ICN and Video Distribution

(Topic for consideration on the new Work Item)
ICN capabilities for optimizing video selection and reception

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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

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 adaptions 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

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THANK YOU