

MOVIS –
Performance Monitoring System for Video Streaming
Networks
Project Number 168219

Estimating Subjective Video Quality from Measurements

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MOVIS – Motivation

You are watching a sports event using a paid service on your PC.



⚡ Suddenly the quality degrades – it's no fun



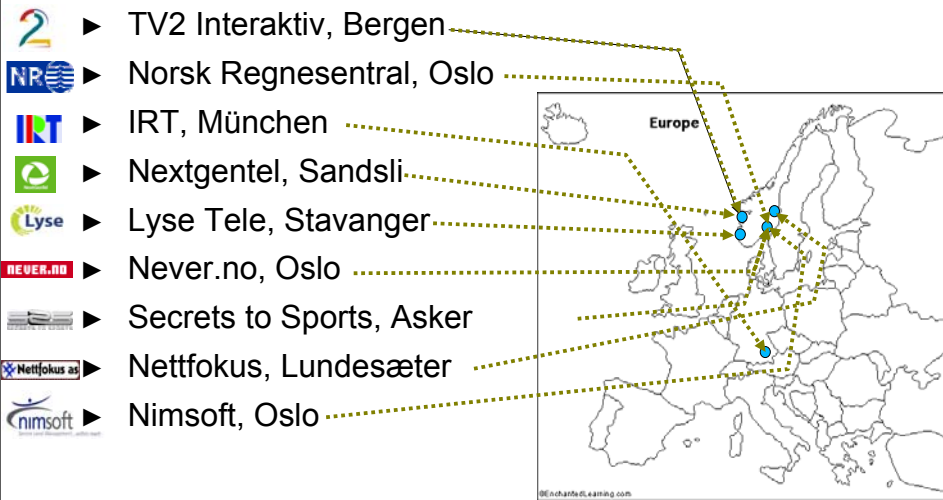
You want to see the game!
Who is to blame? What is wrong?



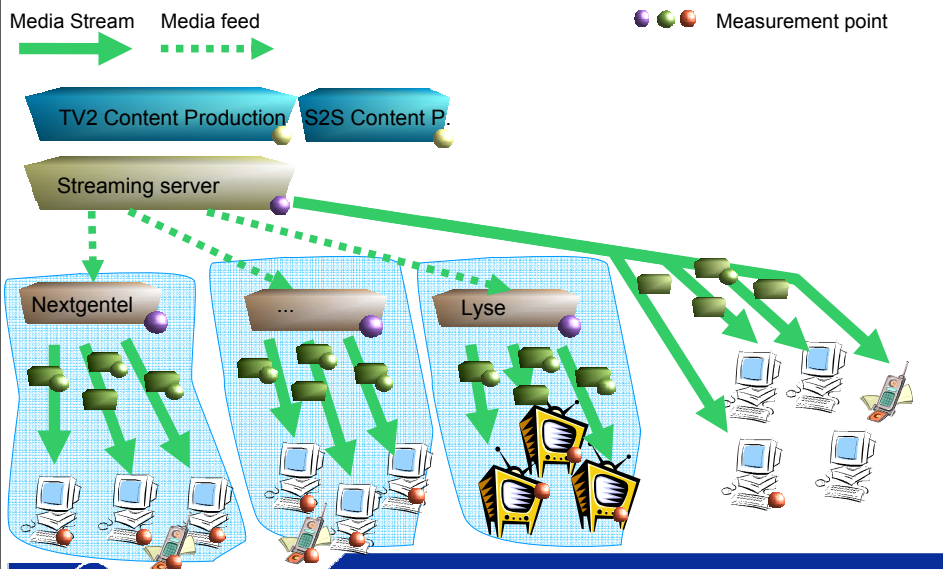
MOVIS gives the providers a tool to detect video streaming problems.

