# IFIP WG 6.6 & IEEE CNOM joint meeting

16h30 – 18h

Room: A-1582

# CNOM / IFIP WG 6.6 officers

- **IEEE CNOM**
  - Chair: *Lisandro Zambenedetti Granville* – Federal University of Rio Grande do Sul (UFRGS), Brazil
  - Vice-chair: *Filip De Turck* – Ghent University - iMinds, Belgium
  - TPC chair: *Deep Medhi* – University of Missouri-Kansas City, USA
  - Secretary: *Shingo Ata* – Osaka City University, Japan

- **IFIP WG 6.6**
  - Chair: *Olivier Festor* – TELECOM Nancy, France
  - Vice-chair: *Burkhard Stiller* – University of Zürich, Switzerland

# Meeting overview

- CNOM & IFIP for the communities (;-)
- Journals + special issues
- Conferences + workshops
- Community wide activities
  - A tool to enable "Time-traveling" in the history of the network management community.
  - An evolutionary taxonomy of the discipline

# CNOM

- IEEE is composed of Societies
  - IEEE Communication Society is composed of technical committees
    - CNOM (Committee on Network Operations and Management) is the technical Committee that deals and network management and operations, and ultimately represents this community in IEEE's structure

# CNOM

- CNOM officers (2015 ~ 2017)
  - Chair: *Lisandro Zambenedetti Granville* – Federal University of Rio Grande do Sul (UFRGS), Brazil
  - Vice-chair: *Filip De Turck* – Ghent University - iMinds, Belgium
  - TPC chair: *Deep Medhi* – University of Missouri-Kansas City, USA
  - Secretary: *Shingo Ata* – Osaka City University, Japan
- Terms are of two years
- New officers are elected in every IM → Next election on IM 2017, in Lisbon

# CNOM

- How to participate?
  - Subscribing to the CNOM mailing list
    - http://cnom.committees.comsoc.org go to "Members"
  - Becoming an *Active Member* by satisfying at least one of these conditions in the last two years:
    - Attended (physically or remotely) at least one CNOM meeting
    - Served as TPC or OC member of NOMS/IM, APNOMS, LANOMS
    - Served as an editorial board member or editorial advisory board member of JNSM, TNSM, or IJNM
  - Representing CNOM on ICC and GlobeCom Symposia
    - ICC 2018 – Alberto Egon Schaeffer Filho
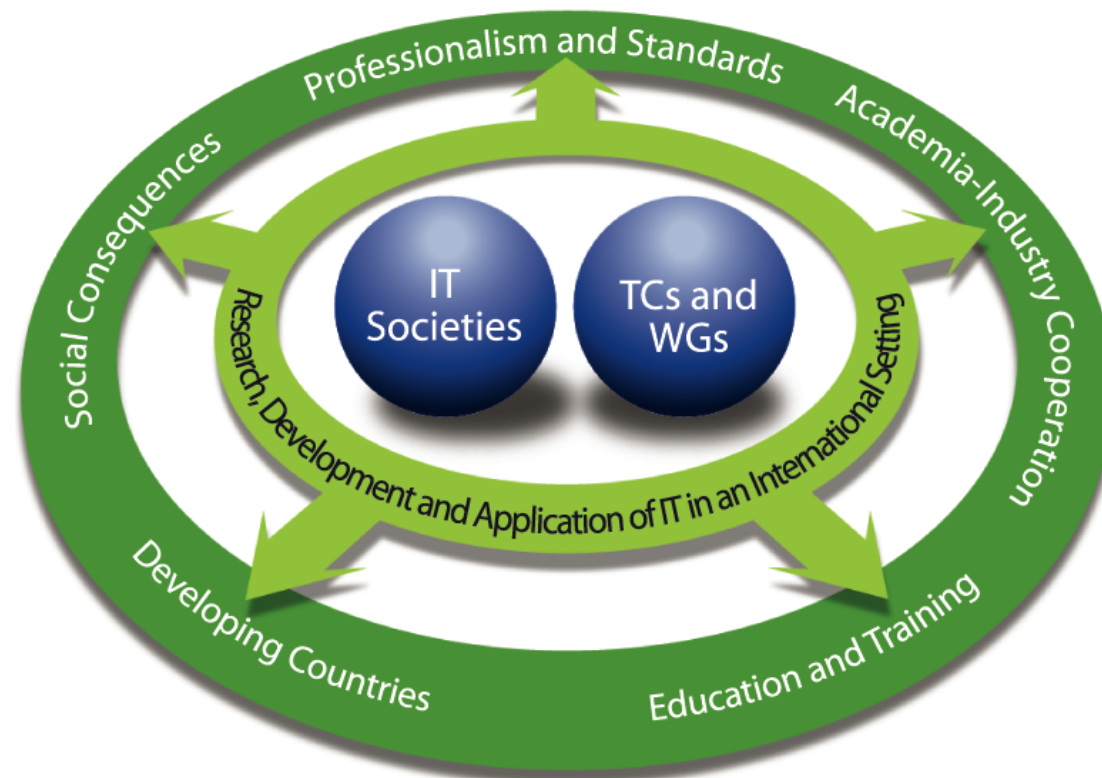    - GlobeCom 2018 – Carol Fung

