

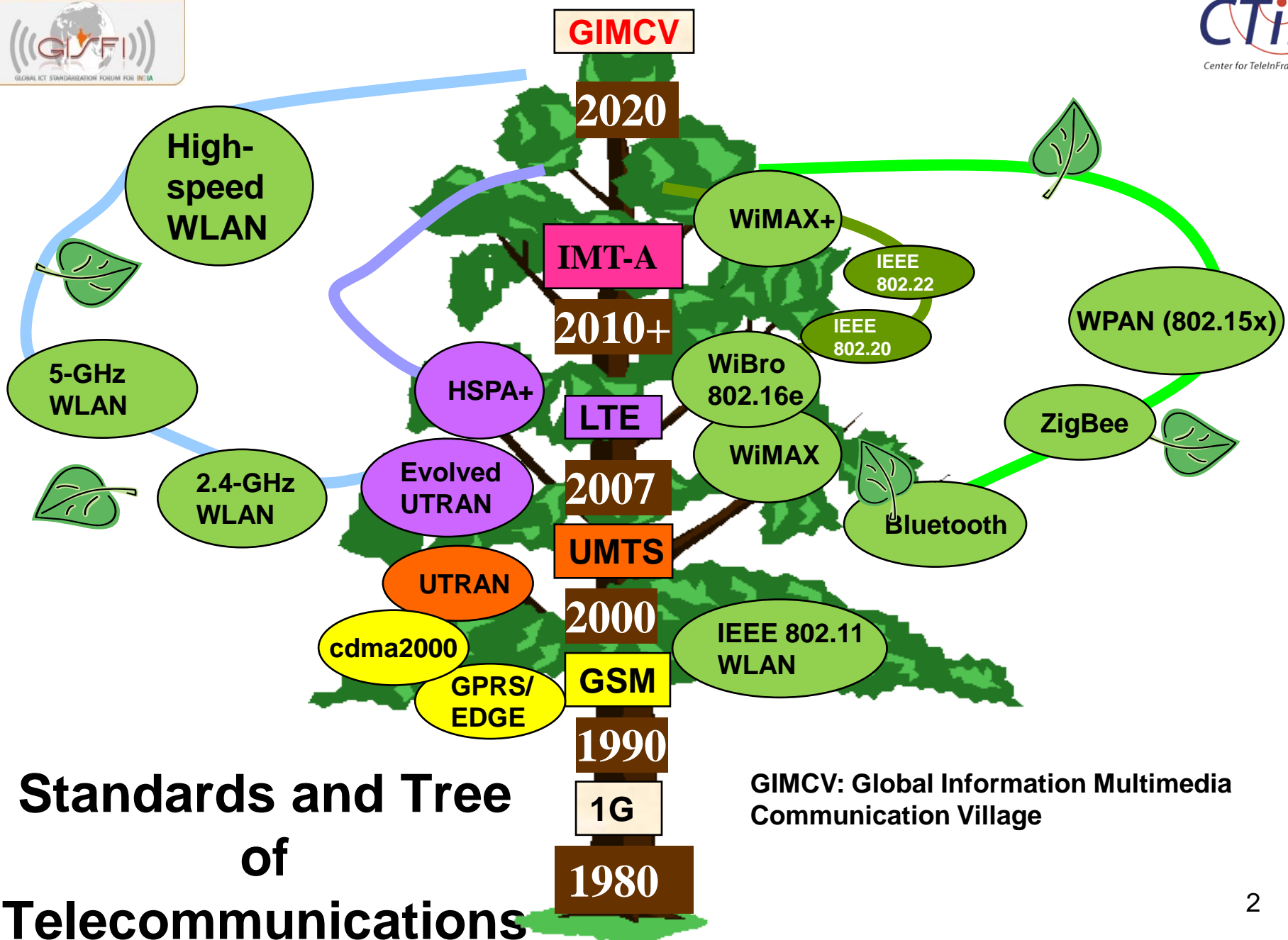


# 11<sup>th</sup> GISFI Standardisation Series Meeting:

## Introducing 5G Standardisation

Prof Ramjee Prasad,  
Fellow IEEE, IET, IETE  
Founding Chairman, GISFI, [www.gisfi.org](http://www.gisfi.org)

