GriPhyN

Grid-Physics-Network

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ATLAS Software Workshop at LBL

May 12, 2000

GriPhyN Project

- A Grid proposal to the NSF ITR program
  - submitted April 17, 2000
  - 12.5M over 5 y, starting 7/1/00

- Collaboration of physicists from 4 experiments:
  - ATLAS, CMS, LIGO, SDSS

and computer scientists with expertise in:
  - security and authentication (Globus)
  - high through-put computing (Condor)
  - mass storage resource brokerage (SRB)
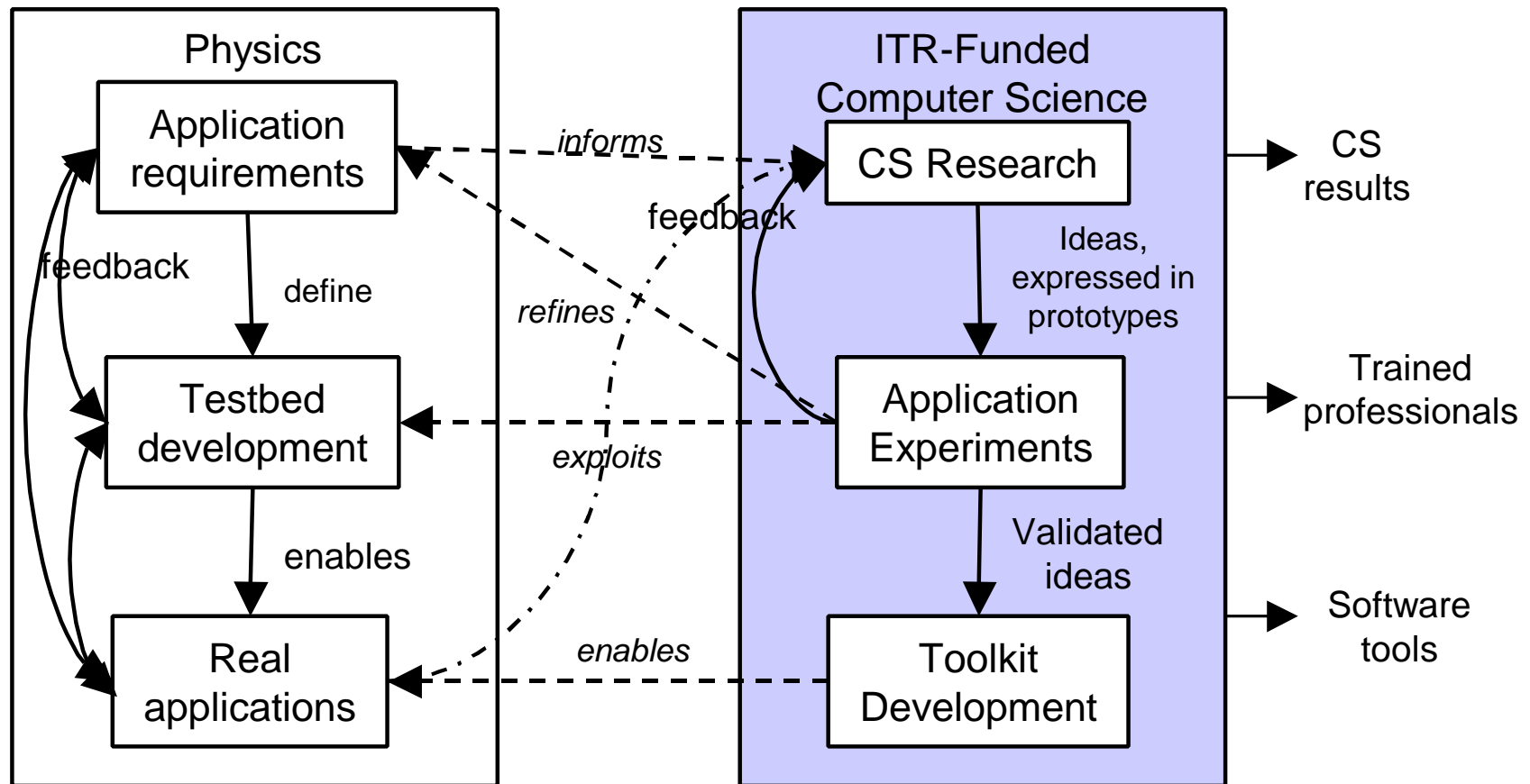   - and other US grid projects: NPACI, NASA grid, PPDG
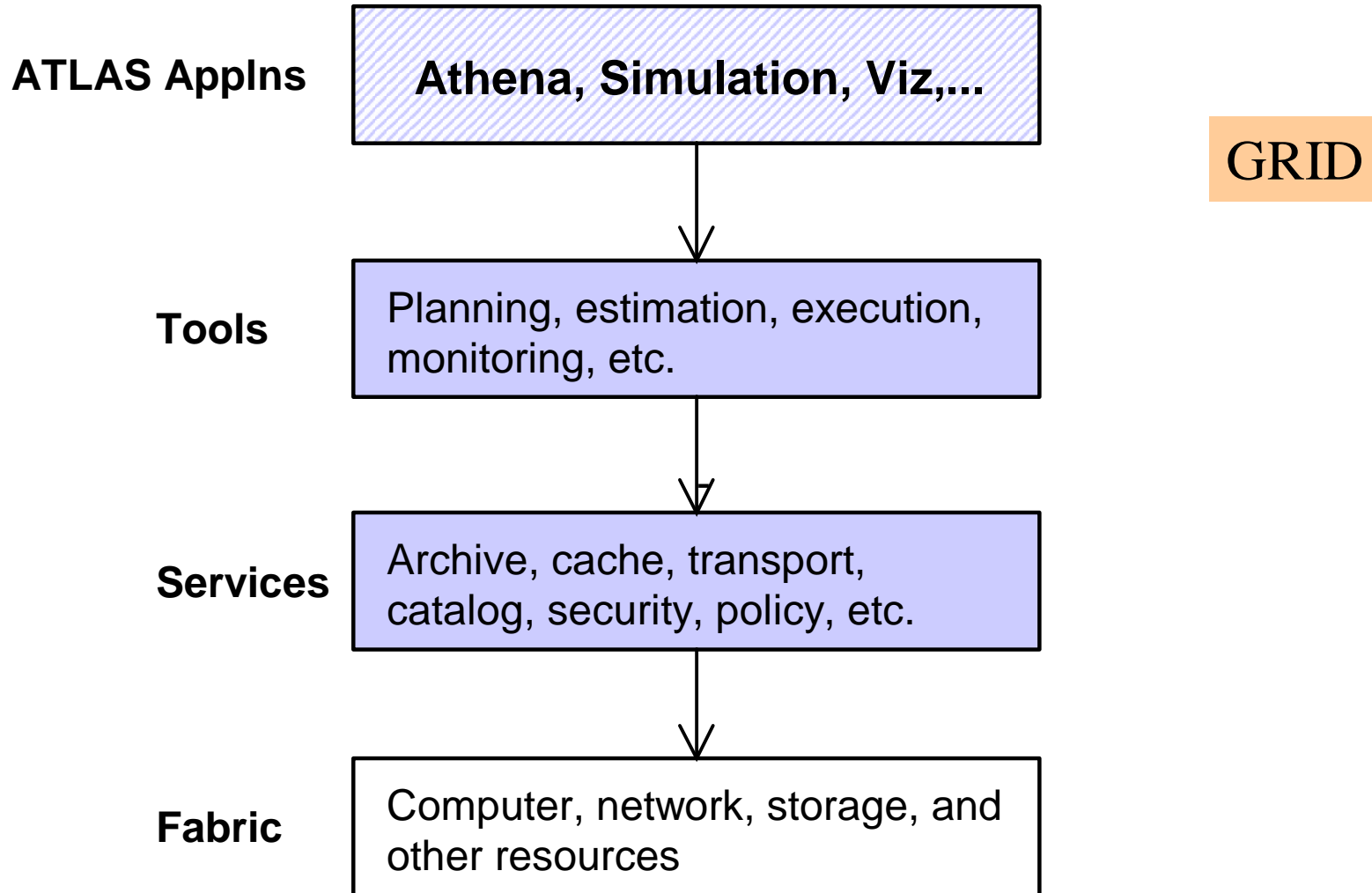
GriPhyN Research Areas