MOVIS – Participating Institutions

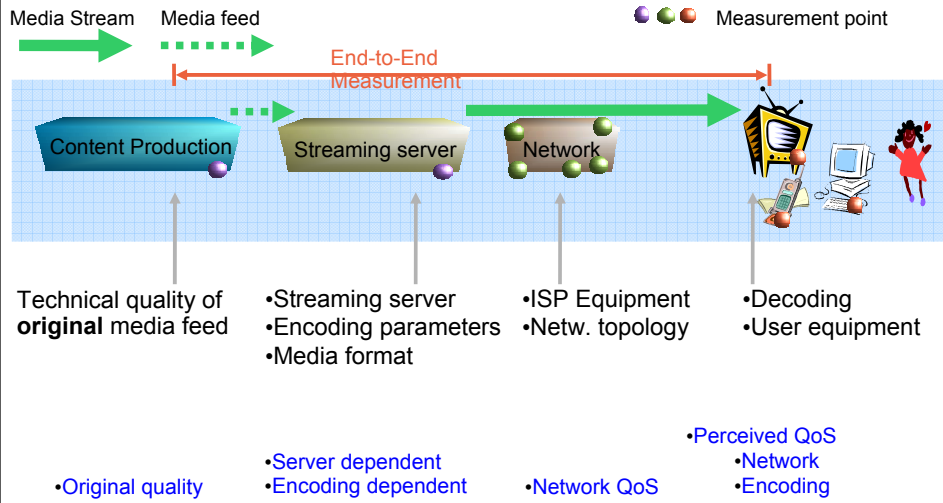
Research Project supported by the VERDIKT programme of the Research Council of Norway



