A case study of one of the most successful programs designed by a higher education institution to promote employability among students living with disability

Prof. Licia Sbattella
President's Delegate for Disabilities
Politecnico di Milano - Italy
G3ict Program Committee Member
licia.sbattella@polimi.it

Agenda

- Specific challenges and opportunities for accessible and assistive ICT solutions

- Italian disability laws and regulations for Academia

- MultiChancePoliTeam: existing ICT assistive services and applications

- Results on employability

- Advanced applied research on assistive ICT

Academia for adult life, employment and social responsibility

- **Adult life and the … "professional self"**
  - The importance of becoming an expert to exercise specific responsibilities in different social contexts.
  - Different professional profiles: scientific *versus* humanistic ones

- **The Campus is a small but complex and significant social context**
  - Where people study, teach, work, cooperate, communicate, research
  - Many persons cooperate with different abilities and disabilities.
  - Everybody can experience autonomous and cooperative dimensions possibly supported by innovative strategies

Academia for adult life, employment and social responsibility

- **Academia is a "special land" which allows protected but strategic relationships between:**

  - Learning and professional environments (i.e. schools / enterprises)
  - Social and cultural dimensions
  - Private and public contexts, governmental and non-governmental partners

- **The applied research can promote**
  - ICT accessibility and innovation
  - The analysis of the real impact of ICT and AT and better evaluation of their efficiency
  - The harmony between human and technological strategies
  - A 'daily' confidence with ICT and Assistive Technology

At Politecnico di Milano – In Italy

- At Politecnico di Milano: **MultiChancePoliTeam** is the group of specialists which guarantees services to students with disabilities (www.polimi.it/disabilita)

- In Italy:
  - A **special Law** (number 17/99) guarantees financial supports to organize special services to make the academic life more and more accessible.
  - **Each university receives funds** in relationships to the number of students with disability, the special projects which support them in studying and facing the first employment experiences.
  - **CNUDD groups the Dean's Delegate for Disability** of each university allowing them coordination, global policies and exchange of innovative strategies.

Special Services:
The MultiChancePoliTeam

- The **MultiChancePoliTeam** guarantees services to the students with disability:
    - A psycho-educational counseling
    - University attendance support (admission test, tutoring, personalized examinations, accessibility to the campus, administrative, accommodation and studying supports)
    - Teaching aids: conditions specifically suited to maximize the benefit of classroom and laboratory work by means of personalized and innovative technological teaching aids (Text To Speech & Automatic Speech Recognition technologies)

Special Services:
The MultiChancePoliTeam

- The **MultiChancePoliTeam** guarantees services to the students with disability:
    - Technological aids (HW and SW solutions for personal needs)
    - The Wireless Campus allows a personalized fruition of classrooms and laboratory activities, Internet and local services, ...
    - Distance Learning (<u>only when strictly needed</u>)
   - International mobility

Special Services
Multimodal fruition of lectures

- Recording and converting lectures
- Allowing multimodal cooperation

- Creating guide-lines for teachers (to improve multimodal materials and lectures)
- Handling distance learning
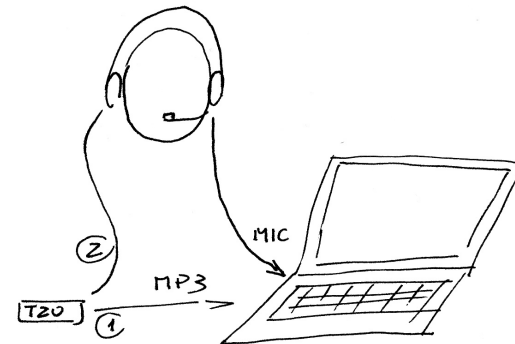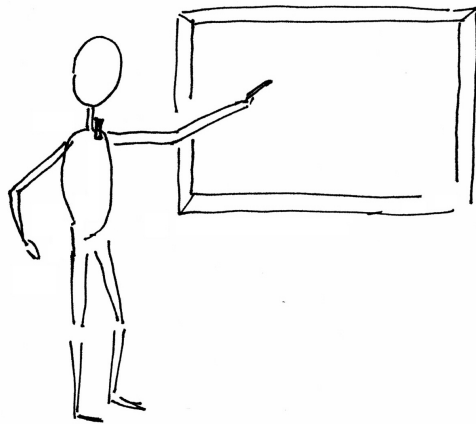
Special Services
Natural Language Processing for Dyslexia