- IT Research:
  - data catalogs, information models
  - transparent caching, file replication and transport
  - automated data and task handling
  - resource planning and estimation
  - execution management
  - policy driven resource scheduling
  - security and authentication

- Deliverables
  - Grid architecture design input
  - Data grid tookits

Computer Science, Physics Interaction

Grid environment

ATLAS Applns

Athena, Simulation, Viz,...

GRID

Tools

Planning, estimation, execution, monitoring, etc.

Services

Archive, cache, transport, catalog, security, policy, etc.

Fabric

Computer, network, storage, and other resources

ATLAS GriPhyN Activities

- Linkage between Athena, database, simulation framework, and the grid toolkits

  – Feedback to software developers in both communities

    (ATLAS core developers and grid toolkit developers)

- ATLAS Test-bed Grid:

  – Validate distributed computing model for LHC computing
  – Provide input to new models by testing tools and distributed functionality of ATLAS software
  – Provide input to planning for facilities development (at each Tier) and networks

GriPhyN Timeline

- Year 1: intial grid enabling services, O(10TB), O(100) CPUs, O(100MB/s) WAN access

- Year 2: centralized virtual data services

- Year 3: support O(100) TB datasets, O(10 TB) network caches, O(1000) CPUs, and O(400 MB/s)

- Year 4: widely distributed O(1 PB) datasets, O(100 TB) network caches, and O(10,000) CPUs