TC 6
WG 6.6
Network &
Service
Management

# ifip

- Non-governmental, not-for-profit umbrella organisation of national learned societies working in the field of Information Technology (IT)

- Established in 1960 under the auspices of UNESCO as a result of the first World Computer Congress held in Paris in 1959

# ifip

## Technical Committees

| | |
|---|---|
| TC1 | Foundations of Computer Science |
| TC2 | Software: Theory and Practice |
| TC3 | Education |
| TC5 | Information Technology Applications |

# TC6 Communication Systems

| | |
|---|---|
| TC7 | System Modelling and Optimization |
| TC8 | Information Systems |
| TC9 | ICT and Society |
| TC10 | Computer Systems Technology |
| TC11 | Security and Privacy Protection in Information Processing Systems |
| TC12 | Artificial Intelligence |
| TC13 | Human-Computer Interaction |
| TC14 | Entertainment Computing |

# ifip

## TC6

WG 6.1: Architectures and Protocols for Distributed Systems

WG 6.2: Network and Internetwork Architectures

## WG 6.6: Management of Networks and Distributed Systems

WG 6.7: Smart Networks

WG 6.8: Mobile and Wireless Communications

WG 6.9: Communications Systems for Developing Countries

WG 6.10: Photonic Networking

WG 6.11: Communication Aspects of the E-World

WG 6.12: Services-Oriented Systems

# WG6.6

- Joint work with IEEE CNOM
- Open platform for community building, animation, promotion and structuration
- Co-organize conferences
- Promote journals
- Sponsor excellence
  - Best paper awards (3-4 per year)
  - Student travel grants (+/- 10 per year)
- All IFIP Fees paid by the Supported Workshops and Conferences are « re-invested » in our conferences for our community
- All the WG6.6 and CNOM involvement is volunteered
- On the IFIP WG6.6 side: encourage the alignment of the WG6.6 supported conferences to the TC6 strategy on the Open Digital Library

# What does « WG6.6 Member » mean ?

- *Actively volunteer to*
    - Contribute to reviews of the community conferences/journals
    - Encourage and do submissions to the community events/journals
    - Join TPCs, OCs, …
    - Be active in the mailing-lists
    - Participate to our conferences and meetings

# How to get involved?

- *Participate to the WG6.6 Meetings in our conferences*
  - *AIMS*
  - *TMA*
  - *IM/NOMS*
  - *CNSM*
- *React and talk on the mailing list (222 participants)*
  
  **ifip_nm@lists.utwente.nl**
- *Visite the web site*
- *Follow us on twitter @ifipwg66*

**wg66.ifip.org**

# IFIP WG6.6 and CNOM Report on

- Journals + special issues
- Conferences + workshops

# IEEE Transactions on Network and Service Management (TNSM)

- Editor-in-Chief since Jan 2014

    Rolf Stadler (stadler@kth.se)
    KTH Royal Institute of Technology

- http://www.comsoc.org/tnsm/

- Within our community, highest reputation

- TNSM is indexed by Scopus and
  many others



| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|------|------|------|------|------|------|------|------|
| SJR | 0.265 | 0.415 | 0.423 | 0.86 | 0.542 | 0,971 | 1,021 | |
| SNIP | 0.977 | 1.159 | 1.302 | 2.598 | 1.647 | 2.025 | 2,527 | |
| Citations | 32 | 75 | 113 | 146 | 174 | 276 | 342 | |

# IEEE Transactions in Network and Service Management

- 14 pages
- Regular calls + Special Issues + Best papers selected from IM, NOMS, and CNSM
- *2016:*
  - *300 submissions,*
  - *70 published*
- *Thomson Reuters Impact factor (2015): **1.284***
- *H-index : 19*

