Starlab

The value of risk

Dr. Giulio Ruffini, CEO
Brussels, Dec 2010

Starlab®

Our Vision

- Starlab's dream is to make science more useful, alive and vibrant, faster and deeper, with a real positive impact on society.

- We believe that while good science is being produced by institutions, there is a niche in the market for an inter-disciplinary team with

  - scientific excellence,
  - business discipline and
  - entrepreneurship

Who are we?

- A team of educated and enthusiastic people from different cultures worldwide
- An interdisciplinary team of physicists, mathematicians, engineers, neuroscientists and creative business people, most with PhDs
- A private independent company (2000)
- 30 on staff today and growing

Starlab appreciates people who are:

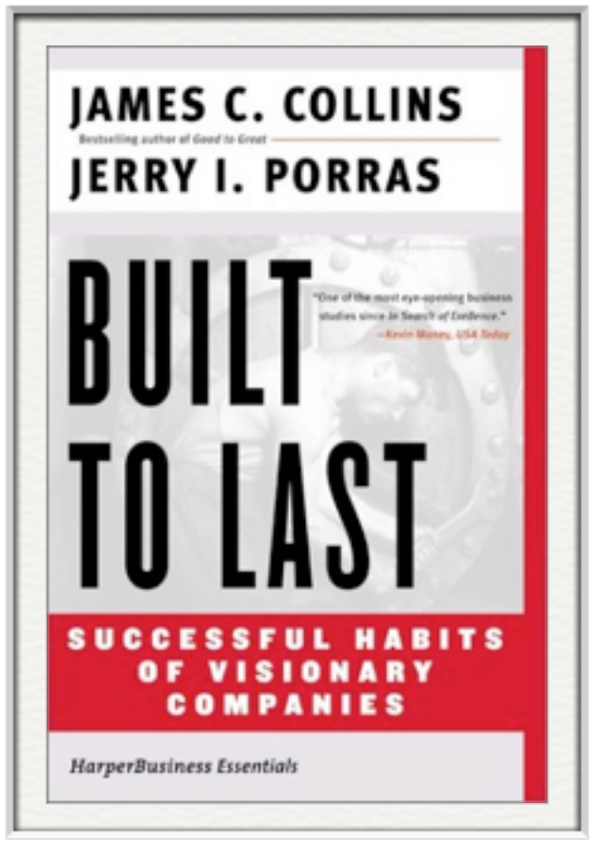
1. Passionate about making a difference.
2. Gifted with a can do attitude.
3. Motivated and hard working.
4. Reliable and Responsible.
5. Creators and Conceptual contributors.
6. Have skills to define and kill problems (can do).
7. Leaders and team players.
8. Good sales people and networkers.

What do we do and how?

- Develop new technologies, products and information service concepts
- Explore new technology markets
- Work with industrial partners to transfer new science and technology one step downstream
- Develop new products and services for direct transfer to the downstream markets
- Patent, License or Spin-off

Our commandments

1. Start with a real important problem
2. Demo or die
3. One little step at the time, but always forward
4. Work hard, be humble and seek perfection
5. Worship Creativity, Interdisciplinarity, Quality and Excellence
6. Build for others and leave a trace. Be concise
7. Be honest with yourself and others
8. Don’t work alone. Be a team player
9. Read and never stop learning
10. Have fun: life is short, at least for now
11. Break the rules.



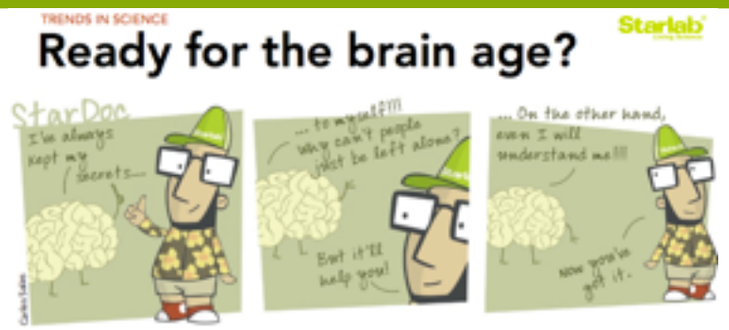
Our Mission

- **To transform science into technologies with a profound and positive impact on society.**

- How?
  - Identifying social needs and the market opportunities they create
  - Reaching to science to provide technical solutions, products and services for governments, industry and downstream markets
  - Building a team combining entrepreneurship, scientific and engineering curiosity, and an obsession for quality and rigor.

