Media Streaming: Pushing the Envelope

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Today: Everywhere, to any device, anytime …

■ **Segmented adaptive HTTP streaming works great!**
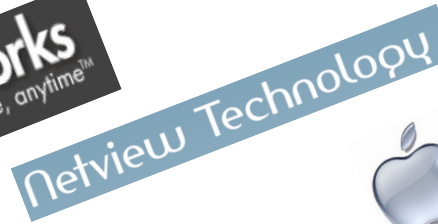
— No, it is not perfect…
  - protocol optimizations for ON-OFF traffic
  - fairness
  - adaptation and request strategies
  - inefficient storage and retrieval
  - …

— Still, the technology manages to support millions of concurrent users in broadcast- and VoD-like scenarios!
  We have made it useful…

Trends I

- Topic based, on-the-fly composition using search
- Personalized playlists
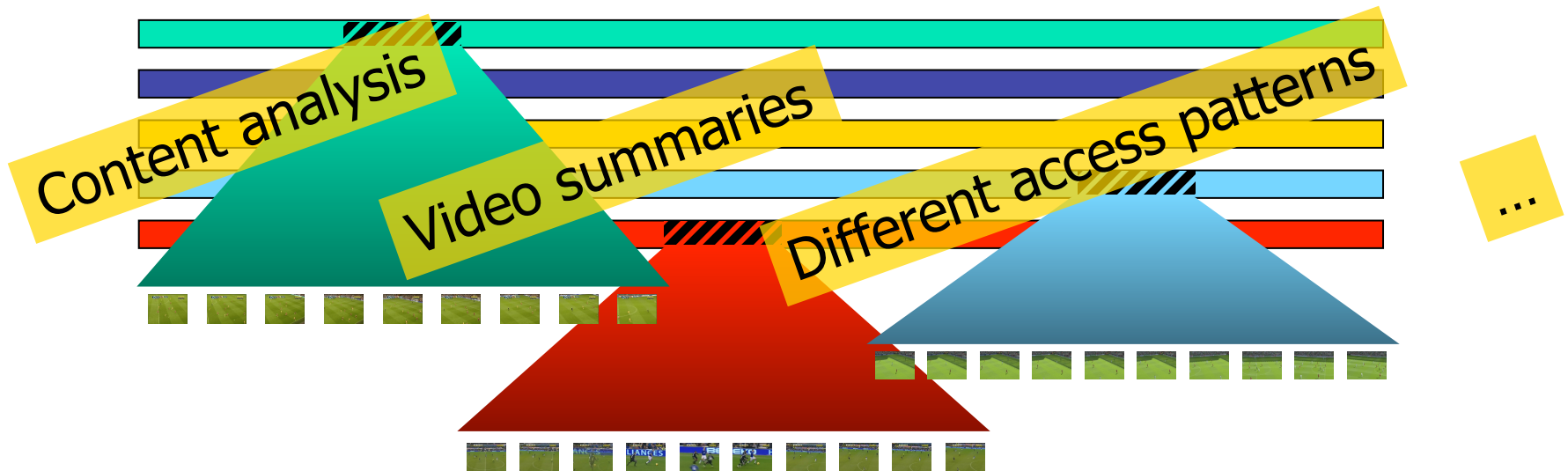
"Give me all the goals scored by Steven Gerrard in 2010 using the right foot"

"Give me a 10-minute summary of TCP congestion control
from lectures by Van Jacobsen, Vinton G. Cerf and Mark Allman "

"Give me the 5 most spectacular car chases from movies made in 1990"

