


COGAIN

Communication by Gaze Interaction

Network of Excellence on
Communication by Gaze Interaction

Main Goals

- Improve the quality of life of people with motor-control difficulties
- Develop effective methods of communication by eye gaze
- Develop assistive technology that is empowering and fun to use



General Goals

- Integrate cutting-edge expertise
 - Join the forces of researchers, enterprises and user organisations
 - Develop eye tracking technology and applications
- Lead the way to mainstream applications
 - Overcome the obstacles for wide-spread use of eye tracking
 - Bring down cost
 - Develop standards for plug-and-play eye tracking
 - Improve usability of eye tracking systems
- Disseminate information


Activities

- Integrating activities
 - Durable community building (WP1)
 - Standardisation (WP2)
 - User involvement, Analysis and Evaluation (WP3)
- Joint research programme
 - Tool development (WP4)
 - Eye tracker development (WP5)
- Spreading of excellence activities
 - Community outreach (WP7)
 - Training (WP8)
- Management (WP9)



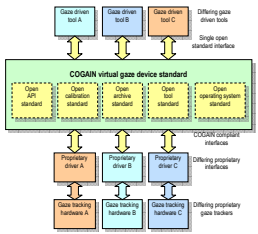

Durable Community Building

- Web portal at www.cogain.org
 - Sharing information and results <http://www.cogain.org/results>
 - Internal working areas for management and task forces
 - Discussion forums
 - Various mailing lists
- COGAIN camps
- COGAIN conferences

Standardisation

- Survey of de-facto standards in eye tracking
- Requirements for the common format of eye movement data
- Standards for gaze based environmental control




User Involvement

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- Questionnaires on user needs
- User trials and training
- Usability studies
- Research retreats
- COGAIN Camps

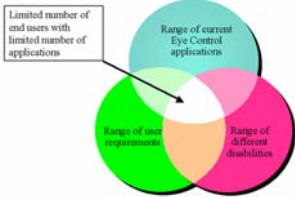
} User Requirements report



User Requirements Report

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- Current situation: Only a limited range of user requirements are met for a limited number of people who might greatly benefit from eye control



User Requirements Report

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- Recommendations for both eye control hardware and software, e.g.
 - Calibration issues
 - Resizable cells and grids
 - Choice of output styles
 - Speech facilities
 - Choice of languages
 - Choice of symbols or text output
 - Safety issues (e.g. infrared exposure)
 - Positioning and mounting

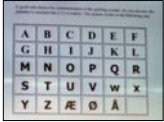



Camp Highlight:

Excerpts from the talk by Arne Lykke Larsen

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- *I was diagnosed with ALS four and a half years ago at the age of 35*
- *Today, my whole body is essentially paralyzed*
- *The advantage of the spelling system is that it always works. [upper picture on right]*
- *Personally I use the spelling system mainly for small-talk, and to give direct orders to my personal assistants*
- *On the other hand, if you want to do poetry or philosophy or theoretical physics, then the spelling system is not really adequate*
- *For any serious writing, I use an eye tracker*

...and more user requirements

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- Possibility to adjust various parameters to meet individual needs and abilities
- Easy and independent calibration and recalibration
- Ability to move without the need for recalibration
- Ability to switch between different kinds of input and output modalities (multi-modal)
- Possibility to access any Windows application (internet, email, games, etc.)
- Eye control system's tolerance to varying conditions (e.g. sunshine)
- Portability, ability to attach to a wheelchair
- Flexibility and accommodation of a wide range of individual differences and needs
- Possible to move independently from one application to the next

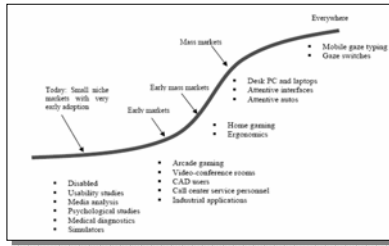



User Population

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- Currently less than 2,000 users in Europe
- Potential market includes people with varying conditions, e.g.:
 - Motor Neurone Disease (MND) / Amyotrophic Lateral Sclerosis (ALS)
 - Multiple Sclerosis (MS)
 - Cerebral palsy (CP)
 - Spinal Muscular Atrophy (SMA)
 - Werdnig-Hoffman Syndrome
 - Rett Syndrome
 - Muscular Dystrophy (MD)
 - Locked-in Syndrome
 - Quadriplegia – Spinal Cord Injury (SCI)
 - Brainstem Stroke
 - Traumatic Brain Injury (TBI)
 - Repetitive Strain Injury (RSI)

