



Aalto University  
School of Science  
and Technology

# Internet by Ethernet

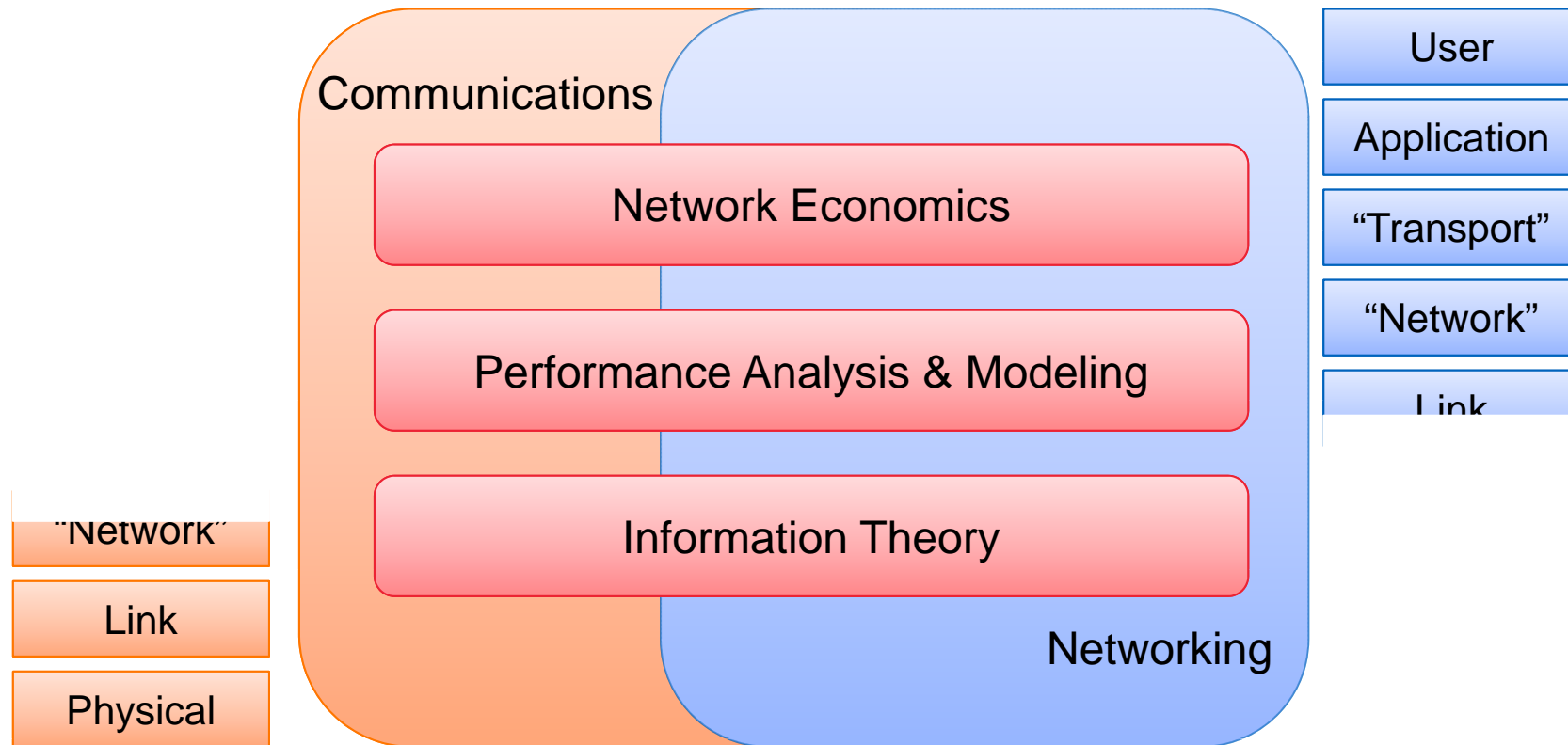
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Department of Communications and Networking (Comnet)

