

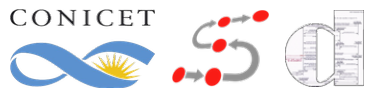
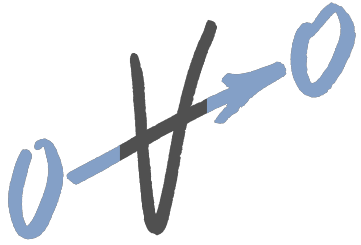


Our **MISSION**: Summary and description of the objectives of the project

Pedro R. D'Argenio

Joint work with... *all of you!*

After good MEALS, a MISSION



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RWTH Aachen

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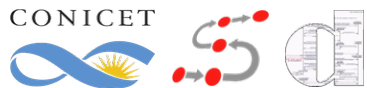
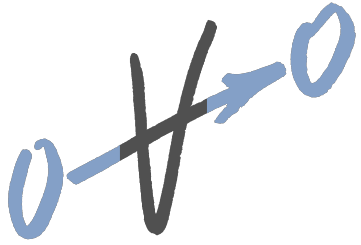
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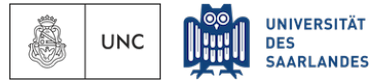
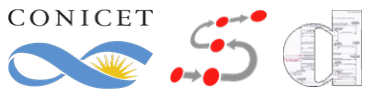
Pablo Castro
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Mariëlle Stoelinga

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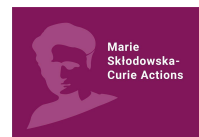
Joost-Pieter Katoen
Thomas Noll





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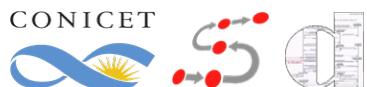
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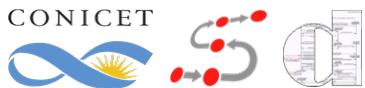
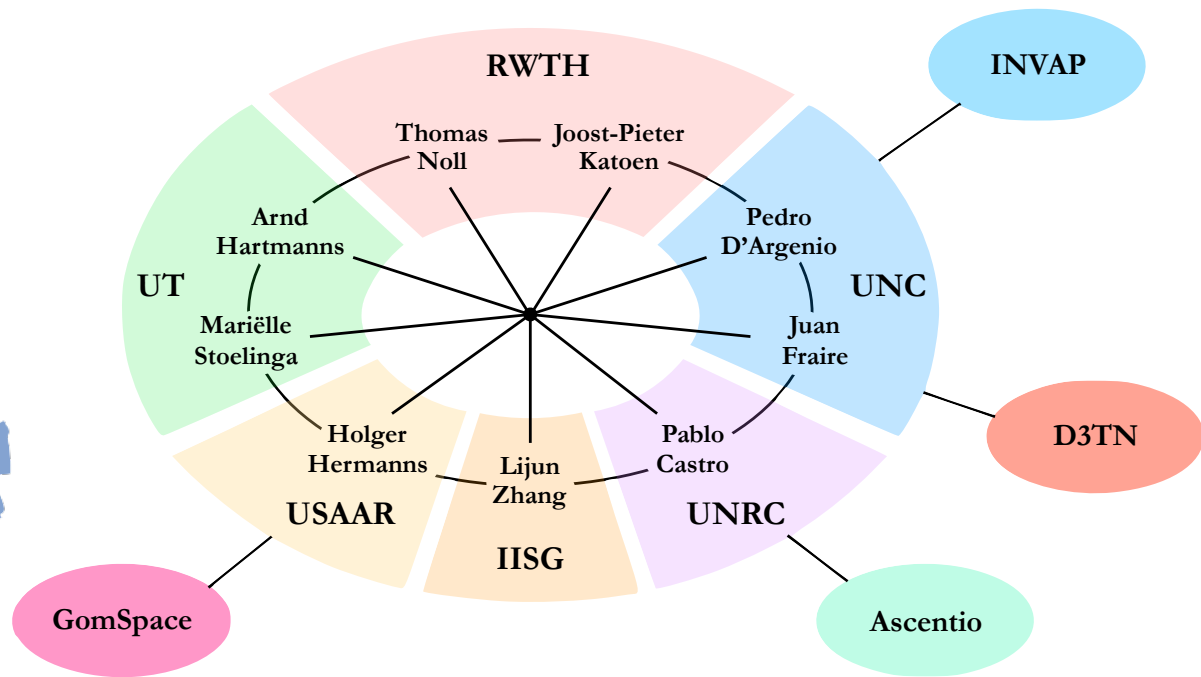
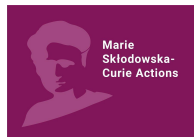
IISG