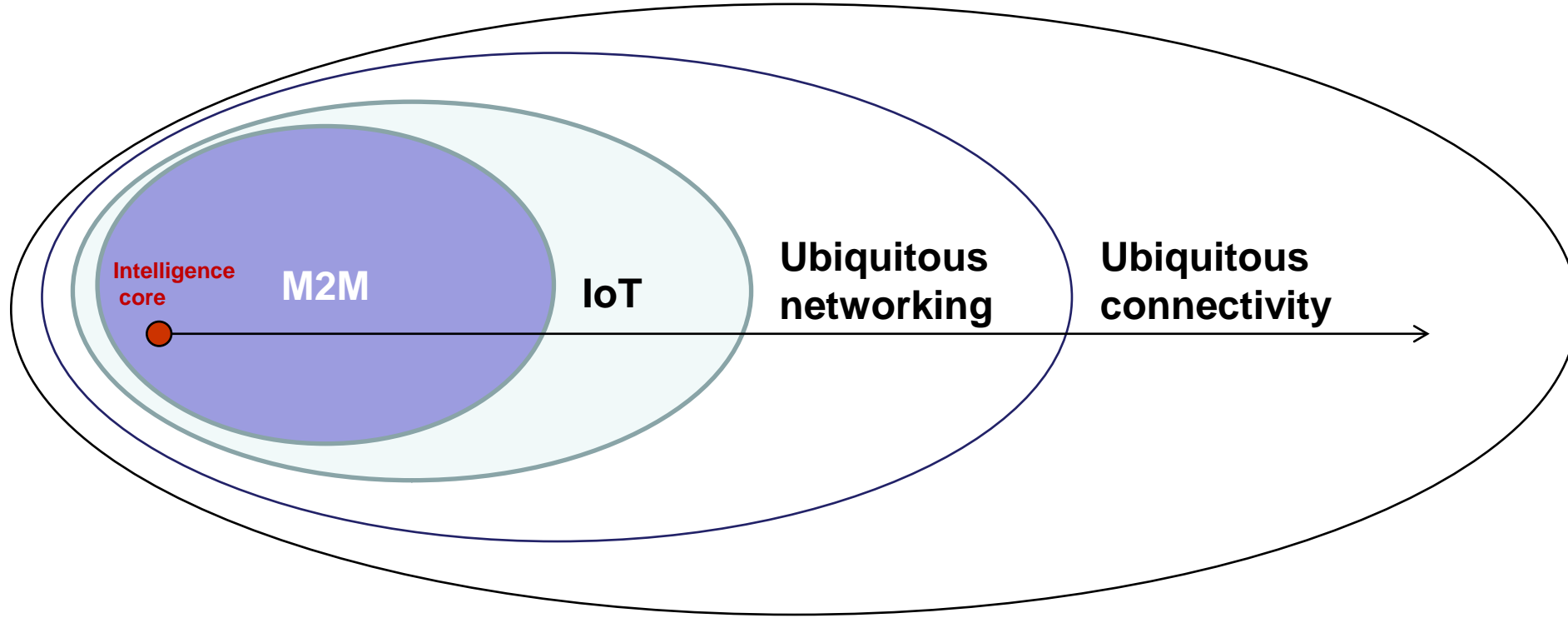
Bangalore, India,  
17-12-2012



# Standards and Tree of Telecommunications

GIMCV: Global Information Multimedia Communication Village

# 5G Scenario



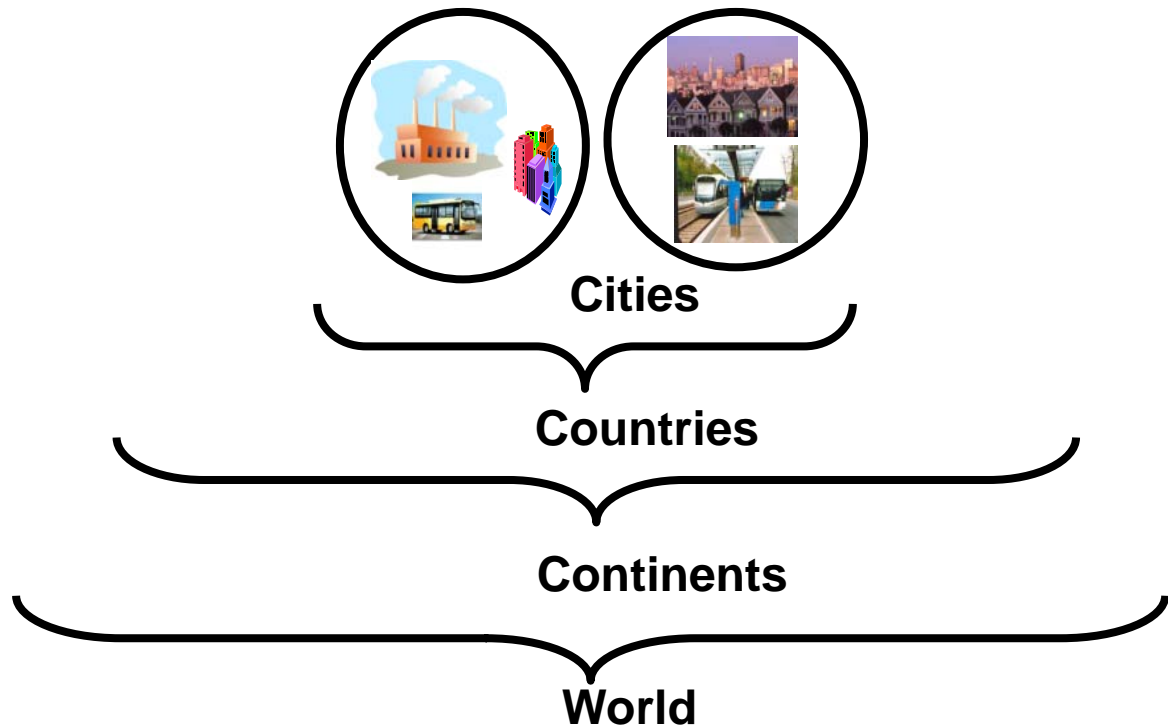


# Innovative Communications

- Need systems that offer **human-centric ubiquitous terabit wireless** connectivity that will enable the human-centric mega-communication applications over the network of the future.
- The aim is to let people **seamlessly bridge the virtual and physical worlds** offering the same level of *all-senses, context-based, rich communication experience over fixed and wireless networks.*

# WISDOM: Revolutionarizing Telecommunication Concepts

- **Wireless Innovative System for Dynamic Operating MegaCommunications (WISDOM)** is a communication system for ubiquitous trustworthy human-centric connectivity via an arbitrary infrastructure support

