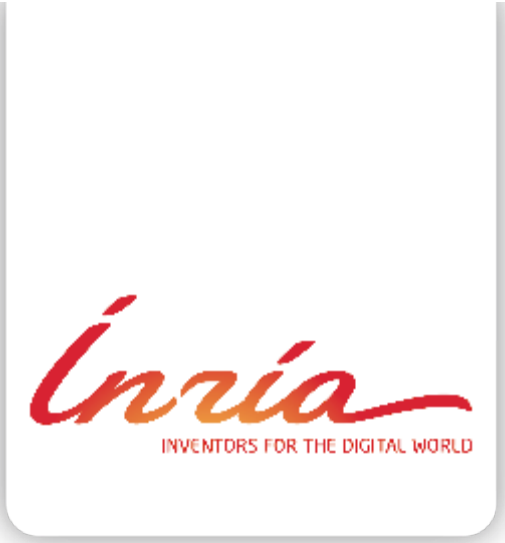
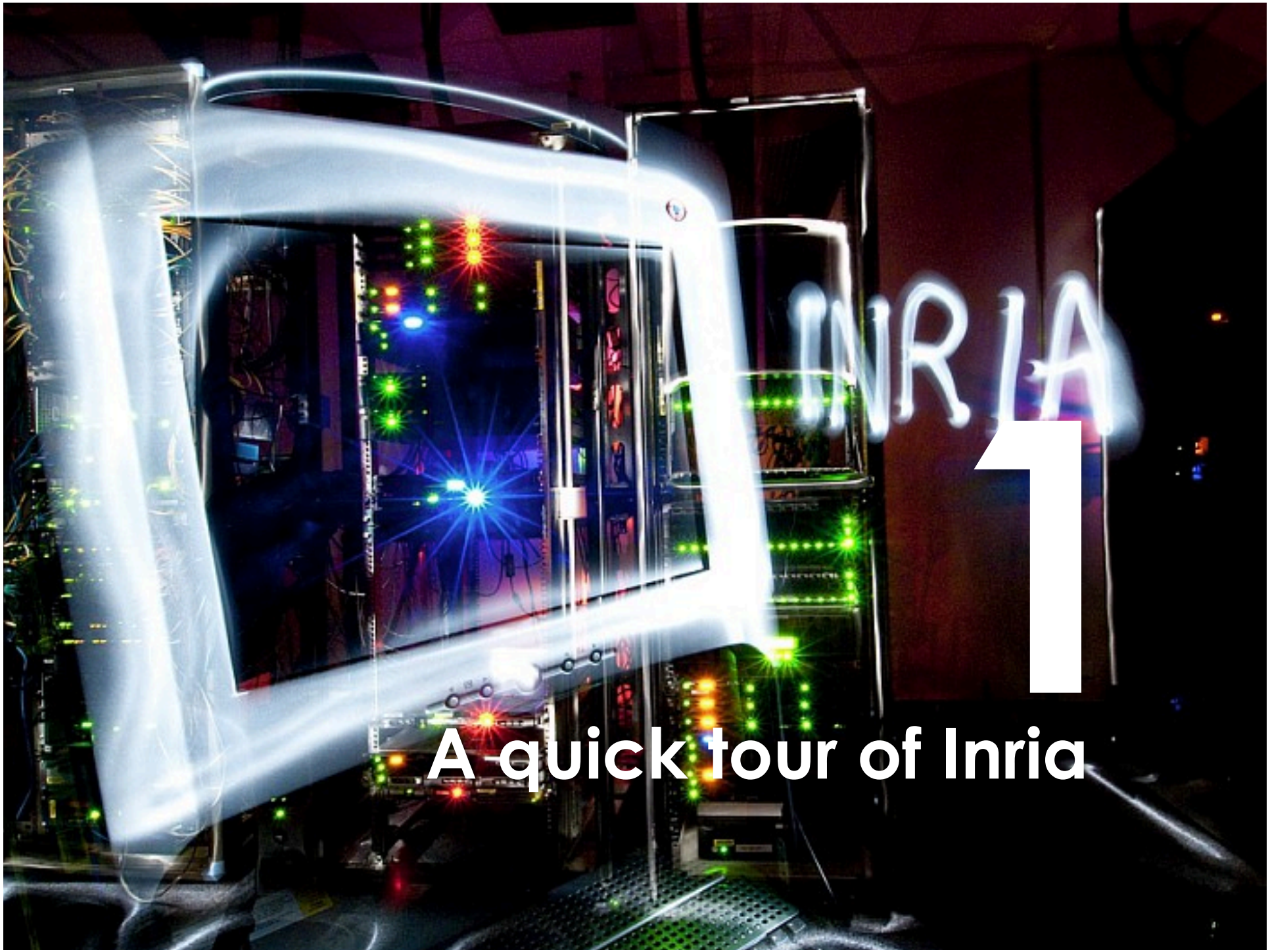


