HELSINKI UNIVERSITY OF TECHNOLOGY

Post-graduate research topics at INIT

Industrial Information Technology Laboratory (INIT)
Helsinki University of Technology

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INIT in a nutshell

- Founded 1.6.2001
- Staff equal to some 25 full-time persons
- 4 PhDs, 6 own PhD students
- Operates at two HUT sites:
  - Otaniemi (17)
  - HUT Lahti Center (8)
- 12 EU-projects since 9/2000: 9 IST5, 1+1 Eureka, 1 ProAct
- Consists of two units:
  - Research Unit (19)
    - **Interactive Environments**
    - **Mobile Applications**
    - **Virtual Prototypes**
  - Educational Unit (6)
    - **MSc programme**
    - **e/mLearning research**

INIT in a nutshell...

- Some 20 publications in three years
- Lots of technical reports due to participation to EU projects
- More than 30 active partners in industry/academia
- First PhD by 9/2003
- Researchers have various backgrounds – also required due to the research topics dealing with diversed technologies and skills

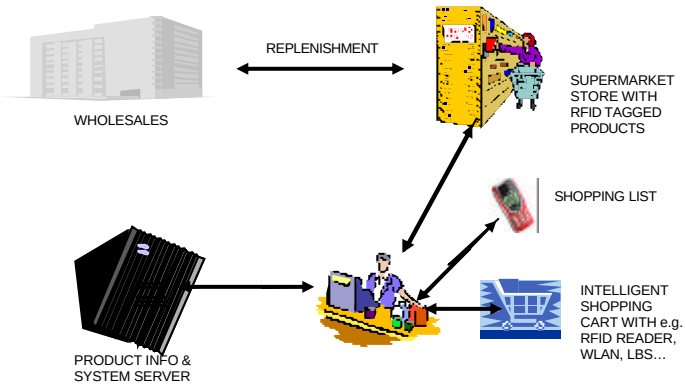
Interactive environments

- **INIT studies and develops interactive systems for addressing multiple users/spectators**
- **Previous work includes various large-size projections and showrooms, such as EXPO2000, Radiolinja Showroom, Nokia Showroom, Kone intelligent elevator, Santa Claus land...**
- **Biggest challenges are in real-time animation/3D graphics, mobile/fixed communication, sensor systems for interaction (also deviceless)**

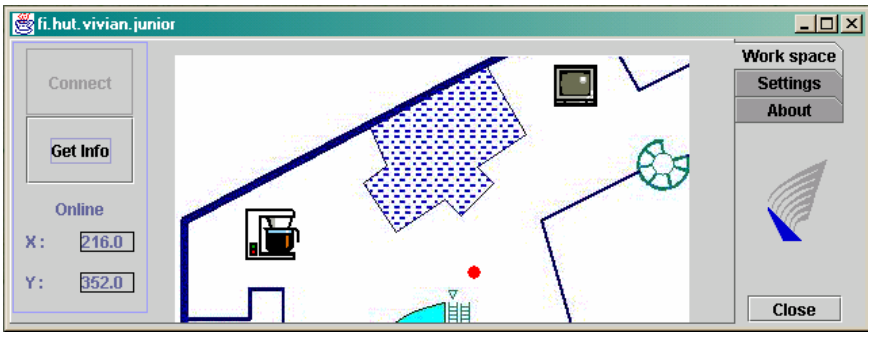
Mobile pilots and applications

- **INIT designs & implements various mobile pilots**
- **Experience in mMiddleware, mTourism, mCommerce, mStreaming, mControl, mPayment, mAuthentication...**
- **Biggest challenges are in SW design (in particular MW design as trying to develop generic solutions), mobile system integration and developing add-ons to terminals**

