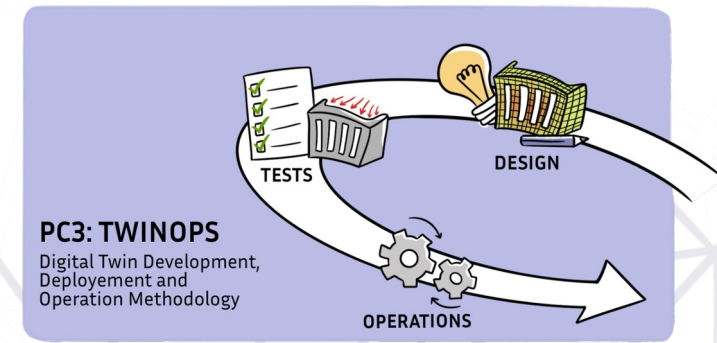


PC3: TWINOPS

Jean-Michel Bruel, IRT
Antoine Beugnard, IMT-Atlantique

Developing specialized *methodologies*,
development life cycles, and domain-specific
languages for engineering digital twins with AI
integration and collaborative approaches

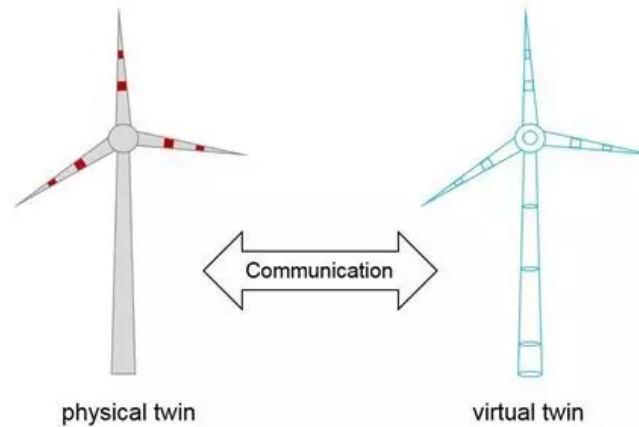
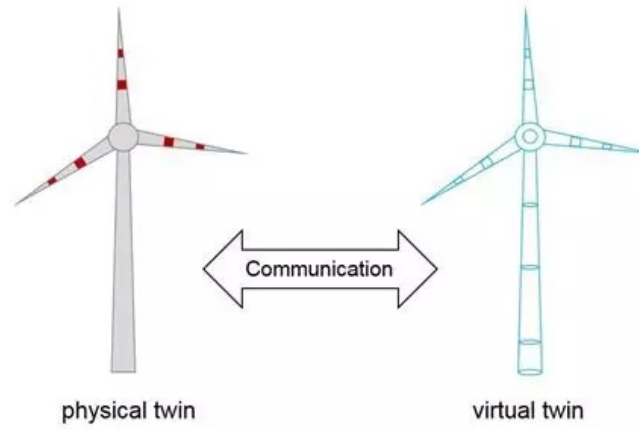


Big Picture

Materials engineers
Meteorologists
Energy engineers
...
Funding agencies
Local elected officials
Operators