INRIA
HPC - ENERGY

SKA meeting



1

A quick tour of Inria

French National Institute for computer science and applied mathematics

- Under the dual authority of the Ministries : Research and Industry
- 8 research centres in France

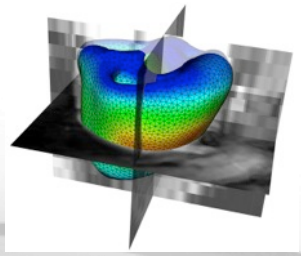
RESEARCH

EXPERIMENTATION AND DEVELOPMENT

TRANSFER OF TECHNOLOGY

Science at Inria

MODELS
AND SIMULATION

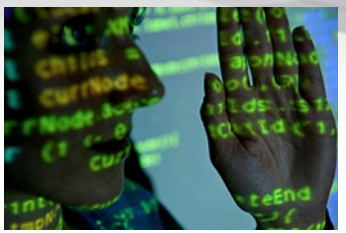


HIGH-PERFORMANCE
COMPUTING, CLOUD

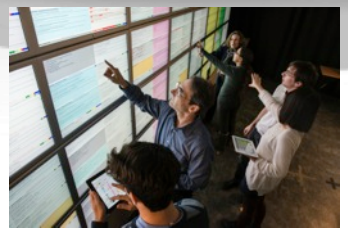
NETWORKS AND
CONNECTED OBJECTS

SAFETY, RELIABILITY

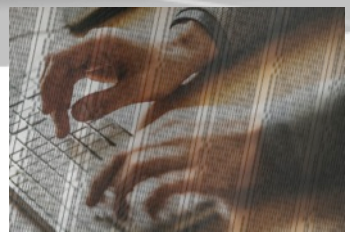
ROBOTICS



PROGRAMMING

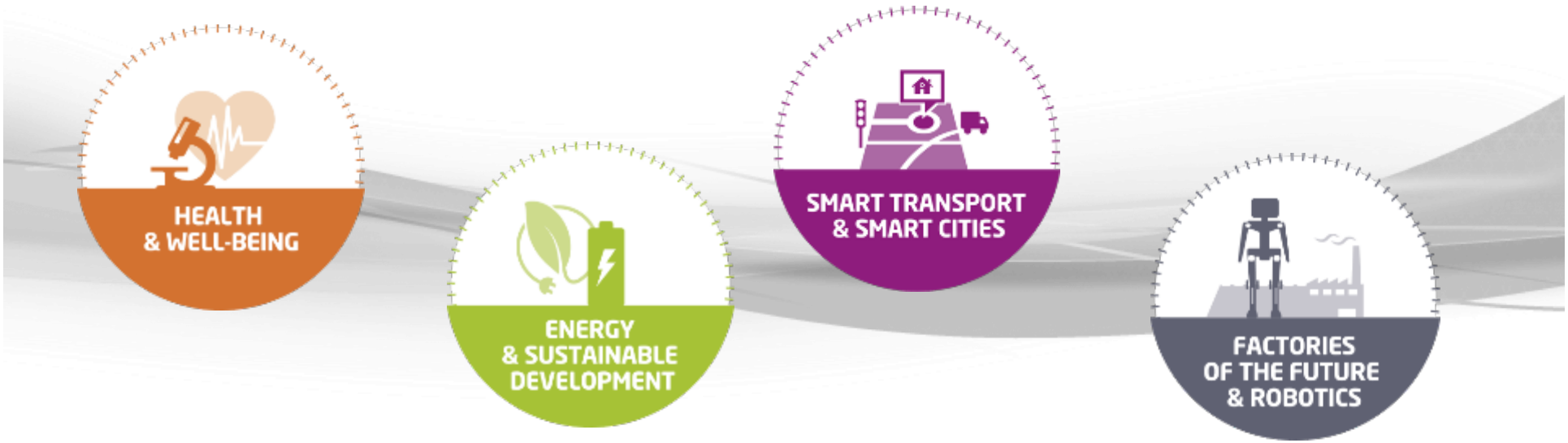


