

Toulouse III – Paul Sabatier University

Faculty of Science and Engineering

Faculté des Sciences et Ingénierie (FSI)



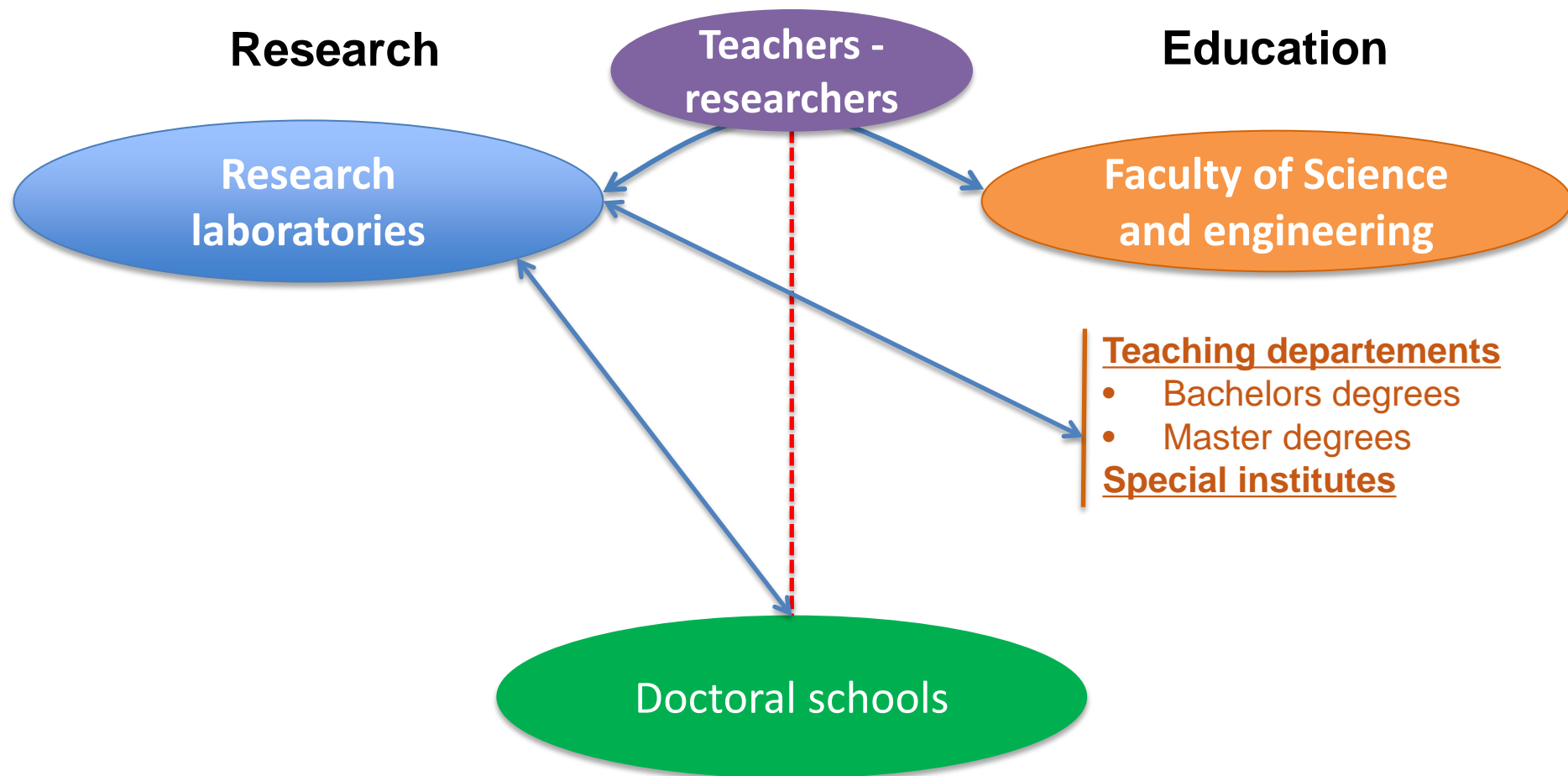
Science – Engineering – Health



Next : The french system

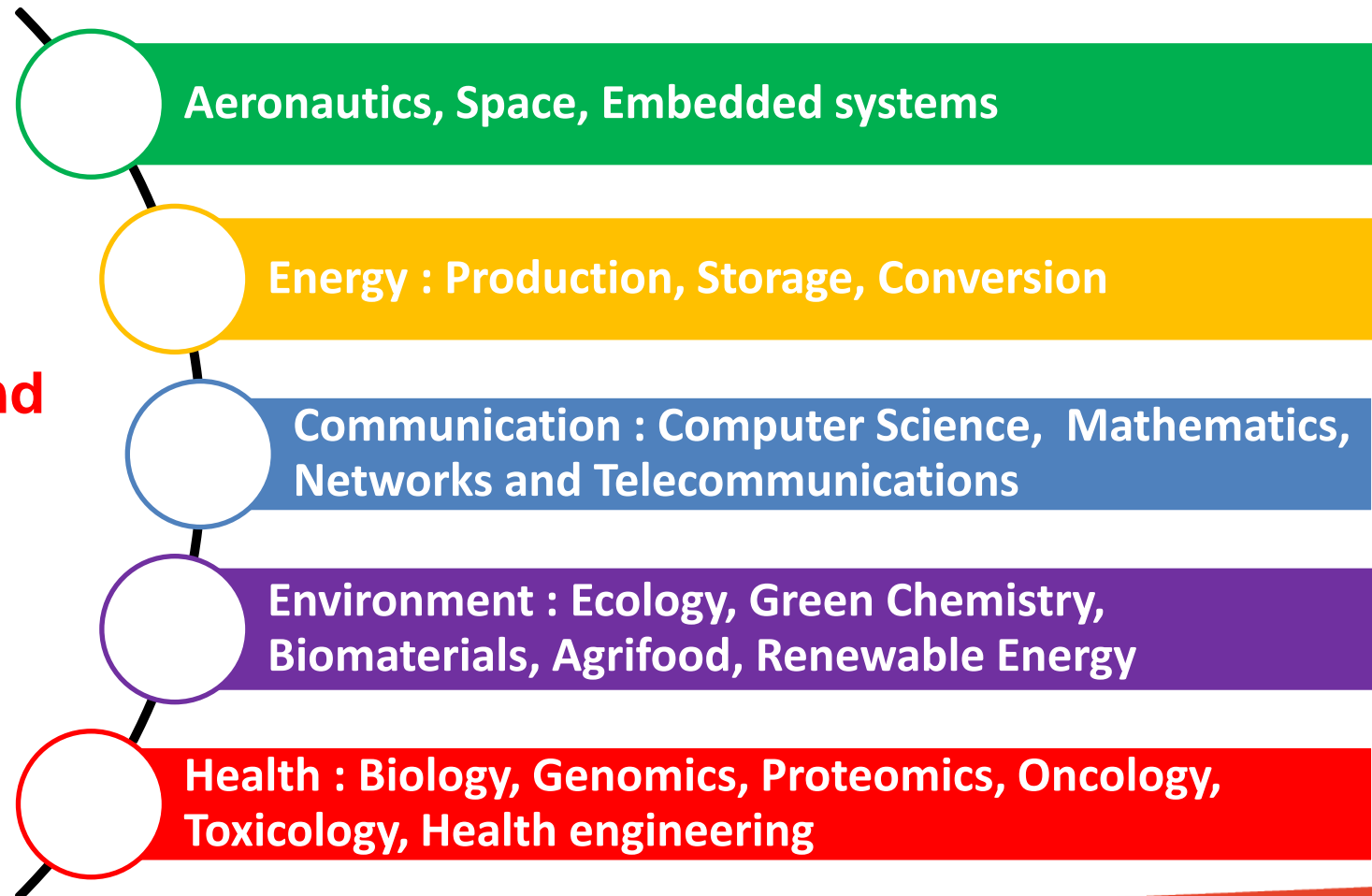


The french system



Topics of the FSI

Fields of Research and Development



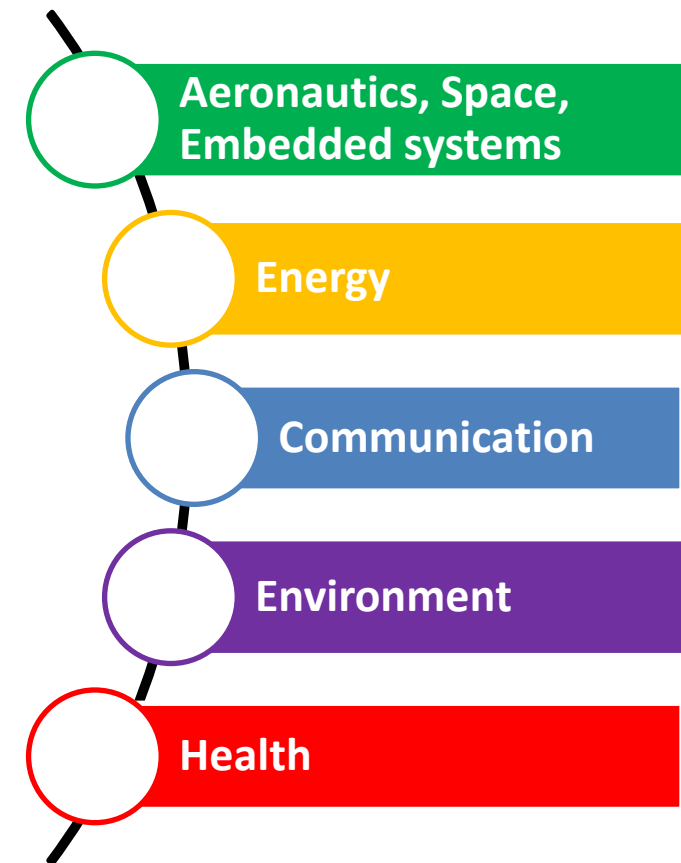