- To study a foreign language
- To prepare and use accessible versions of admission tests
- To face language complexity
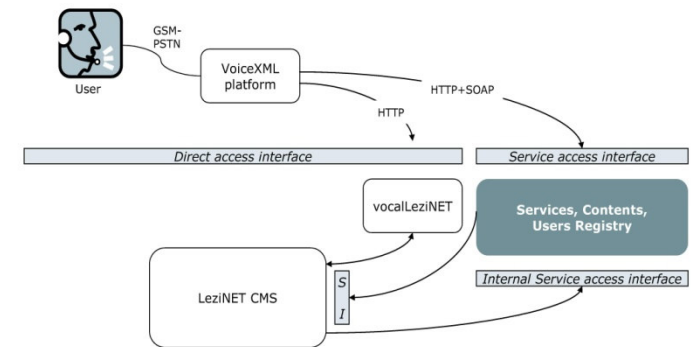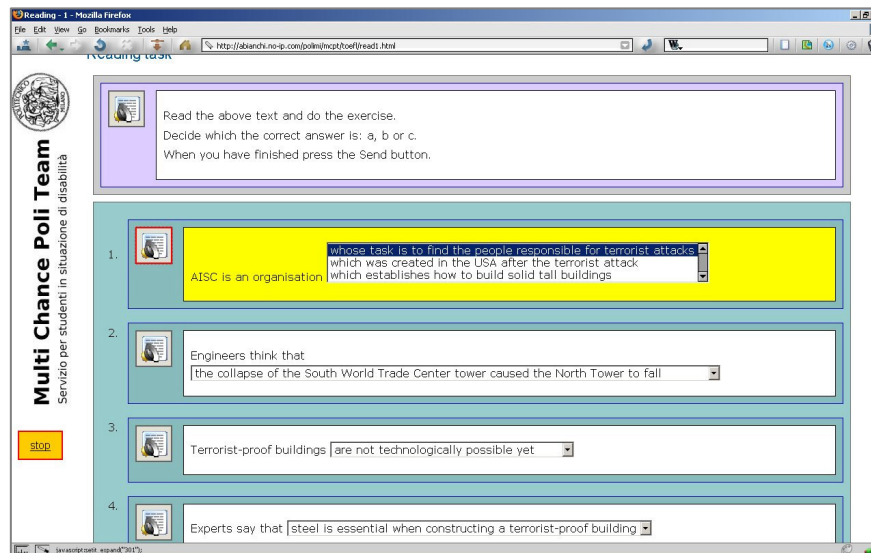
$$I_G = 89 - 10 \cdot \frac{N_L}{N_P} + 300 \cdot \frac{N_F}{N_P}$$

$$I_{READ} = a \cdot I_G + b \cdot I_C + c \cdot I_T$$

Results

- Students with disabilities with technical degrees from Politecnico di Milano: **0% unemployment rate** over 7 years

- **First year** of employment **supported by the University** with government funds

- All students, once they have experienced **good assistive technologies keep using it** for their private and professional lives

- Programs help **employers better adapt the work environment** to persons with disabilities

