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Italiadomani
PIANO NAZIONALE
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Future
Artificial
Intelligence
Research

Spoke 5

High-Quality AI

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Partners

7 Sapienza Dept. + 3 CNR Institutes

faculty members: **30** (Sapienza) + **4** (CNR)

new researchers: **18** (Sapienza) + **3** (CNR)

new PhD: **8** (Sapienza)



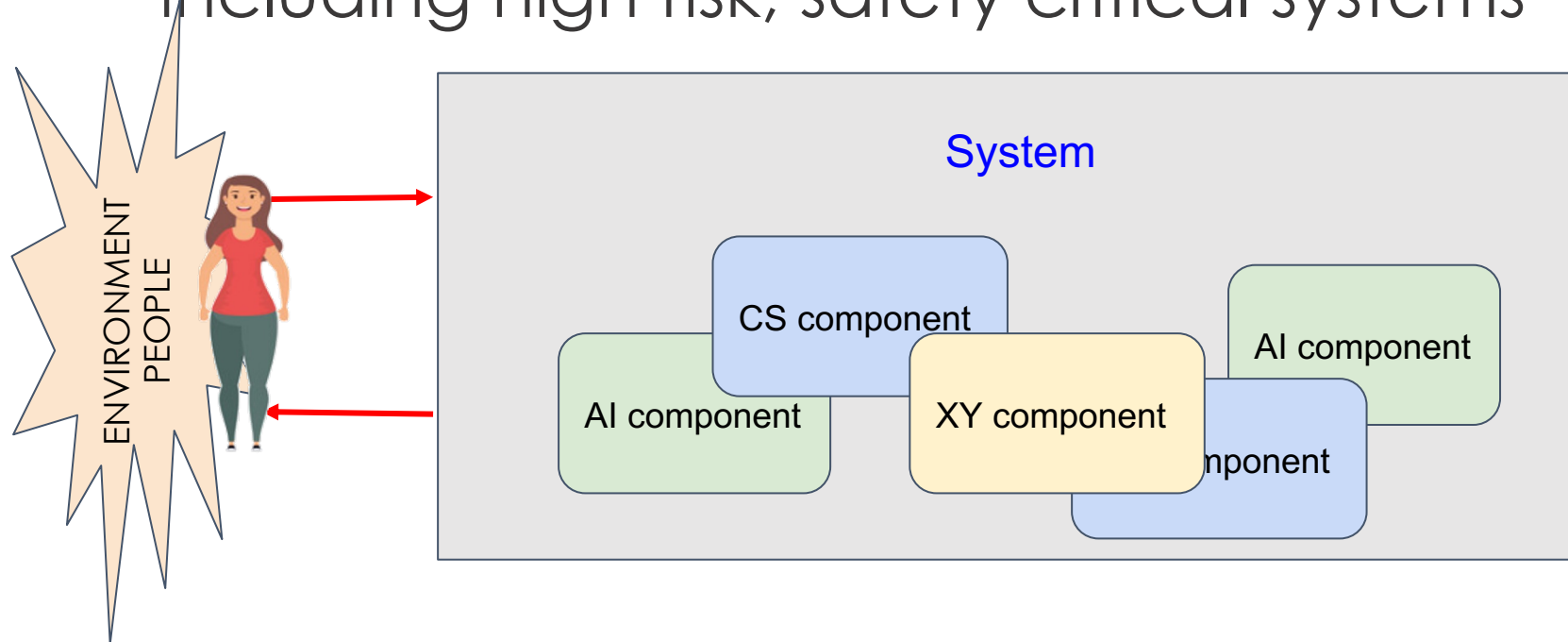
SAPIENZA
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Consiglio Nazionale
delle Ricerche

