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Towards Semitransparency & towards the Use of Media Semantics

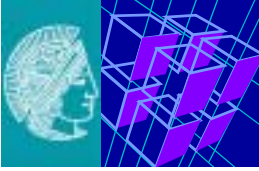
for the QoS of Continuous Media Streams

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Outline

1. QoS in General
2. QoS - Towards a Semitransparent QoS
3. QoS - Towards Usage of Semantics - Semantic Web
4. Approaching QoS for Movies

The Gleaning Mechanism

Scalable Adaptive Streaming

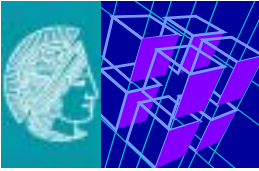
Quality Metrics

New Protocol Environment

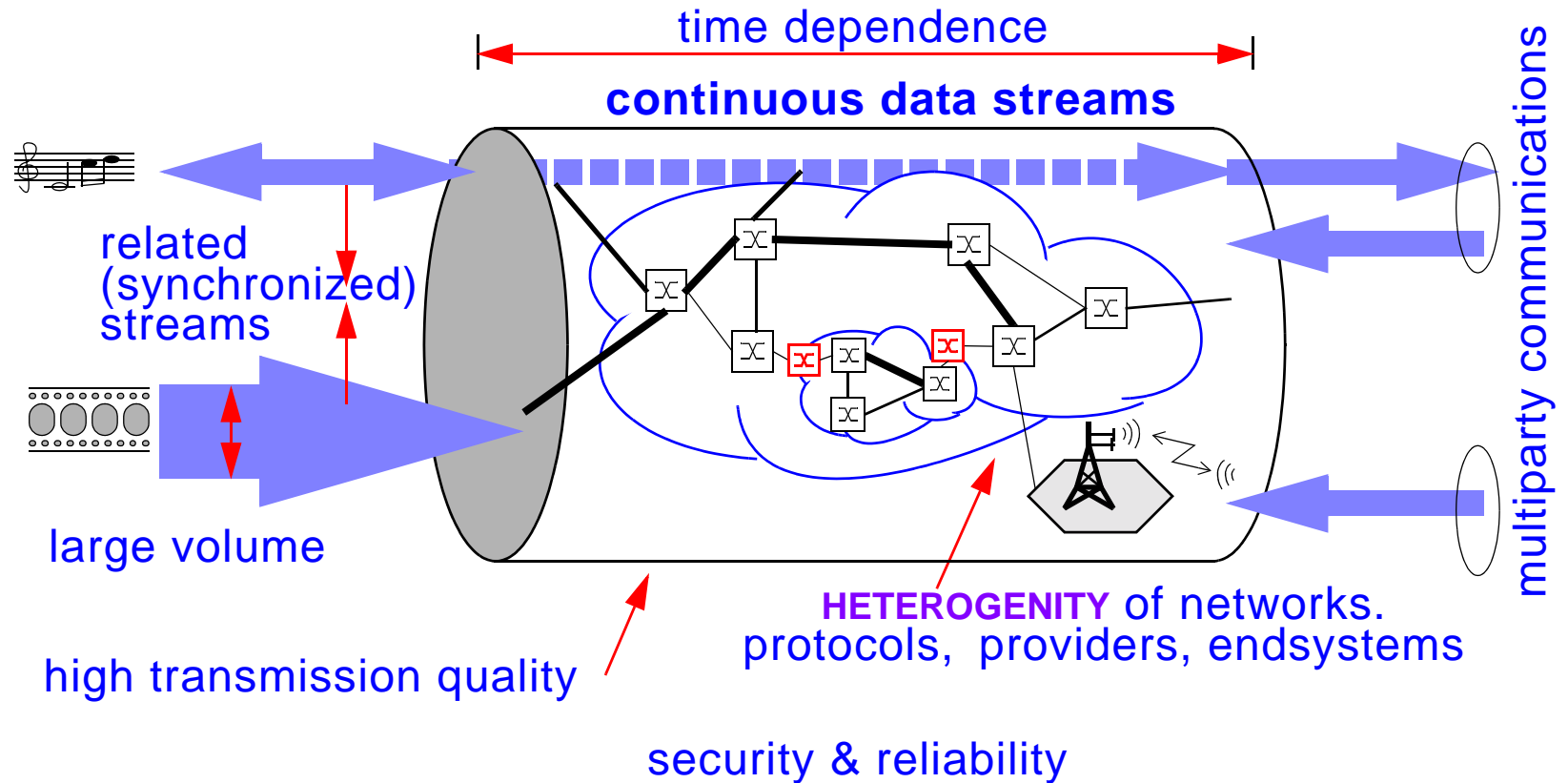
based on the research of the KOM team since 1996

focus: M.Zink, Prof.Dr.-Ing.C.Griwodz (Oslo Univ.),
etc.





