

ChEESE

Trials methodology

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WHY TRIALS?

Trials are not just «exercises». A step forward to assess the **impact** of a *new technology*:

For **Developers**: test some new technological solutions and innovations, and collect user feedback to improve the solutions.

For **Experts**: identify new scientific challenges and be involved in the creation of knowledge (Open Science).

For **Practitioners (end-users and infrastructure providers)**: to focus on a problem in daily operations and initiate the process of assessing solutions.

ChEESE-2p Technology

- *The most powerful supercomputers in Europe*
- *The most advanced simulation workflows for Urgent Computing in Solid Earth sciences.*

Urgent computing (*Wikipedia*)

is **prioritized and immediate access on supercomputers** for emergency computations [...] during matters of immediate concern.

Applications that provide decision makers with information during critical emergencies cannot waste time waiting in job queues and need access to computational resources as soon as possible. Systems for urgent computing commonly use dedicated resources to ensure immediate and dedicated access to urgent computations.

Methodology

We propose to adopt a **structured methodology** to carry out the Trials in a homogeneous way, and to involve the users in a **co-design** process

We **take inspiration** from the methodology formalised by EU driver+ project
<https://www.driver-project.eu/trial-guidance-methodology/>

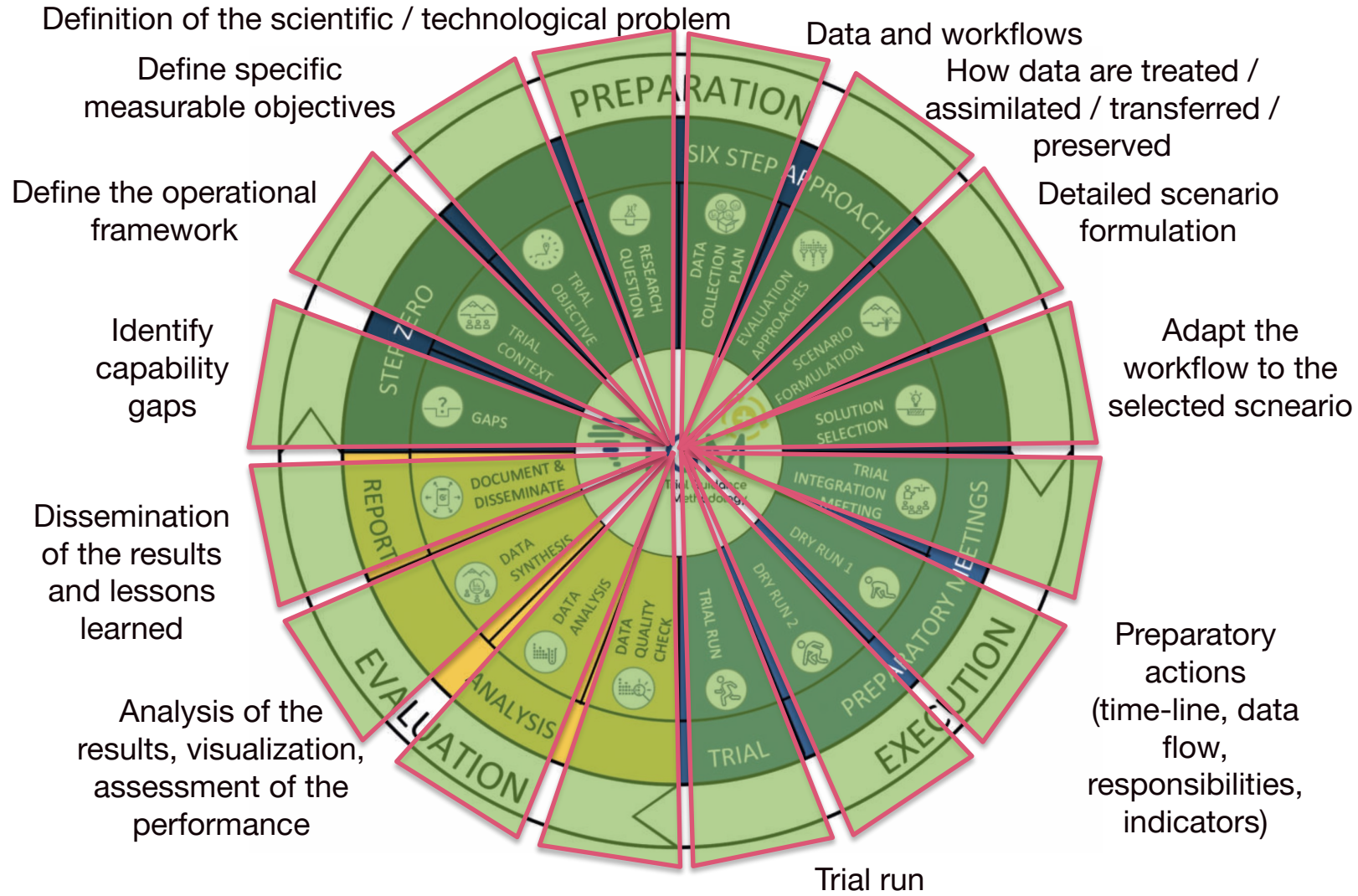
The DRIVER+ project (Driving Innovation in Crisis Management for European Resilience) has received funding from the European Union's 7th Framework Programme