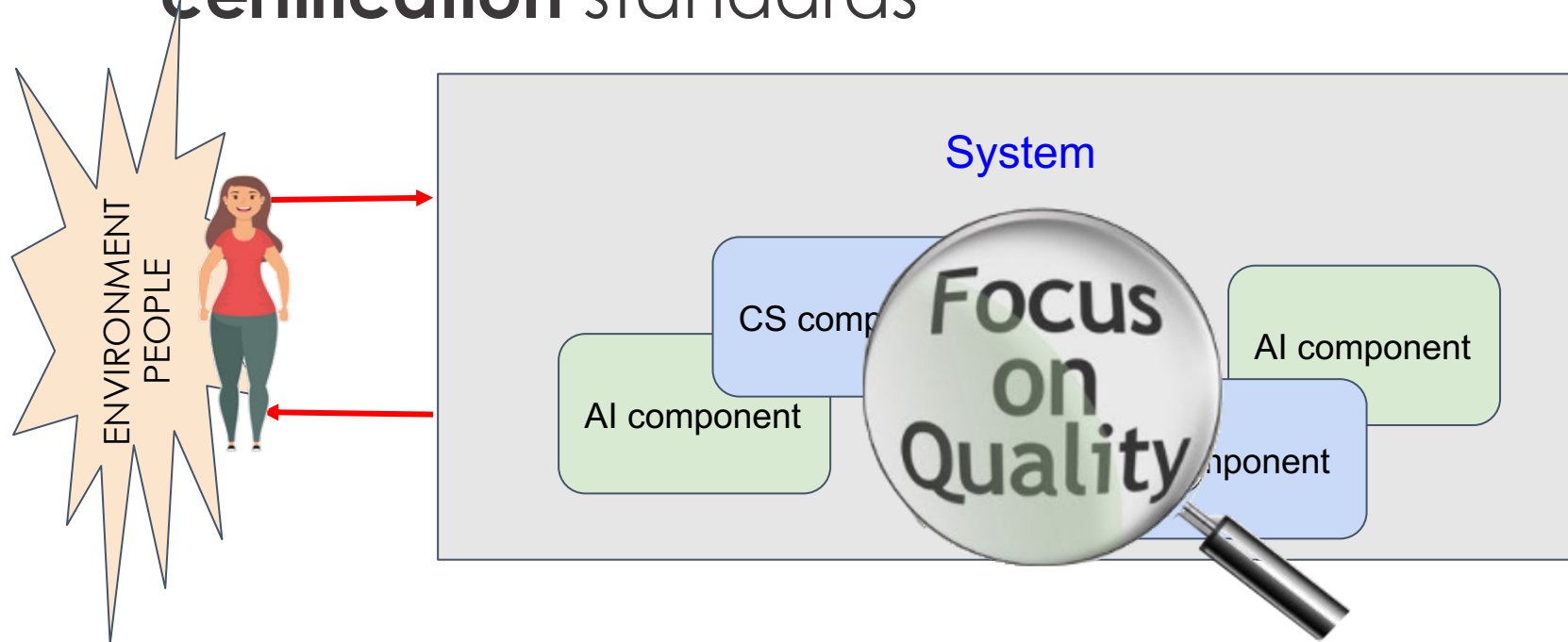
High-quality AI Motivation

- **AI-empowered dynamic systems** (Human-AI teams) including high-risk, safety critical systems



