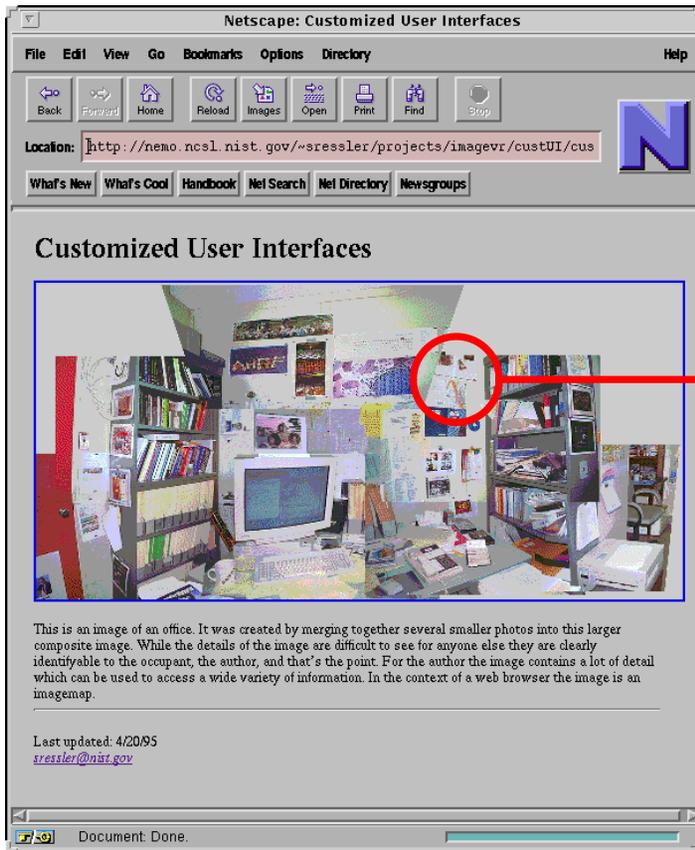
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Customized User Interfaces via Image-based VR



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Integrating Mosaic and a VR Environment

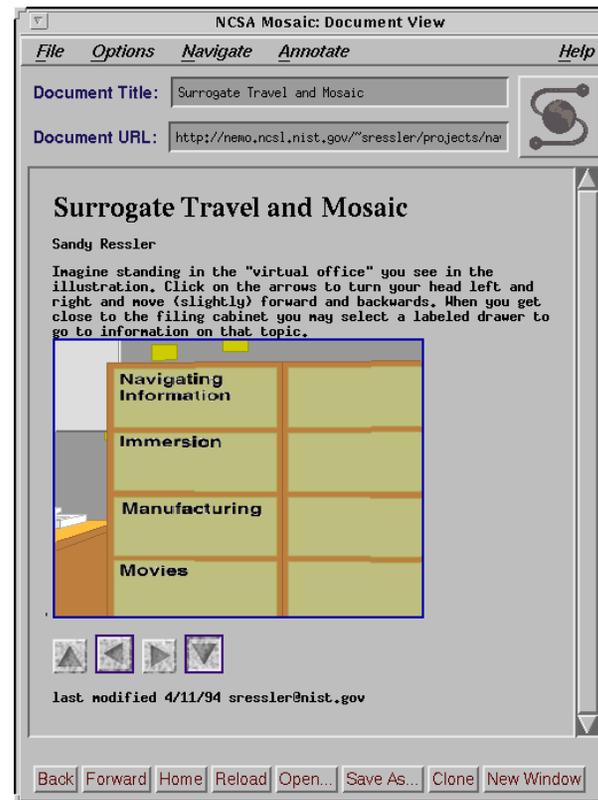
- An experiment in “surrogate travel” as a front end to Mosaic information.



Integrating Mosaic and a VR Environment (cont.)

- Current system is simple proof-of-concept.
- All views are “hardwired” no automated layout.
- Future systems will provide automated HTML generation of scenes and provide correct connectivity.
- Alternately a 3D viewer can be used as a Mosaic application much like viewer are currently used for images and sounds. (Problems with portability)
- The industry is quickly moving towards the Virtual Reality Modeling Language (VRML)

Integrating Mosaic and a VR Environment (cont.)