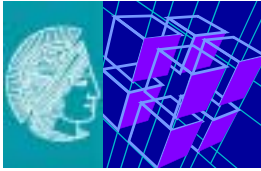
1. QoS in General



supported by

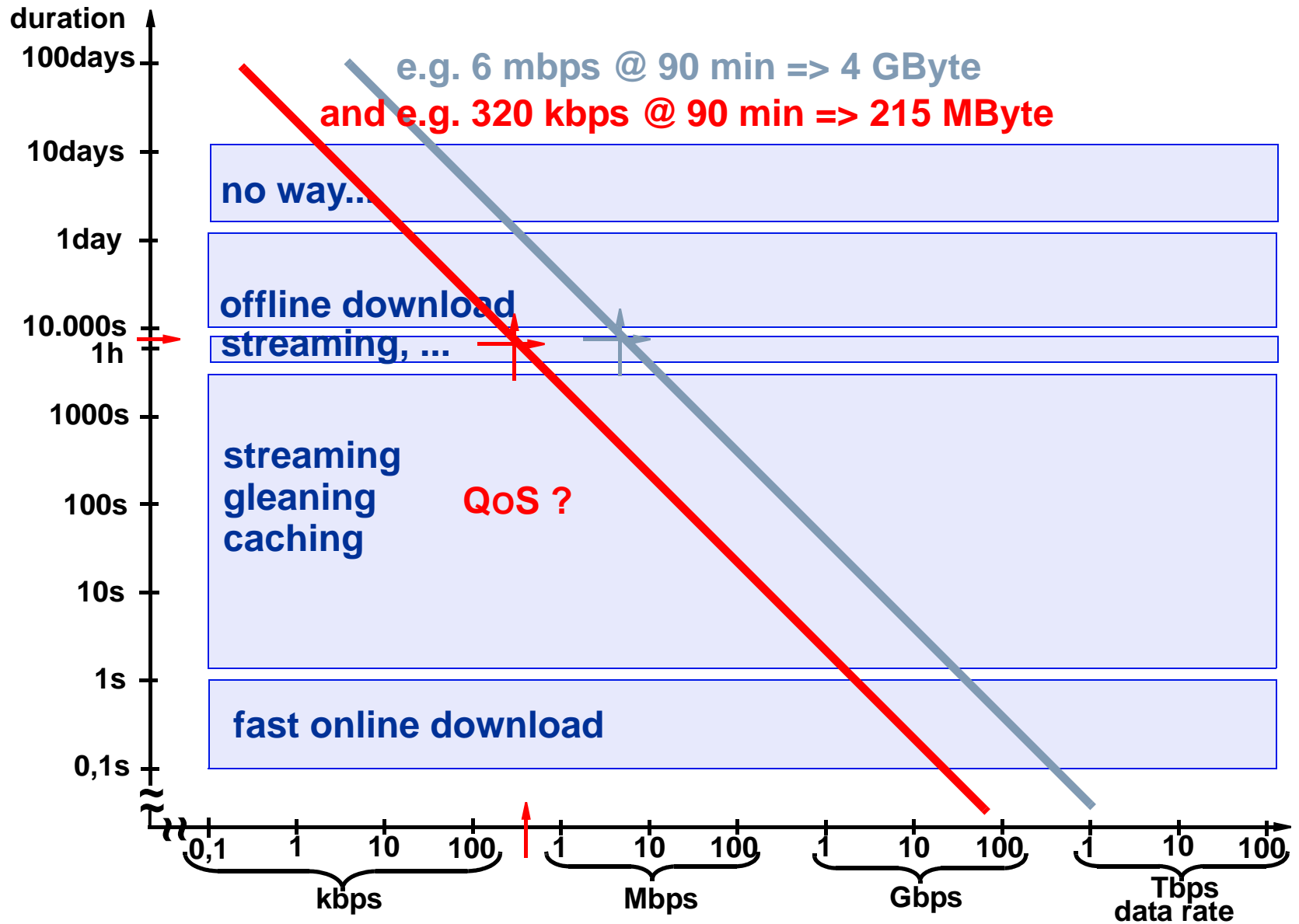
- two Internet Architectures
 - Internet Integrated Services
 - Internet Differentiated Services