Possible development of the gaze tracking market



(Hansen et al. 2005)

Analysis and Evaluation



- Analysis tools for eye movement data
- State of the art report of evaluation methodology
 - What and how to measure
 - Potential evaluation metrics and methods, with special consideration on conducting user trials with people with disabilities



Application Development



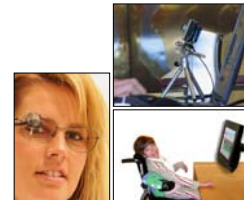
- Application development
- Design specifications and guidelines for COGAIN eye typing systems
- Research retreat on gaze writing
- Prototypes available on web (www.cogain.org/results/applications)



Eye Tracker Development



- Eye Tracker Development
- Research retreats on eye tracker development
- Eye tracker catalogue available on web (www.cogain.org/eyetrackers)



Community Outreach



- Demos at exhibitions
- Project presentations
- Press releases
- Media appearances
- Videos
- Brochure
- Poster
- Private visits
- Research retreat
- COGAIN camps



Training



- Tutorials and PhD schools
- Camp training
- Special sessions and workshops
- Scientific conferences
- Educational programme
- Supporting journal publications

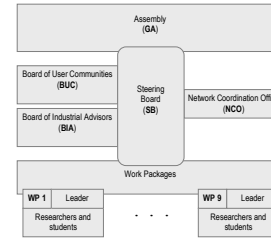


Management



- **Assembly**
 - Includes a representative of each partner in the network
 - Is chaired by the consortium coordinator
 - Makes the main policy decisions such as approving updates to the JPA, approving new partners and selecting the changing members of the Steering Group
- **Steering Board (10 members)**
 - The main managerial and administrative entity of the whole network
 - Has as permanent members representatives from the coordinator, the vice coordinator and all other Work Package leaders
 - In charge of the scientific quality of the endeavours of the network
 - Meetings 3-4 times per year
- **Network Coordination Office**
 - Overall day-to-day management, monitoring, reporting, financial management
 - Prepares and organises the meetings of the Steering Board

Management Structure



Partners



- | | | |
|--|---|--|
| <p>Finland</p> <ul style="list-style-type: none"> • University of Tampere <p>Denmark</p> <ul style="list-style-type: none"> • IT University of Copenhagen • Bispebjerg Hospital • Danish Centre for Assistive Technology • Risø National Laboratory • Danmarks Tekniske Universitet <p>Germany</p> <ul style="list-style-type: none"> • Technische Universität Dresden • Universität Koblenz-Landau • Universität zu Lübeck <p>Italy</p> <ul style="list-style-type: none"> • Hewlett Packard Italiana SRL • Politecnico di Torino <p>Lithuania</p> <ul style="list-style-type: none"> • Siauliai Universitetas | <p>United Kingdom</p> <ul style="list-style-type: none"> • ACE Centre Advisory Trust Ltd • University of Cambridge • De Montfort University • Loughborough University <p>Japan</p> <ul style="list-style-type: none"> • Tokyo Institute of Technology <p>Sweden</p> <ul style="list-style-type: none"> • Sahlgrenska University Hospital (DART) • Tobii Technology <p>Switzerland</p> <ul style="list-style-type: none"> • Universität Zürich <p>Spain</p> <ul style="list-style-type: none"> • Universidad Publica de Navarra <p>Czech</p> <ul style="list-style-type: none"> • Czech Technical University | |
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Facts



- Launched in September 2004
- 5-year project
- 2.9 M€ from the EU's 6th Framework Programme under the Information Society Technologies (IST) priority
- COGAIN is a *Network of Excellence*
- Over 100 researchers from 11 countries



COGAIN Activity Plan



- 10.7.2006 Tutorial on Communication by Gaze Interaction by ACE, TU Dresden and UTA, at ICCHP 2006
- 12.-14.7.2006 ICCHP 2006, Linz, Austria.
- 29.7.-5.8.2006 ISAAC 2006, Düsseldorf, Germany
- 20.-25.8.2006 ECVF 2006, St-Petersburg, Russia
- 4.-8.9.2006 COGAIN Camp, Turin, Italy
- 23.-25.10.2006 ASSETS 2006, Portland, Oregon
- 30.11.-2.12.2006 17th International Symposium on ALS/MND, Yokohama, Japan

Are you interested?



For more information, visit
www.cogain.org



Thank you for your attention!

