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# Far Out Networking

## Theory Group

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- Multidimensionality beyond capacity, different forms of scale (not just capacity, but also delay, energy, stability, security, mere connectivity)
- Moving from node and data-centric to information/knowledge centric, leverage storage and computation
- Rethink network primitives: other than links, flows instead of packets; maintain flows rather than topologies

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- Network management
  - acquiring, learning, and leveraging network state/patterns
  - quantifying limits of learn-ability; benefits of state knowledge
- Control the environment by moving resources or deploying additional resources: autonomy
- Location is a key information primitive: enables distributed control
- View network as: complex system, data collector, computing device

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- Achieving global behaviors through local designs / control
- Network traffic shaping: Designing for more probable traffic patterns that scale (not any to any); Leveraging correlation in network states
- Scalability in the presence of persistent transients and high dynamism; stability questions
- Limitations of system analysis vs. emulation / simulation vs. experimentations; the focus of the analysis in the future needs to be different

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- Leveraging heterogeneity in all dimensions (where capability/resources exists and its availability e.g., geo-location diversity, and demands) and various time scales
- Antifragility – a suboptimal solution may fare better in the face of perturbations; reliability, robustness
- Grand challenge application-level use cases, protocols that can tradeoff the x-ities, context-awareness
- Realizing common operating picture
- Mission planning integrating communications planning

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