Advanced Applied Research: UBICAMPUS and wireless technology

- To navigate and explore the wireless campus
- To reach a complete accessibility of global and local information (often daily changing)
- To communicate with the other protagonists of the academic life
- To handle emergencies
- To be localized
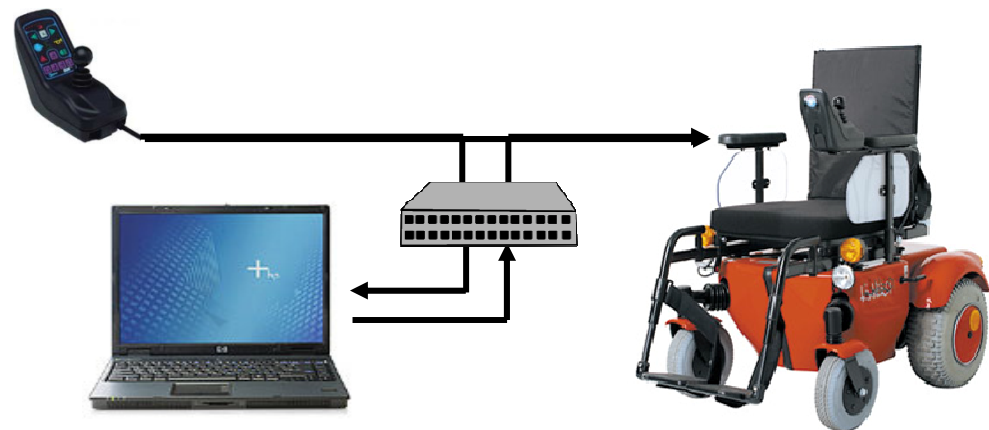- To obtained personalized services based on a specific profile
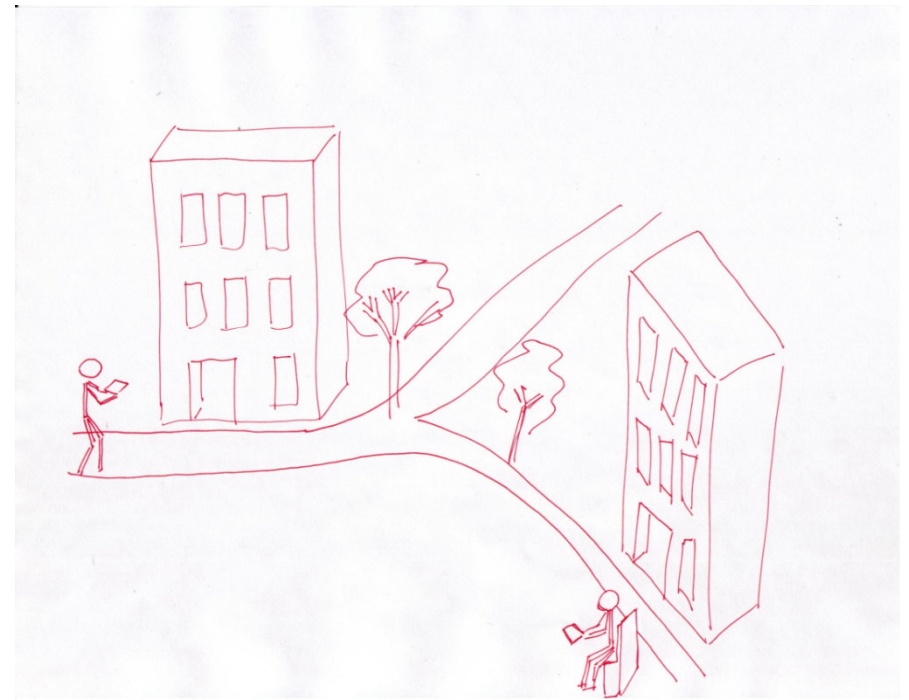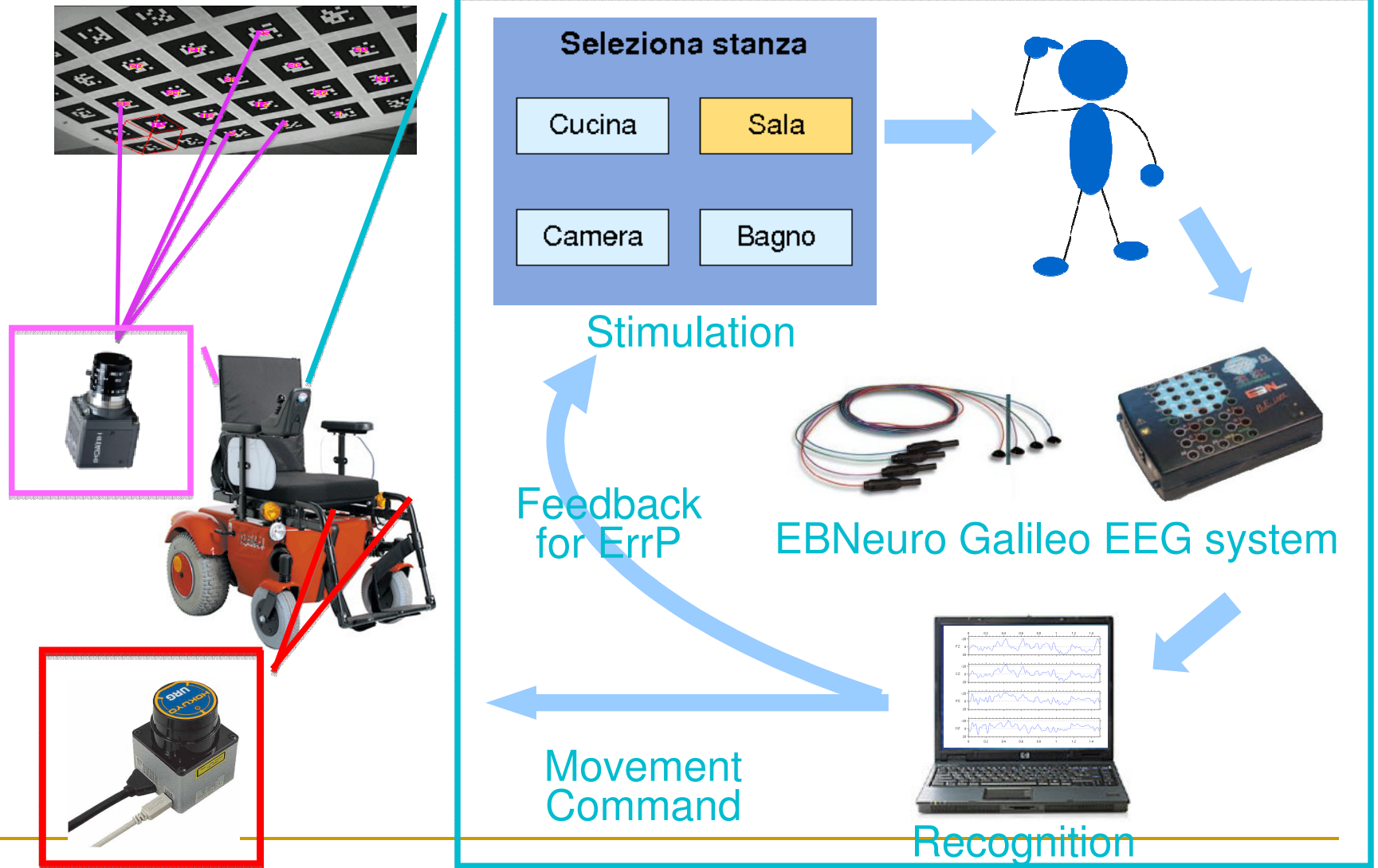
The 4Wheels Project