With variants

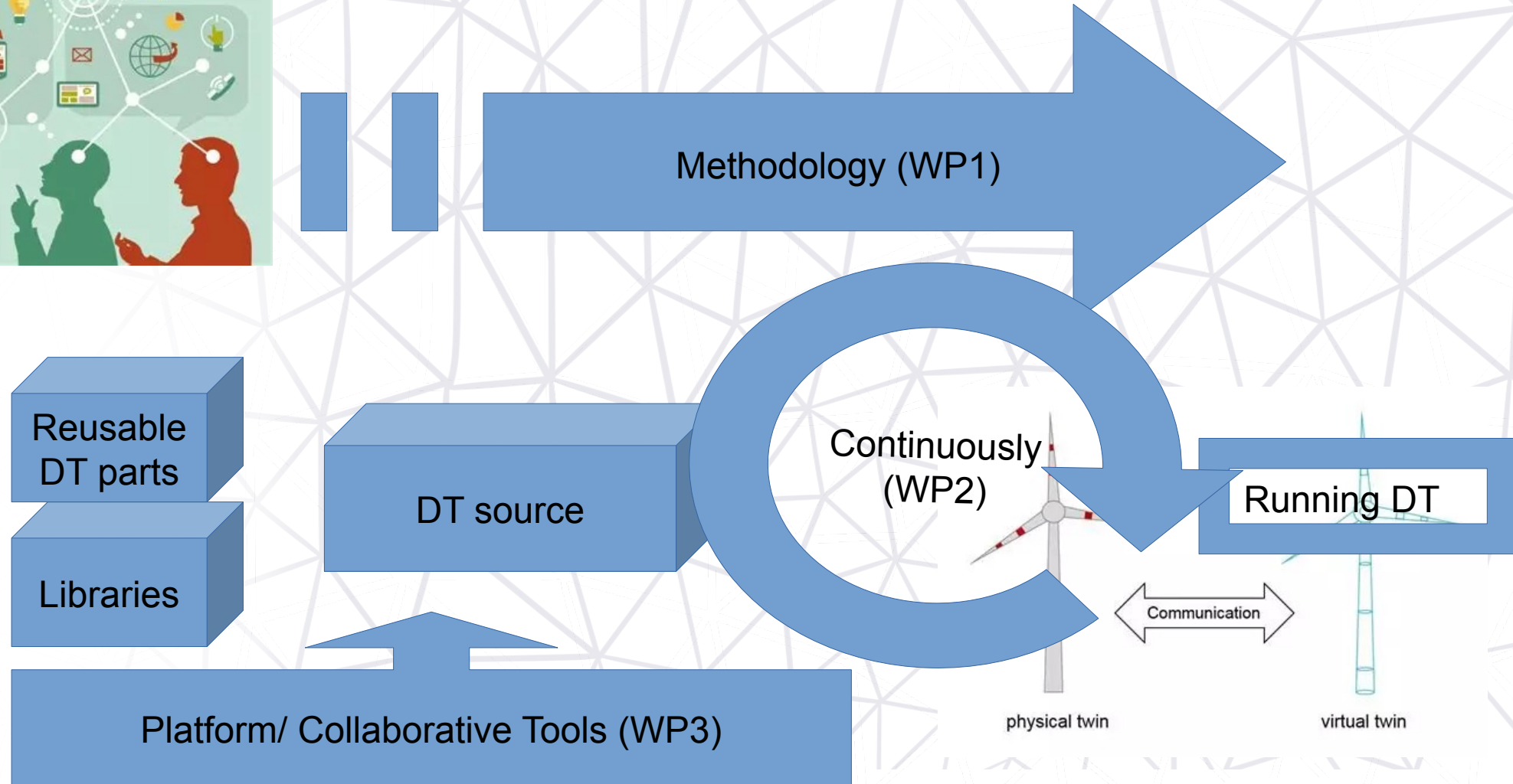


Many instances



Domain Engineers
"End Users"
Software Engineers
- networking, IoT
- data
(collection/storage/analysis)
- HMI
- architects
- simulations
- AI

The process



Work Packages

WP1: Methodology and life-cycle of sustainable digital twins: Lead IRIT/SM@RT (Sophie Ebersold)



WP2: Continuous engineering, co-evolution, quality, and sustainability: Lead LaBRI (Thomas Degueule)



WP3: Collaborative engineering and augmented development tools: Lead CEA (Marcos Didonet Del Fabro)



PhD

WP1

Modeling the construction of
digital twins
(IMT Atlantique)

WP2

Improving Sustainability in the
Physical-to-Digital Twin
Continuum: A Middleware
Framework for Adaptive
Deployment (Lille/Rennes)

WP3

Agents as Run-time
Explorers for Digital
Twins (Pierre Treton)

AI-Assisted Model-Driven
Security Engineering for Digital
Twins: Toward an Automated
Round-Trip Framework (Saclay)



Initial Actions, Resources, Deliverable

18/05 Kick off meeting

Resources

2 Postdocs (Toulouse/Lyon/Brest)

4 PhDs

3 Years IG

Main Deliverables

Methodology

Software Human-Centric DT Dev Interface

Associated Use Cases

Focus on industrial applications

Involving multiple stakeholders

Considering co-evolution of physical and digital twins

Safety and sustainability are a concern

- IFP-Energies Nouvelles (Abir El Feki) – CO₂ storage
- KOPR-like (François Fouquet) : energy grid
- Local Digital Twins

Steering committee

PC leaders

All WP leaders

PhD supervisors

Program coordinators