Trends II

- From single camera linear videos to
  - multi-/free-/3D-view
  - panorama
  - super resolution
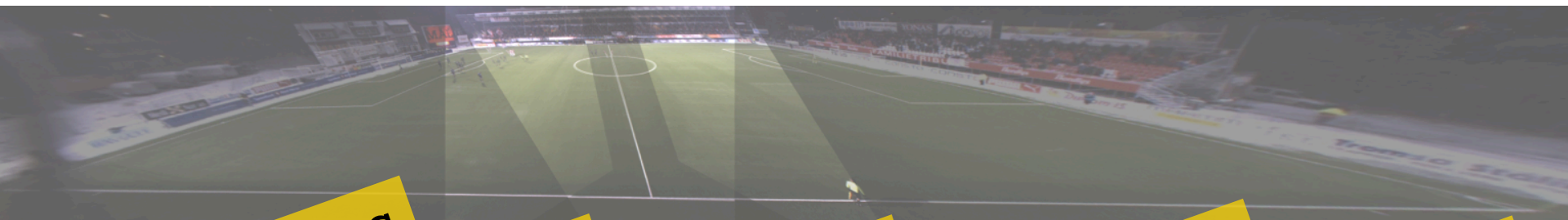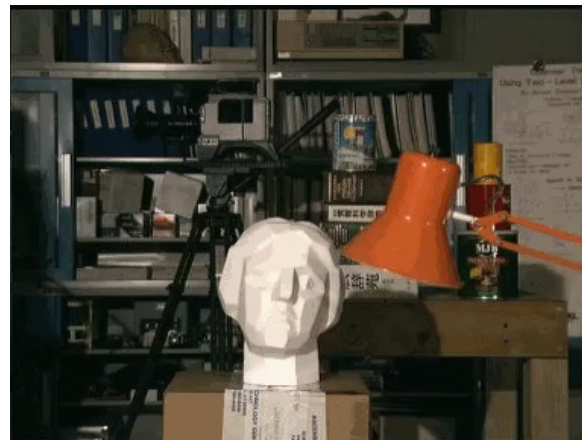
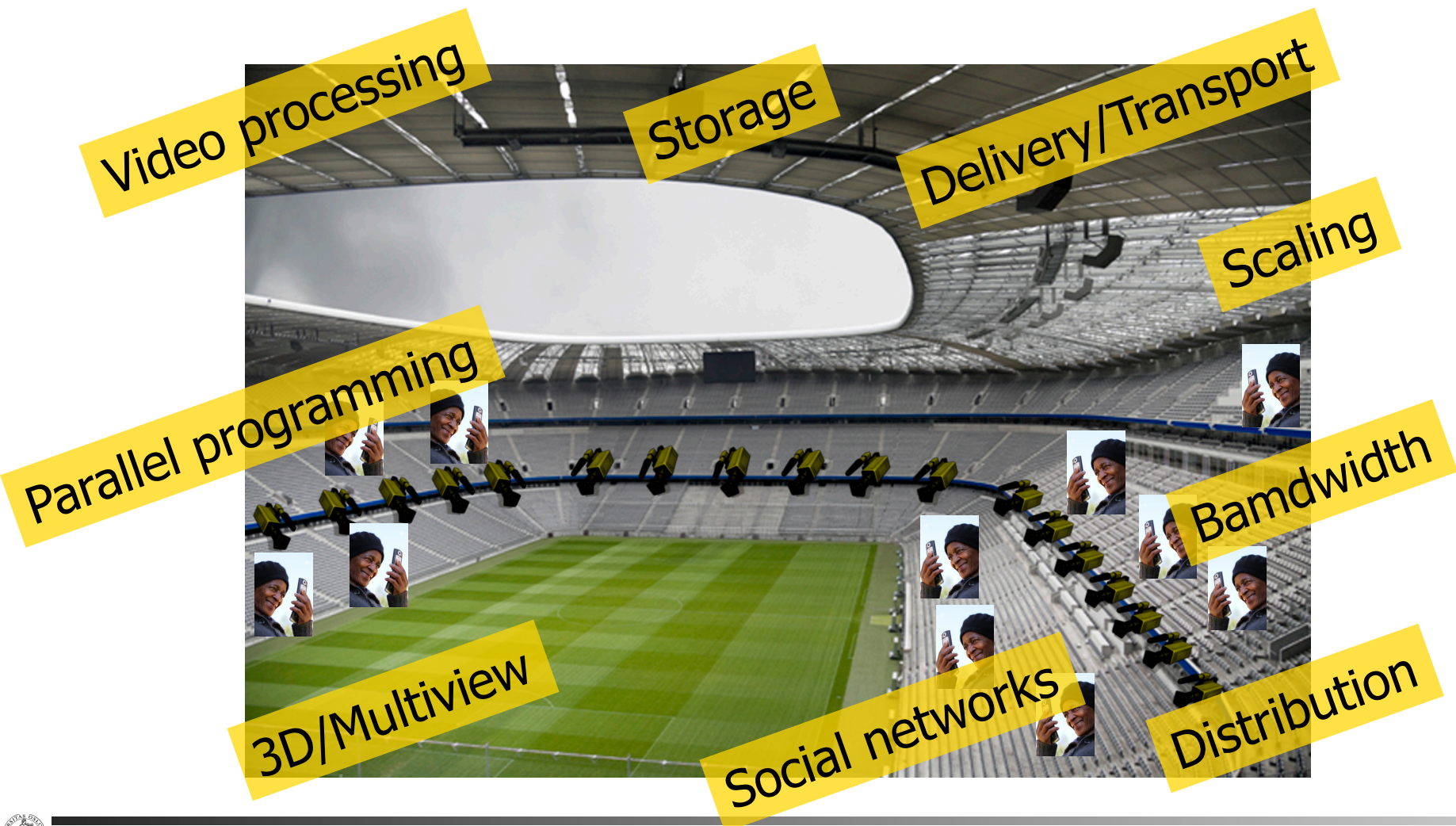Video processing
Feature extraction
Depth information
Distortion correction
Storage and delivery
...