INTERACTIONS,
INTERFACES AND
USAGE



DATA PROCESSING

Socio-economic areas of application



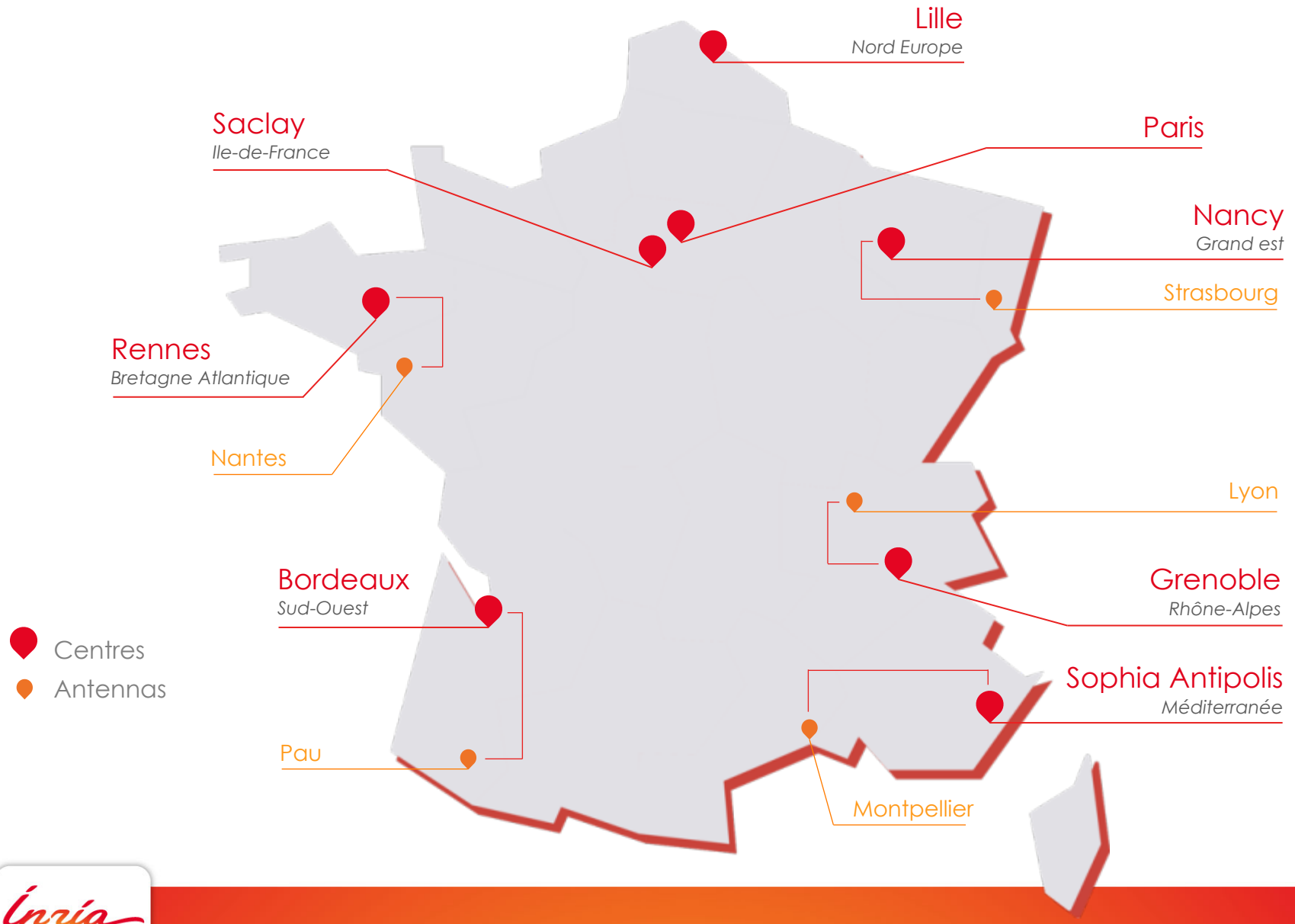
The Inria project team

- 10 to 30 people led by a recognized **scientist**
- A specific research theme
- An **international evaluation** upon creation and every four years
- An average **lifetime** of eight years, with a maximum of 12
- Well-defined **objectives** and a **shared or joint work programme**
- Working in contact and collaboration with **industrial and scientific partners** in France and throughout the world
- Financially and scientifically independent
- A strong focus on transfer and impact