Teaching parts

Eight teaching departments

- ✓ Biology-Geoscience
- ✓ Chemistry
- ✓ Electronics, Electrical Energy, Automatic control
- ✓ Computer Science
- ✓ Languages and Management
- ✓ Mathematics
- ✓ Mechanics
- ✓ Physics

An internal engineering school (Upssitech)

An Institute for Research and Teaching in Sciences (IRES)



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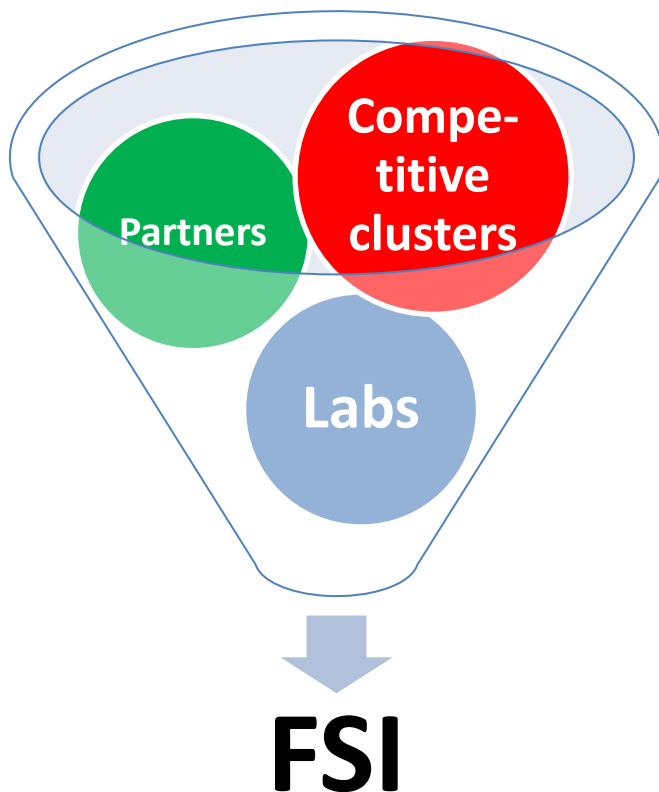
FSI overview

Key figures

- ✓ 11000 students
- ✓ 1250 teachers-researchers
- ✓ 600 teachers from industry
- ✓ 393 technical and administrative staff
- ✓ 11 bachelor's degree disciplines
- ✓ 22 master's disciplines
- ✓ 8 vocational bachelor degrees
- ✓ 3 specialties of engineering degree
- ✓ 6 masters of engineering (CMI)



