

# ICN and Video Distribution

**ICN capabilities for optimizing video selection and reception based on link management procedures**

Daniel Corujo

dcorujo@av.it.pt

# ICN and Video

- There are different studies indicating video as the upcoming most consumed type of online content
- Video content reception provides many different requirements, which directly impact the Quality of Experience of the user
  - Realtime vs. Stream
  - Wireless vs. Wired
  - Networking Conditions
  - ...

# ICN and Video [2]

- Although ICN aims for a generic content centric approach
  - Optimization mechanisms targeting video aspects can be reutilized in other kinds of content
    - Voice, gaming, M2M, etc...
- As such, it is worthwhile to consider different interactions between ICN and video content handling

# Aspects Considered

- I. Link conditions of the receiver
  - I. Which “face” to use, or request content from?
    - I. What if the best face changes over time?
    - II. How does the video source know about this and other network status?
  - II. When different “flavors” of the content are available, which best suits the requester(s)?
- III. Can these factors be combined to best decide how to forward content to the user?
- IV. Moreover, can intrinsic ICN procedures be used to support these actions?

# I - Optimized Face Selection

- Considerations for study:
  - Not just blind terminal decision, but actual optimization from the network
    - Neither the terminal nor the video server know the network conditions, leading to starvation of resources or selfish behavior
  - Provide feedback to the source (or to the network) about reception quality
    - And also advertise other link possibilities (e.g., more available “faces”)

# II - Content Reception Optimization

- Considerations for study:
  - Pre-setup of link/network procedures according to the content requested in, e.g., handovers
  - Provision of feedback about content reception to the source and/or network, when necessary

# III - Content Adaptation Optimization

- Considerations for study:
  - Provide network/terminal events or actions, allowing dynamic adaptations for video selection (i.e., nearby cache or source)
  - Provide link information/choice in a media-independent way

# Challenge

- Manage these aspects (I, II, III and others)
  - Using intrinsic ICN mechanisms
  - In a common way to different ICN instantiations
    - E.g., analysis of the impact in different environments
  - In different heterogeneous systems
    - Both wired and wireless
  - Using different degrees of integration
    - Clean-slate vs. overlay



# Conclusion

- Video-related mechanisms are useful for ICN research
- The high degree of interest (and impact) in the video topic can actually raise the general interest for ICN mechanisms
- ICN can provide extensible procedures for supporting and optimizing video
- ICN thus becomes exposed to new extended scenarios, furthering its usefulness

Daniel Corujo < dcorujo (at) av (dot) it (dot) pt >  
Instituto de Telecomunicações, Aveiro, Portugal  
<http://atnog.av.it.pt>

**THANK YOU**