

New Technologies and disability: Breaking barriers

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About GRADIANT

- ▶ GRADIANT, R&D Center in Advanced Telecommunications
- ▶ Staff over 50 people
- ▶ Customer portfolio: 35
- ▶ 2010 - Total turnover: 3.459.408€



▶ Administration and Services



▶ Communications

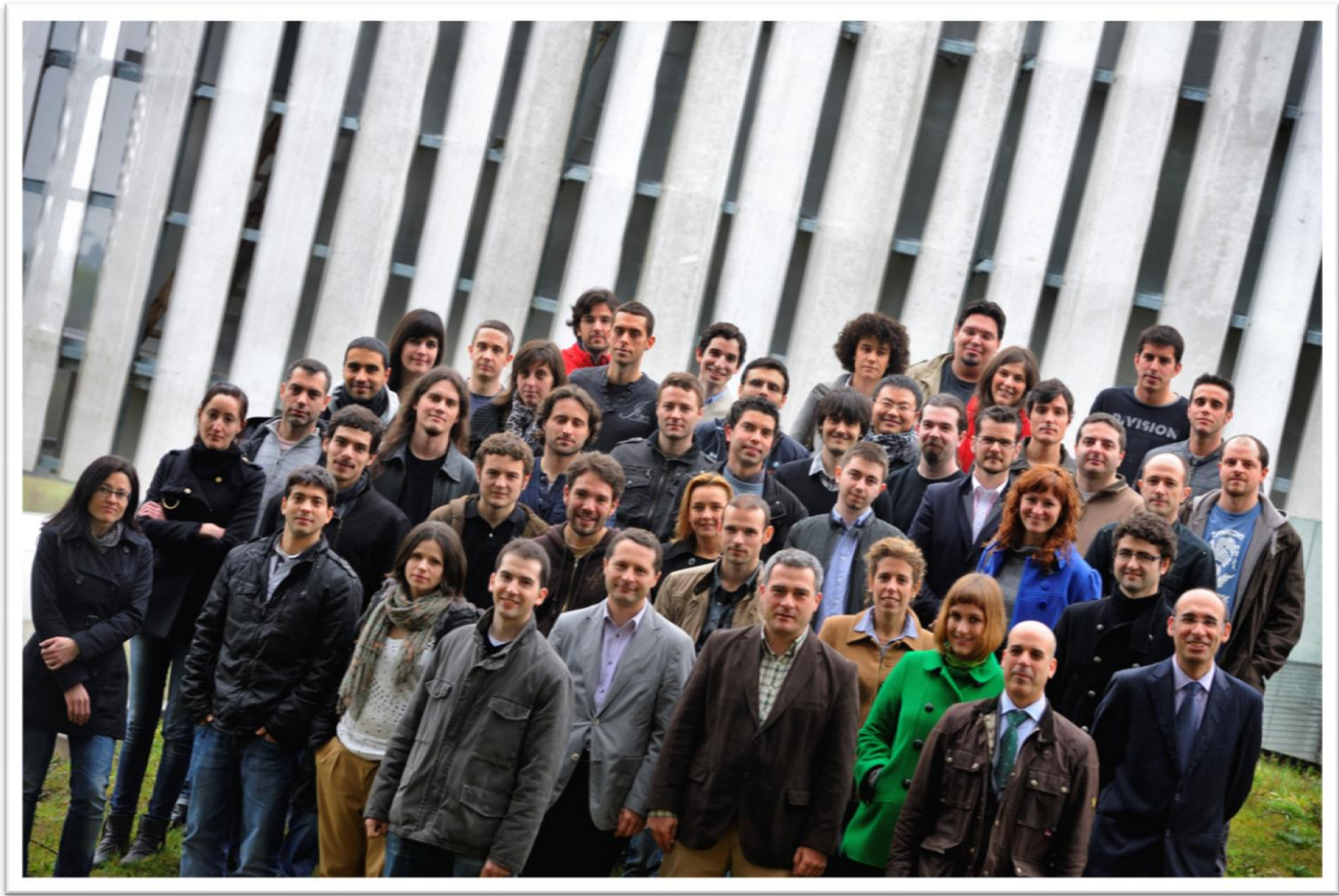


▶ Multimodal Information



▶ Network and Services







GRADIANT's experiences

2008

InGradiant – New Human-Computer Interfaces contest

2009

I Certame de Relatos Curtos de Ciencia Ficción de Gradiant
Xornada de Videoxogos Galegos

(a sci-fi short stories contest and a conference about Galician videogames)

2010

II Certame de Relatos Curtos de Ciencia Ficción de Gradiant
Enxeñeiros por un día
Coñecendo Internet

(a sci-fi short stories contest, electronic workshops, conference about Internet and social networks)

Cara o Futuro

(Conferences around Galicia about the use and the security of the Internet)

2011

“Tecnoloxías Especiais para Personais Especiais” (“Special technologies for Special People”)



2010: A new challenge

- ▶ **GRADIANT** is working in technologies for AAL (Ambient Assisted Living-Home)
 - ▶ Multimodal HCI face recognition, voice, BCI...
- ▶ Special interest in eAccessibility: we are developing different projects to simplify the access to technology at home (p.e. Interacce)
- ▶ People with special needs is the collective which can make the most of new AAL technologies
- ▶ The challenge:
 - ▶ to make the teachers understand the technologies and the potential uses in the classroom and at home
 - ▶ to reach a collective “unknown” for us (we do not know sign language, for example)
 - ▶ to adapt some technologies that we already had to make them more useful
 - ▶ to conceive simple and funny activities

“Scientists discover the world that exists; engineers create the world that never was”

Theodore Von Kármán, The Father of Supersonic Flight, he made fundamental contributions to the theory and practice of aerodynamics.