# Commag Network and Service Management Series

- Feature Editors
  - George Pavlou
    g.pavlou@ee.ucl.ac.uk
    University College London

  - Jürgen Schönwälder
    j.schoenwaelder@jacobs-university.de
    Jacobs University Bremen

# ComMag Network and Service Management Series (cont.)

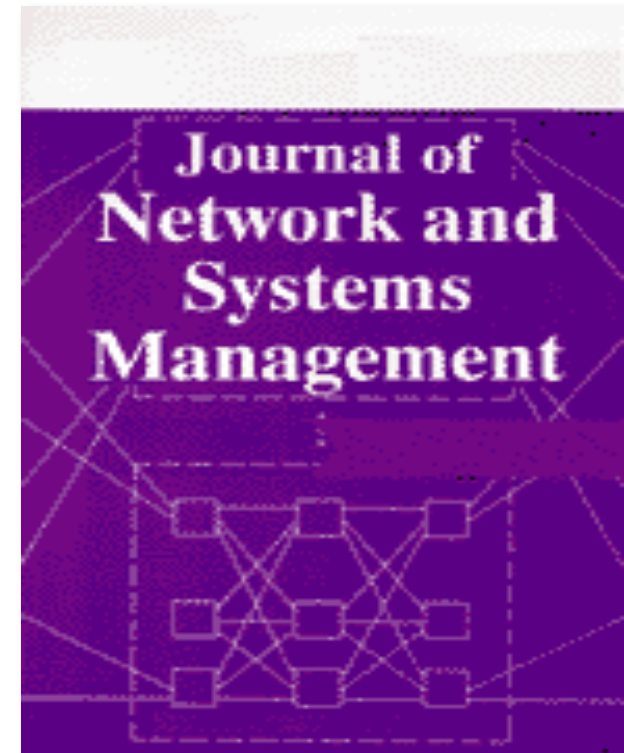| Issue | Published | Submitted | Accepted | Acc. ratio |
|-------|-----------|-----------|----------|------------|
| 1 | October 2005 | 21 | 4 | 19% |
| 2 | March 2006 | 23 | 5 | 22% |
| 3 | October 2006 | 17 | 4 | 24% |
| 4 | April 2007 | 23 | 4 | 17% |
| 5 | October 2007 | 14 | 4 | 29% |
| 6 | April 2008 | 32 | 5 | 16% |
| 7 | October 2008 | 23 | 4 | 17% |
| 8 | July 2009 | 29 | 4 | 14% |
| 9 | November 2009* | 21 | 1 | 5% |

# ComMag Network and Service Management Series (cont.)

| Issue | Published | Submitted | Accepted | Acc. ratio |
|---|---|---|---|---|
| 10 | July 2010 | 21 | 3 | 14% |
| 11 | December 2010 | 22 | 3 | 14% |
| 12 | July 2011 | 22 | 4 | 18% |
| 13 | December 2011 | 35 | 4 | 11% |
| 14 | July 2012 | 20 | 5 | 25% |
| 15 | December 2012 | 13 | 3 | 23% |
| 16 | July 2013 | 21 | 4 | 19% |
| 17 | December 2013 | 22 | 5 | 23% |
| 18 | July 2014 | 22 | 4 | 18% |
| 19 | January 2015 | 18 | 3 | 17% |
| 20 | July 2015 | 16 | 4 | 25% |
| 21 | January 2016 | 28 | 4 | 14,3% |
| 22 | July 2016 | 16 | 3 | 18,8% |
| 23 | January 2017 | 18 | 2 | 11,1% |

# Journal of Network and Systems Management

- EiC: Deep Medhi ([DMedhi@umkc.edu](mailto:DMedhi@umkc.edu))
- Published by Springer / 4 x year
- Current issue: Volume 24, Issue 95
- ISI impact factor:
    - 0.685 (2008)
    - 1.356 (2009)
    - 0.450 (2010)
    - 0.452 (2011)
    - 0.432 (2012)
    - 0.438 (2013)
    - 0.796 (2014)
    - 1.078 (2015)

# International Journal of Network Management

- Editor in Chief : Prof. James Hong
- Associate Editors: Prof. Filip de Turk, Prof. Aiko Pras
- Published by Wiley / 6 times a year
- Since 2011: online only
- Current issue:  **Volume 26, Issue 5**  on
  Software-defined operations
- ISI impact factor:
  - 0.323 (2010)
  - 0.222 (2011)
  - 0.510 (2012)
  - 0.517 (2013)
  - 0.283 (2014)
  - 0,681 (2015)

