Nomad 3D
Augmented Reality in Instrument Control

Yannick Le Goc
Outline

• Introduction
• Nomad & SolidWorks
• Workflow
• Demonstrations
• Conclusion
Introduction

User point of view
- Walls
- Webcams

Figaro
Vertical Time-of-Flight Reflectometer
Introduction

Our goal:

• 3D **dynamic** representation

• **Augment the reality** of the user on the instrument

• See **behind** the walls

**Animate** a 3D model in **realtime**
Introduction
Introduction

NOMAD + Nomad 3D

THE EUROPEAN NEUTRON SOURCE
Nomad

- Motion requests
- Monitoring the encoder positions
SolidWorks

• Computer-Aided Design (CAD)
• Hierarchy of components
• Geometries: combination of basic shapes
Problem

SolidWorks models are **not adapted**
- Combination of shapes not loadable
- Too big

Informations are **missing**
- Motion characteristics: 3D direction vector
- Walls
Goals of Nomad 3D

- **Transform** a SolidWorks design into a Nomad 3D model
- **Realtime** display and **animation** of the model according to the **physical** quantities
Workflow

Transform a SolidWorks instrument model
Workflow

- SolidWorks addin
- Triangulation
- Export
Workflow

- Clean-up
- Simplification
- Levels of Details
Workflow

- Enrich the model
- Motion characteristics
- Walls
Workflow – Editor
Workflow – Editor
Demonstrations

• Viewer application
• Figaro instrument
THE EUROPEAN NEUTRON SOURCE
Conclusion

• Figaro
  - First instrument fully converted
  - Commissioning with users to collect their feedback
  - Preparing to the next instrument

• Future developments
  - Collision detection
  - Moveable objects
  - New platforms: web, tablet, AR device
Thank you

Any questions?

Web site: http://docs.sites.code.ill.fr/nomad-3d/

Contact: legoc@ill.eu