

NIAC Day Breakout Session Outcomes

Session: Big Data-driven Discovery (BD3)

Facilitators: Bill Howe (UW), Cecilia Aragon (UW), Kerstin Kleese-van Dam (PNNL), and Mark Greaves (PNNL)

Major Question/Challenge for BD3	Who Should be Engaged?
Analytics and decision making over streaming data (structured, text) using online algorithms	PNNL AIM project, Jandhyala
Human decision making under time constraints (attention-limited) driven by big data (viz)	Aragon, Chin
Interactivity and exploratory data analysis in big data contexts (speed, abstraction levels, architecture). Interactive HPC (higher-level languages, MR, X-as-a-Service). Rough analysis	Sego, Howe
Visual Analytics (for high dimensional data) maximize sensemaking in human/computer interaction, temporality and dynamism in VA, semantics in VA, flying and decision making in high-dimensional space	Aragon, Endert, Chin Aragon/ARM
Google Earth for biology analysis and bioengineering; use spatial organization as an organizing principle	Einstein; KKVD, Howe
Speeding up data selection, ingest, cleaning, normalization and preparation for analysis (raw->cooked)	Sego, KKVD, Howe
Web for collaboration, knowledge acquisition, and joint discovery	Greaves, Aragon

BD3 High-level Project Goals

- State the aggregated high-level goals for the projects in your Group (1 slide)

Area	Goal
Streaming Algorithms	Funding from DARPA/DSO (algorithms); YarcData; NSF Expeditions of Computing Center
Decision making in an attention-limited environment	NSF Expeditions of Computing Center; NSF Science of Organizations call, ONR, DoE EERE (power grid)
Interactive HPC	Brainstorming session for new ideas for current clients (DARPA, DHS, ASCR, NIH)
Training for researchers in big data technologies	Funding via numerous calls
Spatialization technology	Requirements for spatial navigation for Body/Organ/Biostructure

BD3 Implementation Strategy

What	Who
Interactive HPC workshop	Sego
Visual Analytics mini-workshop	KKVD, Chin, Aragon
Incubator for data analysis	Howe will make sure NIAC is at the table
Web science F2F to discuss mutual research opportunities	Greaves, Aragon
Jointly-authored position paper on crossing the cognitive barrier in a data rich world	KKVD, Aragon
Jointly-authored position paper on streaming data algorithms for decision making (vs just streaming DBs)	Jandhyala, Greaves, Howe, KKVD