- *Warning: Social needs is NOT equal to Market Relevance*

Achievements



- Doubling revenues and staff every ~2.5 years
- One of few SMEs leading a FET project
- European Space Agency recognition: 1st Spanish company to create a spin-off at esa
- endesa 2008 NOVARE award for water management project in Chile
- International partnerships (Canada, Australia, China, US..) and international clients.
- HIT World Innovation Summit Prize
- 7 submitted patents
- 3 registered brands

Starlab Strategic Areas

SPACE

- Technology
- Payloads
- Algorithms
- Feasibility Studies
- Applications
- Environment
- Energy
- Science

NEUROSCIENCE

- Technology
- Interfaces
- Algorithms
- Systems
- Applications
- Safety & Security
- BMI & Presence
- Health & Science

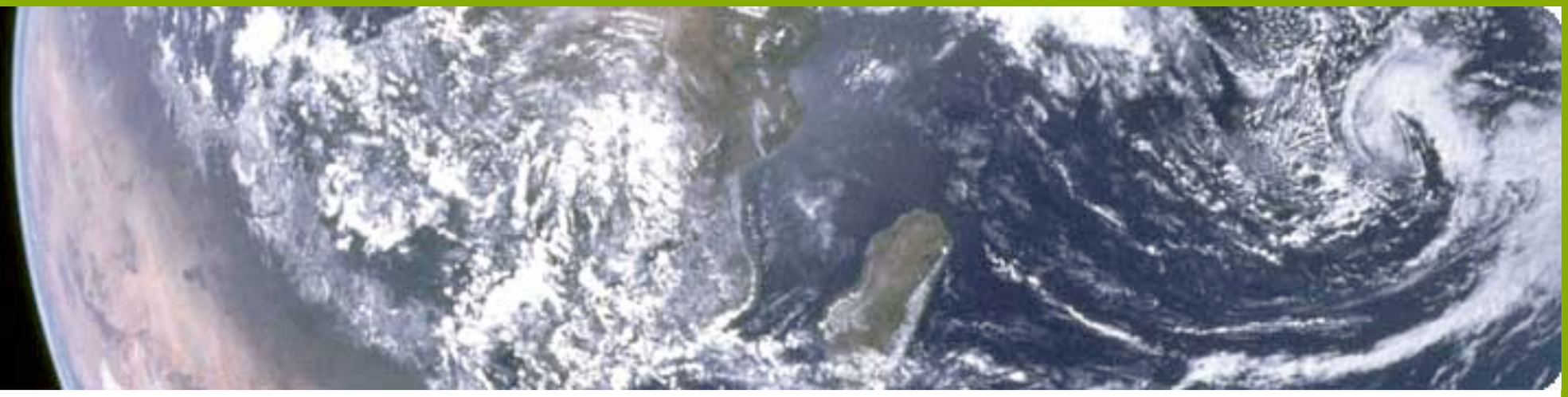
$$\nabla \cdot B = 0, \quad \nabla \cdot E = 4\pi \frac{\rho}{\epsilon},$$

$$\nabla \times B = \frac{\epsilon}{c\mu} \frac{\partial E}{\partial t} + \frac{4\pi}{c\mu} J, \quad \nabla \times E = -\frac{1}{c} \frac{\partial B}{\partial t}.$$

