

Visualization on and Interaction with Large High-Resolution Display Environments

Sebastian Thelen and Peter-Scott Olech

3x3 Display Cluster at TU Kaiserslautern

- Supervisor: Jun.-Prof. Dr. Achim Ebert
- 7.680 x 4.800 pixels resolution (36 megapixels)
- 5 PCs + 9 displays ⇔ 2 LCDs / node



HIPerWall: 5x10 Display Cluster at UC Irvine

- Supervisor: Prof. Dr. Jörg Meyer
- 25.600 x 8.000 pixels resolution (200 megapixels)
- 25 PowerMacs G5 + 50 displays ⇔ 2 LCDs / node

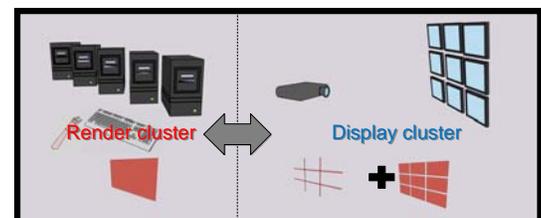


(PI: Falko Kuester, UC San Diego, Sponsor: National Science Foundation)



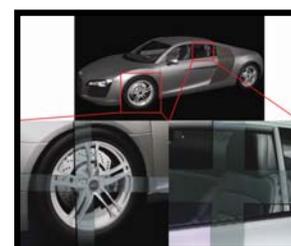
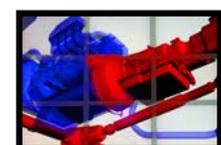
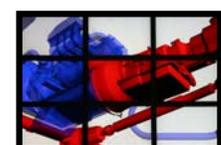
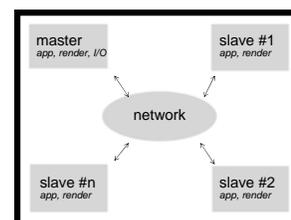
Open Software System for Driving Display Walls

- Master-Slave Architecture
- Scalability
- Data Distribution
- Synchronization
- Calibration



Tiled++ – An Enhanced Tiled Hi-Res Display Wall

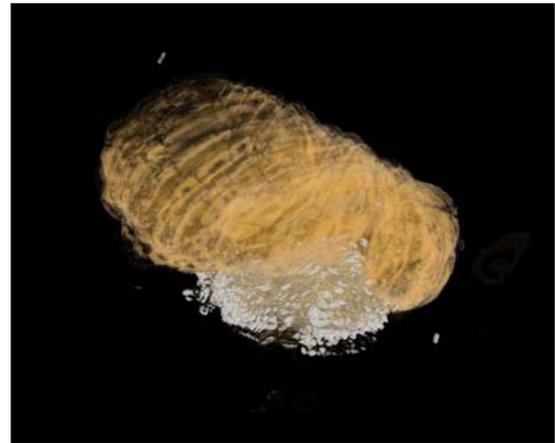
- **Bezel Problem:** Monitor bezels cause discontinuities (French window effect) and potentially distract users
- Hybrid approach combining projectors and LCDs to create a virtually seamless display
 - Provide missing information by projectors projecting onto monitor frames ⇔ Non-trivial **projector calibration** ⇔ Homographies
 - Tiled++ makes navigation more efficient (proven in a **user study**)



Research Applications in Biomedicine

Sebastian Thelen

- **Biomedical Imaging** of large-scale data sets on high-resolution display systems available at UC Irvine
 - Need for new data structures, data decomposition techniques, quantization and multi-level-of-detail storage
 - Aim: Instant rendering on large displays via hardware accelerated volume visualization.



Research Applications in Spatial and Environmental Planning

Peter-Scott Olech

- **Information Visualization** using new display technologies
- Sustainability visualization with: precipitation, water usage, ground water
 - Visualization for public participation, decision making and planning support (e.g. sustainability factors, outdoor noise, form based code)
 - Interaction with new display technologies (e.g. collaborative work and large displays)