POLITECNICO DI MILANO

IBM

MWA4wheels

- To navigate and explore the wireless campus using low cost mobile devices
- To use the joystick of the wheelchair for moving and for interacting with the PC and the environment
- To use an advanced domotic SW infrastructure
- To obtained personalized services based on a specific profile

The LURCH Project (BCI at AIR Lab)

Stimulation

Seleziona stanza

| Cucina | Sala |
| Camera | Bagno |

Feedback for ErrP

EBNeuro Galileo EEG system

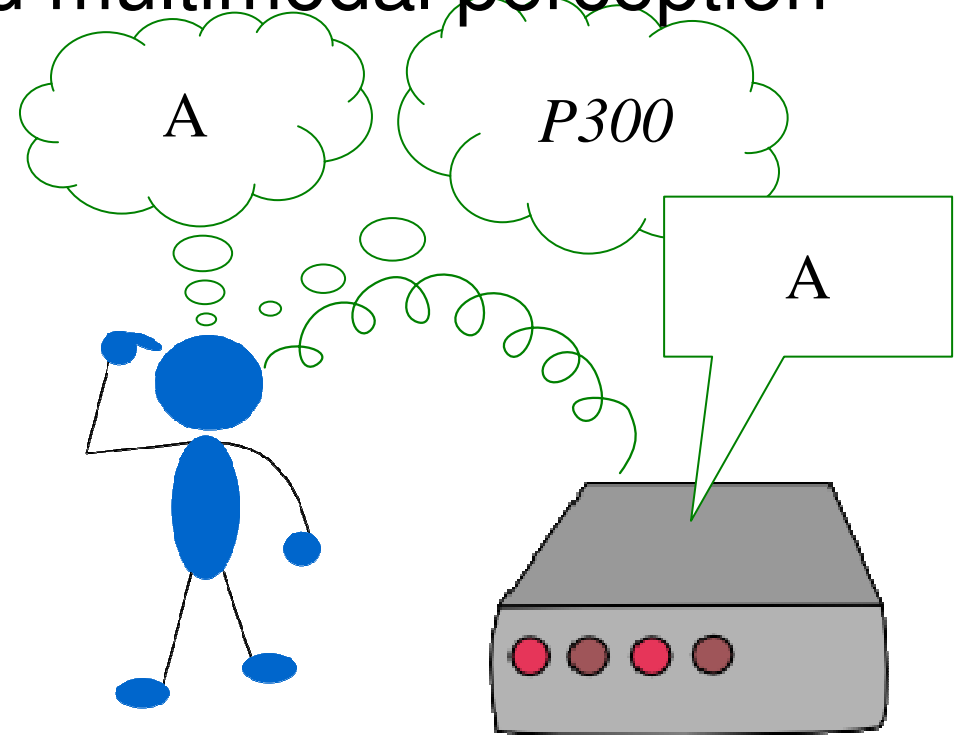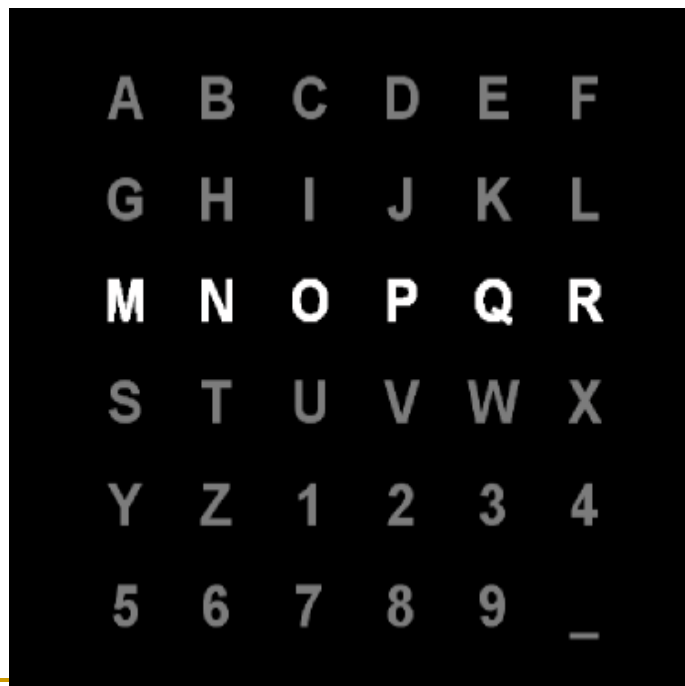**Movement Command**

