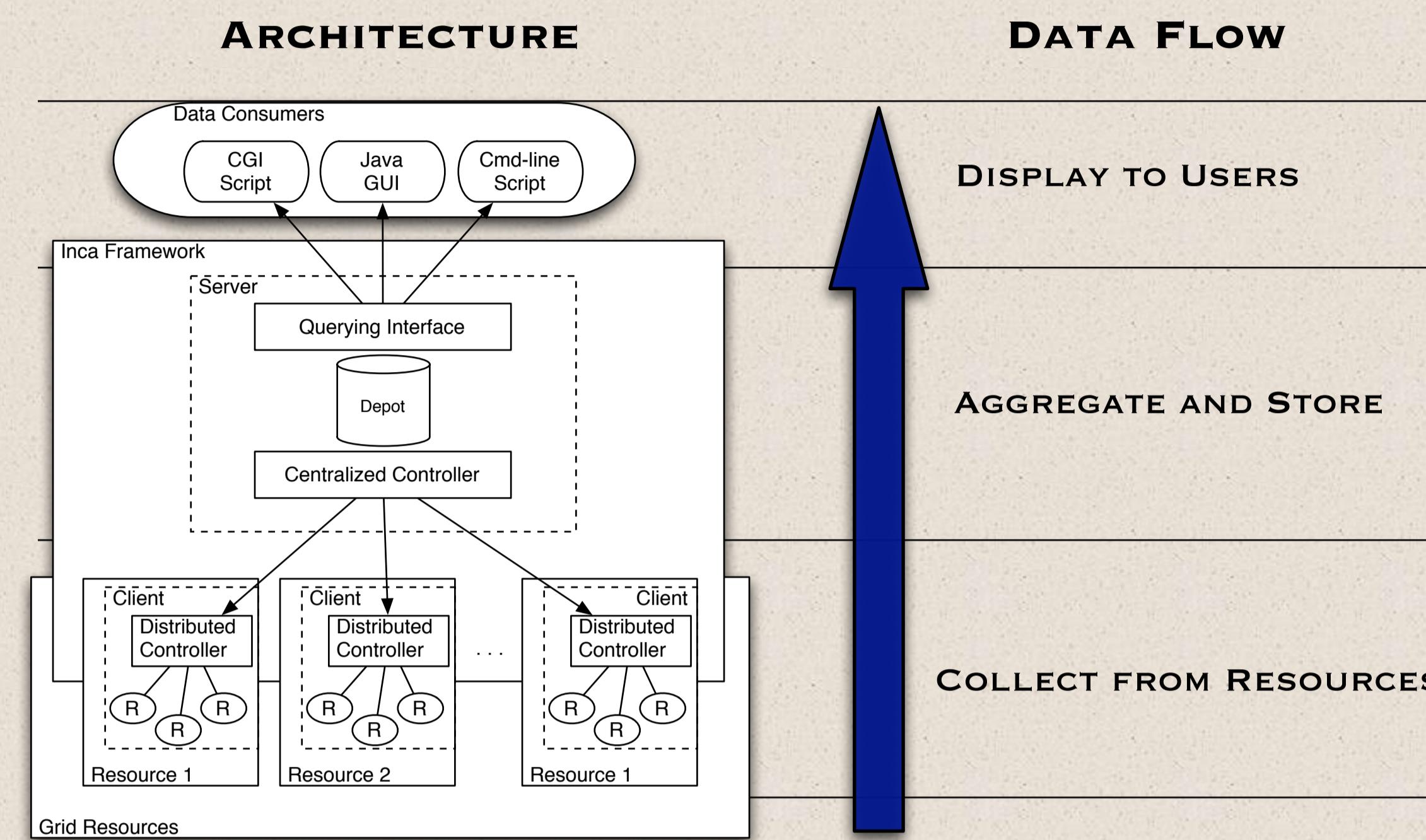


BENCHMARKING AND MEASURING GRID PLATFORMS: SOFTWARE TOOLS AND RESULTS ON THE TERAGRID

INCA

FRAMEWORK FOR AUTOMATED MONITORING OF GRID SYSTEMS

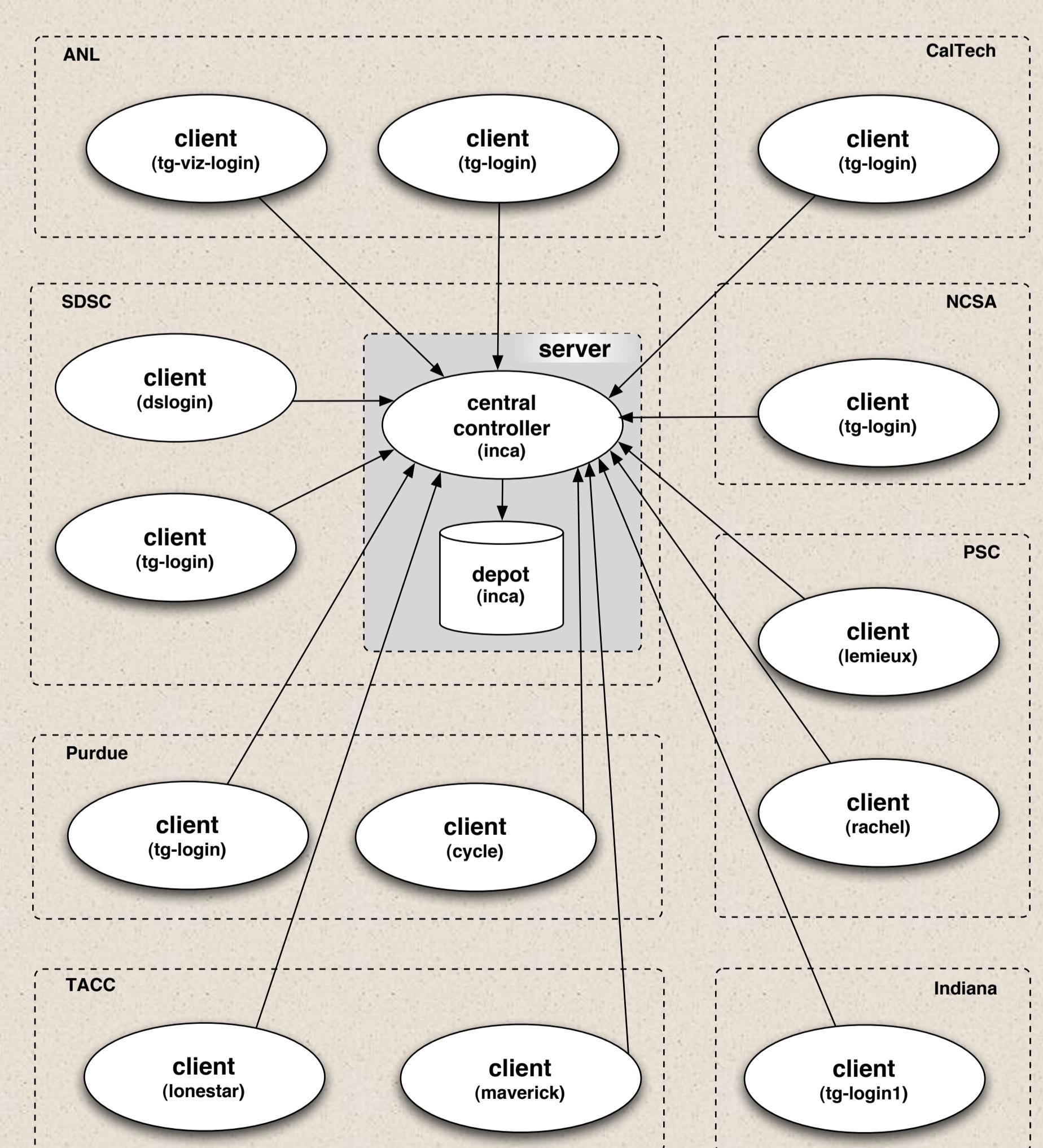


USE CASES:

THE BASIC DATA COLLECTION AND ANALYSIS FRAMEWORK PROVIDED BY INCA SUPPORTS A DIVERSE SET OF USE CASES.

- SERVICE RELIABILITY
- MONITORING
- BENCHMARKING
- SITE INTEROPERABILITY CERTIFICATION
- SOFTWARE STACK VALIDATION

TERAGRID DEPLOYMENT:



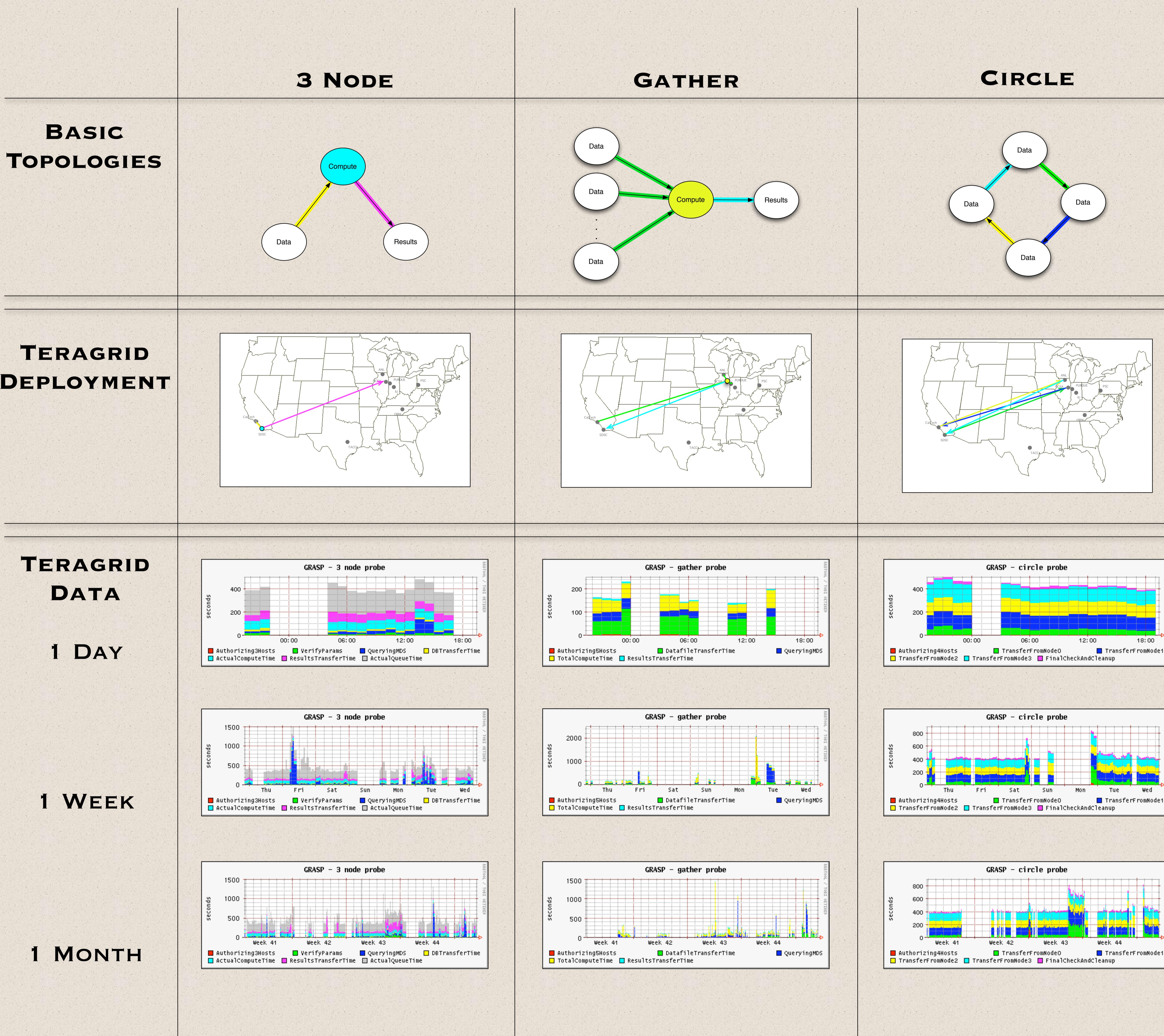
PARTICIPANTS

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GRASP

GRID ASSESSMENT PROBES

LIKE ALL COMPUTING PLATFORMS, GRIDS ARE IN NEED OF A SUITE OF BENCHMARKS BY WHICH THEY CAN BE EVALUATED AND CHARACTERIZED. DUE TO THE DYNAMIC NATURE OF GRIDS, A ONE TIME EVALUATION IS NOT SUFFICIENT; EFFECTIVE MEASUREMENTS MUST BE COLLECTED PERIODICALLY AND VIEWED AS A TIME SERIES.