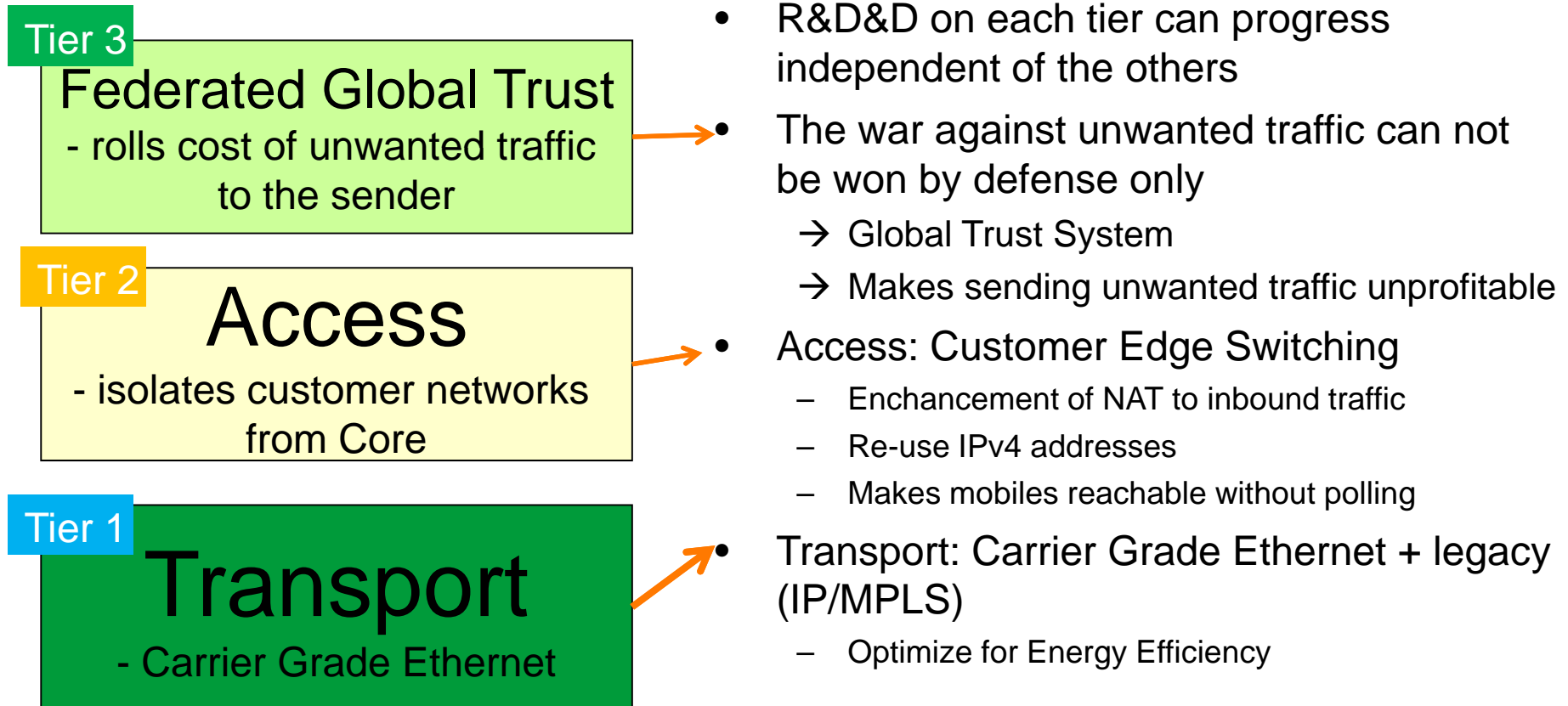
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[www.re2ee.org](http://www.re2ee.org)

# Comnet: Holistic Networking Research



# Three Tiers for Trusted Internet based on Ethernet



# Challenges

- Enhancing Ethernet to wide area and inter-carrier transport
- Enhancing Ethernet to replace IP
  - Addressing
  - Routing protocols: inter-carrier and multi-cast
  - Connecting mobile hosts: interrupt driven architecture
- Interoperability with legacy IP networks
  - Each domain should be able to make an independent choice of transport technology
  - New access should interwork smoothly with legacy destinations
  - Hosts should stay as they are

# What can we offer now

- ETNA Control Plane for native Carrier Ethernet based transport (from FP7)
- TRILL implementation with no broadcasting and initial support for mobility (100GET)
- Initial implementation of Customer Edge Switching (by VTT and Comnet) – (Finnish ICT SHOK FI work)

# Conclusions

- Networks move from synchronous byte oriented transmission to packet transport
  - Energy efficiency, scalability and cost are drivers
  - Ethernet will be everywhere and provide first Edge to Edge transport, later end to end service
- Access and Edge
  - Access must be interrupt driven
  - Separation of identities and addresses leads to tunneling based Edge →
  - Significant improvement in core scalability
  - Selection of forwarding technology must be independent by each carrier
  - No need for IPv6, instead use IPv4 as an identity and locally routed protocol
- Getting rid of unwanted traffic is a business problem: we propose a system of global trust to attack the phenomenon