



University of Applied Sciences and Arts  
Northwestern Switzerland



# Platform for Benchmarking Algorithms in SKA

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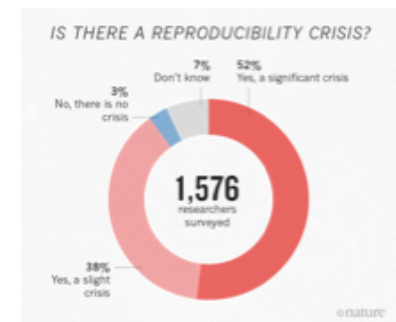
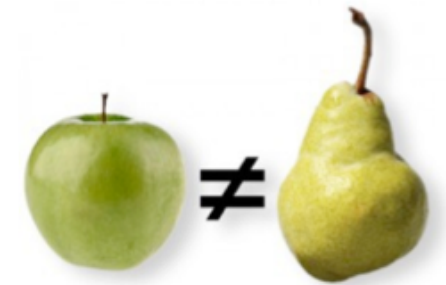
# SKA Data Processing – Challenges

- Huge data volume and data production rate of SKA (» Deluge of Astronomical Data«)
- Improvements necessary in many different areas: Hardware, algorithms (e.g. for exploiting hardware), data compression schemes, algorithmic performance, etc.
- What is the best combination of the different parts for a data production infrastructure that achieves the targets?



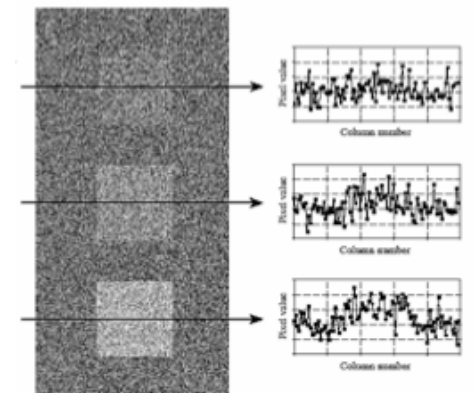
# Evaluating Different Approaches is a Challenge

- Fair comparison based on published results not always easy.
- Details on test case often missing (hardware, resources used, scalability information, input data, output products, etc.)
- Results sometimes hard to reproduce (see survey on reproducibility in science: Nature **533**,452–454, 2016)