An environment dedicated to research and
innovation (1)



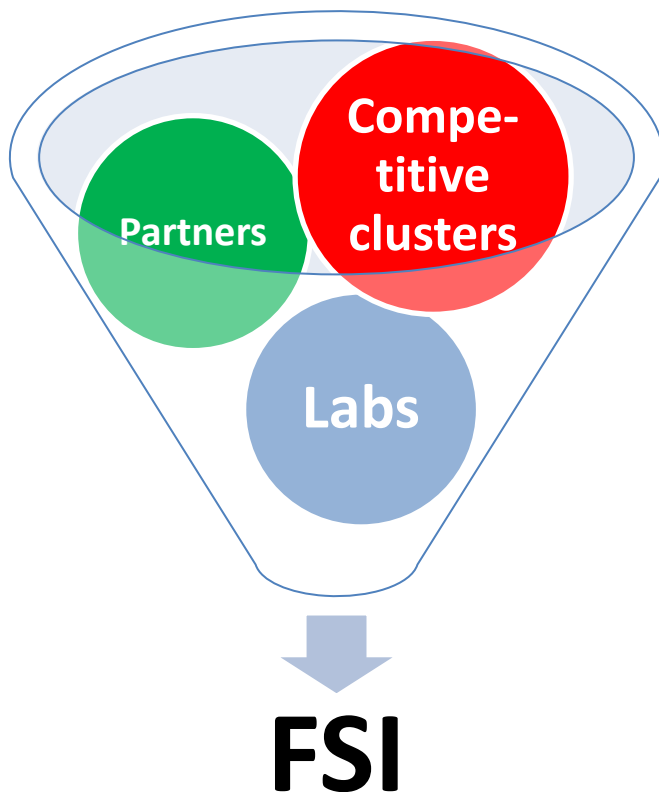
Toulouse: European capital of aeronautics and space

The Oncopole site

7 competitiveness clusters

- ✓ **Aerospace Valley** (Aeronautics, Space, Embedded systems)
- ✓ **Agri-Sud-Ouest Innovation** (Agriculture / Agro-food)
- ✓ **Cancer-Bio-Santé** (Biotechnologies / Health)
- ✓ **Derbi** (Energy)
- ✓ **Eau** (Ecotechnologies / Environment)
- ✓ **Elopsys** (Optics / Photonics)
- ✓ **Pôle Européen de la Céramique** (Consumer goods materials)

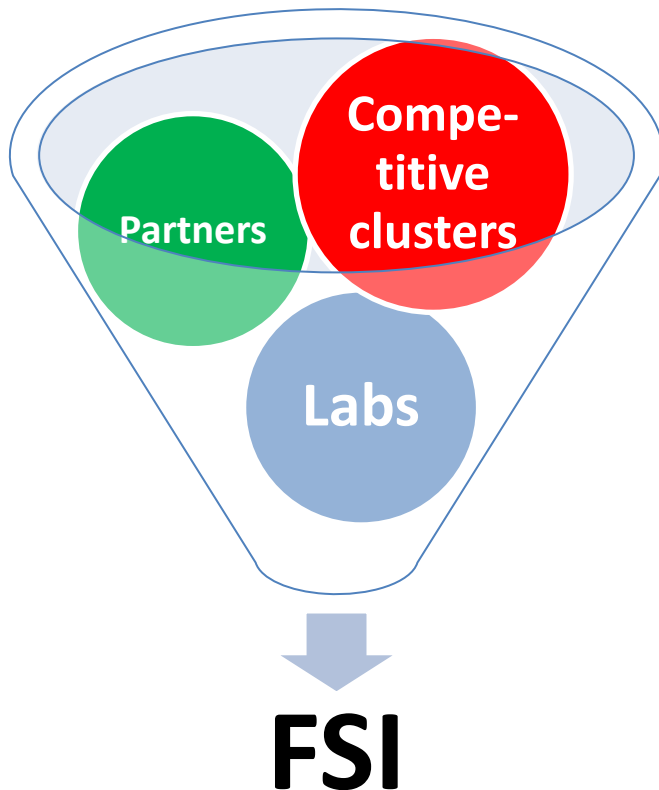
An environment dedicated to research and innovation (2)



Academic research Partners

- ✓ Research institutes: CNRS, INSERM, INRA, IRD
- ✓ University of Toulouse (COMUE) and founding members : Toulouse 1 - Capitole, Toulouse – Jean Jaurès, INSA Toulouse, INPT, ISAE
- ✓ CNES (National Center for Space Studies), ONERA (National Aerospace Research Cent), CEA (Atomic Energy Commission)...

