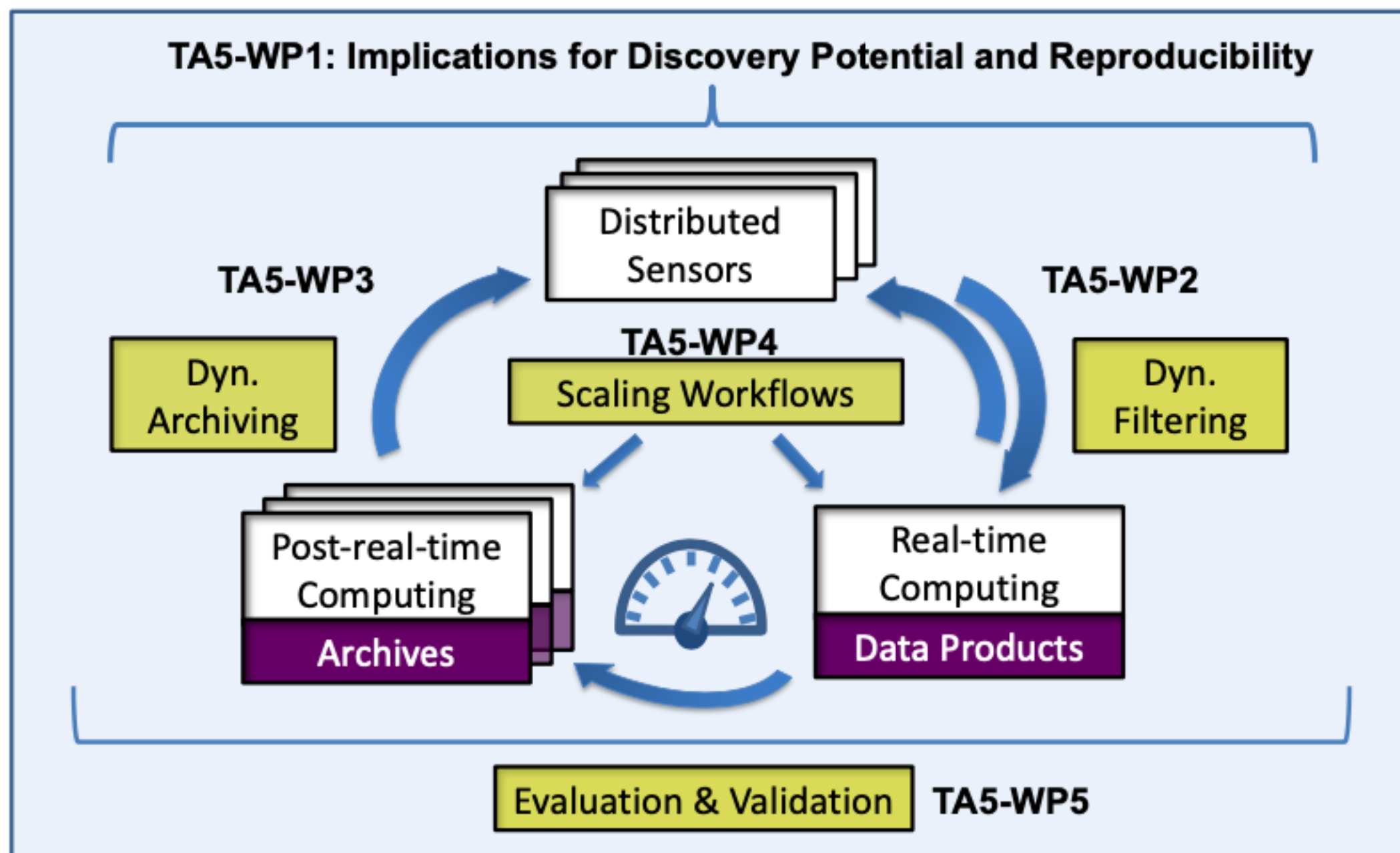


TA5 - WP3: Dynamic Archiving

Laura Spitler
MPIfR, Bonn



Dynamic Life Cycle Model

Concept and requirements document

D-TA5-WP3.1: A sample dynamical archive

March 2023

1 Deliverable 3.1

Specifying the concept of a dynamic archive: Requirements in relationship to other WPs (information loss, dynamic filters, scalable workflows and simulated catalogs) as well as to information present in traditional archives (other TAs).