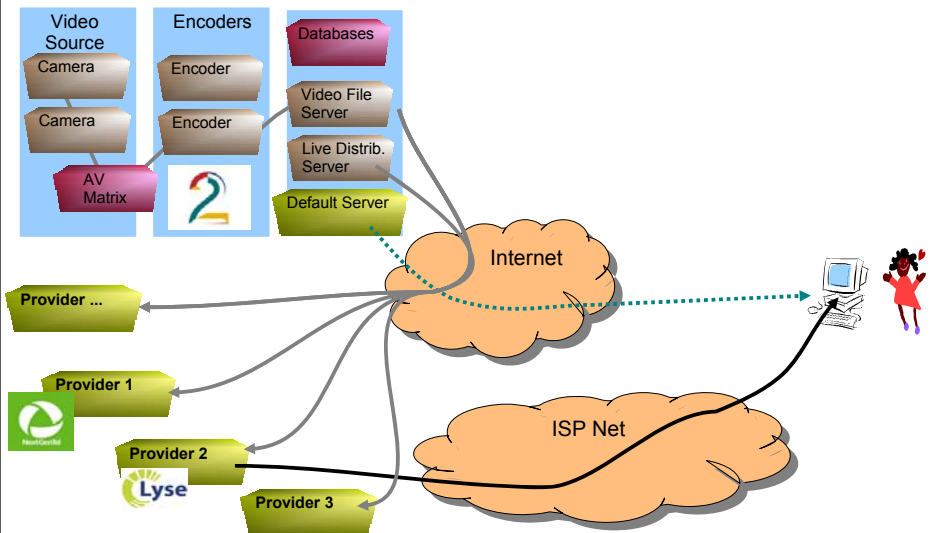
MOVIS – Technical Scenario



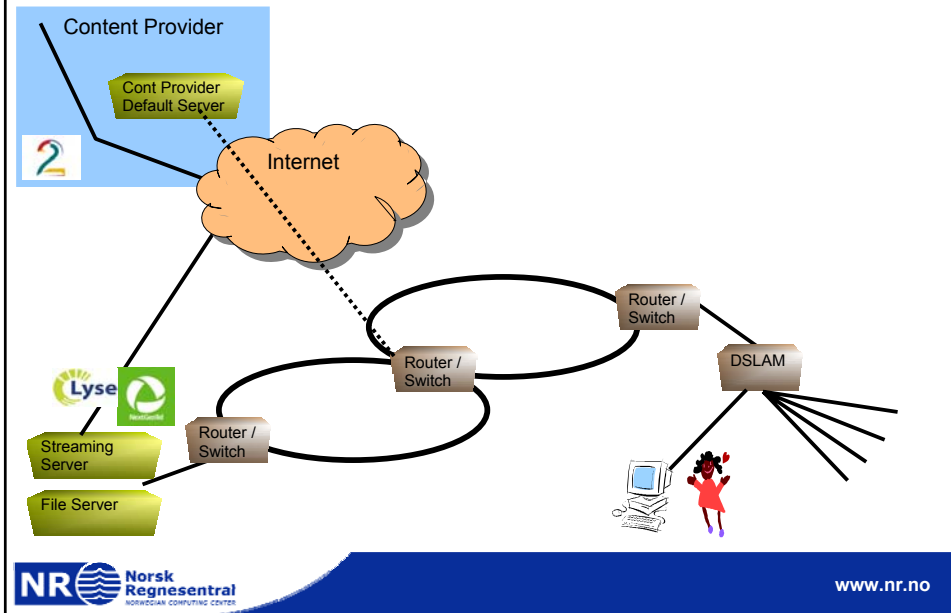
MOVIS – Delivery Chain



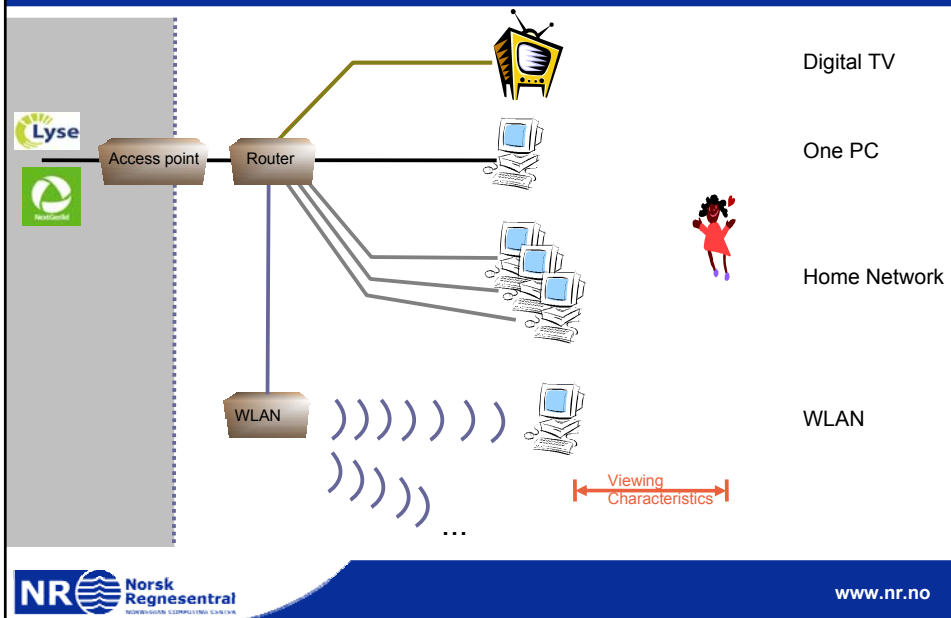
Streaming Content Distribution



Infrastructure at ISP

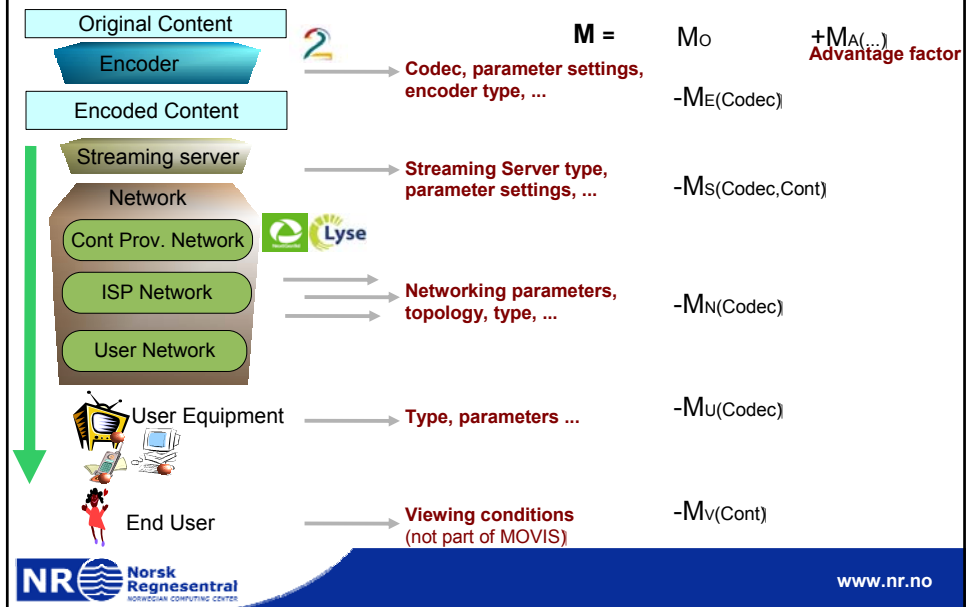


End user equipment scenarios



MOVIS-factor M

a measure for streaming video quality

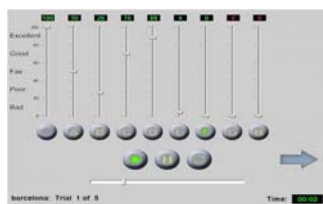


SAMVIQ – ITU-R BT.700

IRT Institut für Rundfunktechnik



- ▶ ITU Standard for Video Quality Assessment in multimedia applications (PC)
- ▶ **Subjective Method: uses test panel for evaluations**
 - **Measure impact of different bit rates (MOVIS WP2)**
 - **Minimum rate for specified quality (MOVIS WP2)**
 - **Impact of network errors (MOVIS WP3)**



Show sequences of video in different qualities to persons in test panel who give ratings

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Sequences used in assessment