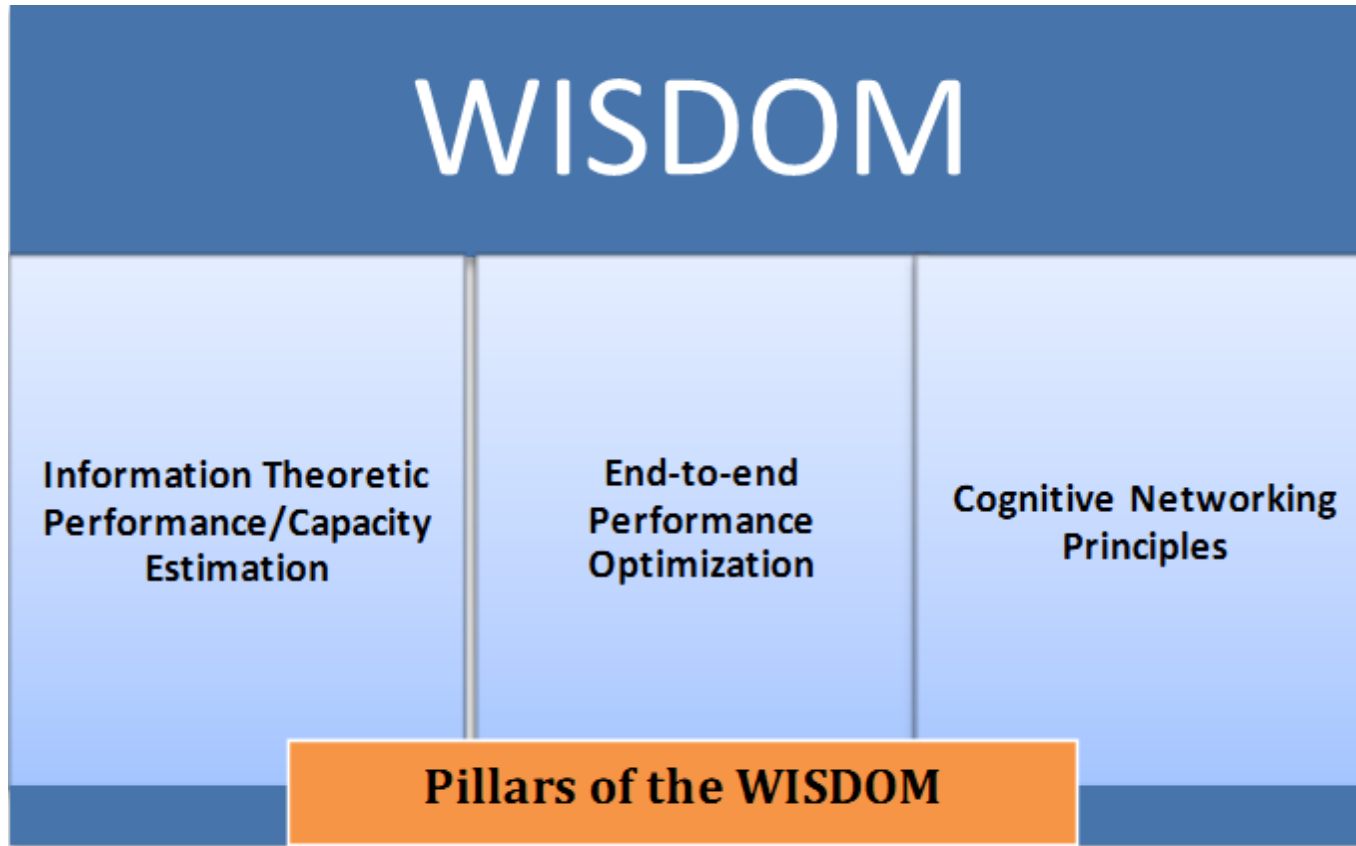


*A step towards  
5G*

**(1 terabit/s =  
10<sup>12</sup> bits/s)**

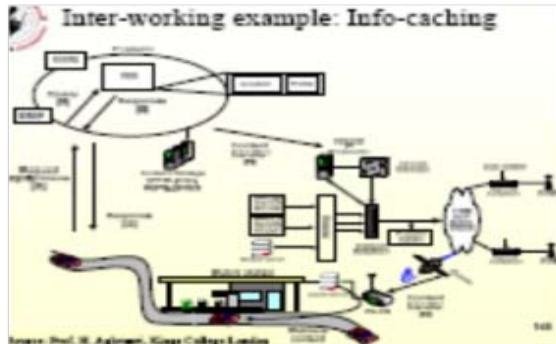


# WISDOM Design Approach





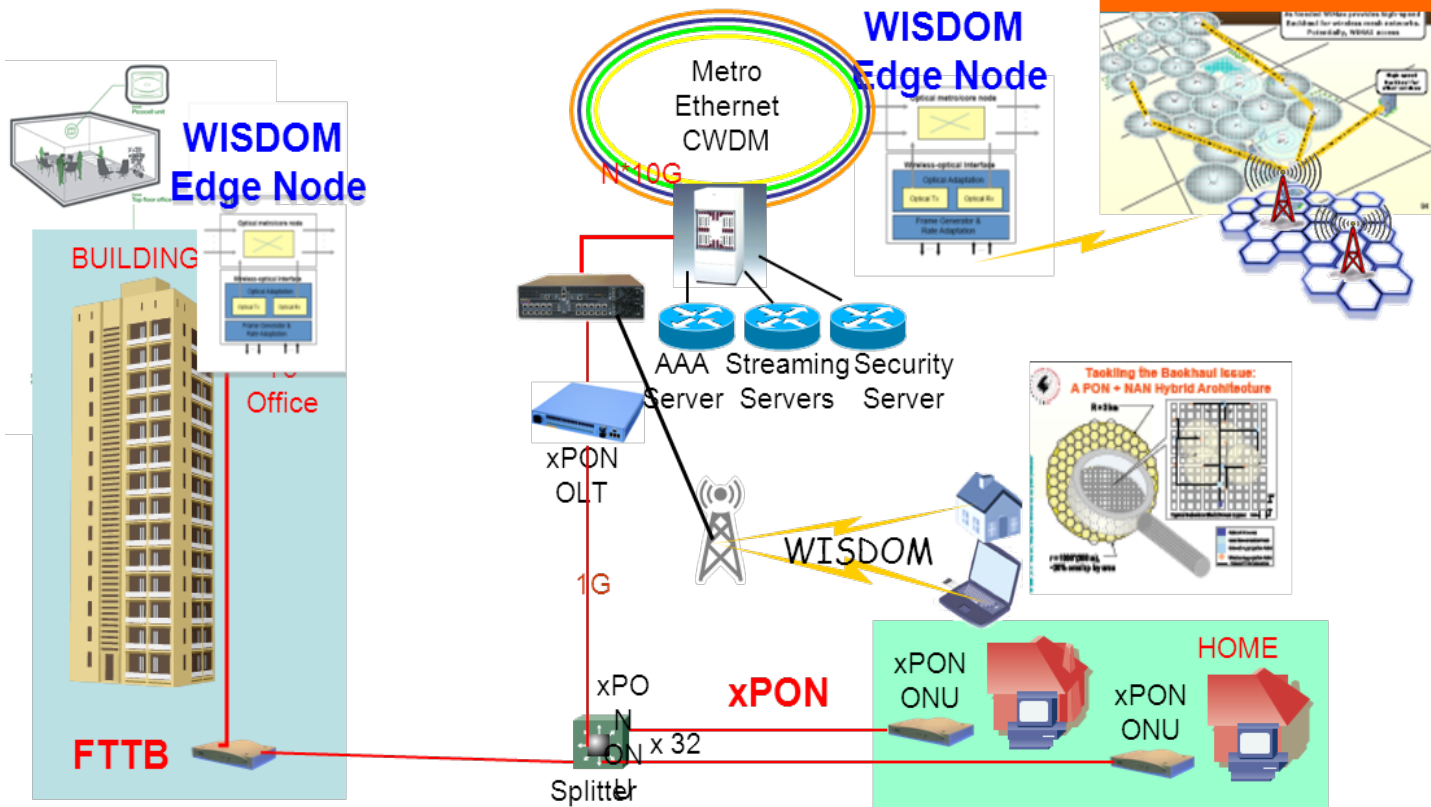
# Network Scenario and Architecture for Outdoor Cellular System



# End-to-End System Architecture

## Metro Core Network

## WISDOM Mesh Network



**Metro core network is permutation of WISDOM Mesh Network and WISDOM Edge Node.**





# WISDOM



## Architectural Challenges

- Deficiencies of current architectural solutions
  - Centralised design does not allow for flexible topology reconfiguration and efficient spectrum resource utilisation.
  - Monolithic radio access and protocol architectures
  - Any evolving /optimising solution leads to higher costs and management complexity
  - Rigidness of spectrum regulation and usage: frequency bands are pre-allocated without a consideration of the spectrum utilisation degree'



# Architectural Challenges



## Design and Architectural Considerations

- How to design an architecture that will support autonomic behavior?
- How to represent the information necessary to an autonomic object in a wireless scenario to achieve an autonomic behavior?
- How wireless autonomic object communicate together, and organize among themselves in a possibly large context?



# WISDOM



## Protocol Challenges

- Novel approach to protocols: holistic protocol stack
- Routing, mobility, communication should be revisited:
  - Satisfy multiple, diverse and conflicting traffic flows requirements- requires novel routing techniques
  - Maintain end-to-end path quality subject to available spectrum and link performance-requires proactive QoS techniques
  - Coordinated channel usage and better spectrum exploitation: novel resource allocation techniques



# Other Challenges to be Addressed



- How to deal with an non-uniformly distributed digital world
- Trust, privacy, confidence
- How to deploy Internet technologies fully across the economy
  
- Main challenge:
  - How to be able to fully capitalize on the research innovations?