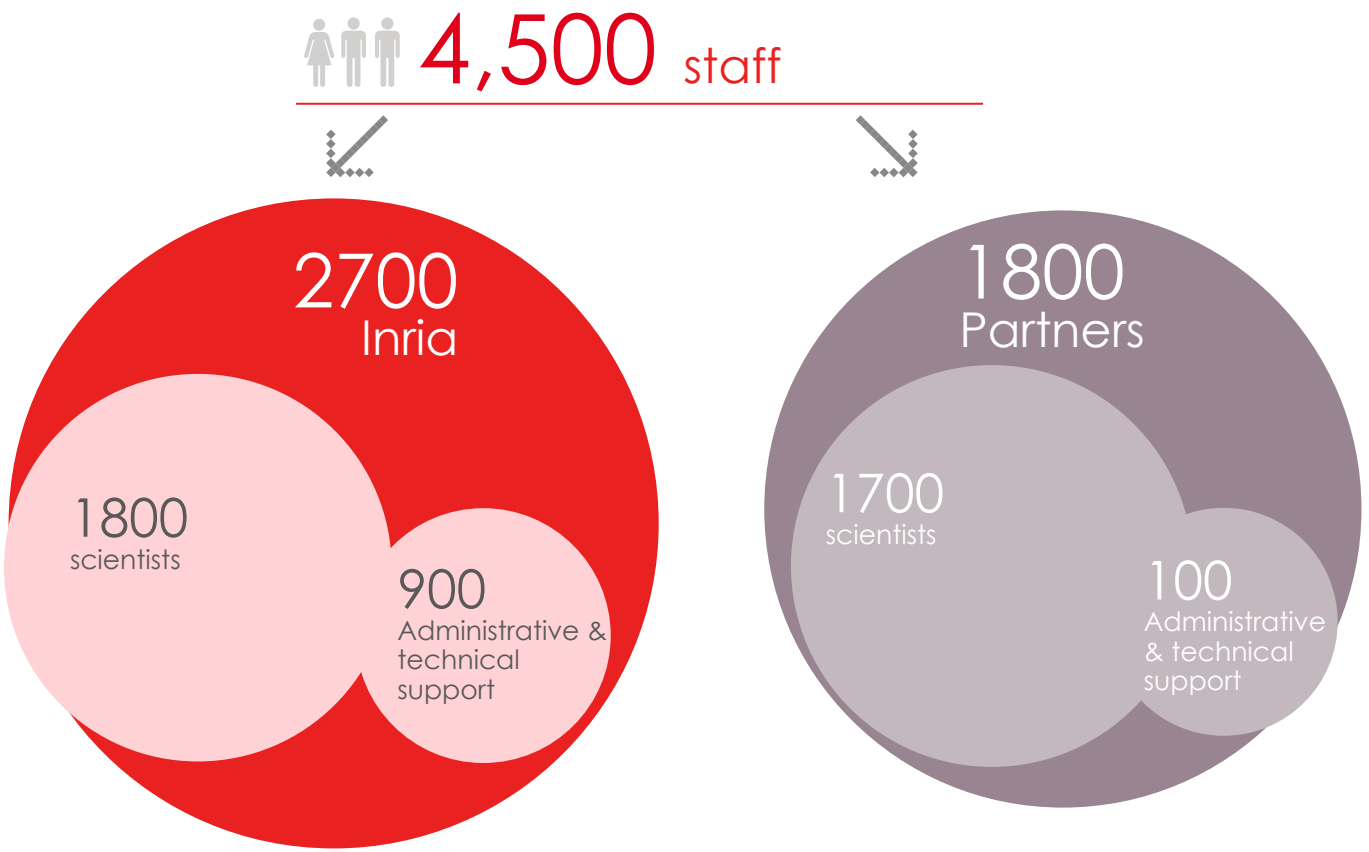
178 Inria project teams in 2015

AN ORGANISATION **TO COMPLEMENT** THAT OF UNIVERSITIES AND THE CNRS

Research centres



Inria, it's all about people



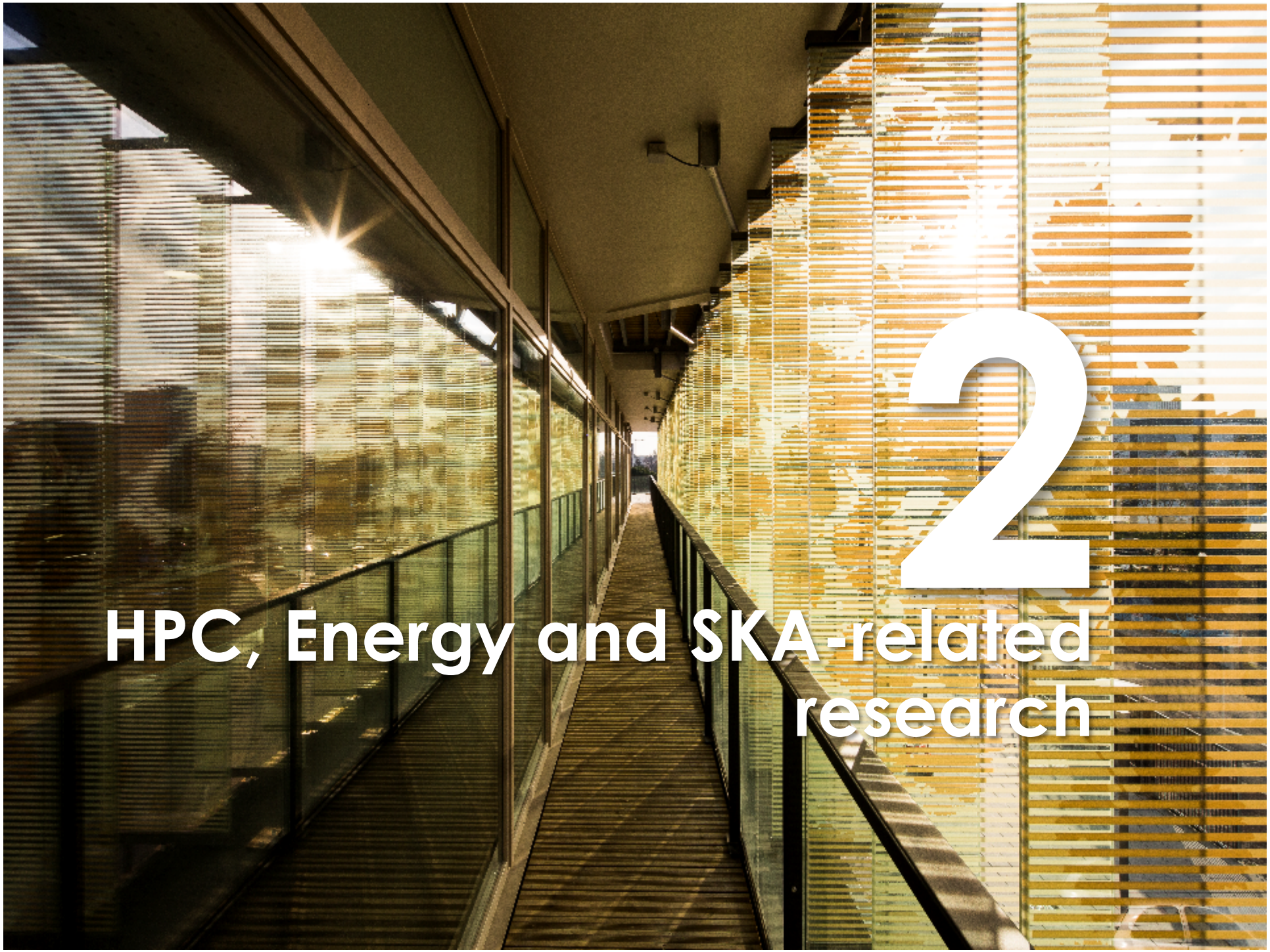
Committees

Inria's Board of Directors

Inria Scientific Council

Inria Evaluation Committee

Operational Committee for the Evaluation of Legal and Ethical Risks



2

HPC, Energy and SKA-related research

How Inria can help?

Contribute to the software stack:

- Storage?
- Image processing (super resolution?)?
- New architecture for computing (GPU, FPGA, manycore, cluster)?
- In-situ and pseudo real-time processing, data filtering?
- Signal processing?
- Knowledge processing (deep learning, data mining)?
- Green computing?

Language/DSL for parallelism and new architecture?

Code optimization?

High-performance network?

Application-specific scientific library (e.g. linear algebra)?

Two scientific themes related to SKA

Applied Mathematics, Computation and Simulation

- Numerical schemes and simulations
