

Experimental Research (morning)

emergency informatics

large infrastructures (transportation systems, buildings, smart grids) -- getting access to large infrastructures real challenge to researchers; keeping it open centralized or distributed infrastructures; what are the role of simulations? instrumenting infrastructure? interventions on infrastructure?

PPP -- public, private partnerships (smart grid experimental platform); not just in control of government sector -- Computing in the Cloud,... in Europe, EU ... how to handle IP issues in doing this?

International communities may not have the same kinds of problems with privacy, security, etc?

Role of crowdsourcing (e.g., for experimental design, looking for confounds) ****

Another view of steps below: -- correlations, mechanisms, predictions (interpolation, extrapolation), evaluations

Step 1: Monitoring (mining data) -- collecting data --- maintenance of data over long time scales; getting access to data turn key; collecting data turn key; rebound effects of turn key;

Step 2: Modeling and simulations; artificial testbeds very artificial? Scale to tremendous infrastructures? Validation of simulator (cyber, physical, social simulation; pairing people with simulators; bringing people into ; multiscale to address complexity, including comprehensibility (Modeling and simulation -- answering what ifs); how would simulation development drive sensing and computation questions

(+ virtual environments, visualization)

Step 3: Feedback loop ... unanticipated consequences -- interweaving monitoring, simulation, validation, intervention in big systems

gap -- virtual meets the physical -- ecologists meet info scientists -- how to make data collection turn key; power for sensors; as CS people, we rely too much on sensors; imperfect, imprecise data is bound to come; social networking applied to sensors (reputation of sensors)

how to take into account security responsibilities -- authorization populations (high res, low res,); anonymized data?

Big problems -- are distributed problems -- multilayer simulation -- what are levels of abstractions that allow people to communicate -- sensing, power; how do models/simulations relate to each others; interdisciplinary ... what are the educational ways forward?

Have we worked on interdisciplinary problems of such a scale? (Planet Lab?)

Where do data in different fields align ? from observational data? what levels of abstraction contribute to communication?

Mechanisms for incentivizing interdisciplinary work, education,

NSF Data Management Plans ... who maintains the data? CAIDA? National vault for sustainability data? Libraries supplying internet access? keeper of information? The individual PI plans a way on incentivizing brainstorming

Downscaling? What is the cost of making an error? Decision making under uncertainty? Risk management. How much risk? worst case, best case, expected case? Risk management? Risk management of experimental design? Experimental study motivated

Range of experimental studies?

What is role of HCI in these studies? HCI in role of motivating the masses; HCI