

# Technology Policy Organizations

## Session 8

Protocols and Standards

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# Standards, Protocols and Regulation- Definitions and Attitudes

- Definitions
  - Protocols vs. Standards – are they different and how?
- Motivating Questions
  - Is it productive to spend our valuable time working on development of a specific standard or protocol for a given technology?
  - In what technology domains are standards and protocols more or less important in the performance of an engineering systems?

# Standards, Protocols and Regulation – Processes for Development

- Development and Maintenance
  - How are Protocols/Standards developed and maintained?
  - What are the ***necessary ingredients*** for ***meaningful*** protocol/standard development?
    - Stakeholders perceive a benefit
    - A set of stakeholders can agree
    - Others cannot change the protocol or standard
  - Analogy to Lean Enterprise Value framework:
    - Value identification . . . Value proposition . . . Value delivery
- Case Example: Development and Maintenance of Standards and Protocols in Telecommunications
  - Close relationships between regulated and regulators
  - Arm's length relationships
  - Independent announcements by stakeholders outside the “industry”

# Standards, Protocols and Regulation – Technical and Social Aspects

- Technical and Social Aspects
  - What technical factors affect the development of protocol and standards?
  - What social factors affect the development of protocol and standards?
  - Key considerations:
    - Dominant design
    - Intellectual property
    - Organizational and institutional structures
    - Economic incentives
    - Regulatory systems

# Standards, Protocols and Regulation – Relationship to the Architecture of Systems

Are Protocols essential to modularity?

Are Protocols Essential to Flexibility?

How important is feedback on the protocol and architecture?

Protocols are “difficult to change” (Doyle) and architecture is the long-lived part of design

# A Map of Standards & Protocols

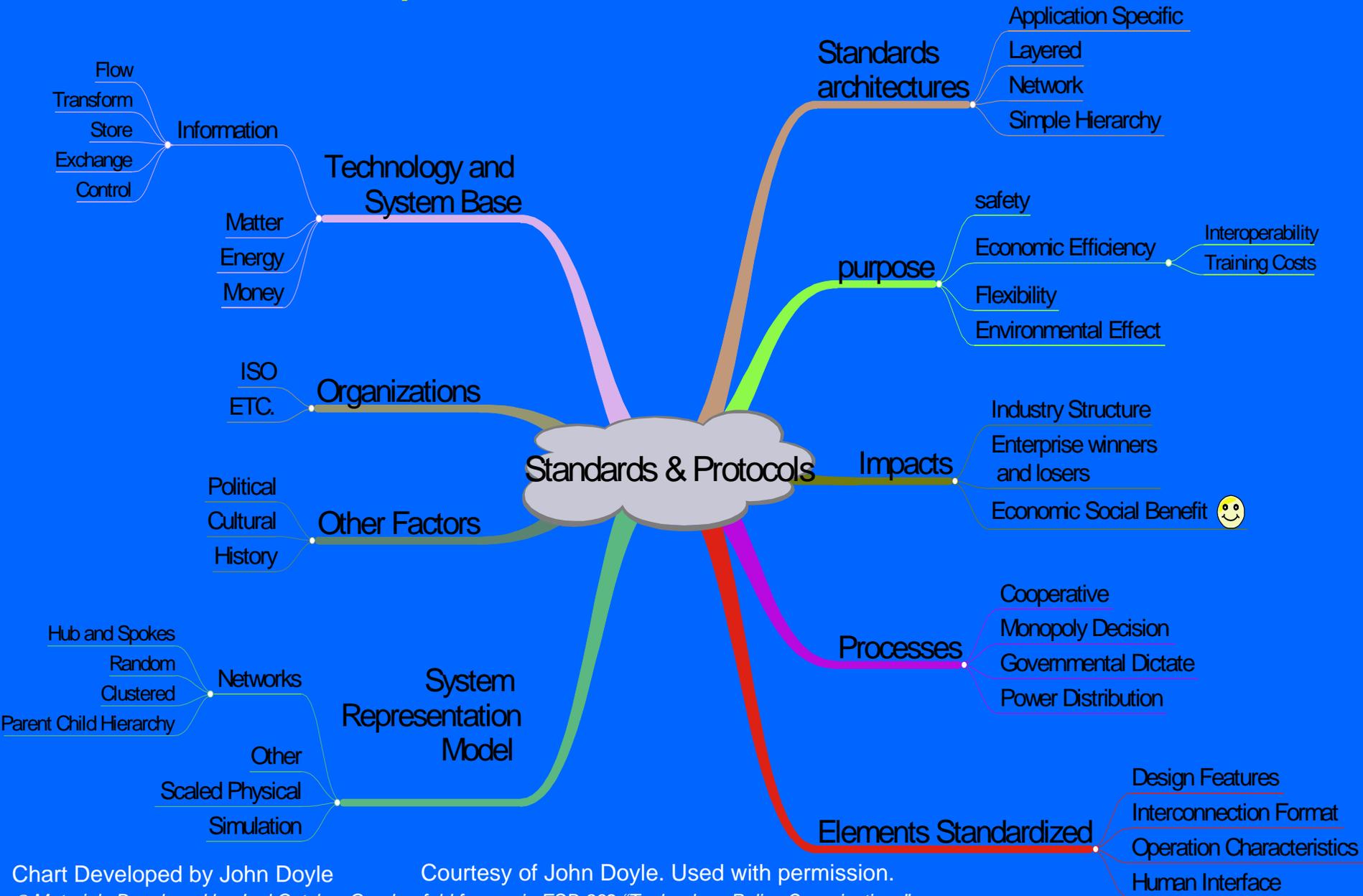


Chart Developed by John Doyle

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# Standards and Protocols *Point of View*

- All Factors inter-relate and one ***cannot separate technical and social complexity***
- The development of Protocols and Standards is perhaps the most important and challenging aspect of the ***practice of Engineering Systems and central to Technology Policy***
- There has been little research on the architecture of and process for development of standards and protocols – such work would be of very high value to the Field of Engineering Systems