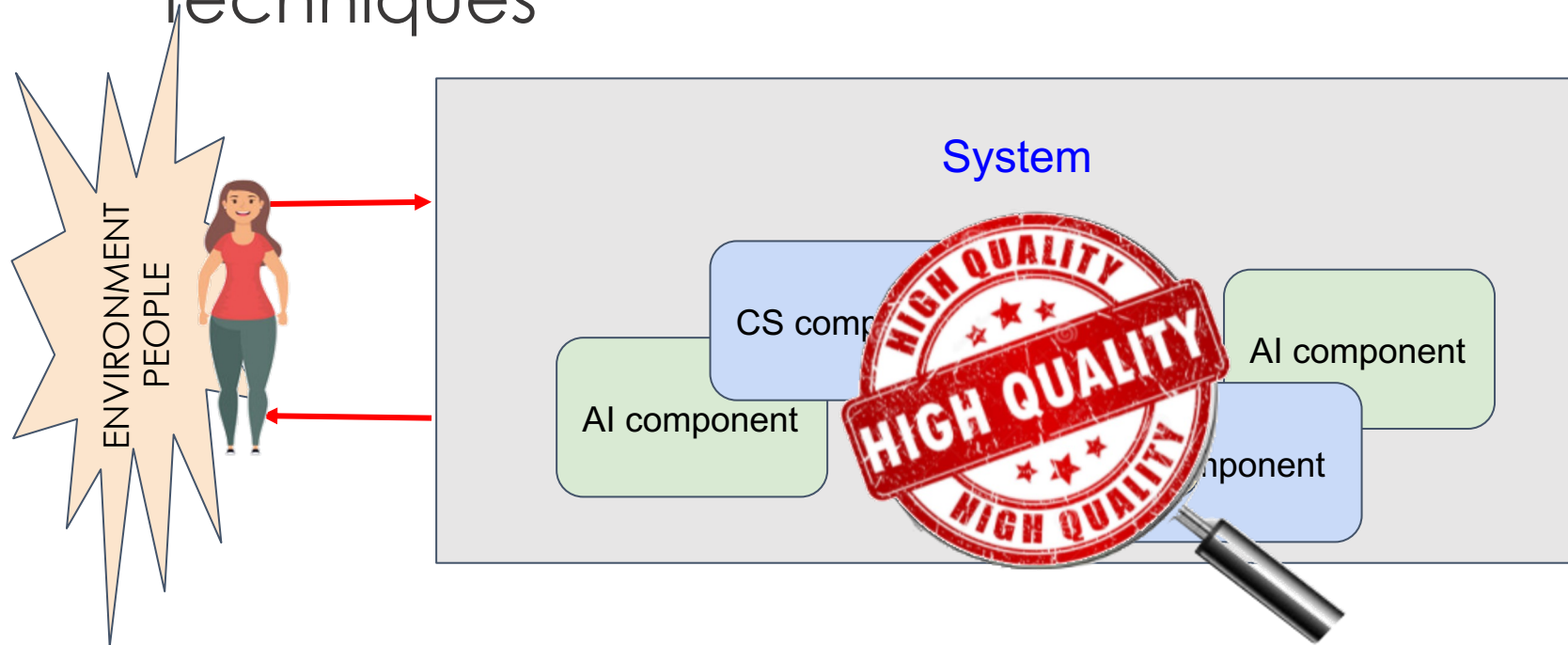
High-quality AI Motivation

- Demand to meet **high quality requirements** and **certification** standards



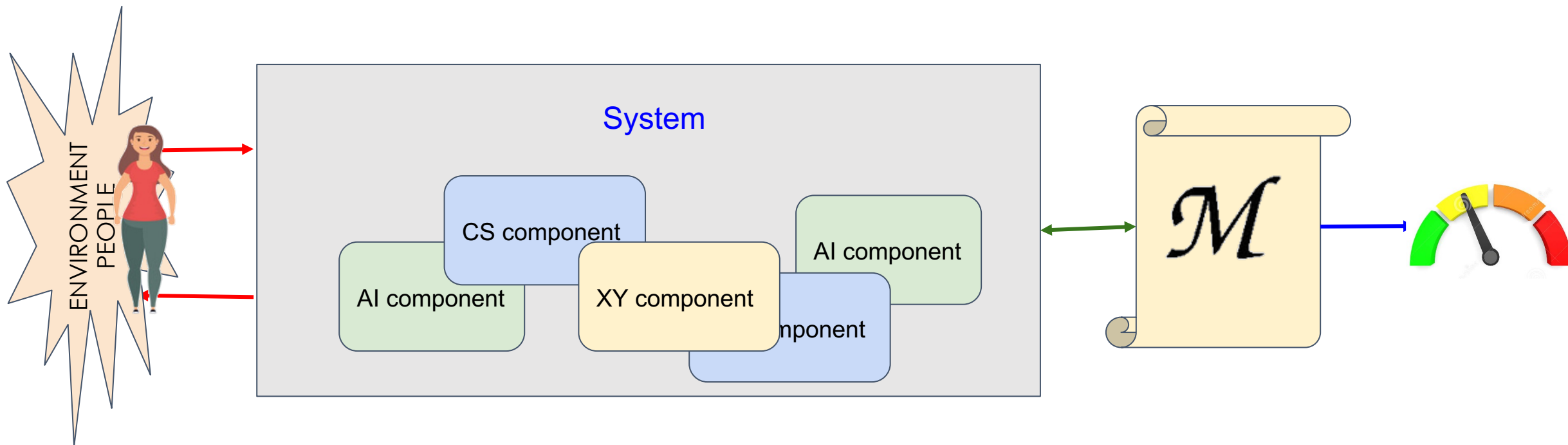
High-quality AI Objectives