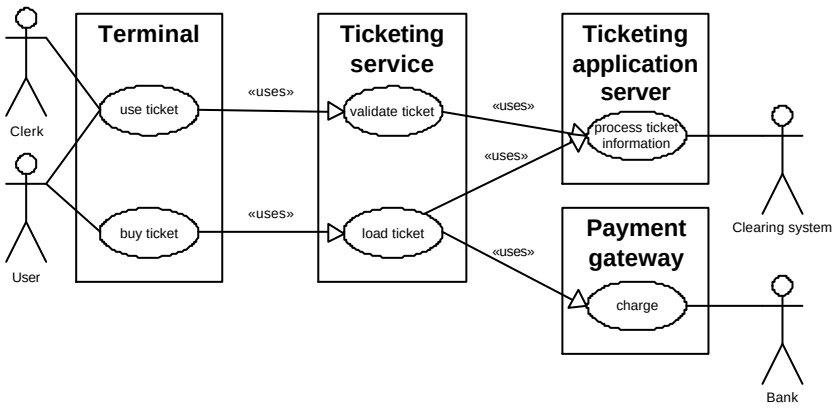
Mobile shopping application



Location-based pilots – e.g. Mobile indoor guide on Psion netBook



Mobile ticketing application



Mobility

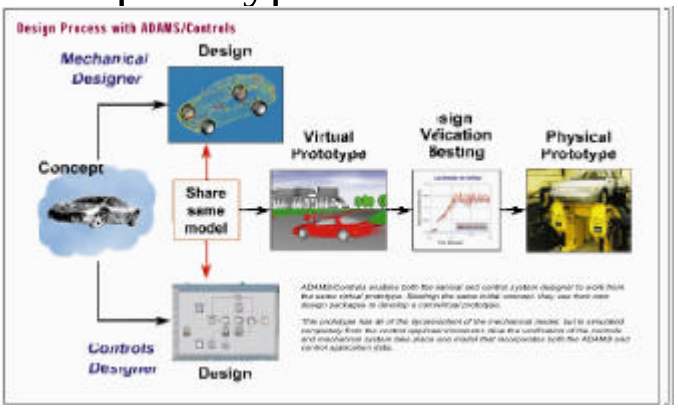
Example on Middleware related research - same client/services on multiple mobile platforms

Virtual prototypes

Virtual prototypes and simulation

- **INIT utilises graphical simulation and modeling tools for various manufacturing system related problems**

Virtual prototypes and simulation



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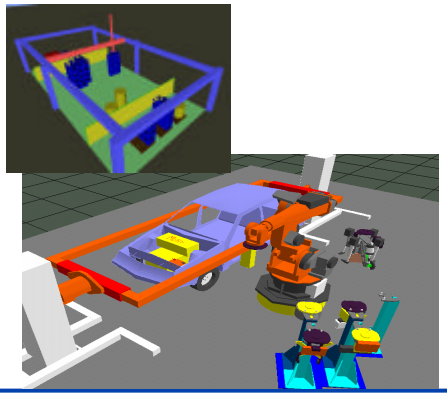
Virtual prototypes

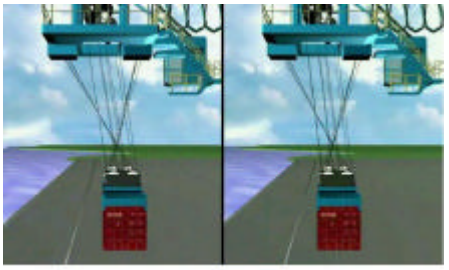
Virtual prototypes and simulation

- **INIT utilises graphical simulation tools for various manufacturing system related problems**
- **Previous work in off-line robot programming and industrial automation**

Prof. Tuominen, INIT/HUT
PG Research Seminar, Otaniemi, 13.3.2003

Virtual prototypes and simulation





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Virtual prototypes

Virtual prototypes and simulation

- **INIT utilises graphical simulation tools for various manufacturing system related problems**
- **Previous work in off-line robot programming and industrial automation**
- **Biggest problems in (control) algorithm design and visual simulation – especially if real-time demands exists**

Prof. Tuominen, INIT/HUT
PG Research Seminar, Otaniemi, 13.3.2003