The methodology was conceived for **Crisis Management**



TRIAL GUIDANCE METHODOLOGY HANDBOOK

Version 1.1 - February 2020



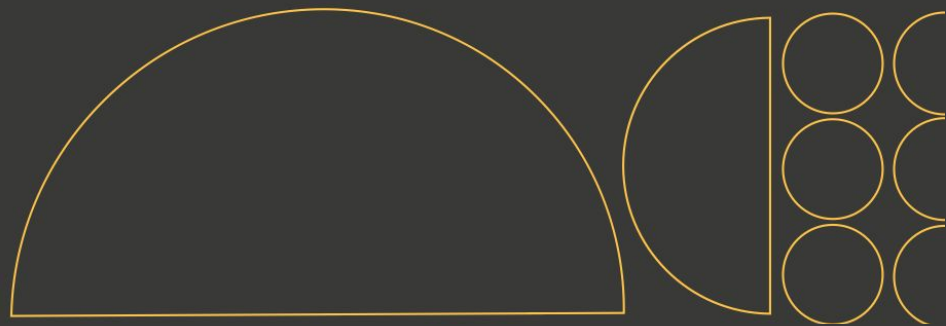
2024										2025										2026									
Concept																													
				Preparation																									
										Execution																			
																				Evaluation									



An «Urgent (Super)Computing» handbook ?

- ❖ What is the **potential use / utility** of the Urgent Computing?
- ❖ Which **knowledge gaps** can the new technology fill?
- ❖ What are the **functional / non-functional requirements**?
- ❖ Is Urgent Computing **robust** enough to be used in **operational frameworks**?
- ❖ What is the **cost** of the new technology?
- ❖ Is the new technology **sustainable**?
- ❖ What **policies** are needed to implement Urgent Computing?
- ❖ Potential links with **Destination Earth**

Thank you!



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ChEESE Technology Readiness Levels

LEVEL	TRL Definition (European Commission)	TRL for ChEESE Pilot Demonstrator	Target	WP
TRL 1	Basic principles observed	Equations and Quantities of Interest (QoI) defined. HPC parallel numerical code deployed.	Developers	n.a.
TRL 2	Technology concept formulated	Efficiency metrics defined and strategy towards <i>exascale</i> preliminarily assessed.	Developers	2,3
TRL 3	Experimental proof of concept	Proof of scalability and efficiency of individual components ^[1] . Simplified tests performed.	Developers	2,4
TRL 4	Technology validated in lab	Proof of models/data interoperability in workflows.	Developers	3,4
TRL 5	Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)	Individual components of the prototype service ^[2] validated in relevant environments ^[3] . Error checking.	Field specialists	2,4,5
TRL 6	Technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)	Component integration and interoperability. Real-case tests demonstrated in relevant environments. Assessment of required resources.	Field specialists	3,4,5
TRL 7	System prototype demonstration in operational environment	Individual components of the prototype service demonstrated in operational environments ^[4] . Training of users.	End-users	5
TRL 8	System complete and qualified	Component integration and interoperability. Real-case tests demonstrated in operational environments. Assessment of Ethical aspects.	End-users	5
TRL 9	Actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)	The service is deployed and operation-ready for different scenarios. Agreement on Ethical and Liability issues ^[5] .	End-users	n.a.

