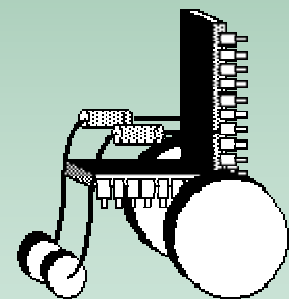


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Sharing models between intelligent applications and user interfaces in Ambient Assisted Living

Jesús María Cía Viciano
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Donostia-San Sebastián

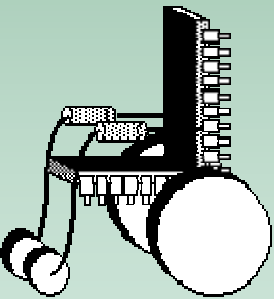


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Laboratory of Human-Computer Interaction for Special Needs

Behar Berezitarako Pertsona-Konputagailu Elkarrekintza Laborategia



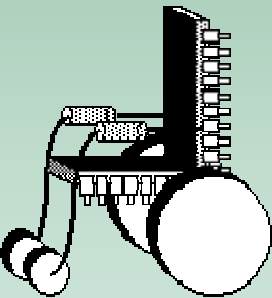
- **Created in 1985**
- **11 permanent professors and lecturers + 9 contracted researchers and granted doctoral students**
- **Work fields**
 - Cognitive, Sensory and Physical Accessibility.
 - Alternative and Augmentative Communication (IUIs) and Mobility (Smart wheelchairs)
 - Ubiquitous Computing and AmI for Smart Homes and AAL

International Committees

- **IFIP TC 13 Human-Computer Interaction**
- **IFIP WG13.3 HCI and Disability**
- **COST219 bis “Telecommunications Access for Disabled People and Elderly”(1997-01)**
- **COST219 ter “Accessibility for All to Services and Terminals for Next Generation Networks” (2003-2006)**
- **EDeAN, IST/CE, etc.**



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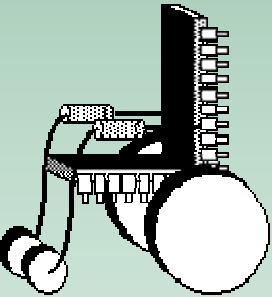


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IUI4AAL 2008

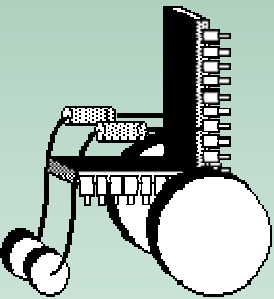
Rationale (I)

- The **Research Group on Intelligent Tutors (UPV-EHU)** has experience in developing intelligent applications were the intelligent user interface
 - is embedded in the own application or
 - is expressly developed for a specific application



Rationale (II)

- **The Laboratory of HCI for Special Needs (UPV-EHU)** has experience in developing:
 - **IUIs for people with** (sensory, physical or cognitive) **disabilities** (DomoSilla, TetraNauta I, II, III; Cogniweb I, II, III, IV Projects)
 - **Technological support for AAL**
 - Middleware for the interoperation of heterogeneous networks (Heterorred Project)
 - Intelligent ambient applications (Ambiennet Project)



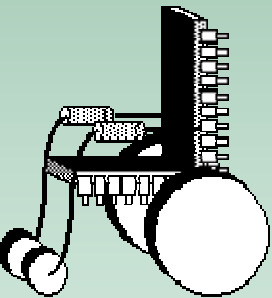
Rationale (III)

Circumstances:

- In all cases **user/task/environment models** are used
- Aml and AAL: Proliferation of intelligent distributed applications and wearable user interfaces (each one handling and maintaining its own models)

Questions:

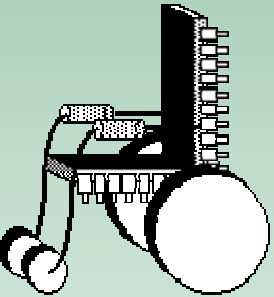
- Can these models be shared by Intelligent AAL applications and IUIs?
- Should they be shared?



The PIAPNE Project (I)

- A joint work:
 - Research Group on Intelligent Tutors
 - Laboratory of HCI for Special Needs
- To develop an AAL prototype, composed of
 - An intelligent context aware application to support elderly people living alone
 - An adaptive user interface