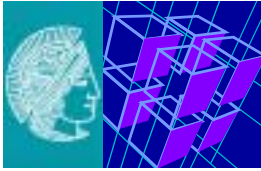




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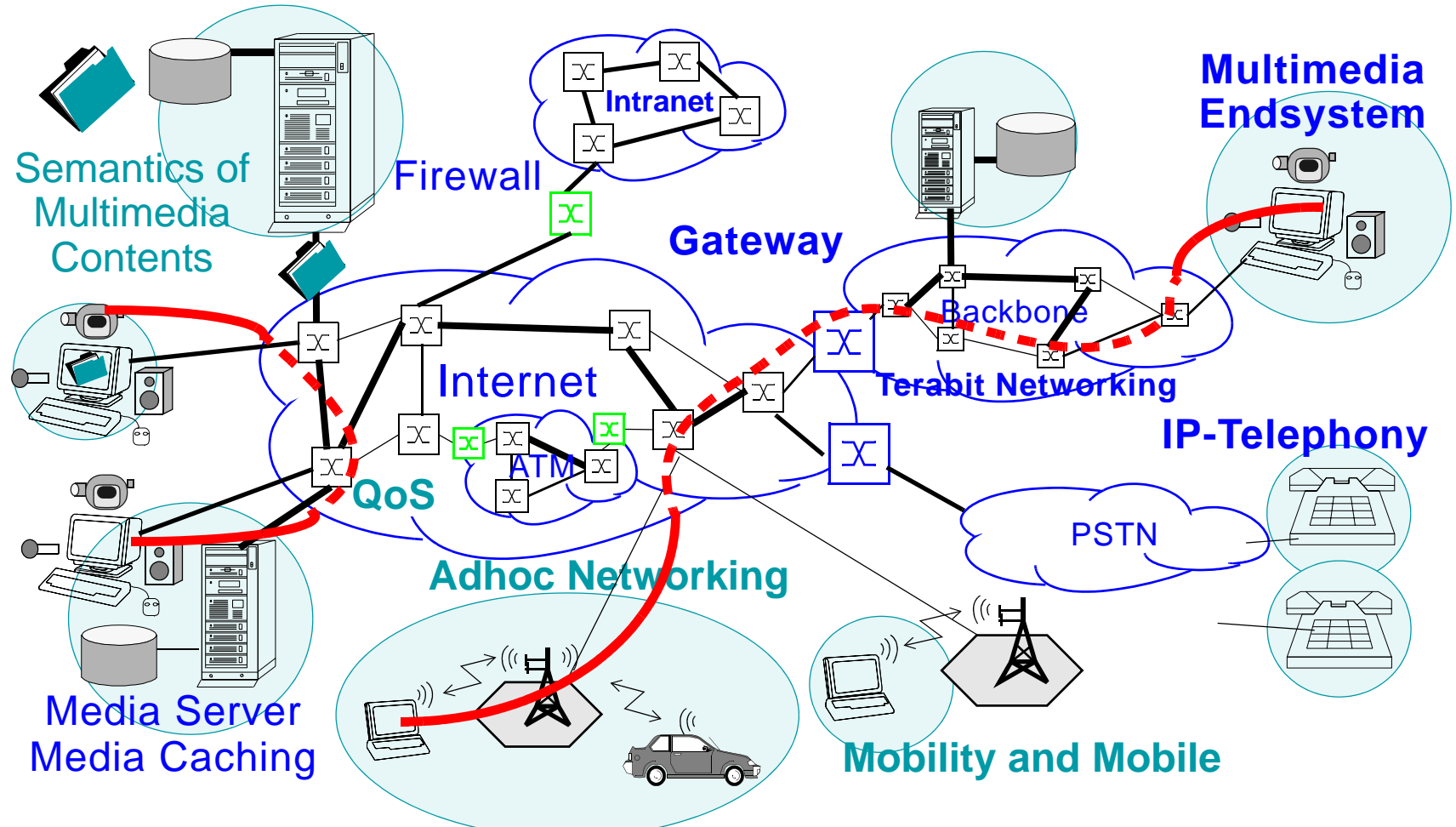
QoS Scenario: a Movie (see and adapted from Jorg Liebeherr, IWQoS 2001)





2. QoS - Towards a Semitransparent QoS

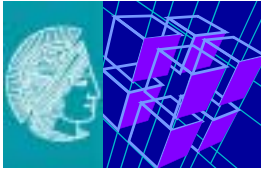
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Facts:

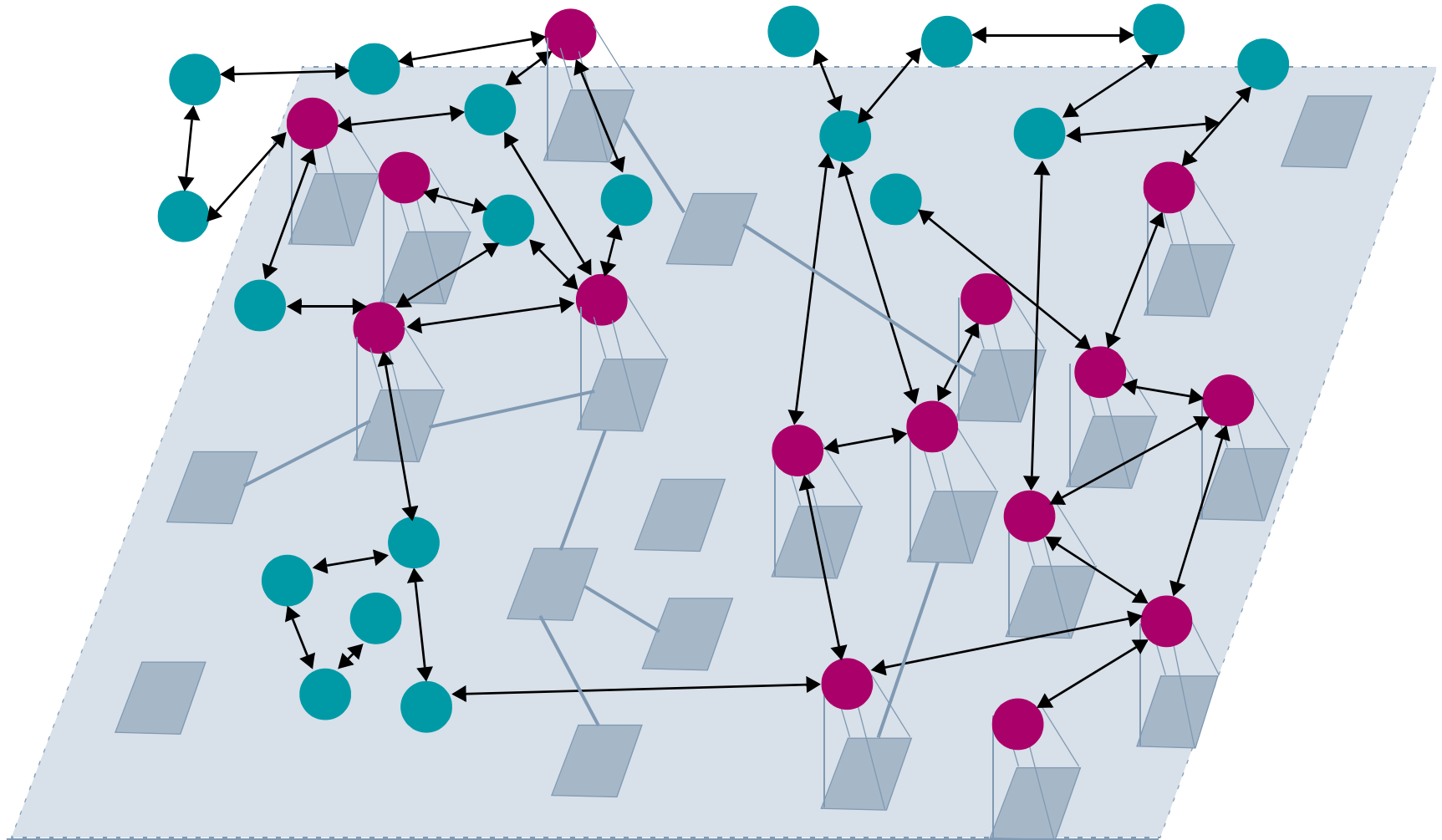
- availability of resource at the backbone (DiffServ, IntServ)
- shortage of resources at the access networks