Starlab®

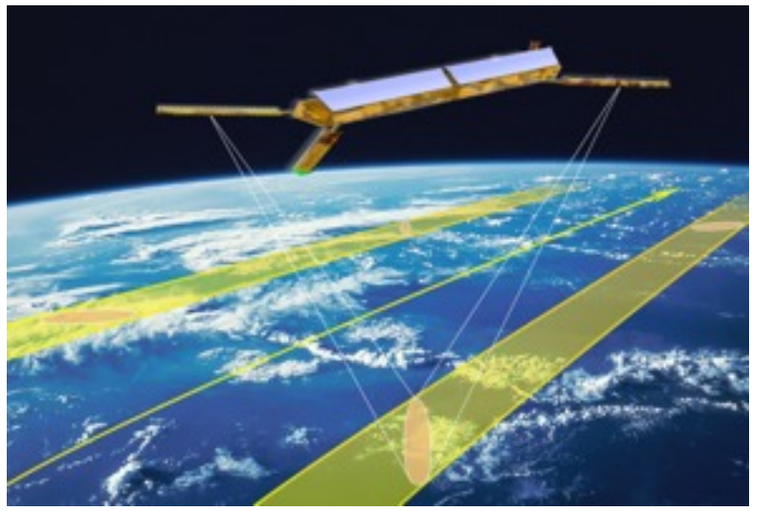
SPACE

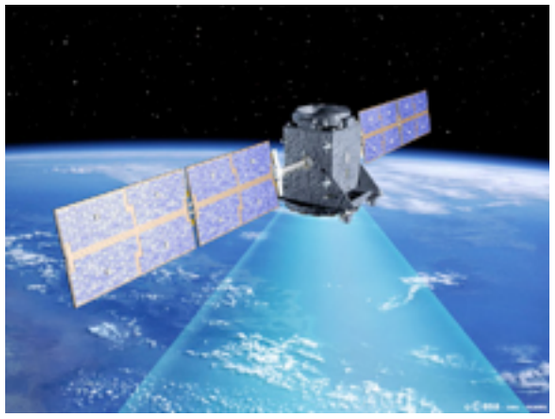
Space



Space Technology

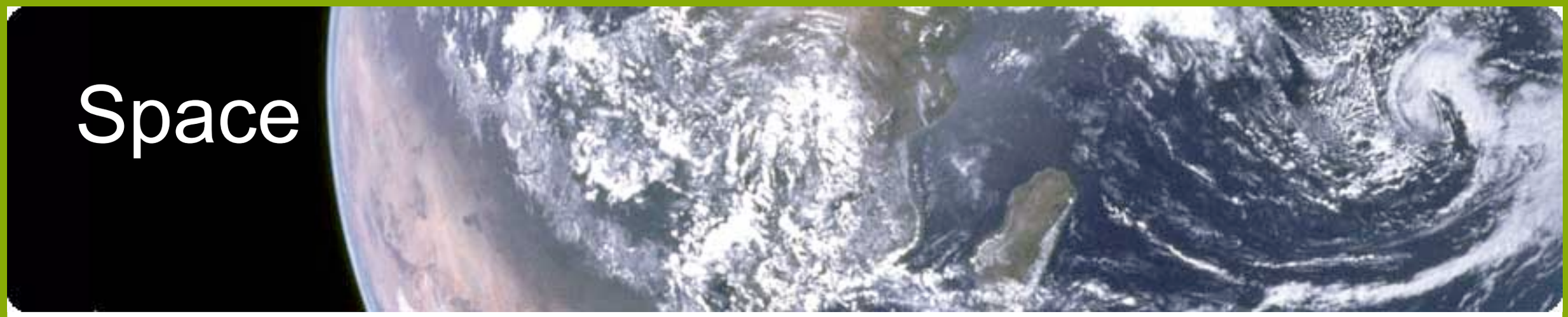
- ✓**Advanced active sensors and algorithms for Earth Observation:**
  - ✓analysis, feasibility studies and simulators of novel instrument concepts for ocean and land monitoring
  - ✓development of new models and signal processing techniques to enhance the estimation of geophysical parameters