The ICTs help to create worlds that never were: the technologies can improve the **communication**, the **mobility** and the **environment control**

“Tecnologías Especiales para Personas Especiales”

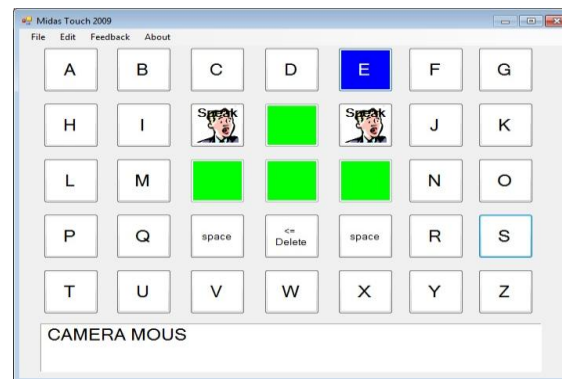
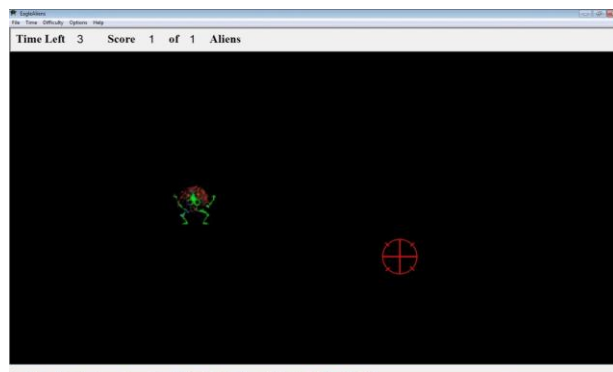
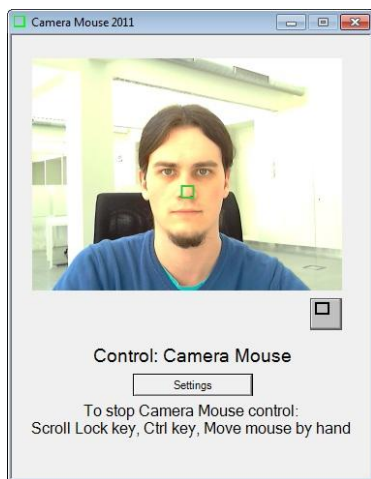
“Special technologies for Special People”

Peculiarities

- ▶ This time, we would have to go the schools (instead receiving the kids at the Center)
- ▶ It was necessary to work with the teachers from the basis of the proposal
- ▶ Most of GRADIANT researchers had never interacted with people with special needs
- ▶ This was the first time using the applications with this public, so we did not know if it was going to work

Our proposal

► **HCI (Human Computer Interfaces):** New human-machine interfaces enable people with specific needs or difficulties the access to technology. In this case, we present the application Camera Mouse. It is a free download application, wich permits to manage the computer mouse with little movements of your head by the tracking of the face features.



▶ BCI (Brain Computer Interface), is a direct communication pathway between the brain and an external device. It works by tracking the electric signals of the brain. In this case, we have presented a game called MindFlex





▶ **Binaural sound ('3D audio')** is a listening experience that spatially transcends normally recorded stereo, since it accurately reproduces the effect of hearing a sound in person, given the 360° nature of how human ears pick up nuance in the sound waves. Binaural recordings can very convincingly reproduce location of sound behind, ahead, above, or wherever else the sound actually came from during recording. It is the 3D for the ear. It can be used to detect hearing difficulties.

▶ New forms of leisure: Nintendo Wii and Xbox with Kinect.



► InTIC

This application was developed by A Coruña University, with IMEDIR (Centro de Informática Médica y Diagnóstico Radiológico de la Universidad de A Coruña), funded by Fundación Orange and Plan Avanza.

- Used by people with disabilities, for managing a computer or a mobile phone.
- Used by autistic people as a communicator, replacing the traditional pictogram's folder
- It can be installed in PCs, tablets, Apple mobile devices (iPhone, iPad) or in Android devices



 
Gradiant

<http://divulgacion.gradiant.org>
CENTRO TECNOLÓGICO DE TELECOMUNICACIONES DE GALICIA

A few conclusions

▶ Mutual learning:

- ▶ they learnt how to manage some new technologies
- ▶ we could realize how we can improve some devices and applications.
- ▶ now, we know their real needs.

▶ Anyone can need this kind of *friendly technology*:

▶ Our son or our daughter could need it

▶ We can have an accident: you can be injured (permanently or not) and maybe you can not access to your mobile, to the internet from your computer or other devices... and you will desire to be self-sufficient

▶ Sooner or later, we will become elder and we will want to be independent, self-sufficient and preserve our privacy (from our sons!).

▶ ***Personal autonomy is the true and real quality of life***

Any questions?

Thank you

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