The Ranguel Scientific Complex : a hub of research and innovation



Labs and very close environment

- 60 research laboratories involved in the FSI Education
- 4 Laboratories of Excellence (LabEx)
- Toulouse Tech Transfer (TTT) : 60 patents per year in average
- 9 PhD schools : 400 new PhD students every year

FSI courses / Bachelor's

FSI Bachelor's (11)

- Chemistry
- Electronics, Electrical Energy, Automatic control
- Civil Engineering
- Computer Science
- Mathematics
- Mathematics and computing applied to human and social sciences
- Mechanics
- Physics
- Management (for 3rd year students)
- Earth Sciences
- Life Sciences

FSI courses / Masters

- Electronics, Electrical energy, Automatic control
- Computer science
- Mechanical engineering
- Materials science
- Chemistry
- Networking and telecommunications
- Mathematics and applications
- Astrophysics and space sciences

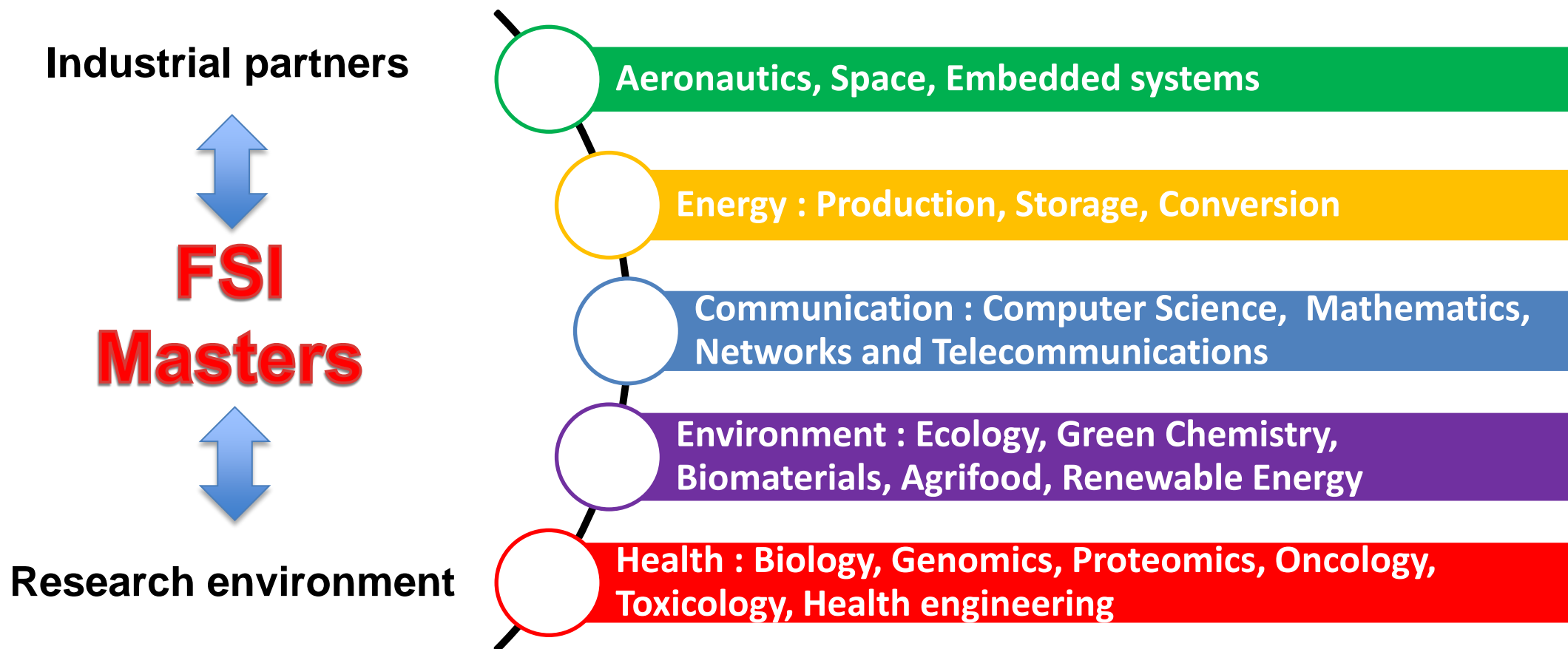
FSI Masters (18)