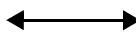





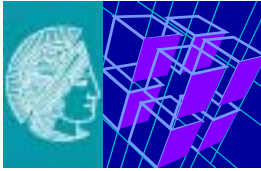
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3. QoS - Towards Usage of Semantics - Semantic Web



-  **Web Ressources**
-  **Metadata Descriptions**
-  **Ontology terms**
-  **RDF expressions (ressource description format)**
-  **HTML links**



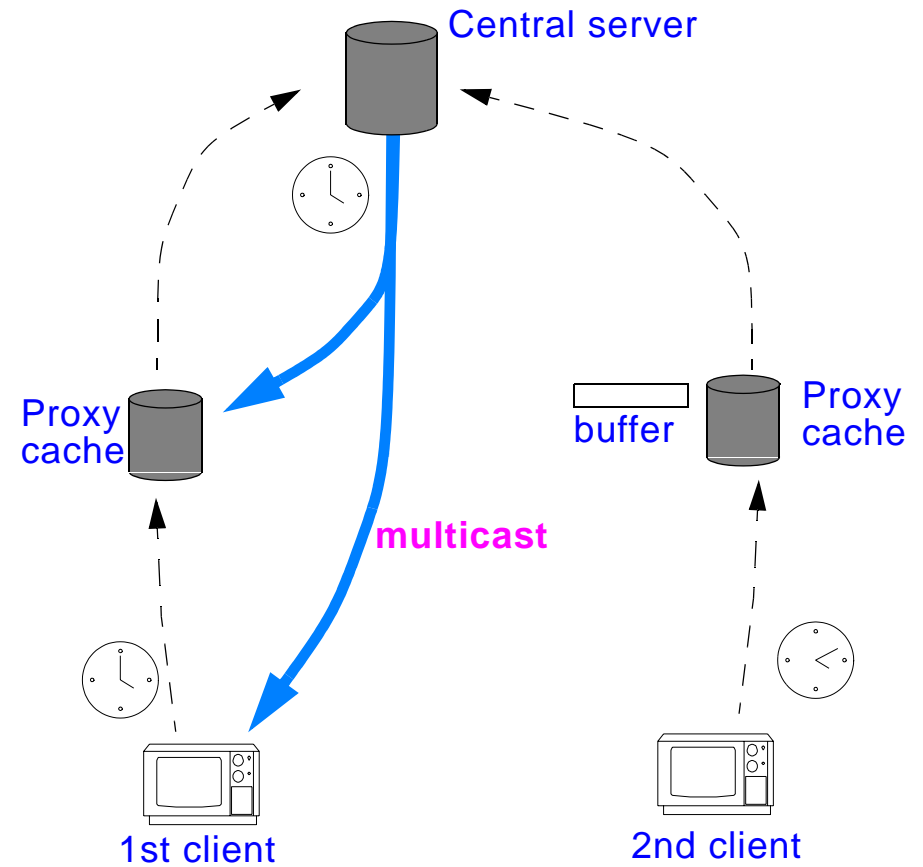


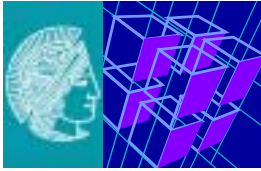
4. Approaching QoS for Movies

The Gleaning Mechanism