Recognition

The Predictive BCI Speller
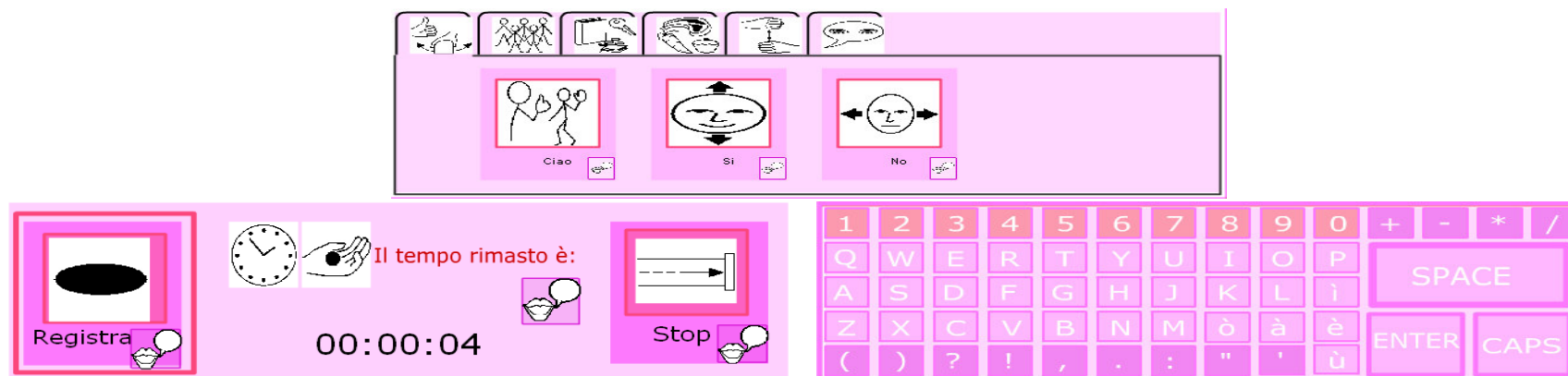## AIR Lab   and   *arcslab*

- To improve communication using NLP prediction

- To study attention and multimodal perception

The ATONOMA-MENTE Project

Independent Living
- Multimodal Communication
- Domotics and Automation
- Personal Assistance
- Emergency Handling

The LAMUSA Project
arcslab – esagramma

- Virtual Environments, Multimodal Communication and Artistic Production for kids and adults with Mental Retardation and Autism
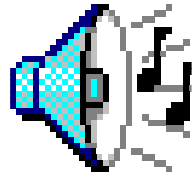
A Symphonic Model for adult life!

La barca è nello scivolo di ghiaccio,
I pinguini scivolano sul ghiaccio.

laura

G3ict & ITU

"Digital Accessibility Index for Persons with Disability"

"Toolkit for Policy Makers"