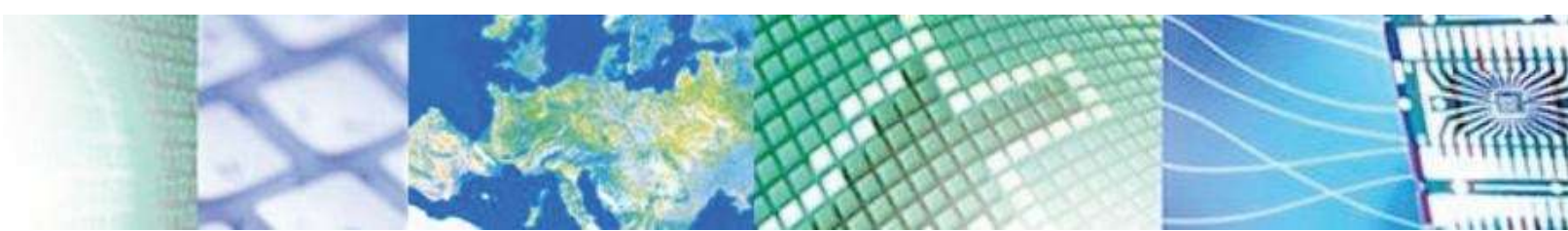




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# CHIST-ERA Projects Seminar

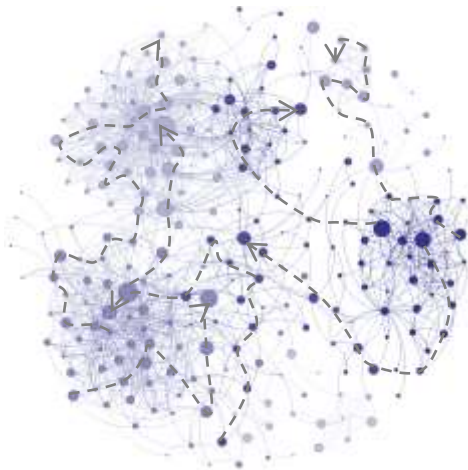
## Day 2, Cross Topics

### Topic C3N

**“Context- and Content-Adaptive Communication Networks”**

**Hermann Hellwagner**  
**(CONCERT Project | AAU Klagenfurt, Austria)**

**Bern, April 29<sup>th</sup>, 2016**



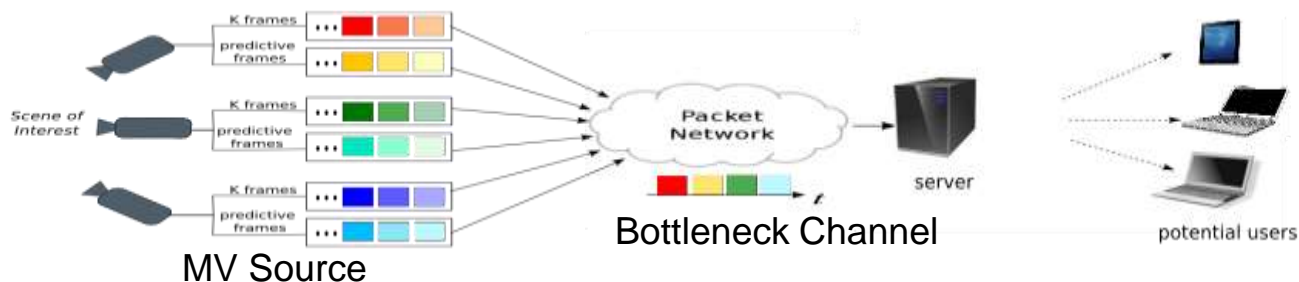
FUNDING OPPORTUNITIES from the  
FUTURE & EMERGING TECHNOLOGIES scheme