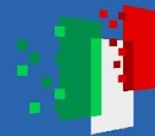
- Develop **measurable qualities** and assessment/certification techniques



High-quality AI Methodology

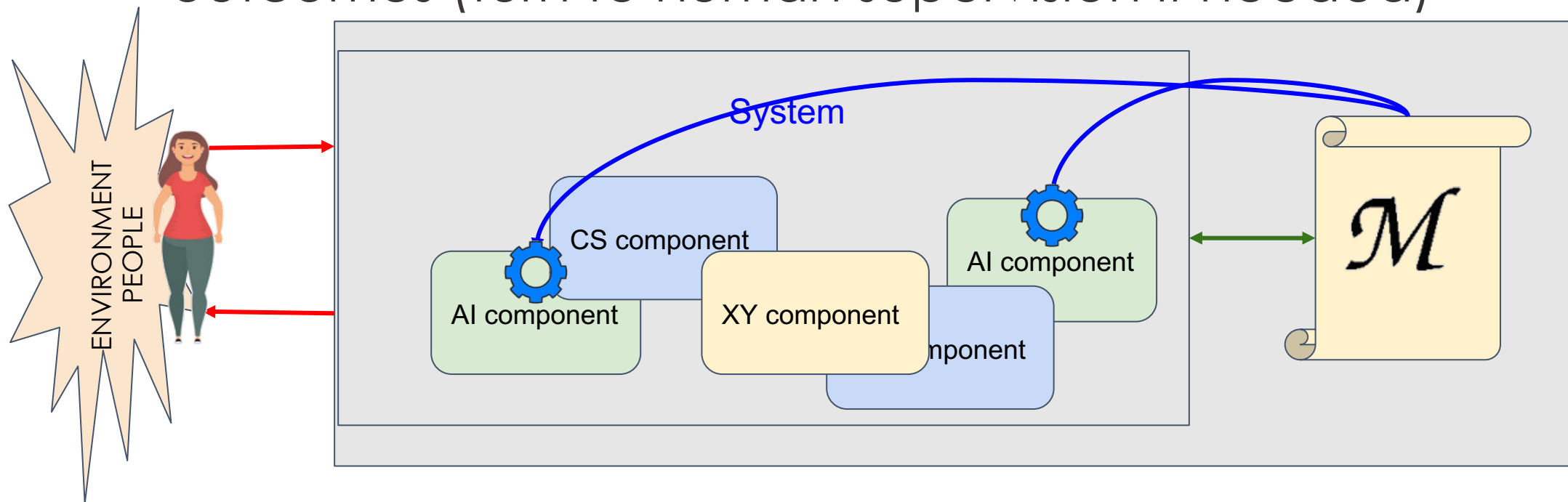
- Rigorous mathematical methods for formal guarantees





