

Use case: future observations

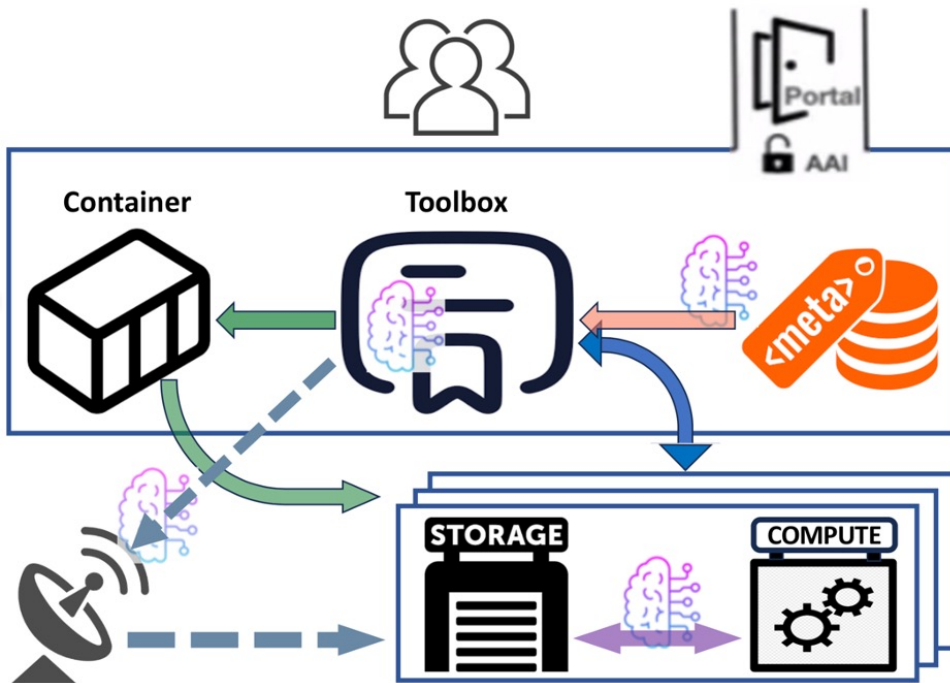
PUNCH 2.0 Meeting

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April 14, 2025

Covered communities / partners

- Astronomy
 - DZA, HU Berlin, MPIfR, U Köln ($\Leftrightarrow$ VdR)
- Particle/nuclear physics
 - TU Dresden, FIAS, U Mainz