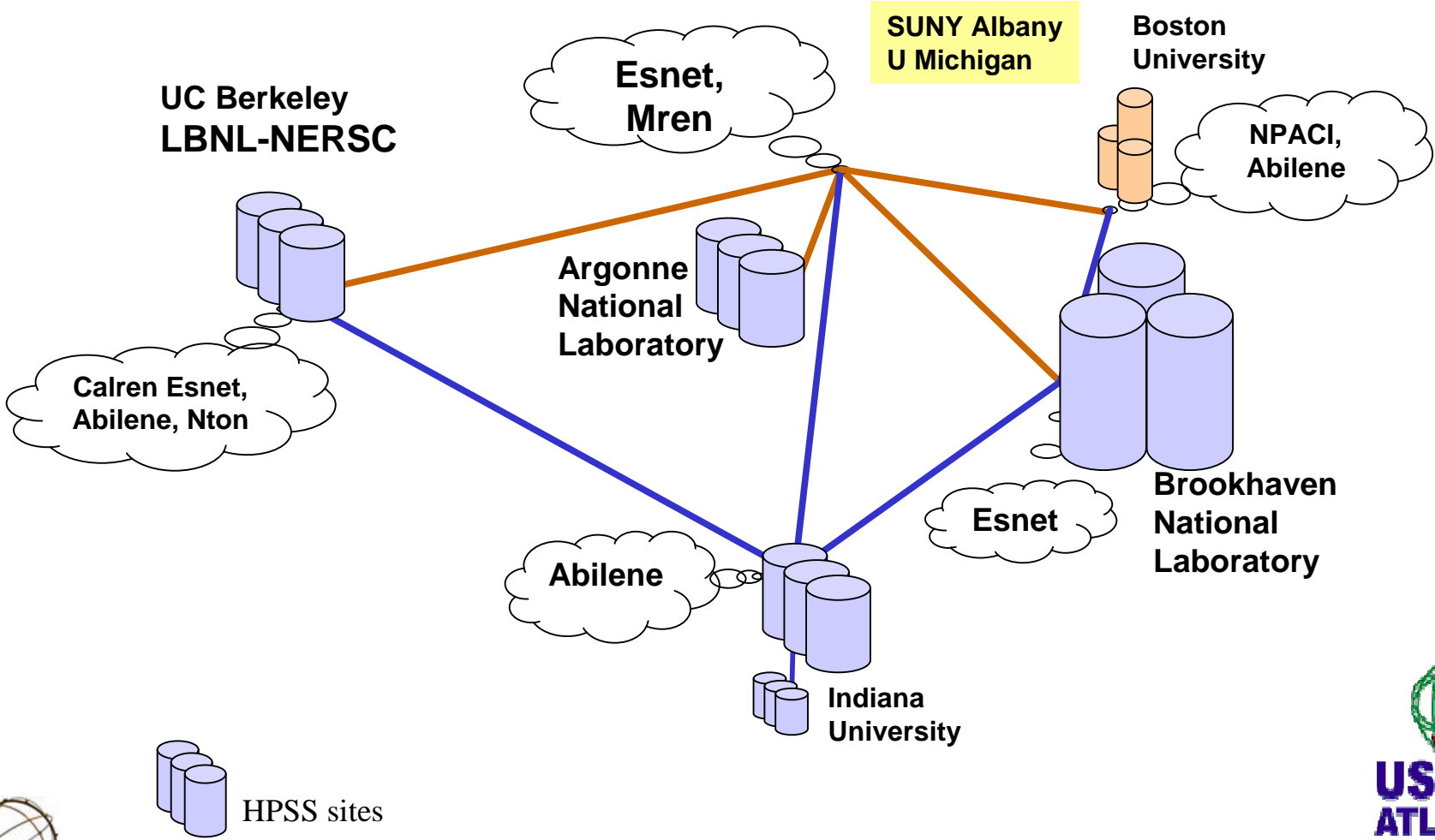- Year 5: enhanced data grid tool kits

Making the Grid Real for ATLAS

- Integrate grid development with existing core software efforts: Architecture, Database, Simulation, Graphics...

- Organize effort around objective "deliverables" and coordinate with existing milestones.

- Identify suitable demonstration projects:
  - support grid services for simulation efforts, test beam analysis
  - support large scale simulations
  - MDC1 for Computing TDR ~ Spring 2002

Initial US ATLAS Test Grid

SUNY Albany
U Michigan

Boston University

Esnet, Mren

UC Berkeley
LBNL-NERSC

NPACI, Abilene

Argonne National Laboratory

Calren Esnet, Abilene, Nton

Esnet

Brookhaven National Laboratory

Abilene

Indiana University

HPSS sites

Grid Organization

- We are planning an ATLAS grid workshop to be held at Indiana University

- Tentative dates: July 14-15

- Objectives
  - identify work areas
  - assign specific software development tasks
  - develop a sensible grid computing plan