High-quality AI Methodology

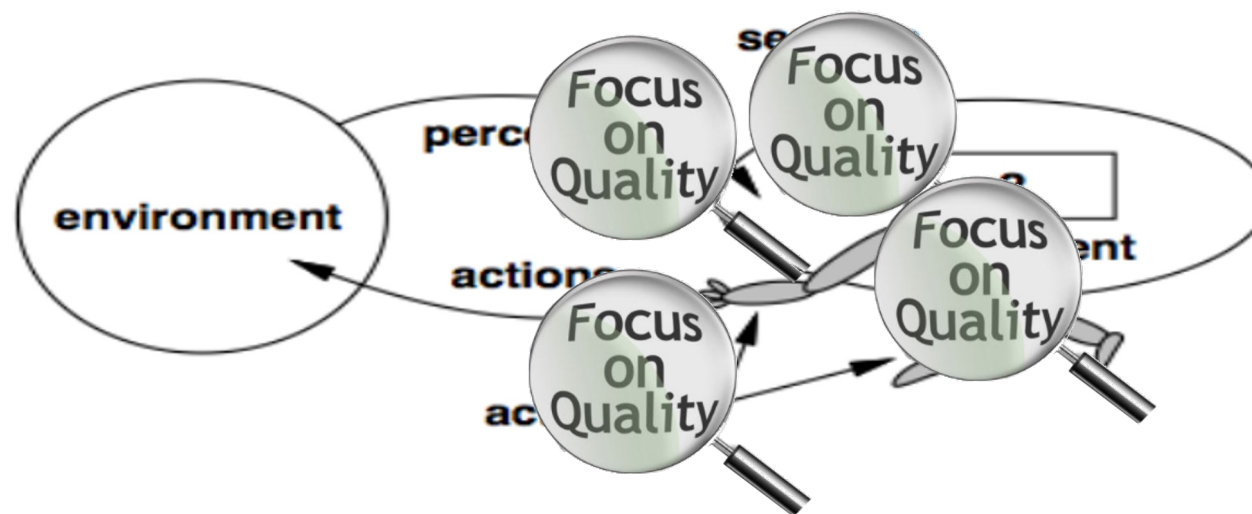
- AI systems able to self-assess the qualities of their outcomes (turn to human supervision if needed)





High-quality AI Methodology

- Whole AI: perception, actuation, learning, modeling, reasoning and planning





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Research questions

Which formal, mathematical, scientific, engineering, and ethical qualities ...