Skiing – bright



Rugby – few details

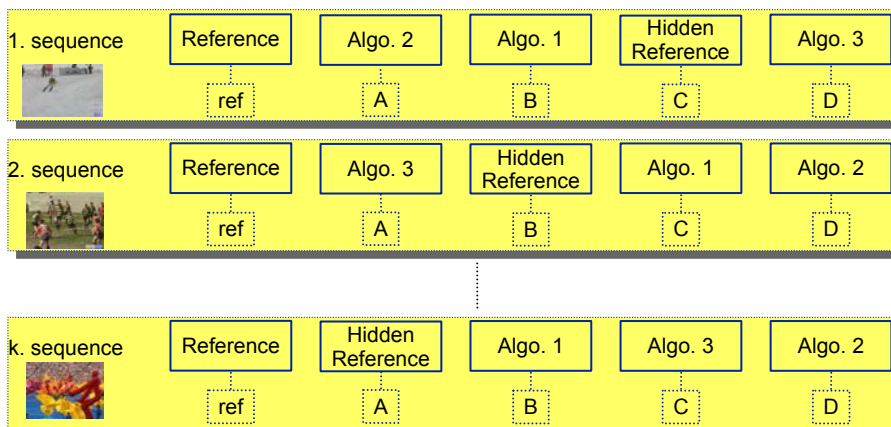


Barcelona - colourful



Rainman – high frequencies

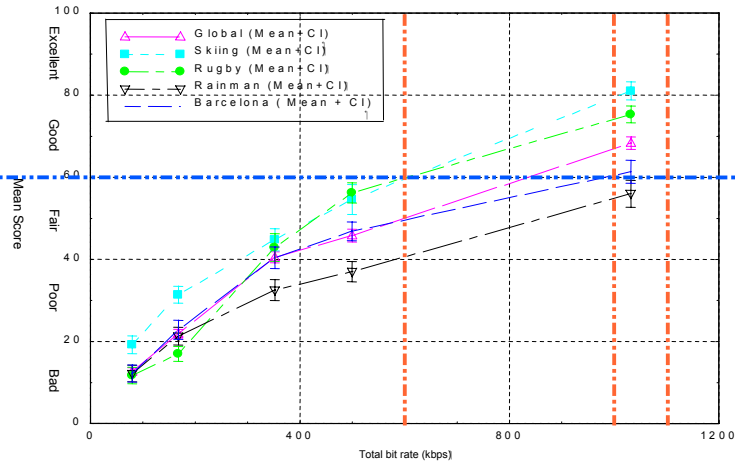
SAMVIQ: Structure of test sessions



Example: Algo. 1 = WM9, CIF – 168kbps, Algo. 2 = WM9, CIF, 1032kbps

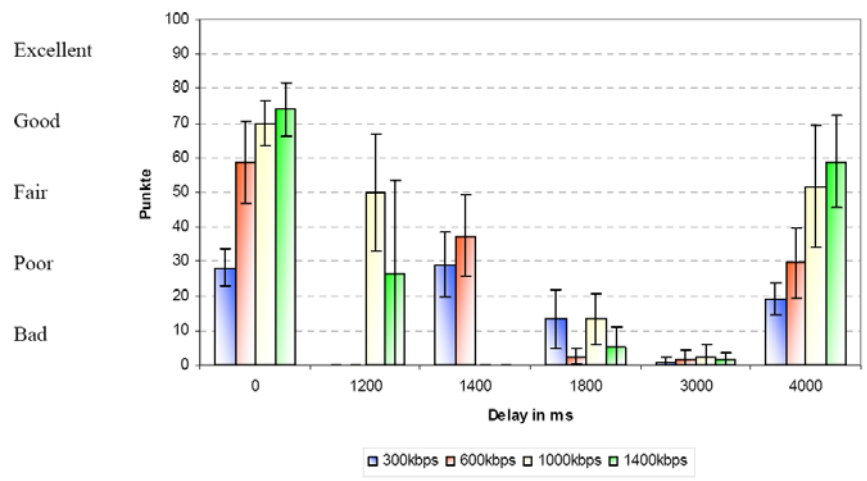
Results: bit rate (encoding)

Windows Media 9
CIF format
all sequences



Results: Delay

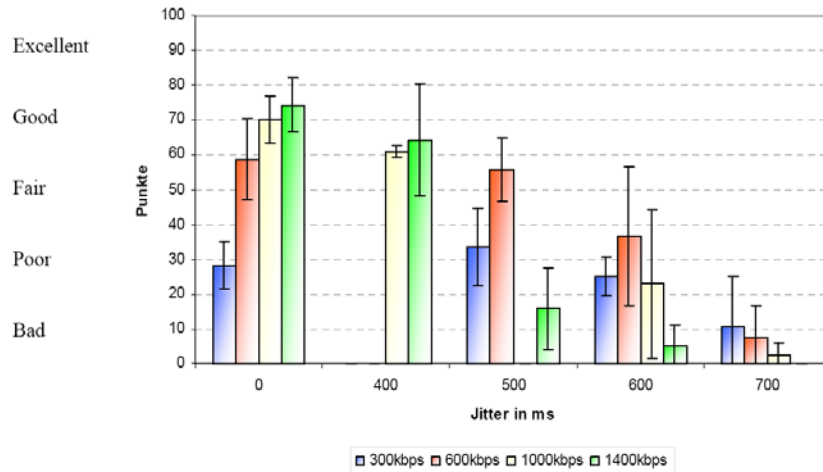
Results due to delay for all bit-rates



Results: Jitter (=Delay variation)