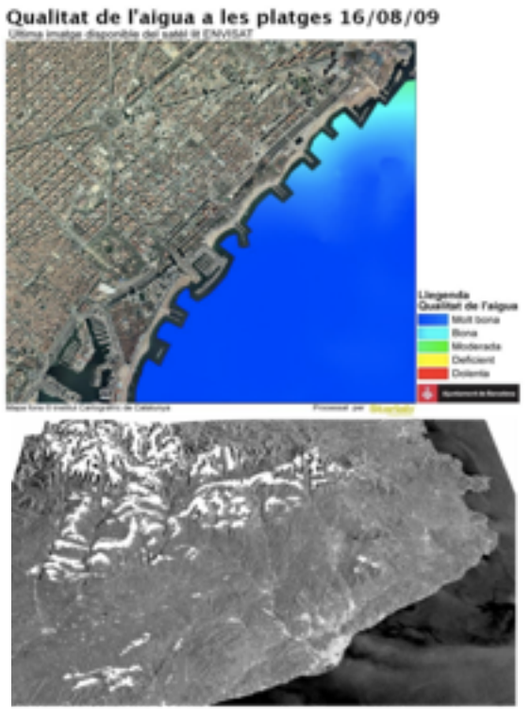




- ✓**Global Navigation Satellite Systems for Remote Sensing:**
  - ✓GNSS-based instruments for crucial geophysical parameter monitoring: sea surface, soil moisture, vegetation, sea ice, dry snow, ionosphere…

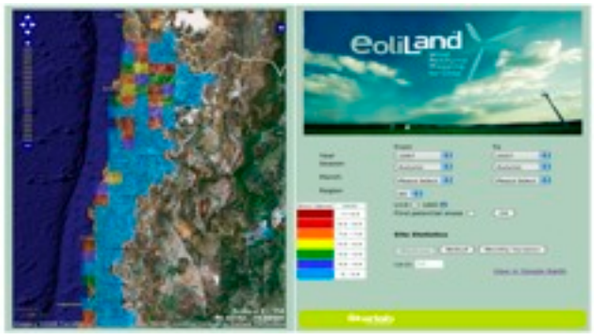
Space

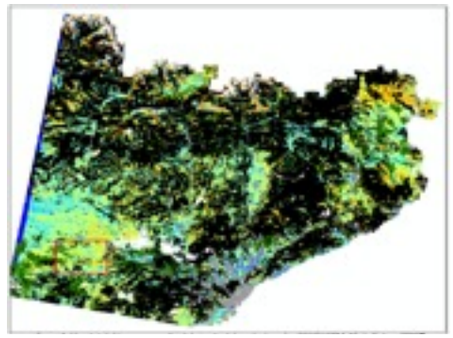




Space Applications: down to Earth

- ✓**Renewable energy:** wind and wave mapping service for site selection or plant management
- ✓**Environmental monitoring:** oil spill detection and water quality service to support our clients
- ✓**Water resource management:** snow cover and soil moisture service for efficient water management