Trends III

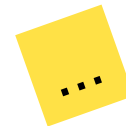- From single producers to allowing everyone to make and distribute videos (n:1, n:m)

Video processing

Storage

Delivery/Transport

Scaling

Parallel programming

Bamdwidth

3D/Multiview

Social networks

Distribution

# Trends IV

- Mobility

oscillating bandwidth

battery lifetime

…

NOSSDAV challenges…

- We still need traditional NOSSDAV-style system support, but at a much larger scale
  - complex image (vision) processing needs to scale
  - massive real-time computations
  - high-rate data movements
  - massive sharing (n:m)
  - …

  ➡ collaboration between multimedia systems people with vision and high performance computing necessary?

- People are moving around – mobiliy

Thank you!
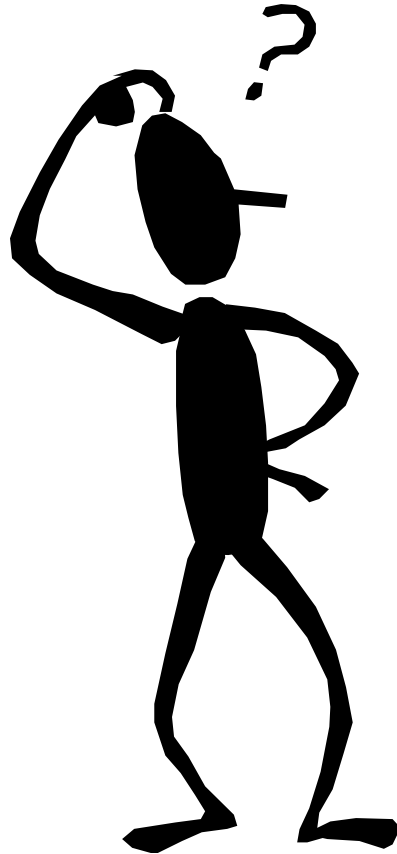
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[simula . research laboratory]
- by thinking constantly about it