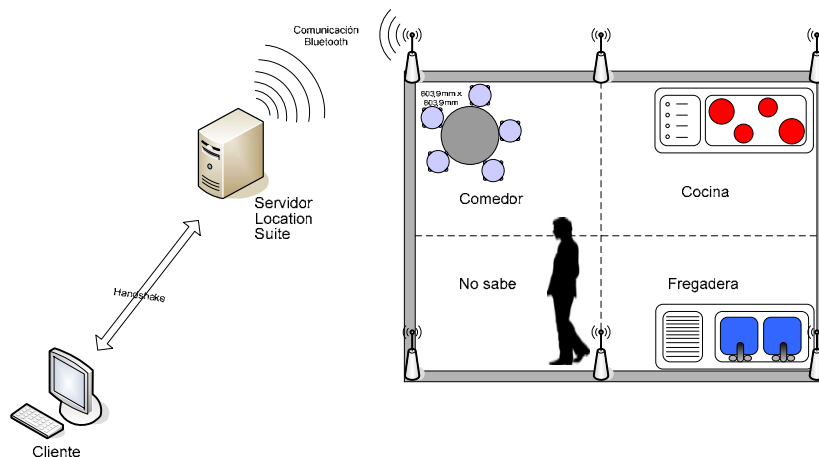
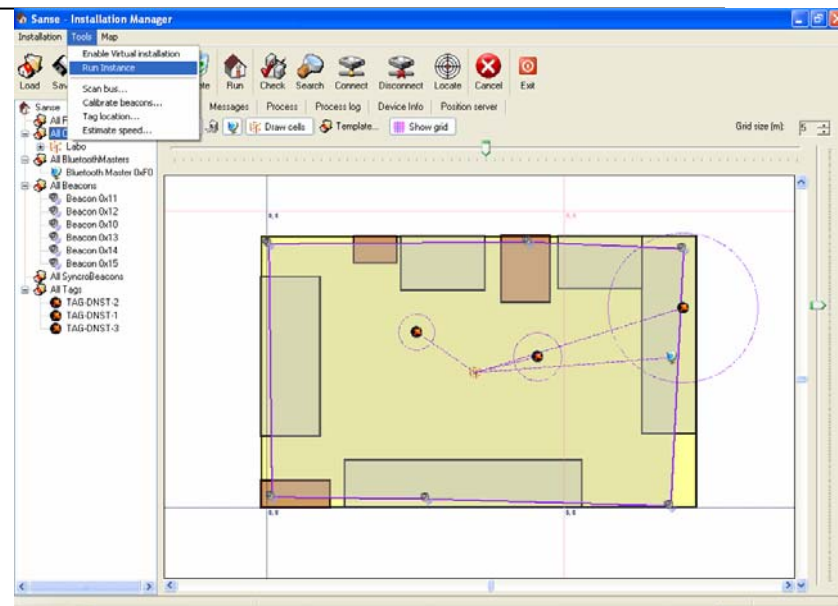
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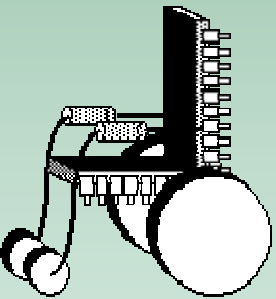
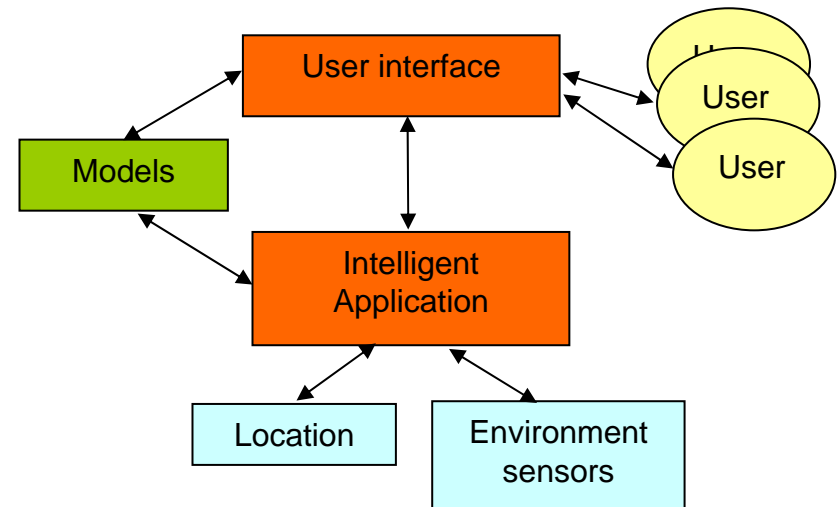
The PIAPNE Project (II)

- The application provides assistance to the users taking into account
 - Their physical, cognitive and sensory features
 - The task they are doing
 - The place where this task is/should be done



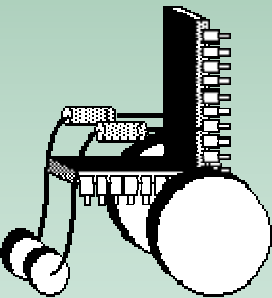
The PIAPNE Project (III)

The prototype application and interface developed in PIAPNE project use, maintain and share a single version of the models by means of a centralized architecture



Use of the models

	Intelligent Applications	Adaptive User Interfaces
User Model	<ul style="list-style-type: none">- Characterization of the user: likes, capacities, permissions, restrictions...	<ul style="list-style-type: none">- Modality for communication- User interface device
Task Model	<ul style="list-style-type: none">- Requirements to develop a task (cognitive, physical, sensory, place, time...)	<ul style="list-style-type: none">- Reduction of the choices for message production
Environment Model	<p>Verification:</p> <ul style="list-style-type: none">- Is the a task done in the appropriate place?- Is the user allowed in this place? (At this time?)	<ul style="list-style-type: none">- Reduction of the choices for message production



Summary & Outlook

- PIAPNE was a prospective project intended to:
 - **Gain experience** in the interaction among Intelligent Applications and IUIs
 - Design **working prototypes** allowing us
 - to test the use of intelligent agents that collect information from the environment to provide a AAL.
 - to explore the technological requirements and the user needs (including ethical requests)
- As a result:
 - This experience suggests that intelligent applications and IUI for AAL can share user, task and environment models
 - allowing the design of **more coherent applications** and
 - **reducing the design and maintenance effort** required

