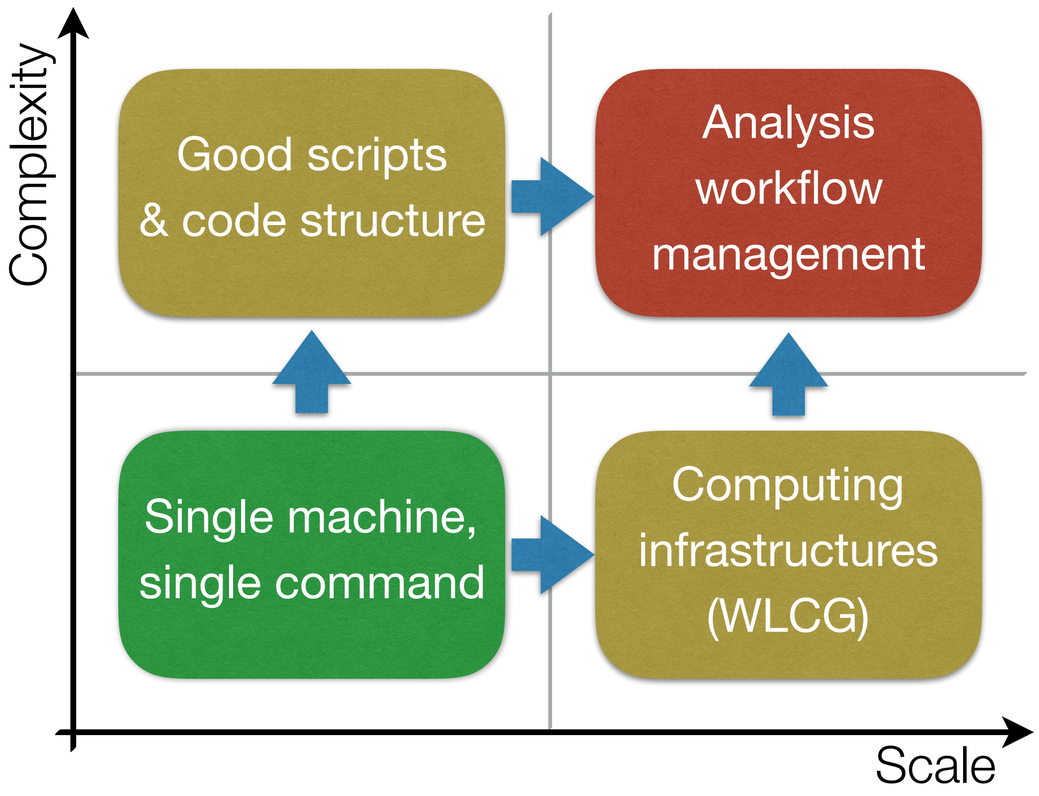
Landscape of Analyses in HEP

- Scale: measure of resource consumption and amount of data
- Complexity: measure of granularity and inhomogeneity of workloads

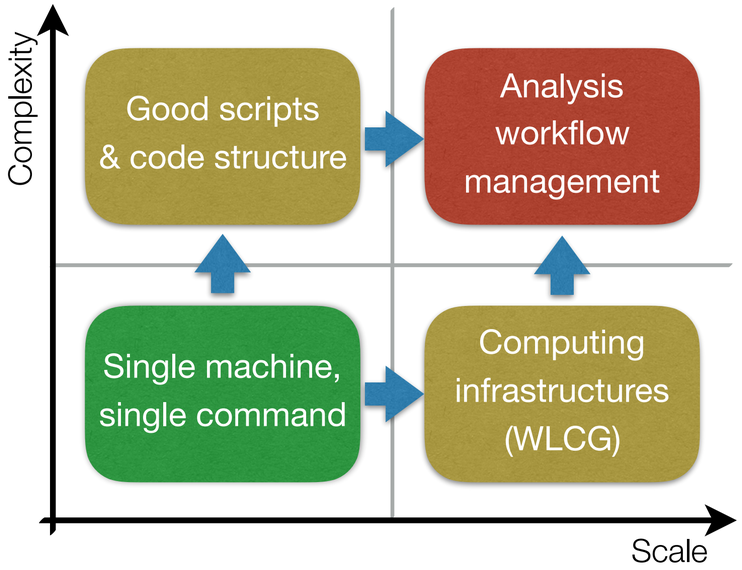
- Future analyses likely to be large ***and*** complex, bottlenecks:
  - Entangled and undocumented structure & requirements between workloads, only exists in the "physicist's head"
  - Bookkeeping of code, data, versions, …
  - Manual execution and steering of jobs
  - Error-prone & time-consuming



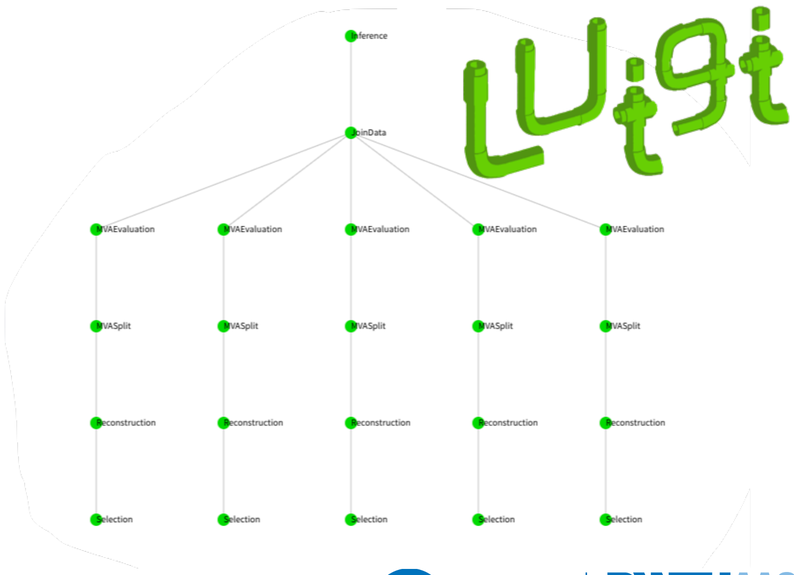
→ *Analysis workflow management essential for future measurements!*

Summary

- HEP analyses likely increase in scale and complexity
  → Analysis workflow management ***essential for success*** of future measurements
- Divergent requirements of existing, specialized management systems and those for “end-user” analyses
  → Need for a ***toolbox*** providing a ***design pattern***, ***not a framework***



- Luigi provides a promising way to model even ***complex*** workflows
- WLCG extension introduces ***scalability*** in the HEP context



- Increased ***transparency & reproducibility → analysis preservation***
- Encourages collaboration beyond code sharing

- Successfully applied in actual *ttH* analysis with CMS

III. Physikalisches Institut
RWTH AACHEN UNIVERSITY