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Phase 1

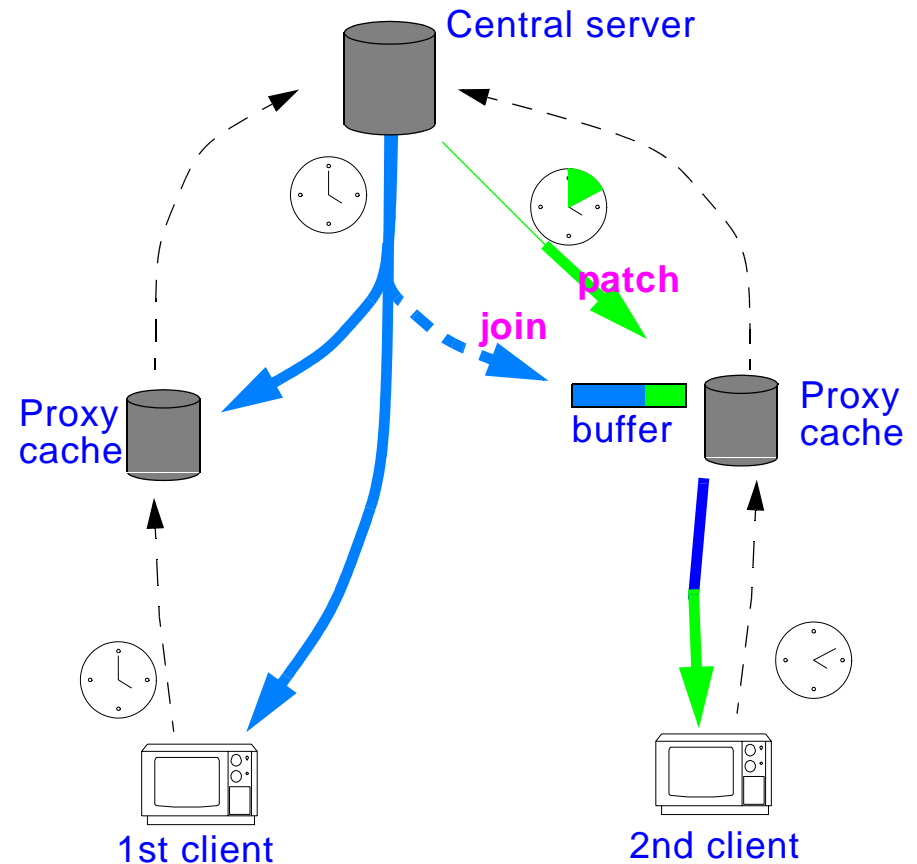




Approaching QoS for Movies

The Gleaning Mechanism

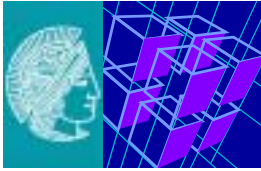
Phase 2



to glean, i.e. (Oxford American Dictionary)

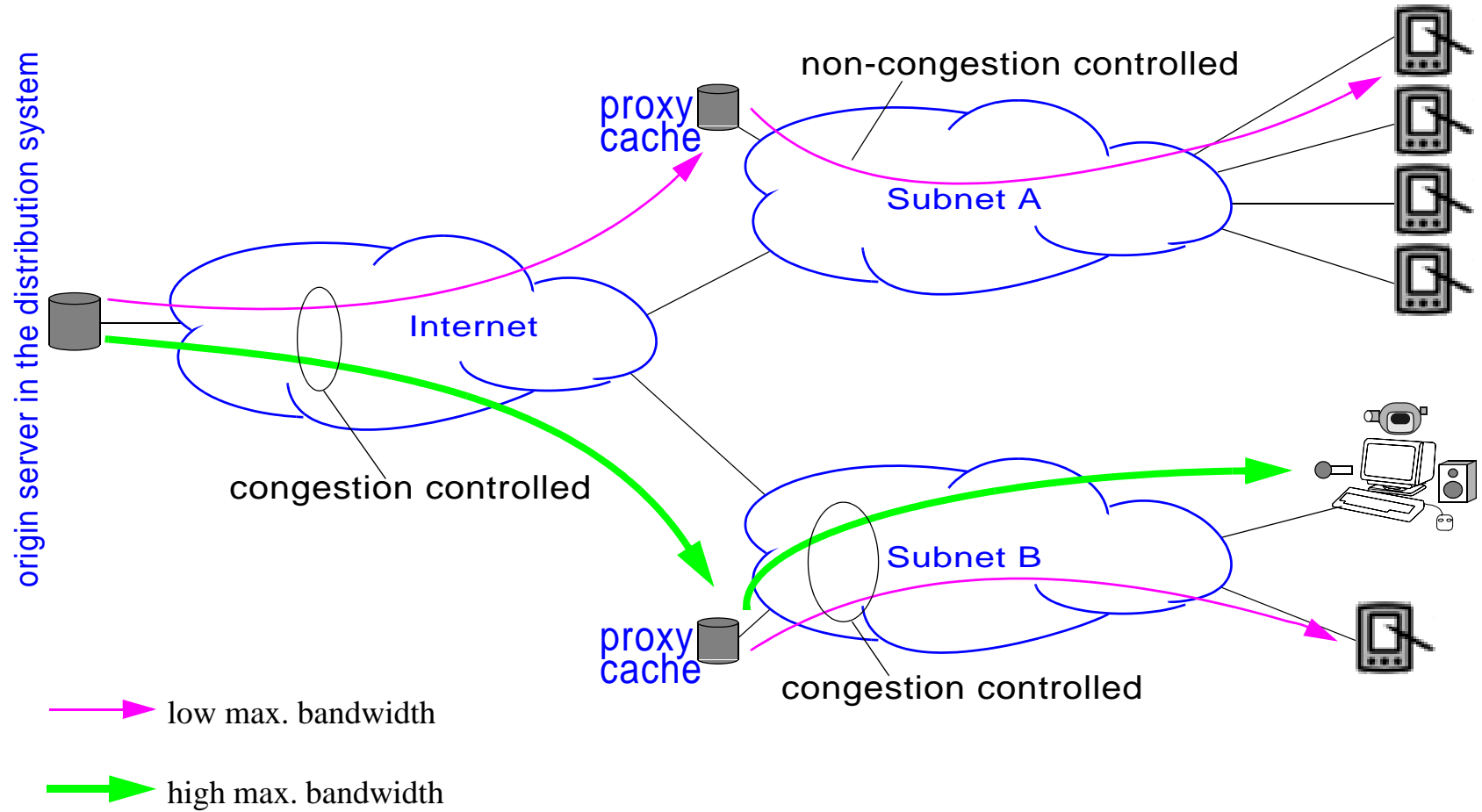
- to pick up grain left in a harvest field by workers
- (fig.) to gather news, facts in small quantities
- i.e. to gather small items of knowledge from various sources ("Ähren auf/nachlesen, einsammeln, stoppeln, erfahren, ..")