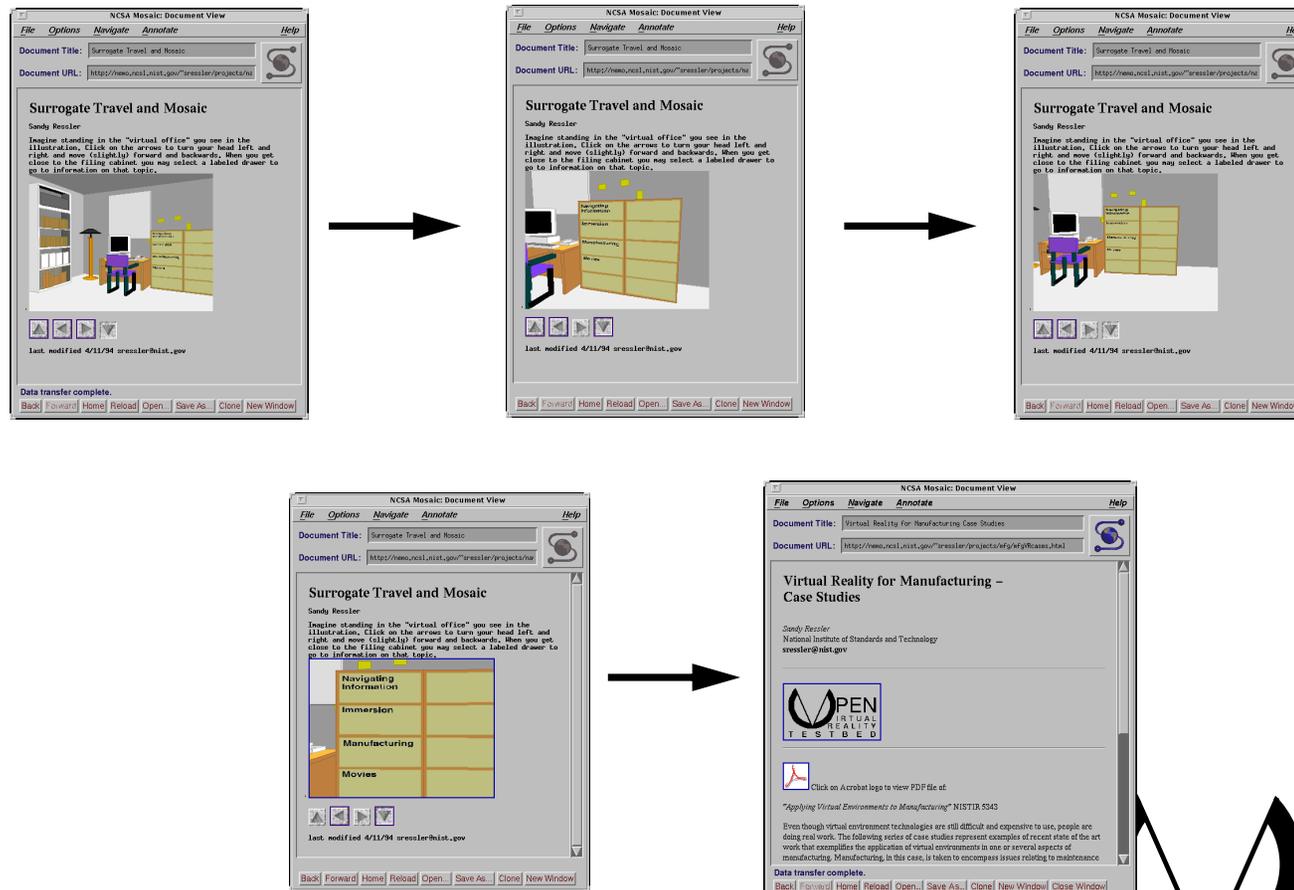
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Integrating Mosaic and a VR Environment (cont.)



