

# Panel: Complexity vs. Robustness in Information Infrastructure

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# Abstract

**Our information infrastructure is gaining ever more functional and trust requirements. Yet, most software systems are already very complicated by most any metric. Programmers, administrators, and users often view today's systems on which they work as ungainly and run amuck. While we might like to justify our problems by the newness of our discipline, it is now over 50-years old, and many overly complex systems have been built using widely prescribed techniques of modularity and layered abstraction. This session will explore issues of the growing complexity in systems, and discuss how to address the growth in functional requirements with the need for increased resiliency. We will address both research and education-related topics.**

# 3 Categories of Complexity

## ■ Classic Complexity ■ Usage Complexity

- Time
- Space

## ■ Implementation Complexity

- Logical
- Structural
- Comprehensibility

| Task \     | Pre-Use | Novice | Middle | Expert | Exception |
|------------|---------|--------|--------|--------|-----------|
| Install    |         |        |        |        |           |
| Configure  |         |        |        |        |           |
| Administer |         |        |        |        |           |
| Use        |         |        |        |        |           |



# Some Topics

- Complex problems
- Design methodology
- Time to market
- Market forces and standards
- Technology scaling
- “Apparent” zero marginal cost of more code
- Lack of clarity on objectives
- Self-selection of computer scientists
- Curricula

# There may be steps to take...

- Meaning
- Measuring
- Methodology
- System Architecture
- Science and Technology
- Educational Change
- Acknowledgment Cultural Change
- Debate Role of Legal System