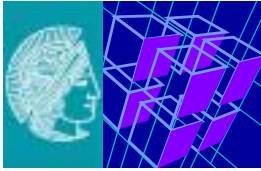




.. and a first Step to make Use of the Semantics of Data

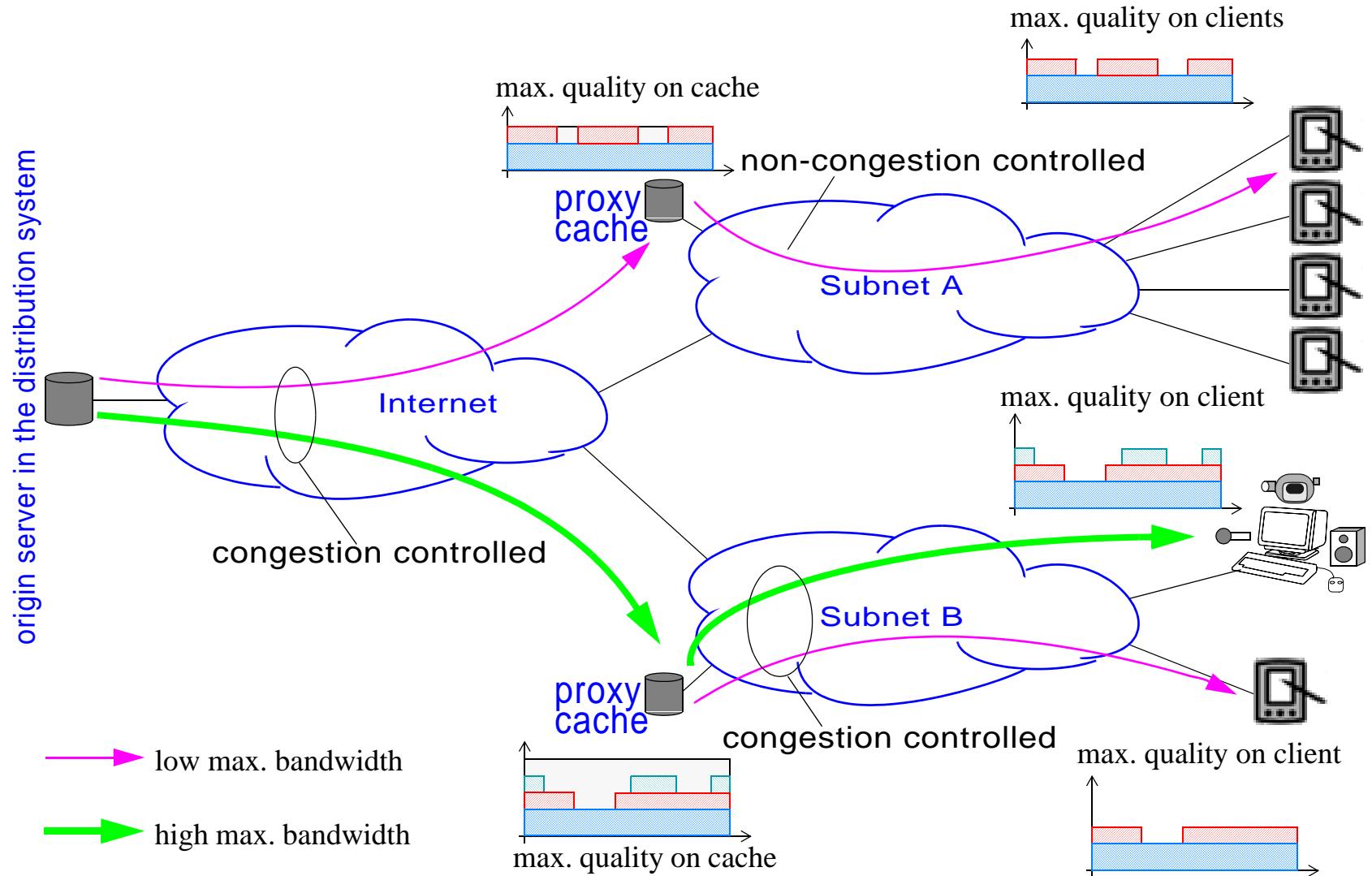
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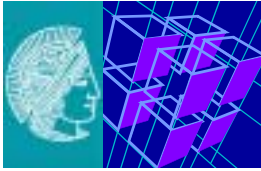




