



chist-era



CHIST-ERA Projects Seminar

C3N Topic

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Brussels, March 22-23, 2017



FUNDING OPPORTUNITIES from the

FUTURE & EMERGING TECHNOLOGIES scheme

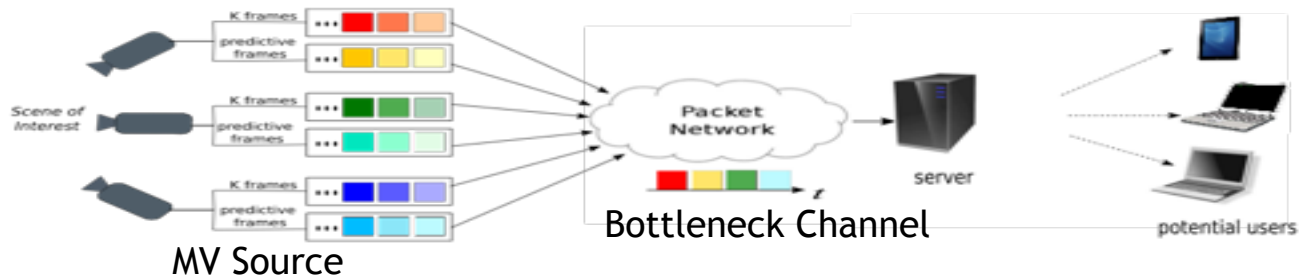




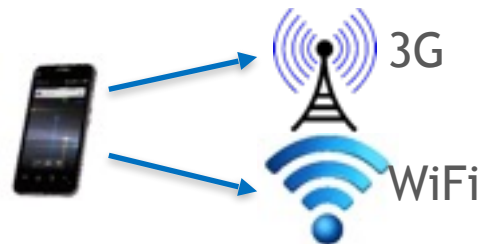
Context- and Content-Adaptive Communication Networks

- ❖ **Novel content or service-adaptive network architectures** *rather than location-based*
- ❖ **Tools and algorithms to be**
 - **Network-aware:** sense network properties
 - **Context-aware:** sense usage patterns (human / social behaviors)
 - **Self-configuring** to user-related information: learning over time
- ❖ **Cross-layer and cross-player network protocols** to implement the above

❖ **CONCERT** - «Smart Communication under Uncertainty»



❖ **MACACO** - «Model & learn Content/Context for Traffic Offloading»



❖ **DISEDAN** - «Flexible and Adaptive Content Delivery» (completed)

Major outcomes and achievements

- ❖ **Fine grained understanding of human behavior (content and context)**
 - **Models for mobility and content based on real traces**
2.4 million of measurements collected
 - **MACACO content off-loading benefits:**
up to 8 MB/day/user of traffic shifted from 3G to WiFi
- ❖ **Understand, learn, and adapt to heterogeneous content and context**
 - **Models for how information spreads in a network**
 - **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



Remaining challenges and needs

❖ Strengths

- Models for content and context
- Prediction algorithms
- Theoretical evaluation and gains

❖ Weaknesses

- Scalability
- In-the-wild deployment and performance evaluation

❖ Opportunities - remaining challenges

- **Incremental deployment**
- Increasing content and application **heterogeneity** (e.g., IoT, 5G, “fog computing“)
- Learning and leveraging players **interactions**

❖ Threats

- Security, privacy, trust
- Non-cooperation between content providers and Telecommunication operators



Potential sources of further funding

✓ Industry

- Cooperation with telecom operators and content providers

✓ H2020

- FET-Open

✓ National calls

- France: ANR PRCI - French IDEX
- UK: EPSRC - Royal Society funding



- ❖ **In 2020: Same quality of experience as legacy TV broadcasting for e.g.**
 - ✓ Web TV
 - ✓ Mobile video

- ❖ **In 2025: Learning for/in autonomous smart networks, e.g.**
 - ✓ Dealing with the mass of heterogeneous devices to serve
 - ✓ Dealing with the larger volume of streams (video streaming)

- ❖ **In 2030: Fully personalized and rich content/service delivery, e.g.,**
 - ✓ Augmented and virtual reality (AR/VR, games)
 - ✓ Tactile Internet (1ms delay constraint)
 - ✓ Immersive communication and collaboration



Questions ?