ORGANIZATIONS



TERAGRID

DISTRIBUTED INFRASTRUCTURE FOR OPEN SCIENTIFIC RESEARCH

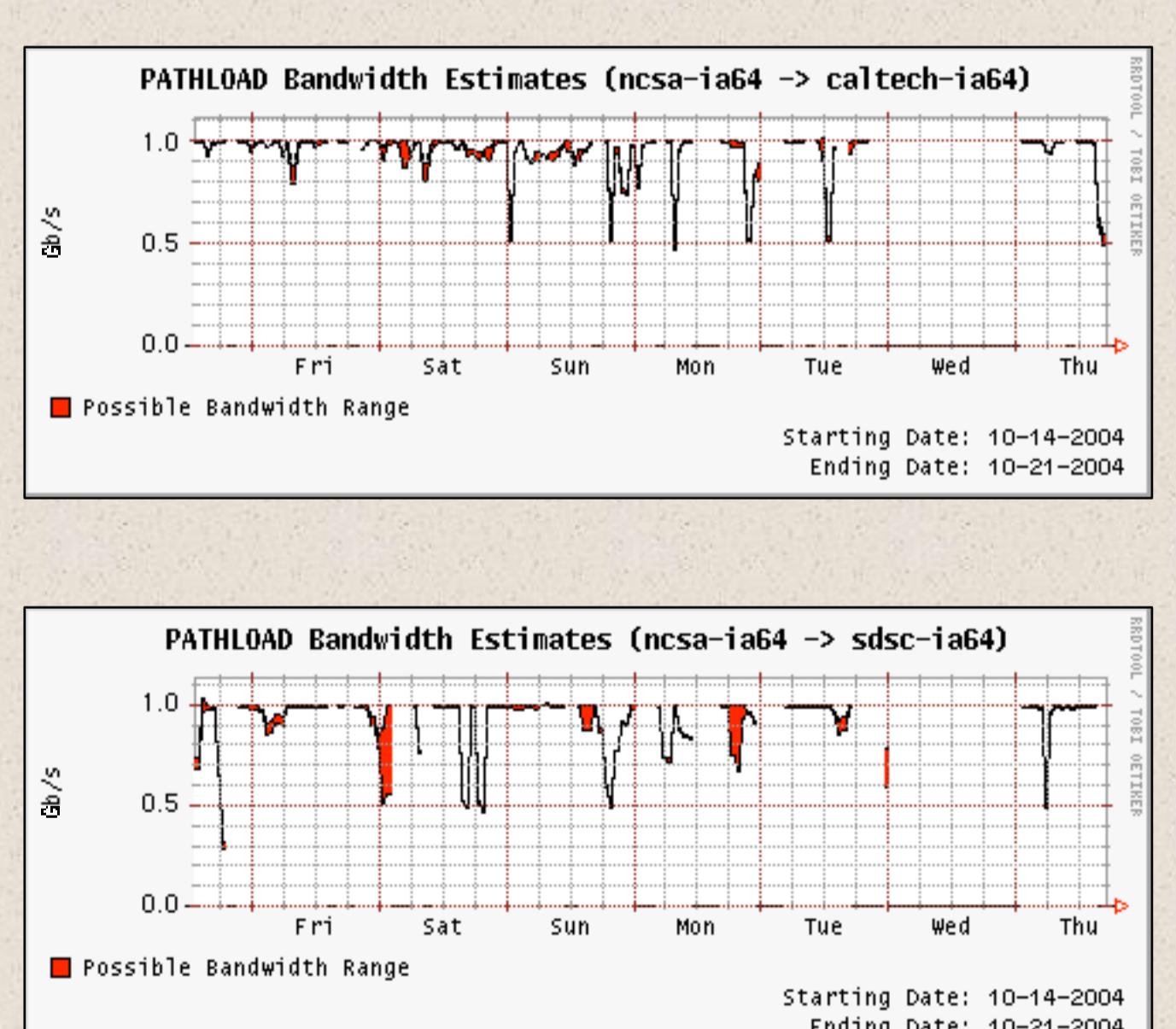


RESOURCE SUMMARY:

THE TERAGRID OFFERS 40 TERAFLOPS OF COMPUTING POWER DISTRIBUTED AT NINE SITES, FACILITIES CAPABLE OF MANAGING AND STORING NEARLY ONE PETABYTE OF DATA, HIGH-RESOLUTION VISUALIZATION ENVIRONMENTS, AND TOOLKITS FOR GRID COMPUTING. TERAGRID'S TIGHTLY INTEGRATED COMPONENTS ARE CONNECTED THROUGH A 40 GIGABITS PER SECOND NETWORK

INCA NETWORK MEASUREMENTS: (E2E REPORTER)

- PROVIDES TERAGRID USERS WITH SITE-TO-SITE PERFORMANCE BASELINES
- WRAPS NETWORK MEASUREMENT TOOLS
- COLLECTS MEASUREMENTS
- ARCHIVES RESULTS IN RRDTOOL
- DISPLAYS RESULTS IN TIME-SERIES GRAPHS



IN THE TWO GRAPHS ABOVE, PATHLOAD MEASURES DYNAMIC AVAILABLE BANDWIDTH OVER TIME ON TWO DIFFERENT E2E PATHS (NCSA->CALTECH AND NCSA->SDSC.) PATHLOAD [DOVROLIS ET AL.] USES EFFICIENT AND LIGHTWEIGHT PROBES AS PART OF A METHODOLOGY CALLED SLOPS (SELF-LOADING PERIODIC STREAMS) TO ACCURATELY MEASURE E2E AVAILABLE BANDWIDTH FROM A USER'S PERSPECTIVE.