# International Journal of Network Management

- Virtual issues published every year (Open Access)
  - For the most cited papers

# Journal Special Issues

- TNSM:
  - Management of Softwarized Networks (March 1st, 2017)
  - Big Data Analytics for Management
- IEEE COMMAG:
  - Advances in Networking Software (November 1st, 2017)
    - Alexander CLEMM, Alex GALIS, Luciano Paschoal GASPARY, Philllip A. LAPLANTE, Filip de TURCK
- IJNM:
  - Management of SDN/NFV-based Systems (January 1st, 2017)
    - SI Editors: Rémi BADONNEL, Kazuhiko KINOSHITA, Sejun SONG, Daphné TUNCER,
  - Security for Emerging Open Networking Technologies (march, 2017)
    - SI Editors: Carol FUNG, Weverton CORDEIRO, Mohamend Faten ZHANI, J. FRANCOIS
  - Management and orchestration of 5G Networks: from Theory to Tesdbeds
    - SI Editors: Roberto Riggio, Imen Grida Ben Yahia (April 1st ,2017)

# 2015 Conferences

| | Submitted | Accepted | A.R. | Attendees | Proceedings |
|---|---|---|---|---|---|
| CNSM 2015 | 102 (87 Full, 15 short) | 18 full, 14 miniconf, 16 posters | 20,6% | 120 | Xplore |
| LANOMS 2015 | 33 | 12 Long / 7 Short | 36% | 58 | XPlore |
| AIMS 2015 | 22 (+24 PhD WS) | 7 (+9 PhDWS) | 31% | 52 | LNCS |
| IM 2015 | 206 | 56 | 27% | 350 | Xplore |
| DRCN 2015 | 44 (full) + 16 (short) | 21 (+19 short) | 41% | 91 | Xplore |
| TMA 2015 | 54 | 16 | 29% | 80 | LNCS |
| APNOMS 2015 | 129 | 38 | 29% | 182 | Xplore |

# TMA 2016



- April 7-8, 2016, Louvain La Neuve, Belgium
  - Ramin Sadre, Université catholique de Louvain, Belgium
  - Fabiàn Bustamante, Northwestern University, IL , USA
  - Alessio Botta, University of Napoli Federico II, Italy
- IFIP Digitial Libray
- PhD Shool on Traffic Monitoring and Analysis (40 participants)
- Workshop (**53 participants, 47 submissions, 16 accepted**)

# Profiling Mobile Broadband Coverage

Andra Lutu, Yuba Raj Siwakoti, Özgü Alay, Džiugas Baltrūnas and Ahmed Elmokashfi

Simula Research Laboratory

Email: {andra, yubars, ozgu, dziugas, ahmed}@simula.no

*Abstract*—**Pervasive coverage and continuous connectivity of Mobile Broadband (MBB) networks are common goals for regulators and operators. Given the increasing heterogeneity of technologies in the last mile of MBB networks, further support for seamless connectivity across multiple network types relies on understanding the prevalent network coverage profiles that capture different available technologies in an area. Correlating these coverage profiles with network performance metrics is of great importance in order to forestall disturbances for applications running on top of MBB networks. In this paper, we aim to profile MBB coverage and its performance implications from the end-user's perspective along critical transport infrastructure (i.e., railways in Norway). For this, we deploy custom measurement nodes on-board five Norwegian inter-city trains and we collect a unique geo-tagged dataset along the train routes. We then build a coverage mosaic, where we divide the routes into segments and analyze the coverage of individual operators in each segment. We propose and evaluate the use of hierarchical clustering to describe prevalent coverage profiles of MBB networks along the train routes and classify each segment accordingly. We further analyze the areas we classify with each profile and assess the packet-loss performance of the networks in those areas.**

## I. INTRODUCTION

Mobile Broadband (MBB) access to the Internet enables

different RATs in the same geographical region translates to the end-users experience. Given the increasing heterogeneity of technologies in the last mile of MBB networks, user experience highly depends on support for seamless handovers across multiple network types. Therefore, identifying the *network coverage profiles* that capture the distribution of all available technologies in the same area from the end-user experience is of great importance.