After good MEALS, a MISSION

MISSION



Context, problem and goal

Traditional space paradigm



Resilience & Reliability

New space paradigm



Cost

Context, problem and goal

Traditional space paradigm



Resilience & Reliability

New space paradigm



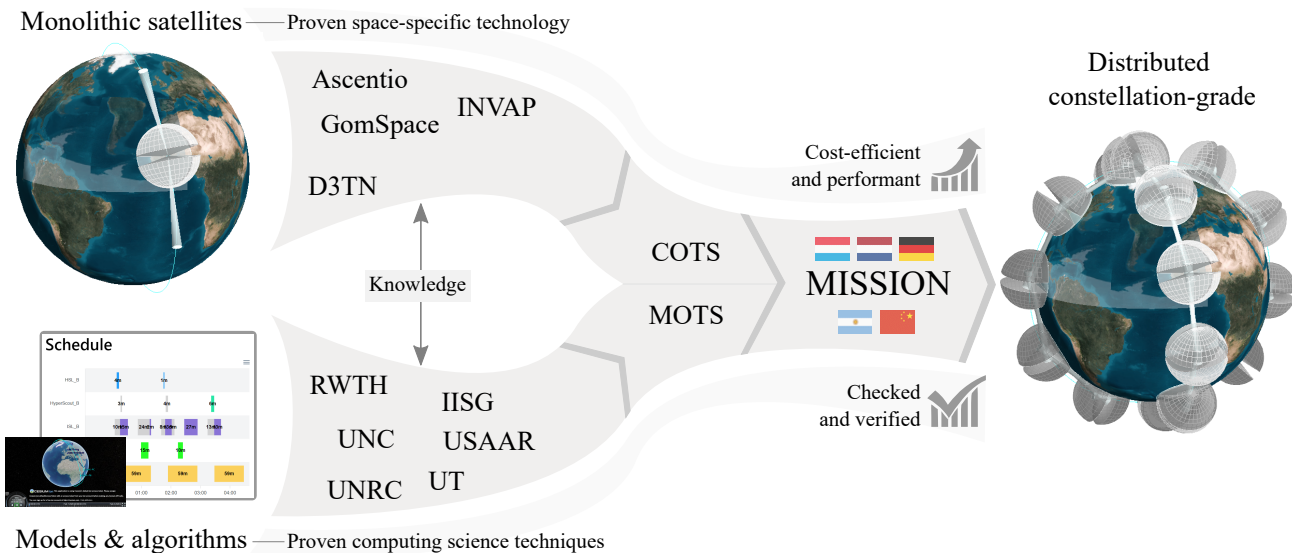
Cost

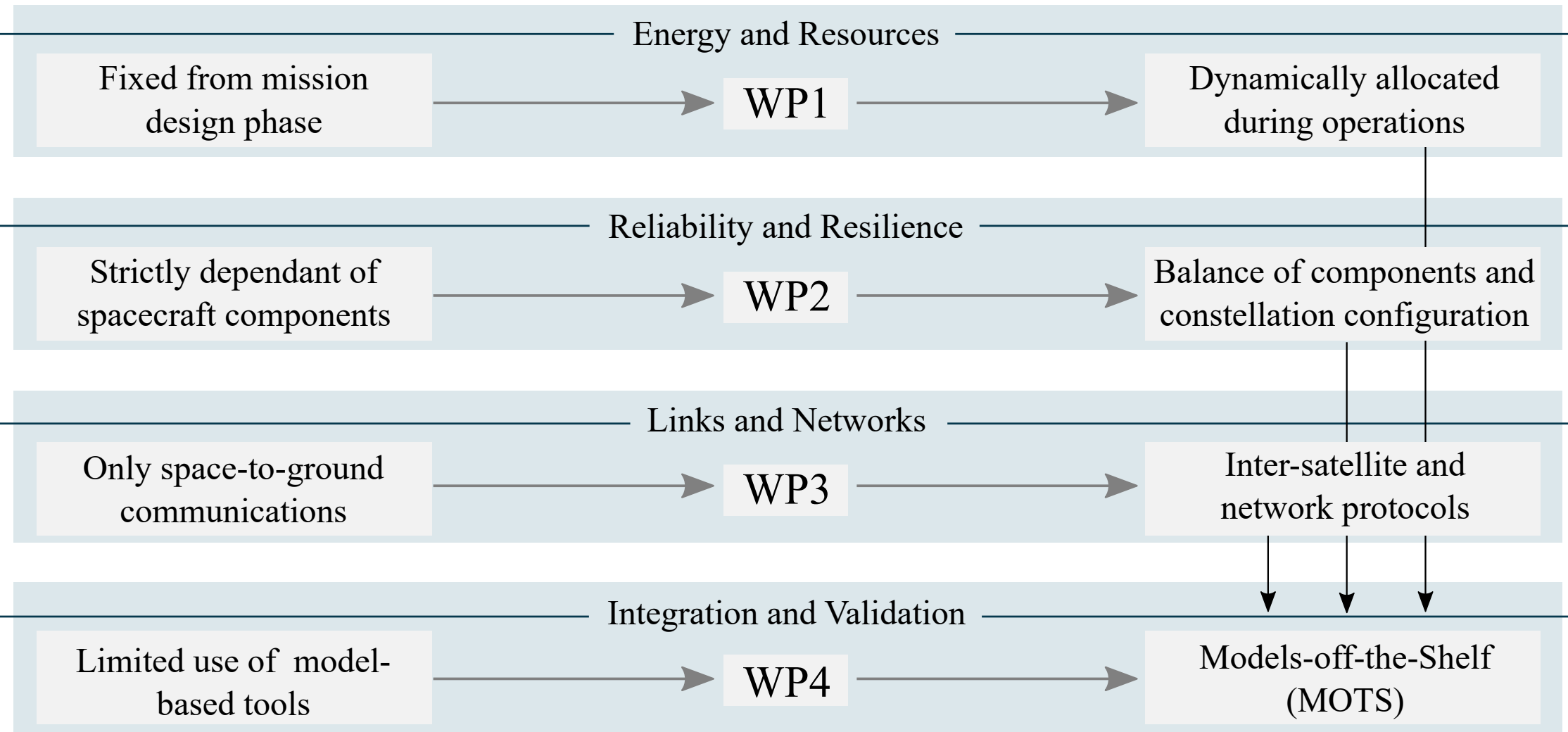
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Resilience & Reliability

Links & Network

Energy & Resources





- 1. Modelling resource dynamics
- 2. Resource-aware scheduling
- 3. Model learning for resource dynamics
- 4. Uncertainty in resource dynamics

Energy and Resources

WP1

Dynamically allocated during operations

Reliability and Resilience

WP2

Balance of components and constellation configuration

Links and Networks

WP3

Inter-satellite and network protocols

Integration and Validation

WP4

Models-off-the-Shelf (MOTS)

Strictly dependant of spacecraft components

Only space-to-ground communications

Limited use of model-based tools

Energy and Resources

Fixed from mission design phase

WP1

1. Extensions of fault trees with repairs
2. Scalable safety and reliability analysis techniques
3. Techniques to cope with rare events
4. Automated synthesis techniques