- Stochastic approaches
- Optimization, machine learning and statistical methods
- Optimizations and control of dynamic systems

Networks, Systems and Services, Distributed Computing

- Networks and Telecommunications
- Distributed Systems and middleware
- **Distributed and High Performance Computing**
- Distributed programming and Software engineering

Distributed and High-Performance Computing theme

ALPINES: Algorithms and parallel tools for integrated numerical simulations

AVALON: Algorithms and Software Architectures for Distributed and HPC Platforms

HIEPACS: High-End Parallel Algorithms for Challenging Numerical Simulation

KERDATA: Scalable Storage for Clouds and Beyond

ROMA: Resource Optimization: Models, Algorithms, and scheduling

DATAMOVE: Data Aware Large Scale Computing

POLARIS: Performance analysis and optimization of LARge Infrastructures and Systems

STORM: STatic Optimizations, Runtime Method

TADAAM: Topology-Aware System-Scale Data Management for High-Performance Computing

Scope of the theme

HPC systems and platform

Parallel and distributed algorithms

Exascale plaforms

Cloud computing platform

Green computing: measure, algorithmic and system control, code optimization

Distributed data: storage, library, software stack optimization

Middleware

Runtime systems

Numerical linear algebra

Domain specific language

Other research themes

Perception, Cognition and Interaction

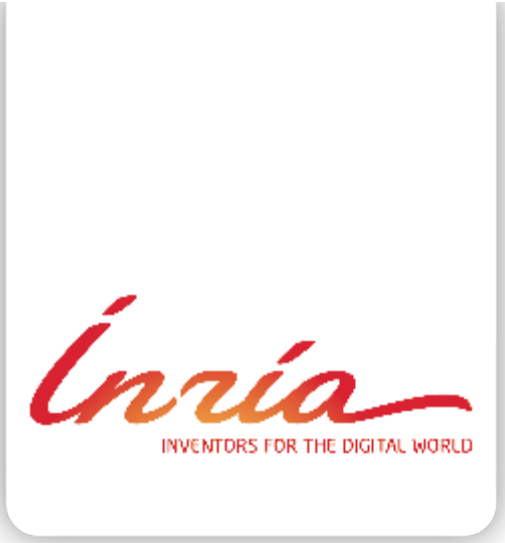
- Vision, perception and multimedia interpretation
- Interaction and visualization
- Data and Knowledge Representation and Processing
- Robotics and Smart environments
- Language speech and audio

Algorithmics, Programming, Software and Architecture

- Proofs and Verification
- Security and Confidentiality
- Algorithmics, Computer Algebra and Cryptology
- Embedded and Real-time Systems

Digital Health, Biology and Earth

- Earth, Environmental and Energy Sciences
- Modeling and Control for Life Sciences
- Computational Biology
- Computational Neuroscience and Medicine



Any questions?