.. and a first Step to make Use of the Semantics of Data(2)

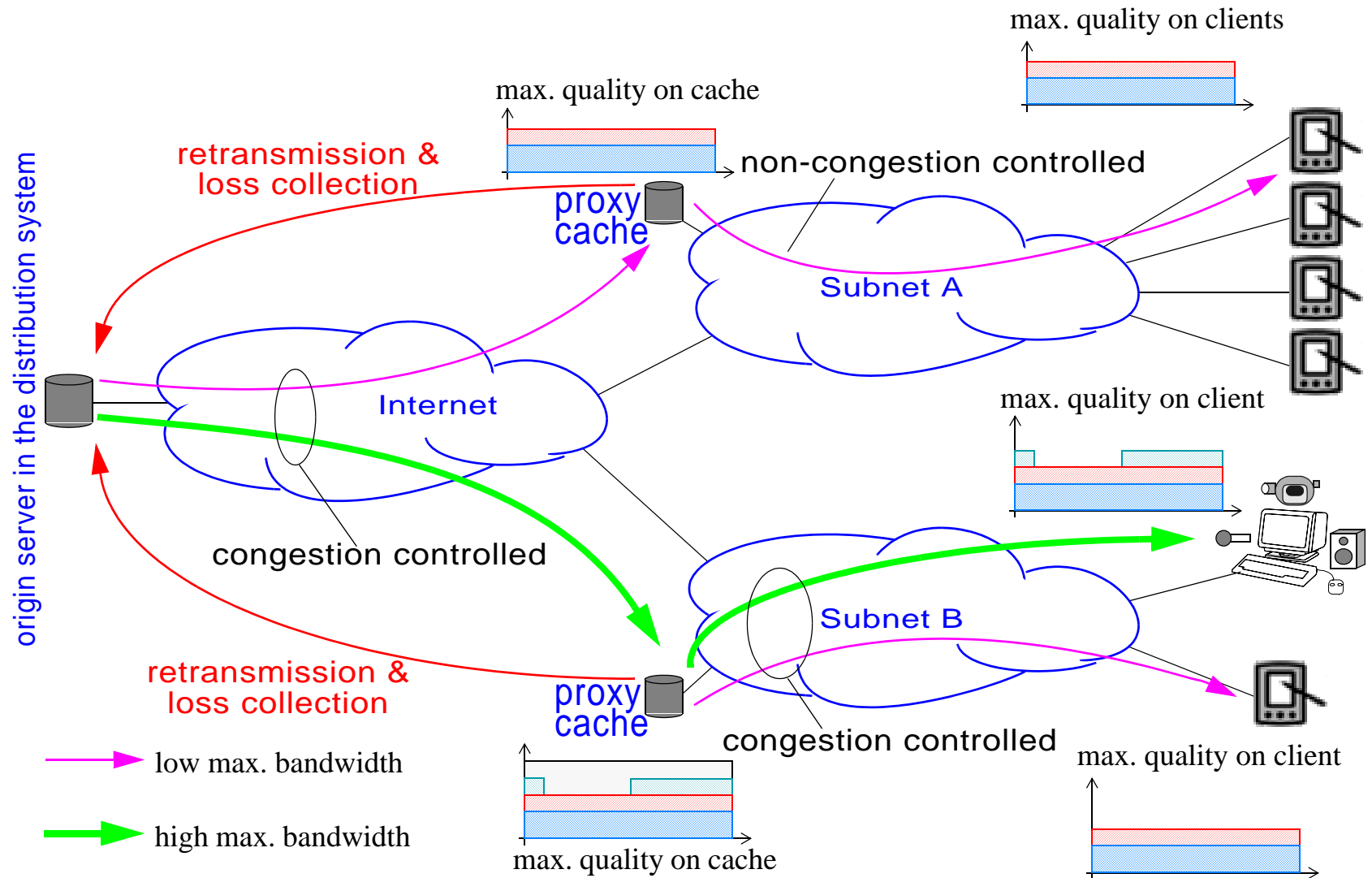
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.. and a first Step to make Use of the Semantics of Data(3)