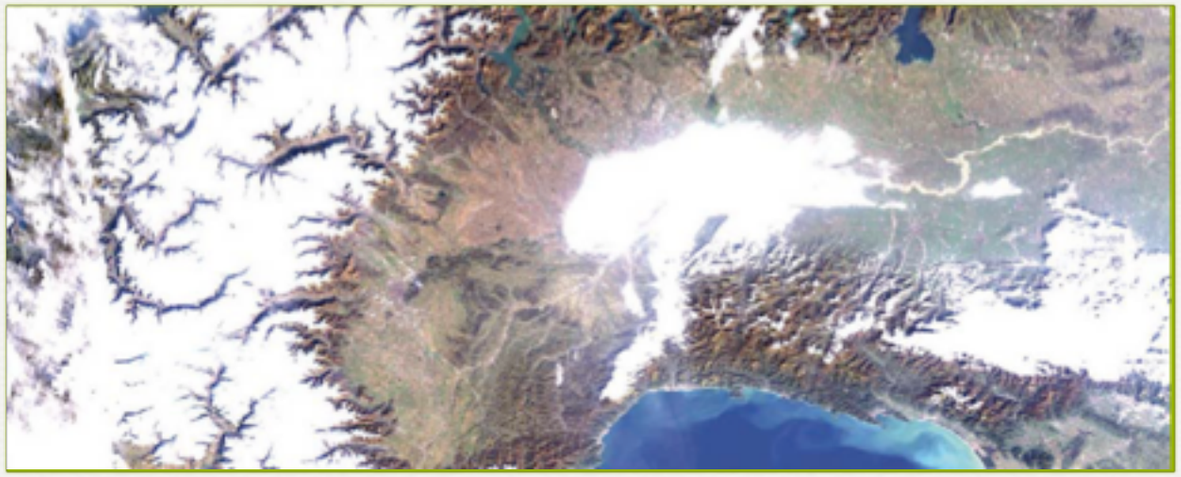


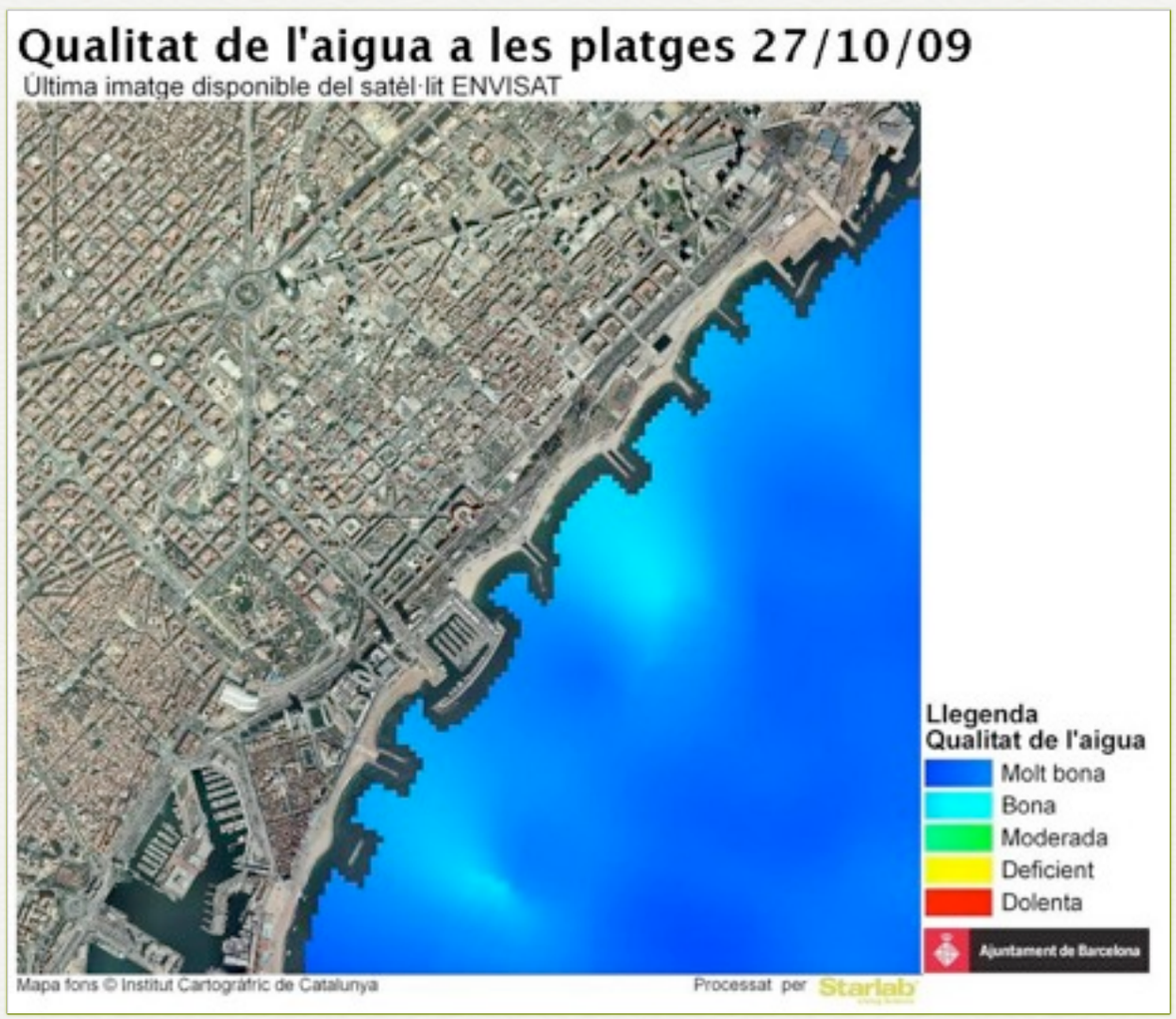
Oceanpal®

Remote dry system for water state monitoring using GNSS signals

Earth Observation Services

- EO Services: currently active contracts - Catalan Water Agency





- Ajuntament Barcelona
- Jellyfish Service for Spain

Starlab®

NEUROSCIENCE

Neuroscience

HYPER
INTERACTION
VIABILITY
EXPERIMENTS

Peach®
presence research in action

Our Neuroscience R&D

- ✓Electrophysiology focus
- ✓Advanced signal processing techniques
- ✓Computational intelligence

