

Network Management Research Classification

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Information Society
Technologies



Goal

- Define a taxonomy that organizes the network and systems management research topics in order to:
 - Classify/characterize the research efforts (in academia and industry) using a stable list of appropriate tags (topics)
 - Identify appropriate reviewers, in the management community, for conference papers and journal articles review
 - Track the interest of authors and reviewers in regards to the several topics of the area

Traditional Approach

- Traditionally, topics of interest are defined by TPC chairs and Editors per single conference/journal
- There is not a “stable-across” events list of topics that could be used by authors and reviewers (e.g., NOMS, IM, DSOM)
 - Typically, only a flat list of topics is employed
 - For each new event, authors and reviewers need to express their interests again



New Approach

- Define a more stable, two-level hierarchy of topics that defines the scope of the area
 - First-level topics cover different dimensions of management
 - What should be managed (e.g., networks, services)
 - Which aspects should be managed (e.g., security, accounting)
 - How it should be managed (e.g., distributed, centralized)
 - How to implement it (e.g., which protocols?)
 - Which techniques should be used (e.g., simulation)
 - Second-level topics specialize the first-level topics



First-Level Topics

1. Network Management
2. Service Management
3. Business Management
4. Functional Areas
5. Management Approaches
6. Technologies
7. Methods



Second-Level Topics

1. Network Management

2. Service M
 3. Business
 4. Functiona
 5. Managem
 6. Technolog
 7. Methods
- 1.1. Ad hoc networks
 - 1.2. Wireless & mobile networks
 - 1.3. IP networks
 - 1.4. LANs
 - 1.5. Optical Networks
 - 1.6. Sensor Networks
 - 1.7. Overlay Networks



Second-Level Topics

1. Network Management
 2. Service Management
 3. Business
 4. Functions
 5. Management
 6. Technology
 7. Methodology
- 2.1. Multimedia service management (e.g., voice, video)
 - 2.2. Data service management (e.g., email, web)
 - 2.3. Hosting (virtual machines)
 - 2.4. Grids



Second-Level Topics

1. Network Management
2. Service Management
- 3. Business Management**
4. Functions
5. Management
6. Technologies
7. Methods

- 3.1. Legal & ethical issues
- 3.2. Process management



Second-Level Topics

1. Network Management
2. Service Management
3. Business Management
- 4. Functional Areas**

5. Manag
 6. Techno
 7. Method
- 4.1. Fault management
 - 4.2. Configuration management
 - 4.3. Accounting management
 - 4.4. Performance management
 - 4.5. Security management
 - 4.6. SLA management
 - 4.7. Event management



Second-Level Topics

1. Network Management
2. Service Management
3. Business Management
4. Functional Areas
- 5. Management Approaches**

6. Techno
 7. Method
- 5.1. Centralized management
 - 5.2. Distributed management
 - 5.3. Autonomic and self management
 - 5.4. Policy-based management



Second-Level Topics

1. M 6.1. Protocols
2. S 6.2. Middleware
3. E 6.3. Mobile agents
4. F 6.4. P2P
5. M 6.5. Grid
- 6.6. Data, information, and semantic modeling

6. Technologies

7. Methods



1. N 7.1. Control theories
2. S 7.2. Optimization theories
3. B 7.3. Economic theories
4. F 7.4. Machine learning and genetic algorithms
5. M 7.5. Logics
6. T 7.6. Probabilistic, stochastic processes,
queuing theory
- 7.7. Simulation
- 7.8. Experimental approach
- 7.9. Design

7. Methods



Next Steps

- Incorporate the taxonomy support in JEMS (Journal and Event Management System)
- Employ the taxonomy in next management-related conferences (e.g., NOMS, IM, DSOM,...)
- Use the taxonomy in research efforts (including IRTF activities) to classify/characterize them
- Collect results and review the taxonomy

Questions

- Do you believe this classification will be helpful to classify research papers?
- Do you believe changes are needed?
- Do you believe this classification can also be useful for IRTF/IETF work? Examples:
 - Classify MIBs modules according to this scheme?
 - Does this scheme help to find the right 'expert' for a given task?