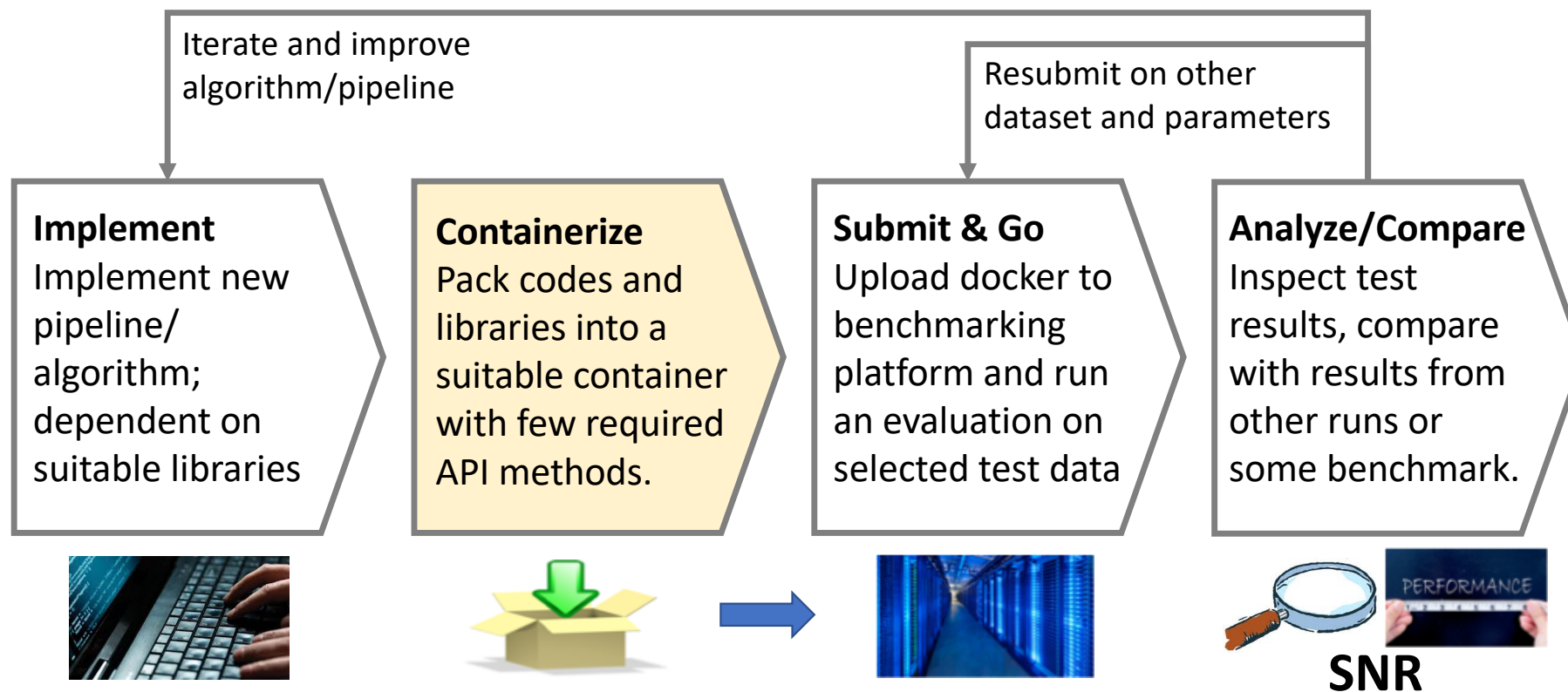
# Benchmarking Platform for SKA

- Platform for evaluating algorithms/pipelines (for image reconstruction)
- Focus on algorithms performance at moderate data volumes
- Standardized Test Datasets (inputs)
- Measurement of computational resources (standardized units) and output product quality
- Compensation of hardware-specific aspects (as best as we can)