- Fundamental physics and applications
- Earth and planetary sciences, environment
- Energetics, thermic
- Fundamental physics and applications
- Chemical and biological process engineering
- Biodiversity, ecology and evolution
- Biotechnologies
- Bioinformatics
- Plant sciences
- Ocean, atmosphere and weather sciences

Toulouse III – Paul Sabatier University

Faculty of Science and Engineering

Masters are strongly linked with research topics



Toulouse III – Paul Sabatier University Faculty of Science and Engineering

Strong partnership with private companies

**Educational curricula are
jointly elaborated**

**Participation at all levels of
decision (Councils)**

**600 lecturers involved in
our diplomas**

**Supervisors of student intern-ships and
industrial projects**



Next : integration of graduates

Occupational integration of graduates

- ✓ Less than 2 months for 1st employment
- ✓ Net rate of employment after 30 months : **92%**
- ✓ **89%** of executive, **84%** with stable employment

- ✓ UPS graduates are heading top companies, particularly in the health and engineering areas.

Open to the world (1/2)

An international vocation

- ✓ Deeply related with other European countries for mobility of students and teachers
- ✓ Openness towards major universities in North America, the Mediterranean region, Brazil, China, South Africa, India, Indonesia and Russia

International teaching and exchange programs

- ✓ 12 Erasmus Mundus programs worldwide
- ✓ Bi-graduation Canada-France : Plasma science and technology
- ✓ 400 foreign incoming students in 2014 as part of an exchange program, increasing every year
- ✓ Creation of the TOUL'BOX (2014) and WELCOME DESK (2015) programs at University of Toulouse, an unique service aiming to better welcome foreign students and partners

Open to the world (2/2)

Internationally oriented research

- ✓ 11 international laboratories set up in conjunction with Canada, Taiwan, Morocco, Japan, Vietnam, Uruguay and Russia
- ✓ 2 European laboratories set up in conjunction with Slovenia and Spain
- ✓ 1 international joint unit with India
- ✓ 11 European and international research groups (Ukraine, USA, Russia, Italy, Poland, Germany etc.).

The research environment

Aeronautics, Space, Embedded systems

- ✓ **Competitiveness clusters** : Aerospace Valley + IRT St Exupéry
- ✓ **Research laboratories** : ICA, CIRIMAT, CEMES, LAAS, LAPLACE, IRIT, IRAP...
- ✓ **Labex** : OCEVU, NEXT
- ✓ Membership of European and International networks and consortiums
- ✓ Partnership with the CNES and private companies (Airbus, Thalès, Continental...)

The concerned masters



Aeronautics, Space, Embedded systems

Masters concerned in technology area

- ✓ Electronics, Electrical energy, Automatic control
- ✓ Computer science
- ✓ Mechanical engineering
- ✓ Materials science
- ✓ Networking and telecommunications
- ✓ Mathematics and applications

The concerned masters

Aeronautics, Space, Embedded systems

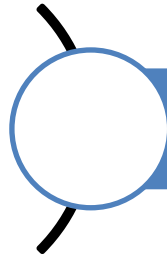
Masters concerned in fundamental area

- ✓ Astrophysics and space sciences
- ✓ Fundamental physics and applications
- ✓ Earth and planetary sciences, environment



The ChemCam instrument (IRAP&CNES)

Fields of interest



Communication : Computer Science, Mathematics,
Networks and Telecommunications

Artificial intelligence, Robotics

Machine learning, Human-computer interaction...

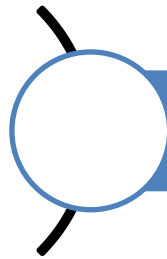
Signal and image processing

Big data

Safety of software development, Cybersecurity...