Reliability and Resilience

Strictly dependant of spacecraft components

WP2

Links and Networks

Only space-to-ground communications

WP3

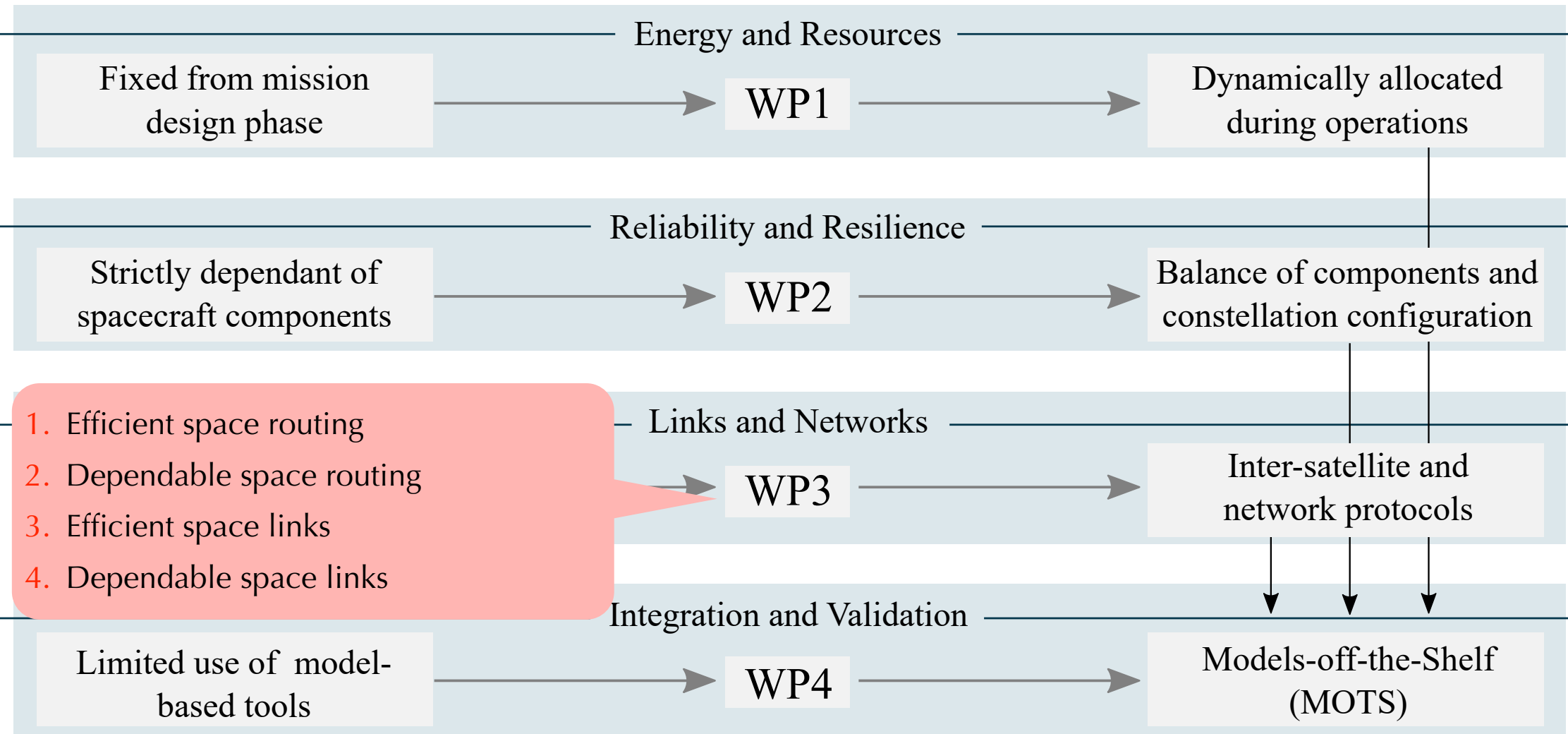
Inter-satellite and network protocols

Integration and Validation