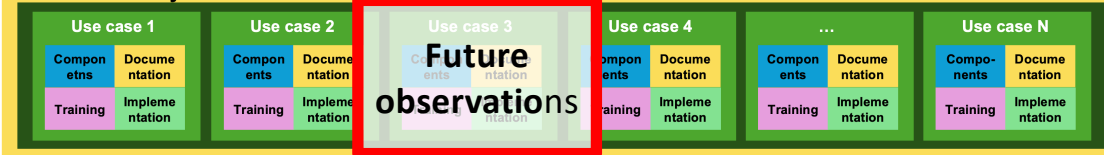


TA 4: Management

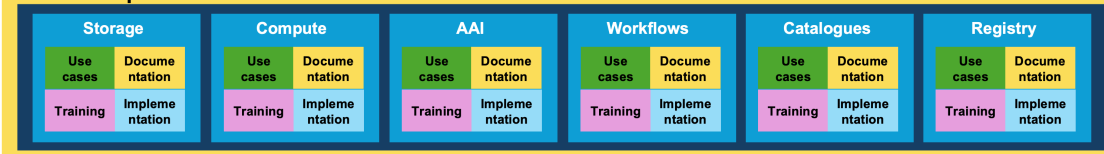


TA 3: Services and Results

TA 2: Assembly



TA 1: Components



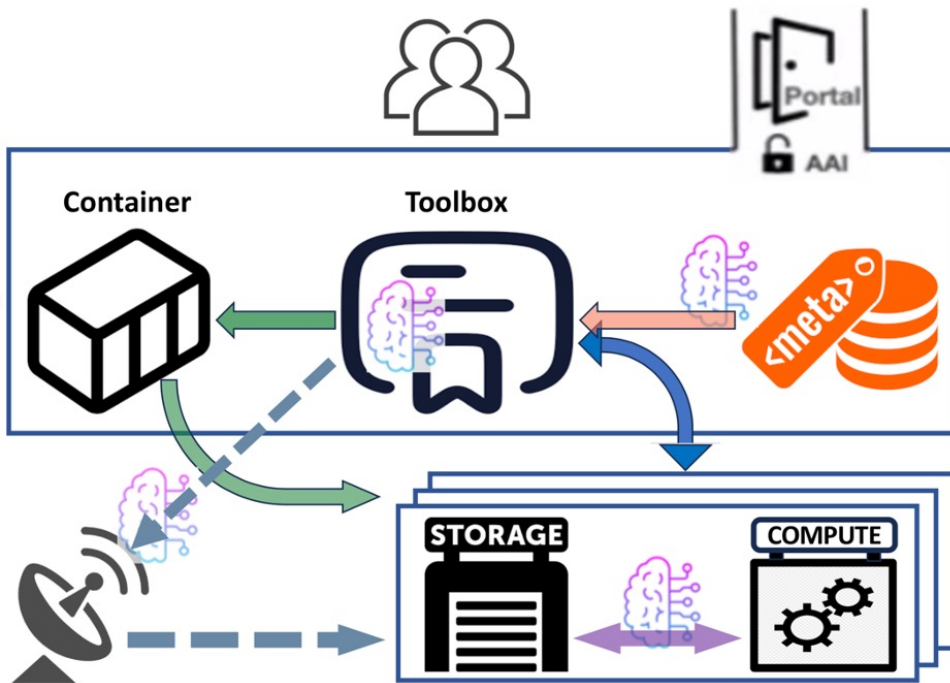
Experiments ramp up data rates

- signals more complex
- significantly shorter time scales
- emerging technologies/hardware

⇒ Need for **fast ML** solutions and **feedback loops**

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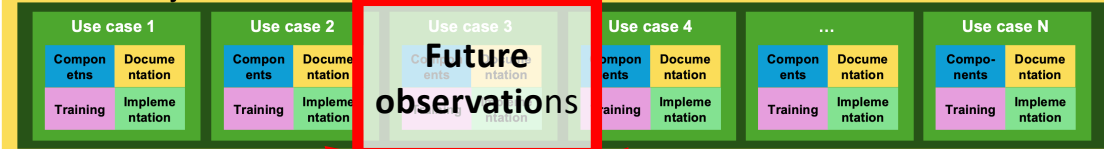


TA 4: Management

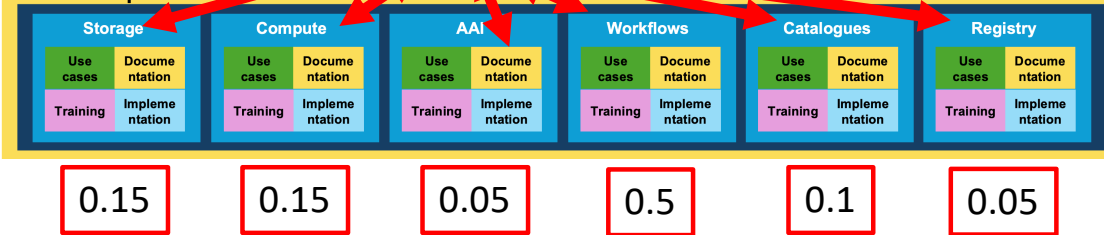


TA 3: Services and Results

TA 2: Assembly



TA 1: Components



Key aspects

- Real-time data analysis
- Fast ML (... ML-PPA ...)
- GPU/FPGA/... Alpaka ...
- Simulations
- Containerization
- Dynamic metadata
- Dynamic archiving
- Memory-based comput.

Aspects covered by others

- Real-time data analysis
- Fast ML (... ML-PPA ...)
- GPU/FPGA/... Alpaka ...
- Simulations
- Containerization
- Dynamic metadata
- Dynamic archiving₃
- Memory-based computing