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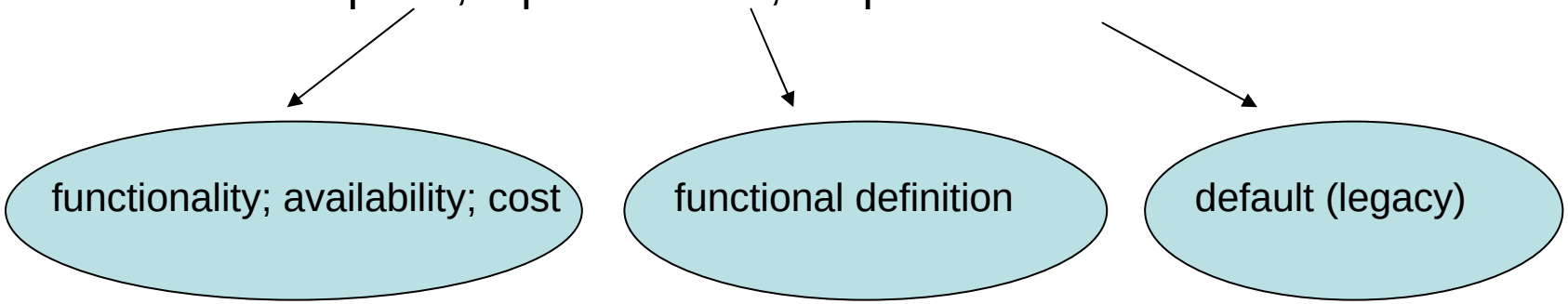
- High Level GRID Programming Model
- Define Component:

  <description; specification; implementation>




- Identify and provide semantics for constructs to capture *heterogeneity* and *dynamicity*:

  Discovery (Examine *description*)

  Progress (Achievement of functionality; resource usage)

  Execution Control (Invoke; Pause; Continue; Terminate)

# Heterogeneity

- Components must run efficiently on heterogeneous resources.
- Achieved by transformation of specification.
- TAMPR Transformation System (Boyle, Argonne; Harmer, QUB)
- Experience of transforming ML specifications of numerical applications to efficient parallel software for execution on a range of machines.

# Dynamicity

- Experience of modelling dynamic aspects of GRID within a limited domain of applications: *Grab and Go*.
- Grab and Go (with Kim Gabarro, UPC):
  - System comprises a number of components with identical functionality but different implementations.
  - Progress toward the goal is accelerated by exchange of intermediate results.