- ✓Sensor system design - analog & digital
- ✓Non-invasive brain stimulation

- ✓Clinical applications
- ✓Emotions, stress state monitoring
- ✓Biometry & BCI

ACTIBIO
Unobtrusive Authentication Using ACTivity Related and Soft BIOmetrics

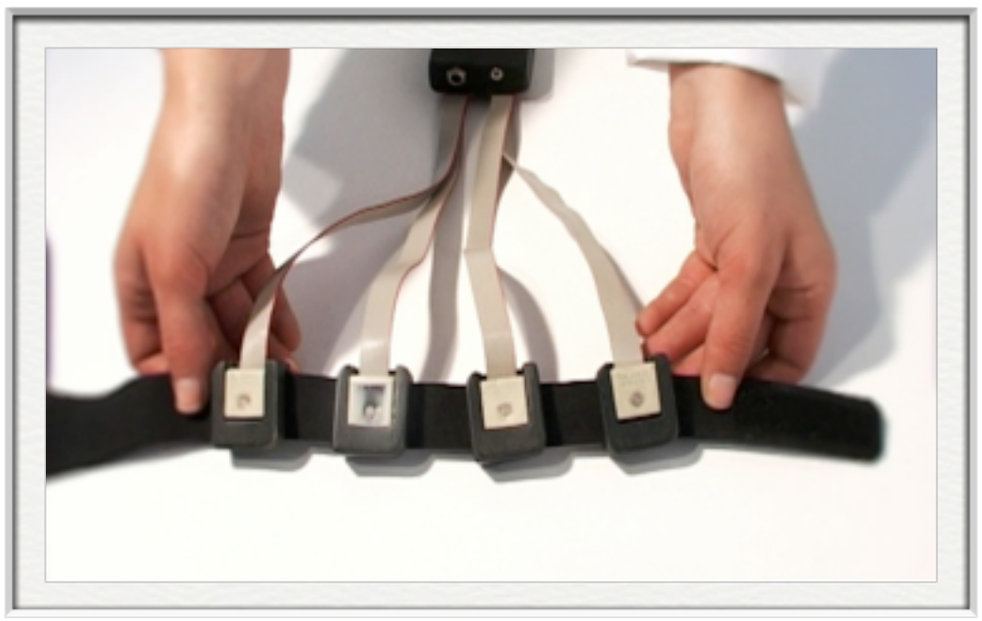
BEAMING
Being in Augmented Multi-Modal Naturally-Networked Gatherings

Neuroscience: from research to product

The portable wireless brain monitoring system:

an FP6 success story

enobio®



A wearable, modular and wireless electro-physiology sensor system for the recording of:

- ✓**EEG** (Electroencephalogram - brain activity)
- ✓**ECG** (Electrocardiogram - heart activity)
- ✓**EOG** (Electrooculogram - eye movement)

HYPER
INTERACTION
VIABILITY
EXPERIMENTS

Vision and project focus

ICT Vision: in the next 50 years we will witness the coming of age of technologies for fluent brain-computer and computer-mediated brain-to-brain interaction—which we call *hyper-interaction*.

Our question: are non-invasive brain stimulation technologies a viable option for hyper-interaction?