Institut für Rundfunktechnik Results due to jitter for all bit-rates



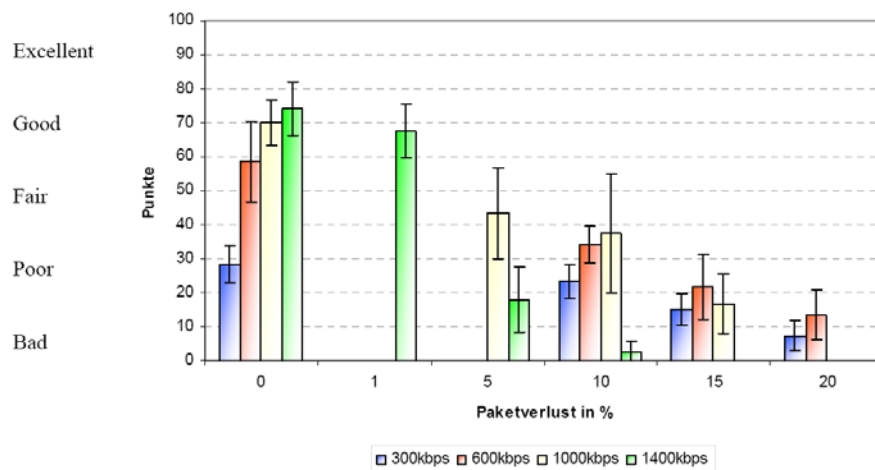
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Results: Packet Loss



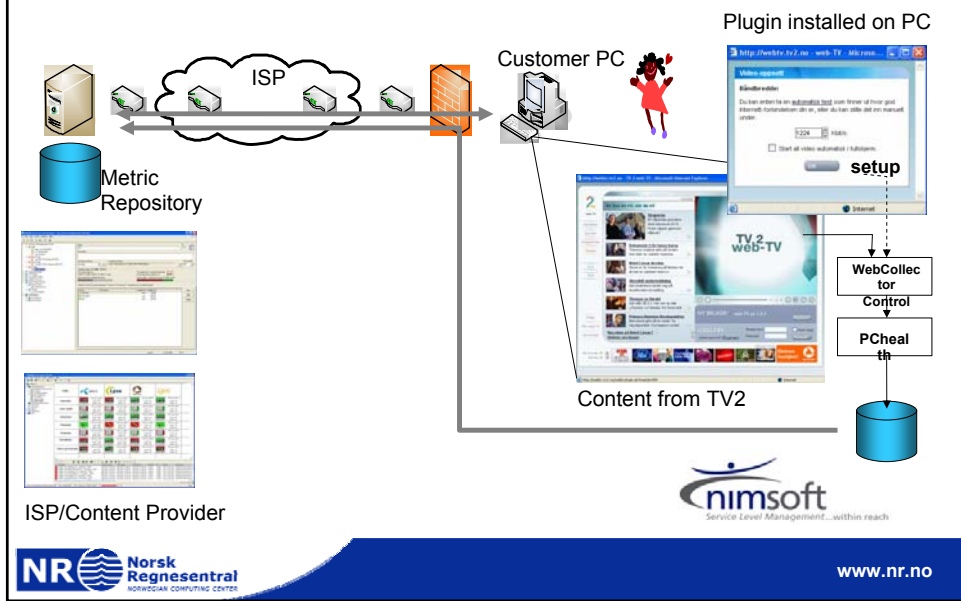
Institut für Rundfunktechnik Results due to packet loss for all bit-rates



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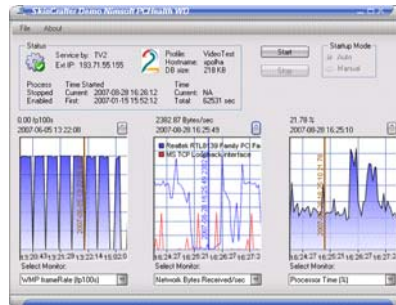
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Implementation



The Dashboard

- Various user interfaces available for service providers
- Dashboard as overview by provider / county
- Detail view providing parameters



Conclusions

- ▶ **MOVIS**
 - analysed metrics for video quality measurement
 - developed a model for end-to-end quality rating
 - performed a subjective analysis of video quality
 - based on encoding parameters
 - based on networking conditions
 - implemented a prototype for video quality measurements



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