In this paper, we focus on profiling the MBB coverage along the critical railway infrastructure in Norway. Then, our goal is to build a **coverage mosaic**, where we classify and characterize railway route segments based on the distribution of RATs in that segment. For this, we use a vast dataset that we collect through periodic measurements from custom devices that we strategically place on-board several passenger trains. The dataset is pestered by numerous challenges, including high volume, the mixture of spatio-temporal coordinates and the presence of qualitative variables (i.e., the RAT value). Furthermore, depending on the deployment of base stations along the railway routes, the distribution of different RATs highly varies from one segment to another. Some operators rely on thresholds they impose of statistical descriptors to characterize

# NOMS 2016

- April 25-29, 2016, Istanbul, Turkey
- General Chair
  - Sema Oktug, Istanbul Technical University, Turkey
  - Mehmet Ulema, Manhattan College, USA
- TPC Co-Chairs
  - Brendan Jennings, Waterford Institute of Technology, Ireland
  - Melike Erol-Kantarci, Clarkson University, USA
  - Helmut Reiser, Ludwig-Maximilians University, Germany

- **213 papers submitted (general track), 54 accepted, 25.43% acceptance rate**
- 7 Workshops
  - 5GMan, AnNet, DISSECT, ManFI, ManFIoT , PASC 2016, UMITS **240 registered participants**

# NOMS 2016 Best Paper Award

- *"A Minimum Spanning Tree-Based Approach for Reducing Verification Collisions in Self-Organizing Networks"* - Tsvetko Tsvetkov, Janne Ali-Tolppa, Henning Sanneck and Georg Carle

# AIMS 2016

- June 20-24, 2016, UniBwM München, Germany
- General Co-Chair
  - Gabi Dreo Rodosek, UniBWM
- TPC Co-Chairs
  - Rémi Badonnel, Inria, France
  - Robert, Koch UniBWM
- Ph.D. Workshop Chairs
  - Martin Drasar, Masaryk University, Czech Republic
  - Aiko Pras, University of Twente, Netherlands
- Main track: 29 submissions, 7 selected
- PhD Track: 21 submissions, 9 selected
- 42 Participants

## Cloud Flat Rates Enabled via Fair Multi-resource Consumption

*Patrick Poullie (University of Zürich - Switzerland), Burkhard Stiller (University of Zürich - Switzerland)*

# Future conferences

- IM 2017
  - May 8-12, Lisbon, Portugal
- TMA 2017 – Network Traffic Measurment and Analysis Conference
  - June 21-23, Dublin, Ireland (Maynooth University)
  http://tma.ifip.org
- AIMS 2017
  - July 10-14, Zurich, Switzerland
- LANOMS 2017
  - October, Córdoba, Argentina
- CNSM 2017
- NOMS 2018
- IM 2019

# AIMS 2017

- July 10-14, 2017, University of Zürich, Switzerland
- General Chair
  - Burkhard Stiller, University of Zürich, Switzerl.
- TPC Co-Chairs
  - Daphne Tuncer, UCL, U.K.
  - Robert Koch, UniBwM, Germany
- Lab Co-chairs

**http://www.aims-conference.org/2017/**

  - Martin Drasar, Masaryk University, Czech Republic
  - Thomas Bocek, University of Zürich, Switzerland

**Submission Deadline: Janaury 15, 2017**   **Paper CfP with CNSM Registration Desk**

- Full paper track:
  14 pages expected with coherent results
- Ph.D. Research paper: 5 pages with idea and plan
  - Publication with LNCS under negotiation (indexed proceedings)