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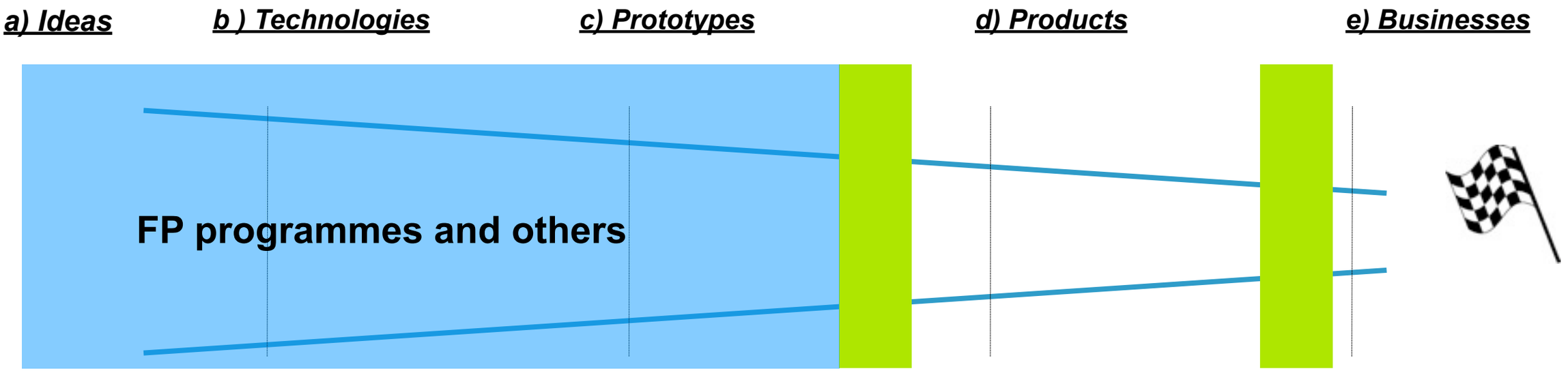
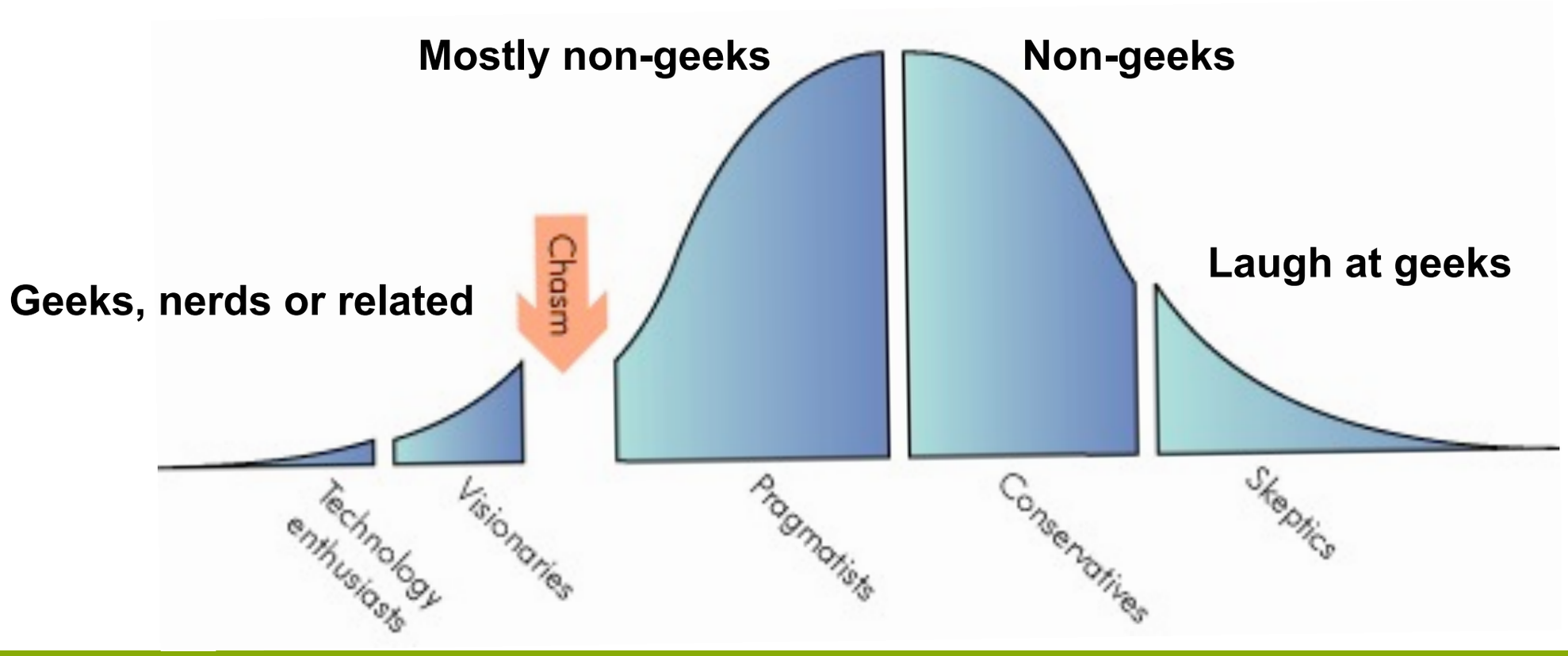
High Tech SMEs