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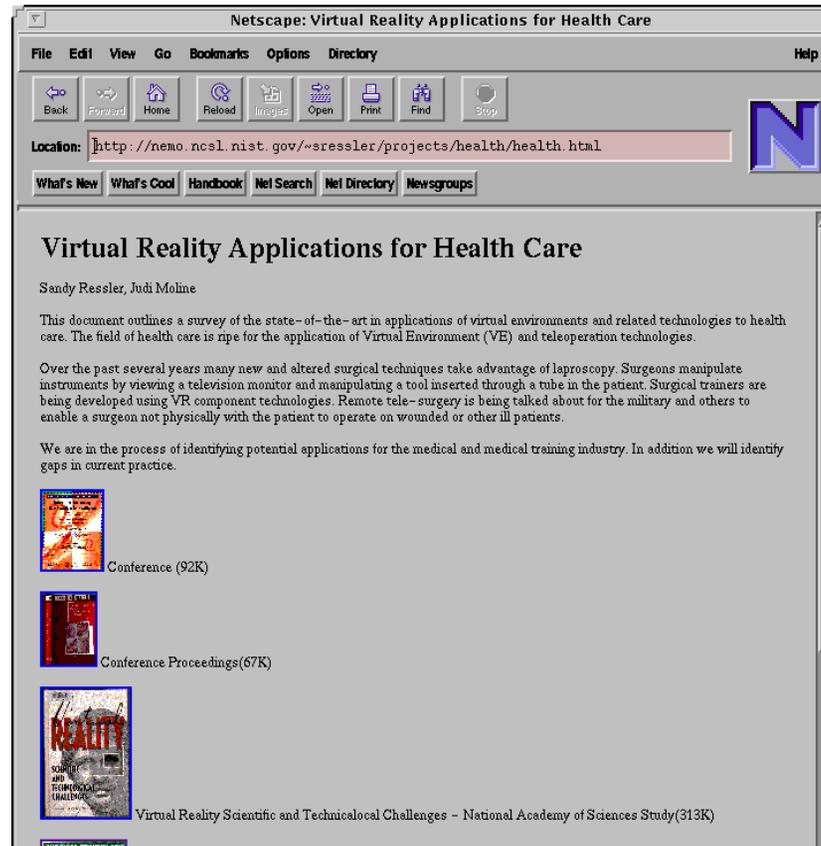
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Health Care and Virtual Reality

- **Advanced Technology Program funded white paper.**



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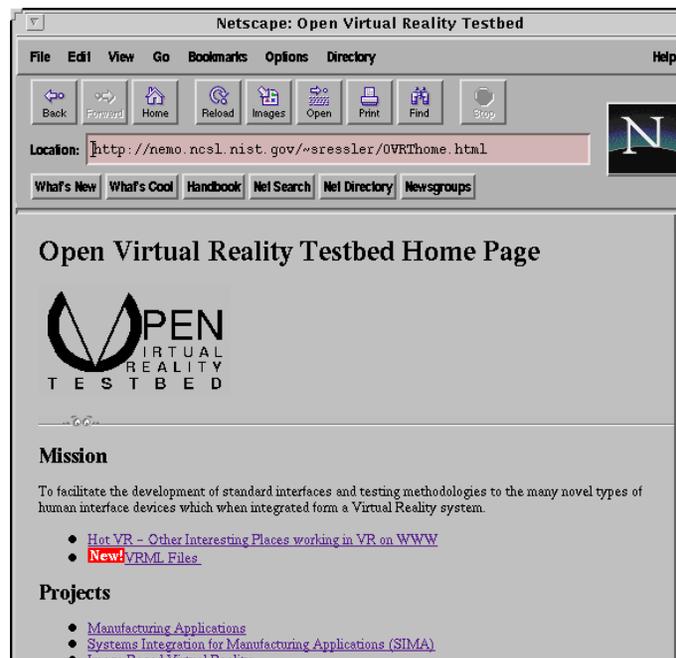
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Open Virtual Reality Testbed — On the Web (cont.)

- Project “Home Page” URL -
<http://nemo.ncsl.nist.gov/~sressler/OVRThome.html>
- For more information contact Sandy Ressler:
sressler@nist.gov



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