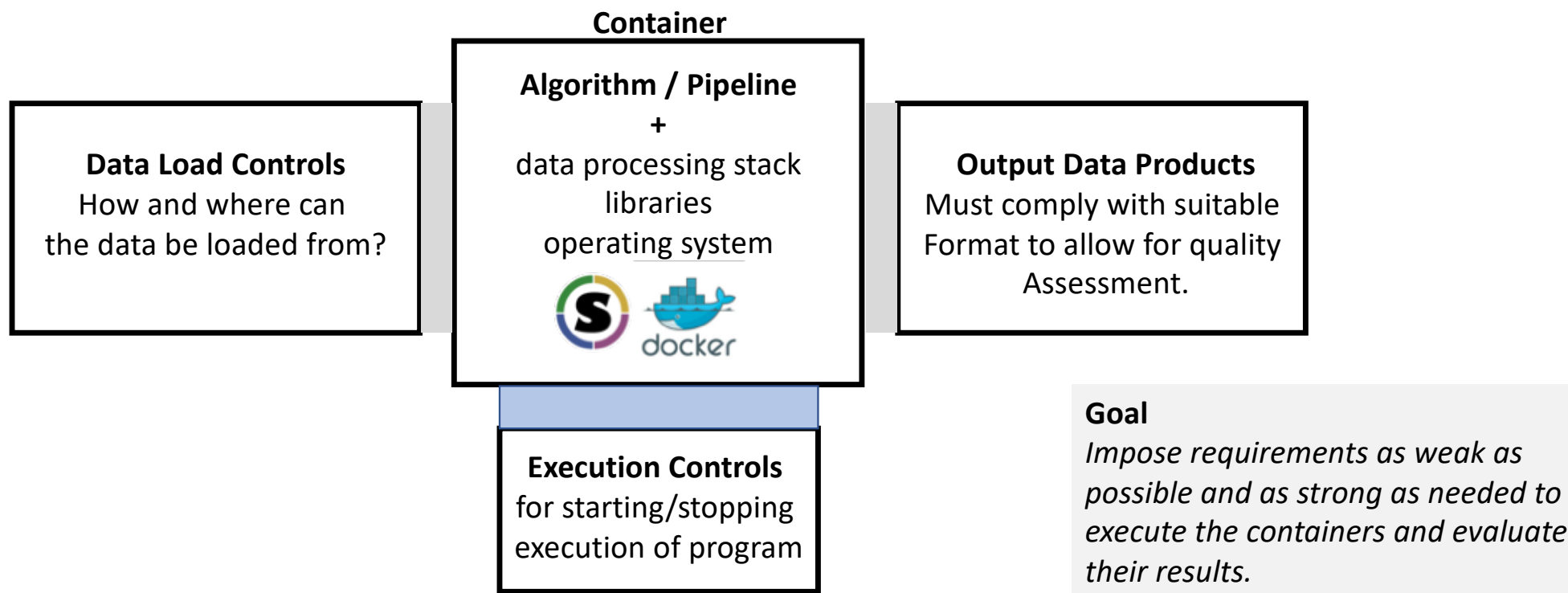


**SNR**

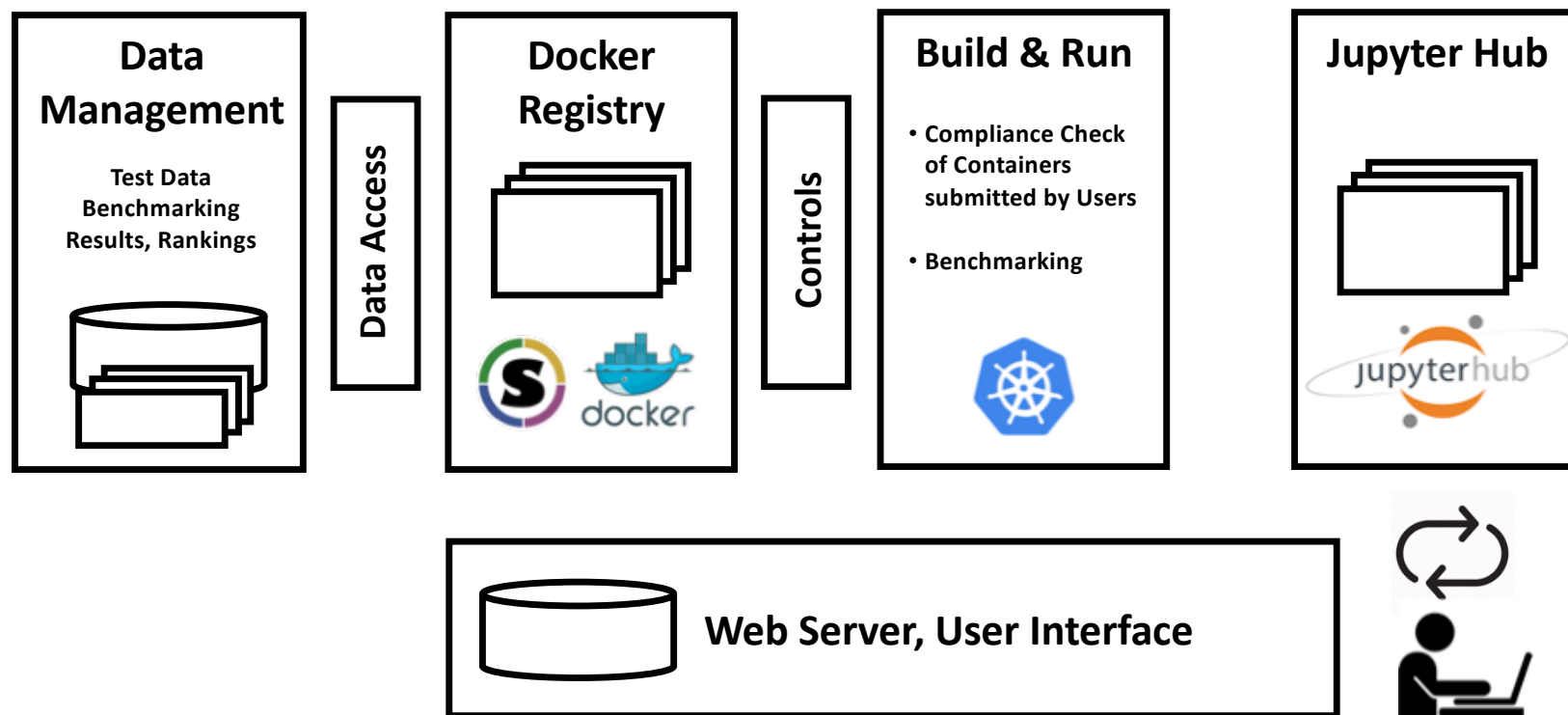
# User Scenario



# Requirements for Plugging into Platform



# Benchmarking Platform: Technical Details



# Test Datasets, State-of-the-Art Algorithms

Well-curated and well-documented datasets of «reasonable» volume (start small, grow bigger) from different sources (MeerKAT, VLA, ALMA, etc.)



***Focus on image reconstruction algorithms.***

Well-established algorithms (such as CLEAN) with performance/quality metrics measured for demo purpose and benchmarking.



# Roadmap

- 06/18 Proposal for Funding submitted
- 01/19 Start of Project
- 01-06/19 Collection of Requirements  
(Science, Technology/Suppliers of Infrastructure)
- 01/20 First prototype ready for beta-testing
- 06/20 Announcement to Community



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# Your Feedback, Input and Participation is Vital!