HiTSME nuts and bolts

- Entrepreneurship (must stay hungry and foolish)
- Passion (but more always needed)
- Talent (same)
- Nerdiness (market naivite)
- Risk tolerance and a sense of urgency
- Flexibility: can implement changes rapidly
- Agility: quick to catch opportunities
- Speed (there are the quick and the dead)
- Efficiency (goes with having few resources)
- High tech SMEs are research intensive!

Ideas, Technlogies, Products, Business, and the Chasm





Recommendations to high-tech SMEs

- Hire talent: international, down-to-earth PhDs who want to make a difference
- Participate in FP: work with top teams globally. Play an active, driving role in projects. Project Coordination is an interesting alternative to get where you want. SME managers should be good coordinators.
- Think of positive side effects: in addition to products and services, projects will add know-how to your company and help you retain talent
- Learn how to manage IP (also inside FP projects)
- Beware of the prototype-to-product transfer: longer, harder, costlier than your worst dreams
- Stay true to your vision and mission. Build your company on values. Stay clear of dreams of quick money and people with short term motivations.
- Thinking long term is part of ambitious entrepreneurship. Combine as needed with shorter term tacticts for sanity and survival
- Don’t lie to yourself: never forget the key question! **The Chasm is waiting for you**

Problems

All this is nice and necessary, but it takes time and it is risky

- Funding/grants are very nice, but SMEs need contracts!
- VC is scarce, and then, not really nice (really)
- High risk tech normally goes with long time scales. It takes time to land from a dream and hit the market! The market may take time to form after you ping it.
- Will there be a market? Very hard to know sometimes, but you must try your best to find out soon.
- How do attract and retain real talent?

Want to help?

- High tech SMEs are an asset to Europe: our bet on the future.
- Provide 100% funding (or more) and simplify financial rules. Procurement? The ESA experience, can it be extended? European Information Technologies Agency? European Brain Agency? Promote sub-contracts roles for SMEs in projects.
- Help SMEs get in the driving seat of research projects.
- Provide support for market definition and focus.
- Promote an IP protection culture to support SMEs, where each knows their role.
- Provide mechanisms for different timescales and SME sizes: short, medium and even long term technology development. Support transfer from prototype to product to business
- Promote early stage and growth (high risk) investment in Europe. Somehow!
- Universities and researcher centers: be generous. Your own success relies in good measure on transfer to society. SMEs need you. And you, in the medium term, need SMEs!
- All stakeholders should be ready to accept risk. Entrepreneurs are. Are you?

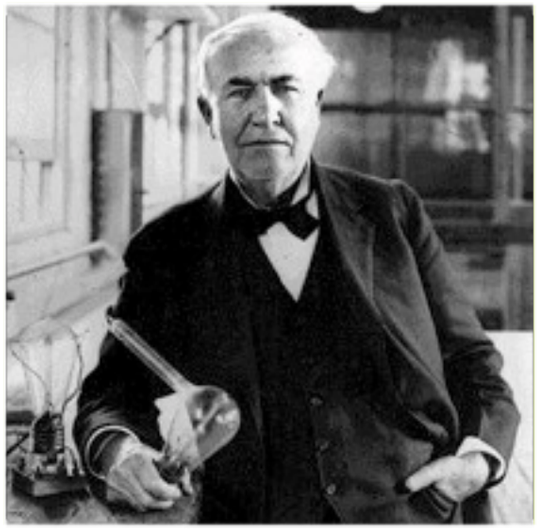
Thanks FET!

- FET paves the road to the future.
- HiTSMEs can work on their next decades' strategy with FET: build to last!
- NB: here technology is a risk, but also the market: it is for visionaries. Can we do better than that? How?

Objective ICT-2011.9.2: FET Open:
High-Tech Research Intensive SMEs in FET research

New funding opportunity for high-tech research intensive SMEs in FET-research

The value of an idea lies in the using of it.
T. A. Edison



Thank you for you attention

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