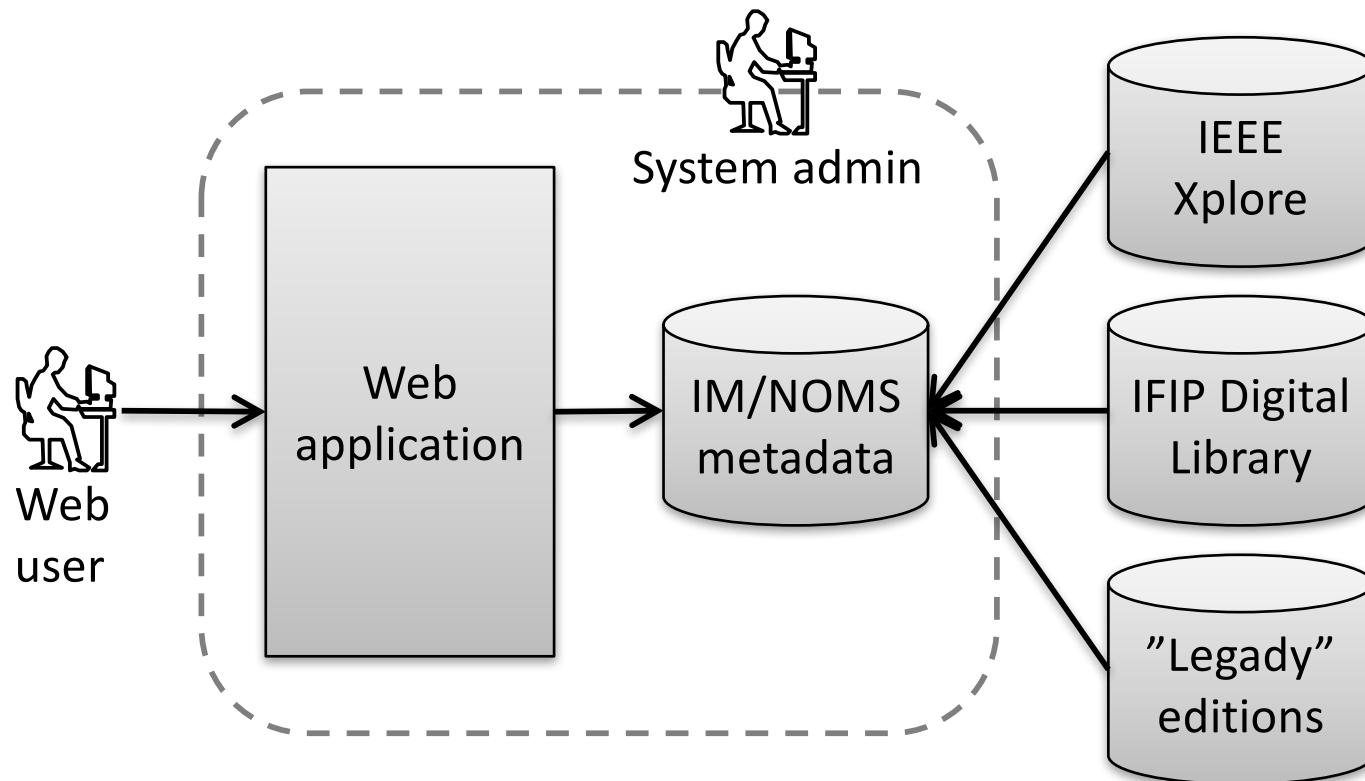# IFIP/IEEE IM 2017 open calls

- ## Workshops
  - 5GMAN 2017 - The 2nd IFIP/IEEE International Workshop on Management of 5G Networks: http://www.5gman.org/
  - DISSECT 2017 – 3rd IEEE/IFIP Workshop on Security for Emerging Distributed Network Technologies: http://www.dissect.vcu.edu/2017/
  - PAPELE 2017 – Workshop on Protocols, Applications and Platforms for Enhanced Living Environments, http://papele.eu/
  - QoE-Management 2017 – The First IFIP/IEEE International Workshop on Quality of Experience Management, http://qoe.community/qoe-management
  - AnNet 2017 – IEEE/IFIP International Workshop on Analytics for Network and Service Management
  - FNSSC 2017 – 1st Workshop on "Future Networks for Secure Smart Cities"

- ## Dissertation papers

- ## Demo papers !!!

# Observing the history of IM/NOMS

- A system being develop to observe the evolution of IM/NOMS given the published papers

# Observing the history of IM/NOMS

- The system will allow finding out, e.g.,
  - What are the most popular topics along the years?
  - Which are the research networks formed by IM/NOMS authors?
  - Which groups contributed more?
  - Etc.

- We expect to have a first version of the system ready for IM 2017

# CNOM/IFIP6.6 Taxonomy

https://en.wikipedia.org/wiki/
Network_and_service_management_taxonomy

# CNOM/IFIP6.6 Taxonomy

https://en.wikipedia.org/wiki/Network_and_service_management_taxonomy#Category_.231:_Network

🔍 nsm taxonomy

## Category #4: Functional Areas [ edit ]

The fourth category "Functional Areas" addresses the following question: Which functional areas are covered? The functional areas originated from the ISO Telecommunications Management Network model and framework for network management.

- Fault management
- Configuration management
- Accounting management
- Performance management
- Security management

## Category #5: Management Paradigms [ edit ]

The fifth category "Management Paradigms" addresses the following question: Which paradigm is used to achieve network and service management?

- Centralized management
- Hierarchical management
- Distributed management
- Federated management
- Autonomic and cognitive management
- Policy-based management

# IFIP WG 6.6 & IEEE CNOM
# joint meeting

THANK YOU!

# IM 2017

- 154 submissions
- 668 reviews
- 44 acepted long papers