Limited use of model-based tools

WP4

Models-off-the-Shelf (MOTS)



Energy and Resources

Fixed from mission design phase

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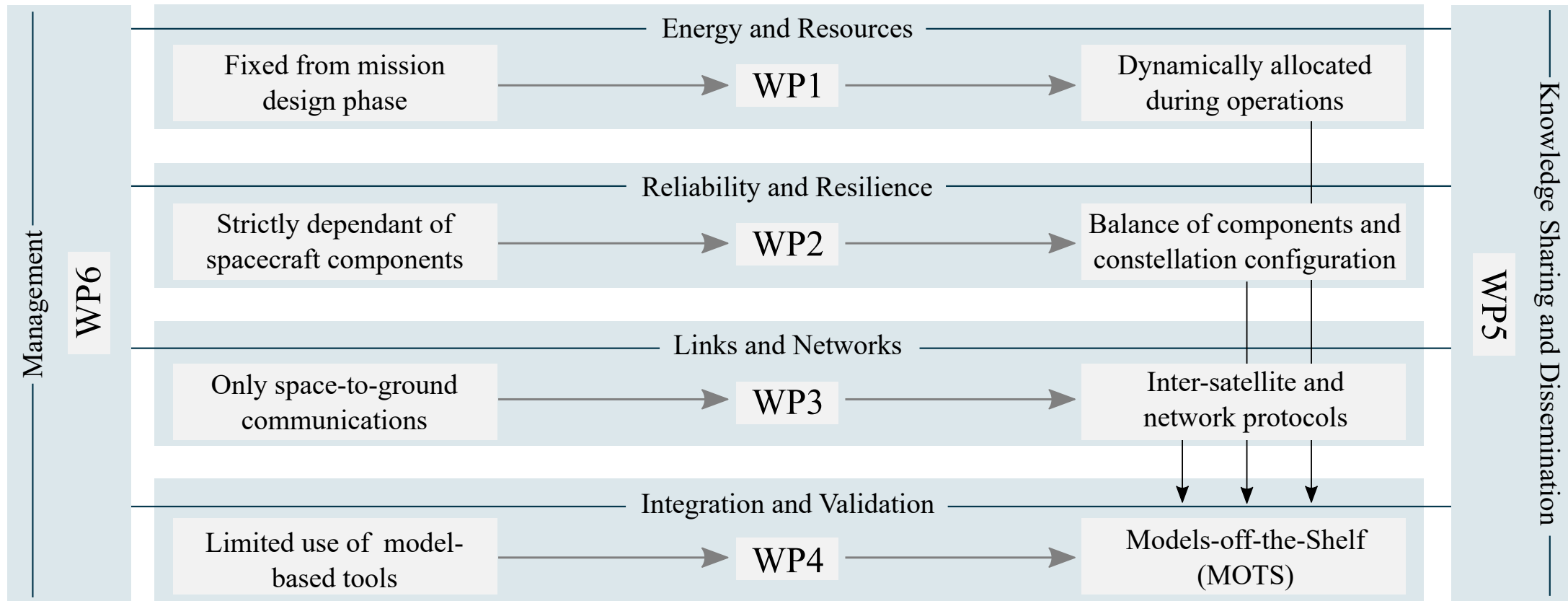
WP3

