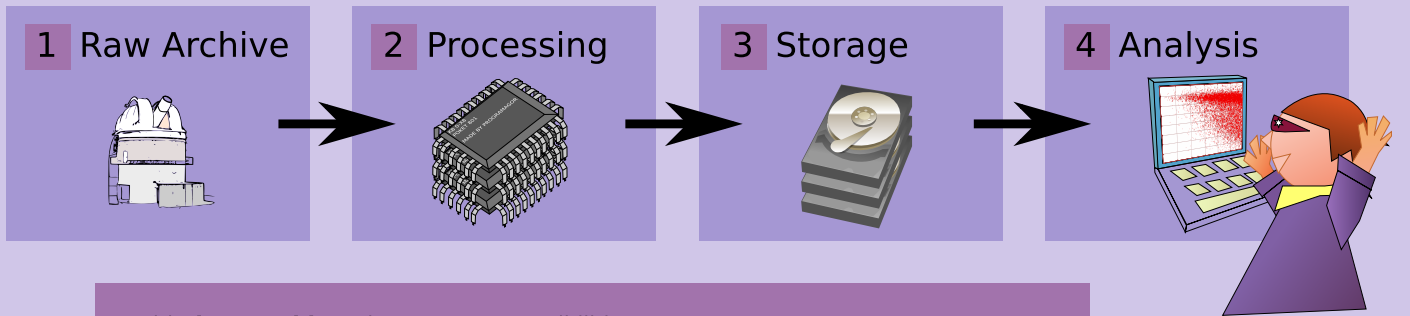# Query-Driven Visualization
Bridging the gaps between Processing, Archiving and Analyzing

H. Buddelmeijer, buddel@astro.rug.nl
Kapteyn Astronomical Institute, University of Groningen

university of groningen

faculty of mathematics and natural sciences

kapteyn astronomical institute

Traditional 'Pushing' Approach

**1** Raw Archive → **2** Processing → **3** Storage → **4** Analysis

With **data pushing**, there are two possibilities:
A) All data is pushed trough processing to storage automatically, even if never used
  ► large amount of **unnecessary processing and storage**
  ► it is **difficult to adapt** for user-specific needs
B) Data is pushed through manually
  ► requires **manual work** that could be automated
  ► requires **access** for the user to the processing
  ► makes it **difficult to share** data between scientists
The scientist has to make the **trade-off between speed and reusability**!

Most effort spent getting the data into the analysis!

Query-Driven 'Pulling' Approach

4 Raw Archive ← **3** Processing ← **2** Storage ← **1** Analysis
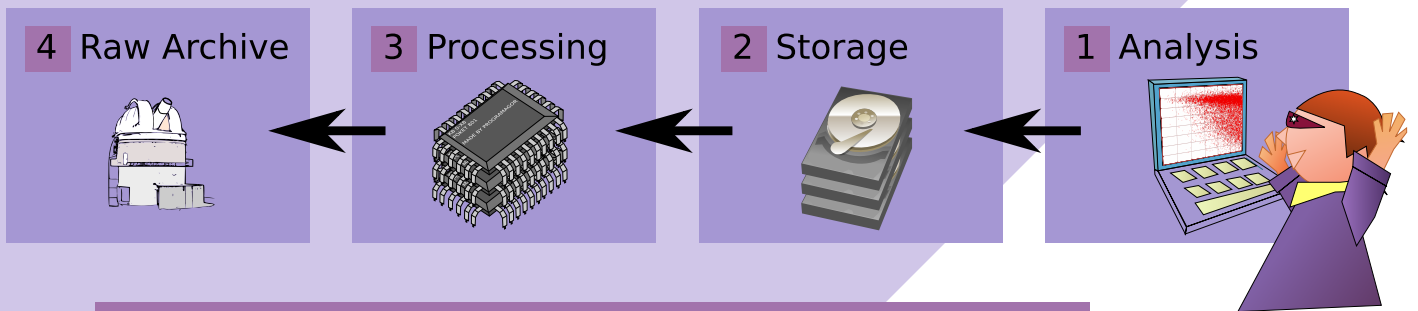
With **data pulling** the process **starts at the end**:
1) The visualization requests the data that is needed for the analysis at hand.
  ► The desired **end result is known** at every step.
2) Data is stored with **full data lineage**: it is know how all the data was derived.
  ► **Automatic reuse** of existing data.
  ► **Implicit sharing** of data.
3) New data is only **processed if necessary** for the analysis at hand.
  ► The result is **derived as fast as possible**.
4) (Ultimately, even raw data could be retrieved or even measured on request.)

Furthermore, data pushing is still possible, therefore
  ► the benefits of the traditional approach remain, while
  ► the problems disappear thus
  ► **both speed and reusability** are achieved!

Most effort spent performing the analysis!

Interested in query-driven visualization? Scan the QR code to visit:
http://www.astro.rug.nl/~buddel/SCIOPS2013
http://www.esciencecenter.nl/projects/project-portfolio/e-visualization-of-big-data/
http://link.springer.com/article/10.1007%2Fs10686-011-9263-0

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