Q5.1 Autonomous AI systems

Q5.2 Data-centric AI systems

Q5.3 Generative AI systems

Q5.4 Machine Learning systems



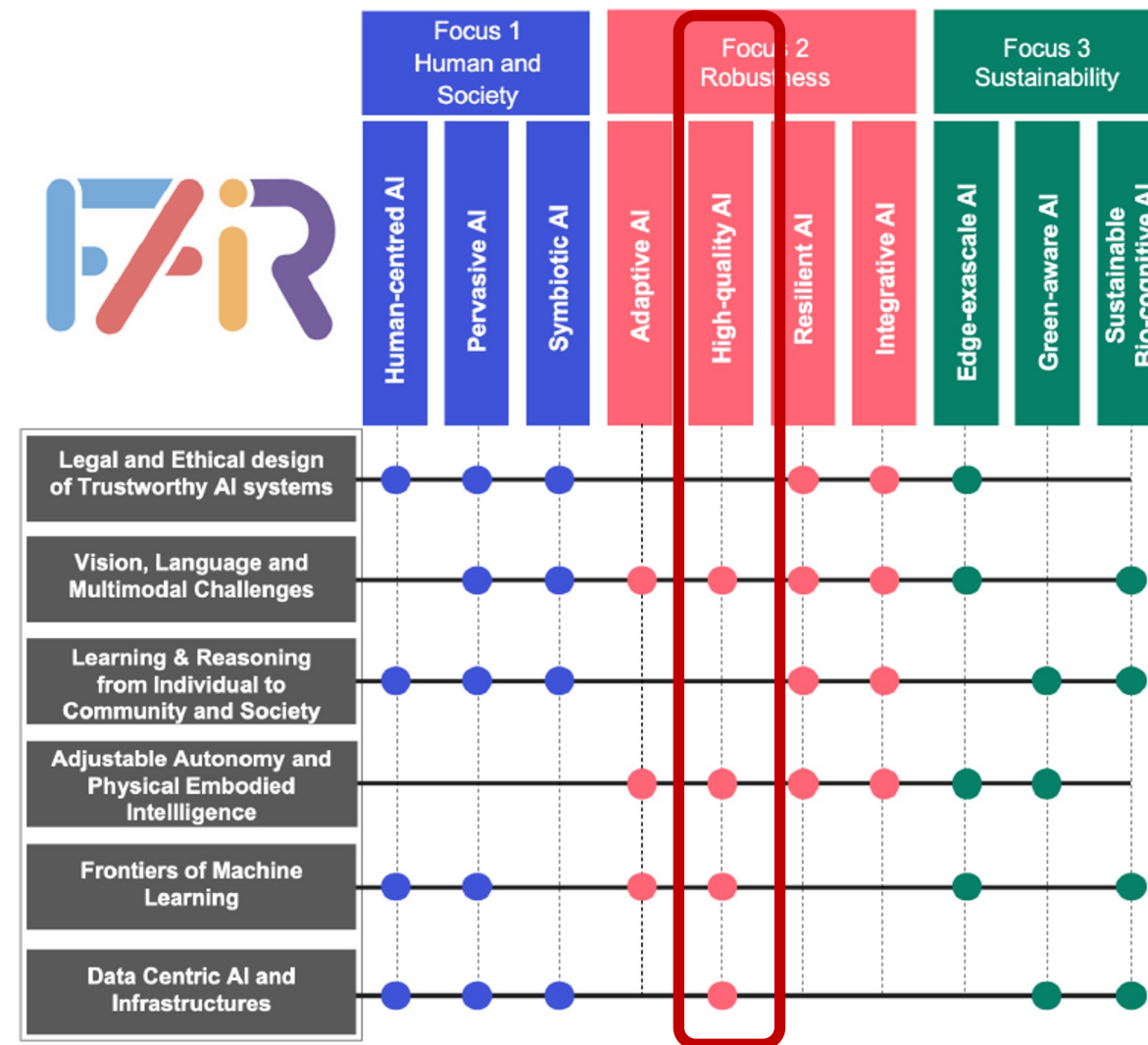


WP structure

- WP5.1 – Scientific, Methodological and Ethical Foundations for Verifiable **Adjustable Autonomy**
- WP5.2 – Data Quality and Management in **Data-Centric AI**
- WP5.3 – Quality in **AI Physical Systems**
- WP5.4 – **Natural Language Generation** and Text Quality Assessment
- WP5.5 – Quality Assessment in **Hard Science and AI**
- WP5.6 – Engineering and Scientific Qualities in **Machine Learning**
- WP5.7 – Mathematically-Grounded Qualities of **Transparent and Accountable AI** Models
- WP5.8 – **Pilots and case studies** for High-Quality AI validation and demonstration

Collaboration

- Spoke scientific meetings
- Transversal Projects
- Cascade calls
 - Academy
 - Industry
- International community





Impact

- **AI scientific community:** measuring and assessing AI quality becomes a major topic in AI conferences
- **Other scientific communities (SSH):** collaboration to measure and assess human-related qualities of AI systems
- **Citizens:** improved understanding and trust in AI systems
- **Public/regulamentary bodies:** certification methods and support for regulatory actions
- **Industry:** new processes and business models for AI systems



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Thank you for your attention