1. Inventory of industrial practice and requirements
2. An interface-based quantitative formalism
3. Compositional higher-level languages and file formats
4. Integration of established techniques
5. MOTS library for COTS components
6. Integration demonstrator

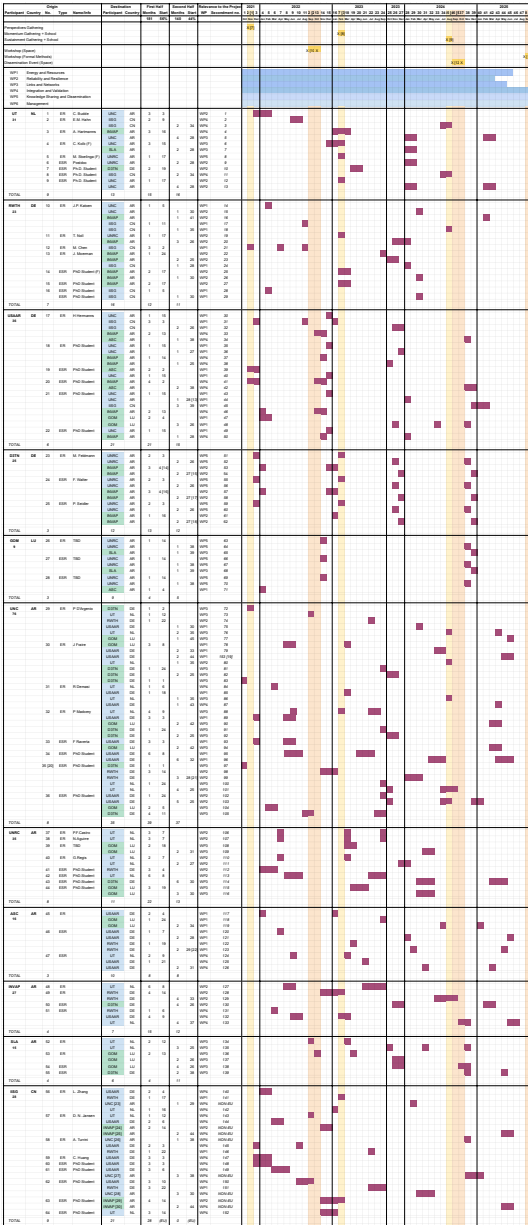
Integration and Validation

Limited use of model-based tools

WP4



Partner Interaction + Fostering Career



Gatherings

- MISSION Perspectives Gathering (M3)
- MISSION Momentum Gathering (M14)
- MISSION Sustainment Gathering (M32)

Workshops

- MISSION Space Workshop (M22)
- MISSION Formal Methods Workshop (M40)
- MISSION Dissemination Event (M46)

Research Schools

- Río Cuarto Summer School on CS (M14)
- The Summer School on Formal Methods (M32)

Training Seminars

- On-site training seminars
- Virtual training seminars

Partner Interaction + Fostering Career + Dissemination

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