Internet of things, internet of everywhere...

The research environment



Communication : Computer Science, Mathematics,
Networks and Telecommunications

- ✓ **Research laboratories** : IRIT, LAAS, IMT...
- ✓ **LabEx** : CIMI, AMIES, NEXT
- ✓ **Competitiveness clusters** : Aerospace Valley, Cancer bio-health, Agri-Sud-Ouest Innovation, ASE-IRT St Exupéry
- ✓ Collaboration in European and international projects
- ✓ Partnership with Airbus, Thales, CNES, CEA, EDF, KLM, SAS, several research and development SME from Toulouse and surrounding area...

The concerned masters

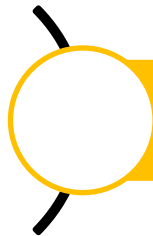
Communication : Computer Science, Mathematics, Networks and Telecommunications

- ✓ Electronics, Electrical energy, Automatic control
- ✓ Computer Science
- ✓ Mathematics and applications
- ✓ Networking and Telecommunications
- ✓ Telecommunications and IT networks
- ✓ Robotics and Interactive Systems



Spencer robot completed tests guiding KLM passengers at Schiphol. The LAAS partner of this project.

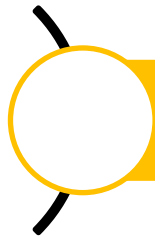
The research environment



Energy : Production, Storage, Conversion

- ✓ **Competitiveness cluster** : DERBI (80 companies, 20 research laboratories)
- ✓ **Laboratories involved** : IMFT, LAPLACE, IRSAMC (4 research laboratories), LAAS, CEMES, CIRIMAT...
- ✓ **LabEx** : NEXT, GANEX
- ✓ Partnership with AREVA, CECAM, EDF R&D, CEA, ONERA, ENGIE INEO, SAFT...

The concerned masters



Energy : Production, Storage, Conversion

- ✓ Electronics, Electrical energy, Automatic control
- ✓ Energetics, thermic
- ✓ Fundamental physics and applications
- ✓ Chemical and biological process engineering
- ✓ Materials science

The research environment

Environment : Ecology, Green Chemistry, Biomaterials, Agrifood, Renewable Energy

- ✓ More than 50 **research laboratories** : ECOLAB, CESBIO, EDB, LCC, IPBS, CIRIMAT, CEMES, LAPLACE,...
- ✓ Many **competitiveness clusters** : Water cluster, Cancer bio-health, Green Chemistry cluster, Agrimip innovation, Pôle européen de céramique...
- ✓ **Labex** : TULIP
- ✓ Partnership with BRGM, TOTAL, UMICORE, AGRONUTRITION, BIOGEMMA, TERREAL, SYNGENTA ...

The concerned masters

Environment : Ecology, Green Chemistry, Biomaterials, Agrifood, Renewable Energy

- ✓ Biodiversity, ecology and evolution
- ✓ Biotechnologies
- ✓ Bioinformatics
- ✓ Plant sciences
- ✓ Chemistry
- ✓ Chemical and biological process engineering
- ✓ Electronics, Electrical energy, Automatic control
- ✓ Energetics, thermics
- ✓ Fundamental physics and applications
- ✓ Materials science
- ✓ Ocean, atmosphere and weather sciences

The research environment



Health : Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering

- ✓ Many **research laboratories** implicated : IPBS, LGC, LCC, ISCT, CBI, I2MC, CRCT...
- ✓ Connections with the **LabEx** : TULIP and TOUCAN
- ✓ **Competitiveness clusters** : Cancer-bio-health, Elopsys
- ✓ Partnership with about 80 companies as SANOFI, Pierre Fabre, Dassault Systems, Geno Toul,...

The concerned masters



Health : Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering

- ✓ Biology-health
- ✓ Bioinformatics
- ✓ Biotechnologies
- ✓ Chemistry
- ✓ Chemical and biological process engineering
- ✓ Computer science
- ✓ Mathematics and applications
- ✓ Electronics, Electrical energy, Automatic control
- ✓ Fundamental physics and applications
- ✓ Mechanics