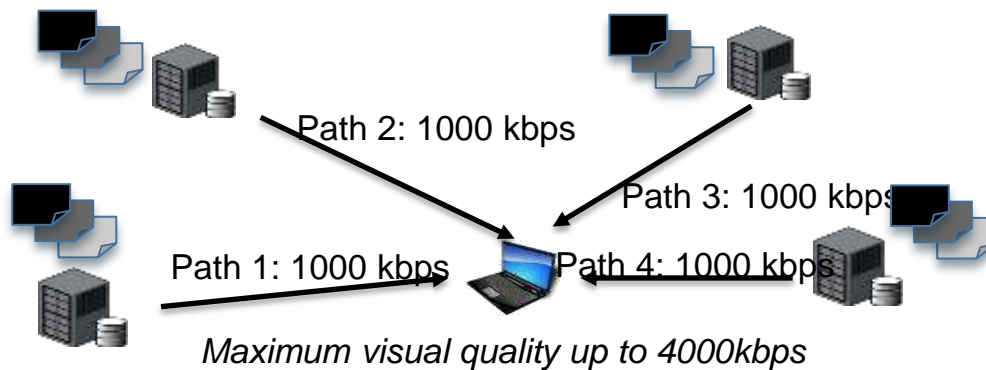


# Introduction: C3N - Projects

## ❖ CONCERT – «Smart Communication under Uncertainty»



## ❖ DISEDAN – «Flexible and Adaptive Content Delivery»



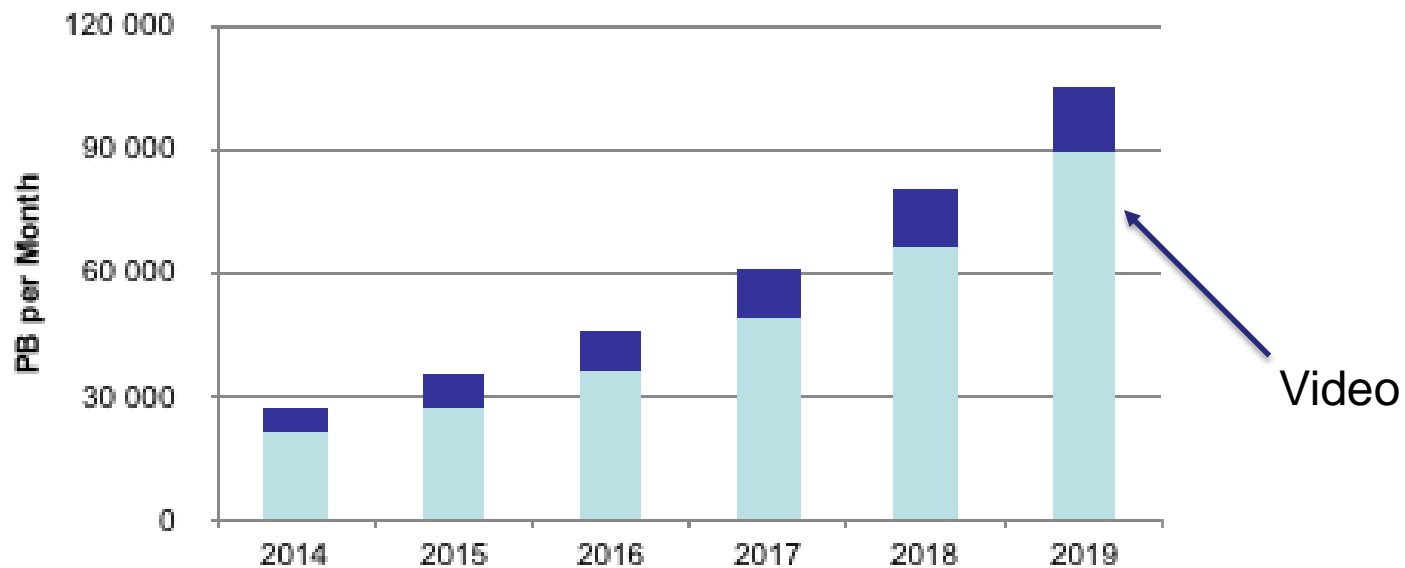
## ❖ MACACO – «Prediction for Traffic Offloading»



# Major Challenges at Project Start in C3N

- ❖ Tremendous growth and variety of future communication devices and multimedia traffic (mostly video)

Consumer Internet Traffic (2014-2019) - Cisco VNI



- ❖ Understand, learn, and adapt to uncertain content and context
- ❖ Improve end-user quality of experience (QoE)



## Sample Major Achievements and Output in C3N

- ❖ Tremendous growth and variety of future communicating devices and multimedia traffic (mostly video)
  - **MACACO content pre-loading mobile app**: up to 8 MB/day/user of traffic shifted from 3G to WiFi
- ❖ Understand, learn, and adapt to uncertain content and context
  - **CONCERT multi-view streaming**: 14% more accurate decisions through adaptation to learned client interactions
- ❖ Improve end-user quality of experience
  - **DISEDAN over-the-top video delivery system**: improves QoE from 42% to 75% compared to legacy systems, for a cost of 6.3% of bandwidth overhead



# Upcoming Challenges and Needs in C3N

- ❖ Scalability
- ❖ Performance evaluation
- ❖ Feasibility for real-time operation
- ❖ Security, privacy, trust
  
- ❖ Incremental deployment in real networks
  
- ❖ Increasing content and application heterogeneity (e.g., IoT, 5G, “fog computing”)
  
- ❖ Learning and leveraging social-based interactions

- ❖ **Same quality of experience as legacy TV broadcasting, for**
  - ✓ Web TV
  - ✓ Mobile video
  
- ❖ **Fully personalized and rich content/service delivery, e.g.,**
  - ✓ Augmented and virtual reality (AR/VR, games)
  - ✓ Free-viewpoint video
  - ✓ Immersive communication and collaboration
  
- ❖ **Learning for/in autonomous smart networks  
(cf. also “Actionable Intelligence“, D2K)**



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# Role of the CHIST-ERA Support (for C3N Research)

- ❖ **European consortium to pursue joint fundamental research**
- ❖ **Joint publications and scientific events**
- ❖ **Basis for additional funding**
- ❖ **Publications and patents:**
  - ✓ 20 publications in journals
  - ✓ ~50 publications in international conferences/workshops
  - ✓ 3 patent applications

## Questions ?