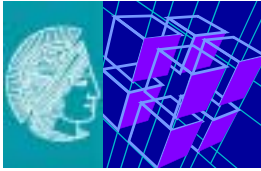


—▶ low max. bandwidth
—▶ high max. bandwidth

see

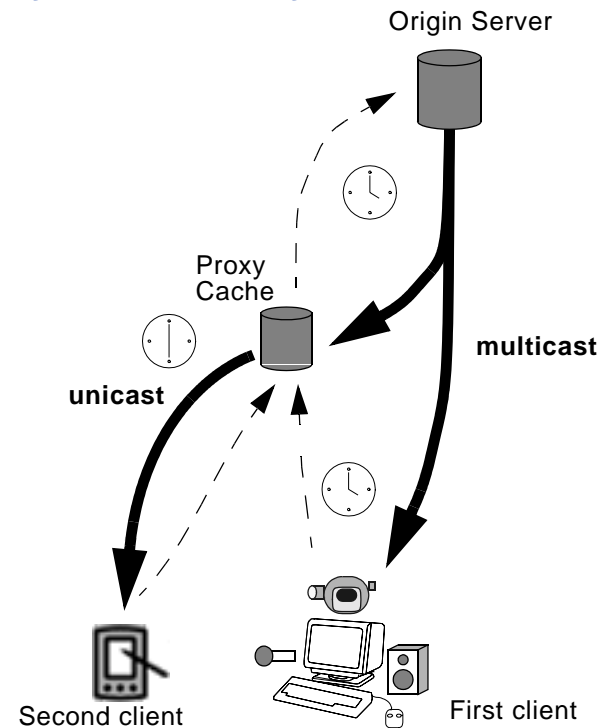
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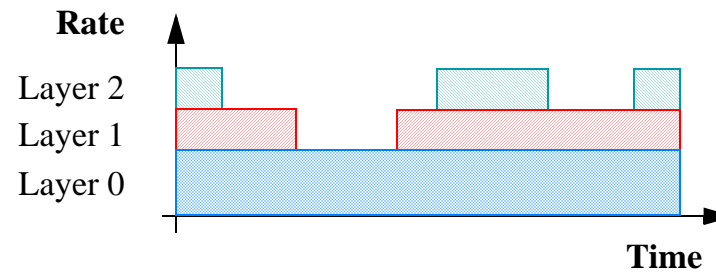


Scalable Adaptive Streaming

- Scalability through proxy caches (system scalability)



Adaptiveness through congestion control and layer encoded video (content scalability)



⇒ Retransmission Scheduling

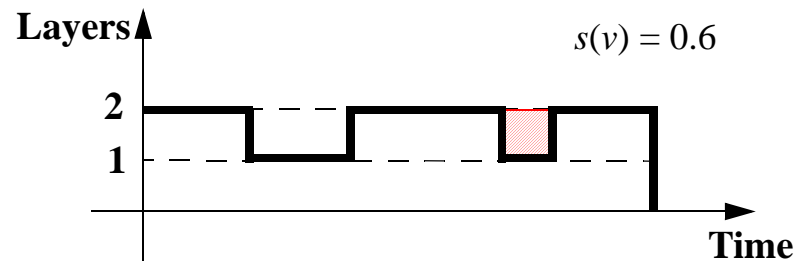
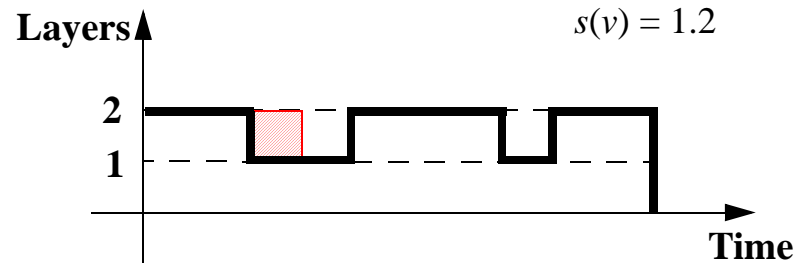
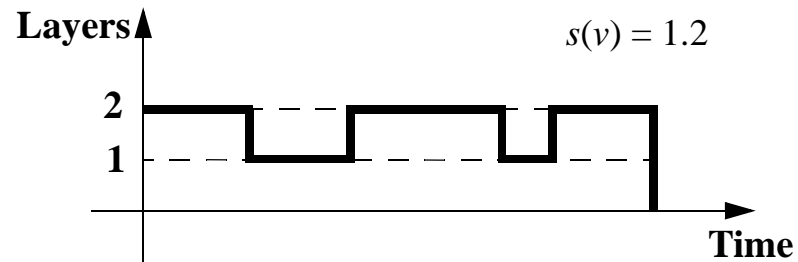




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Quality Metrics

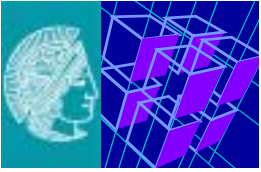
- **General assumption: quality is influenced by**
 - the frequency of layer changes and
 - the amplitude of layer changes
- **Simple Example:**



see

<http://www.kom.e-technik.tu-darmstadt.de/video-assessment/>





New Protocol Environment

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