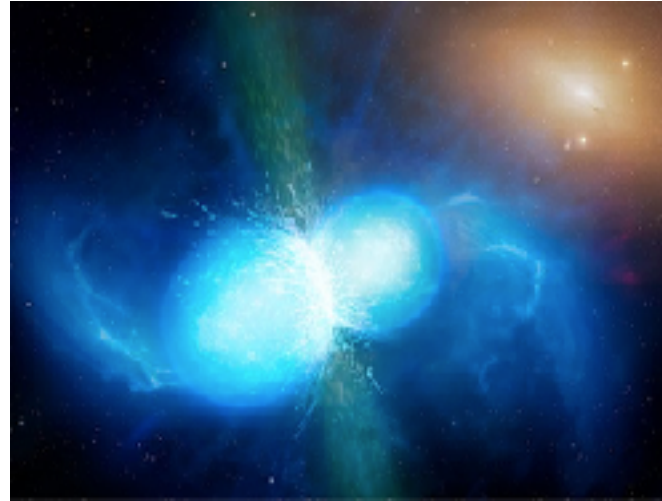
“An archive generated by a dynamical filter and/or used to create a dynamical filter”

Data irreversibility in astronomy: dynamic sky

Exploding stars



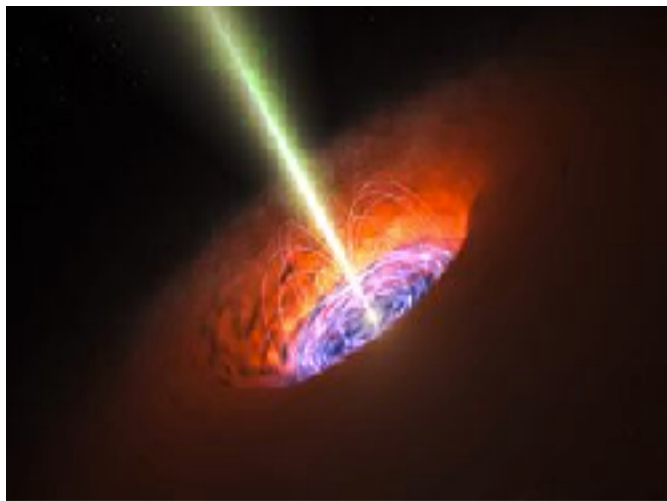
Merging stars



Fast radio bursts

???

Astrophysical jets

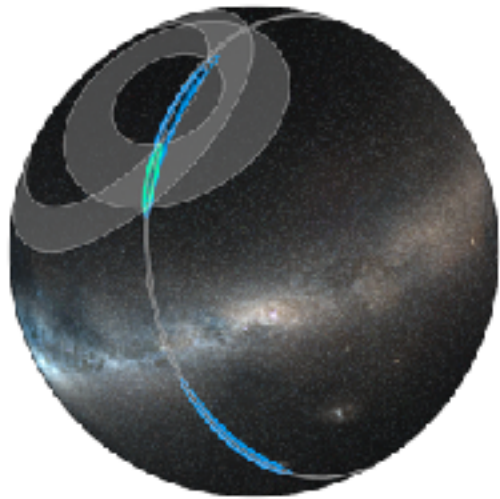


Stellar outbursts



Bonn

Astronomical survey



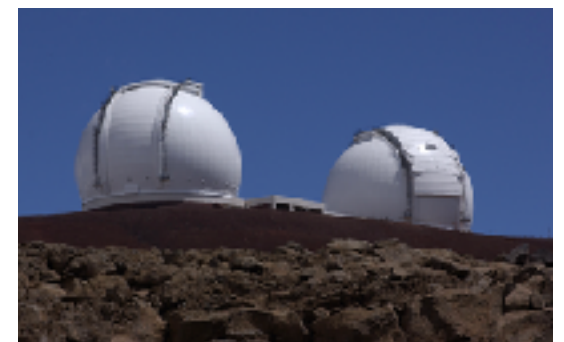
Credit: L. G. Vega, NASA, Leo Singer (left), Ray Ingers (right)



Source detection pipeline

Berlin

Follow-up observations



Modern surveys



Credit: South African Radio Astronomy Observatory (SARAO)

Instrumentation

Realtime
search pipeline

Machine
learning
classifier

Only “interesting” data written
to disk

01001101 01111001 01000100
01100001 01110100 01100001

Dynamical filter

Dynamical archive

metadata

Efforts in Bonn

- People: Laura Spitler, Kristen Lackeos (post-doc)
- Leverage work on dynamical filtering in Bonn
 - Ramesh Karuppusamy, Andrei Kazantsev, Yunpeng Men
- Training ML models using simulated data
- Develop an example dynamic archive using the output of these dynamic filters

Functions of dynamic archive (detection stage)

1. Database of labeled events (e.g. “FRB”, “pulsar”, “RFI”)
2. Testing / (re-)training dynamic filters
 - Quantify information loss (recall, accuracy, false positive rate, true negative rate, etc.)
 - **Kristen: Assemble real data sets to test Andrei’s ML models**
3. Assemble a statistically complete sample of events detected with different dynamic filters
4. Use metadata + RFI events to develop a “RFI weather” metric

TA 5 workshop

- Proposed location: Berlin (hosted by Jakob Nordin)
- Proposed dates: 18 & 19 Jan (Thu & Fri)
 - Starting / ending so that people can arrive on the morning of 18 Jan and leave the afternoon of 19 Jan.