



MPEG-DASH: Driving The Growth Of Streaming Using The New HTTP Standard

Mike Luby, Qualcomm

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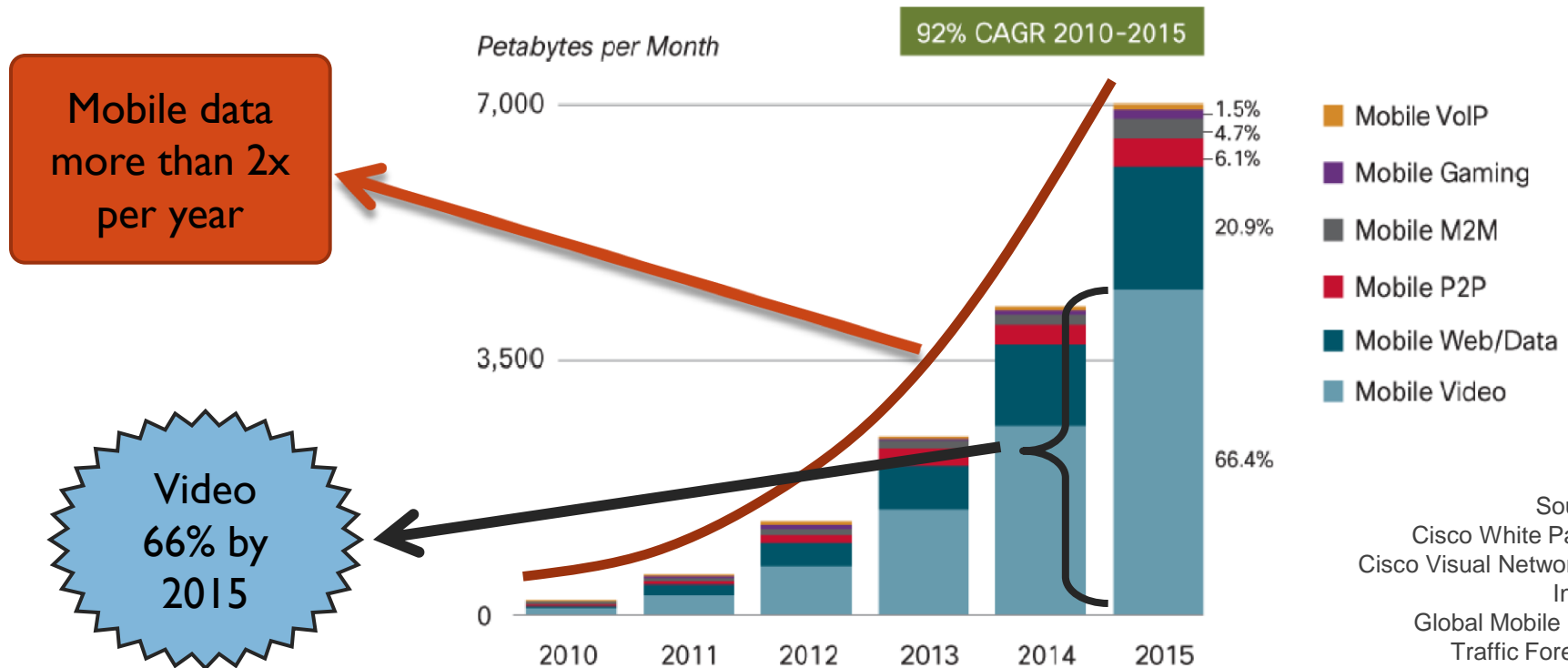
David Price, Ericsson

Iraj Sodagar (Moderator), Microsoft

Streaming Media West 2011

Video will dominate the Internet and Mobile

- ▶ Internet: Real-time video is 50% of the traffic at peak periods
 - ▶ notably 30% from Netflix and 11% from Youtube
- ▶ Mobile: Video traffic is growing exponentially & is a large portion.



Source:
Cisco White Paper:
Cisco Visual Networking
Index:
Global Mobile Data
Traffic Forecast
Update, 2010-2015

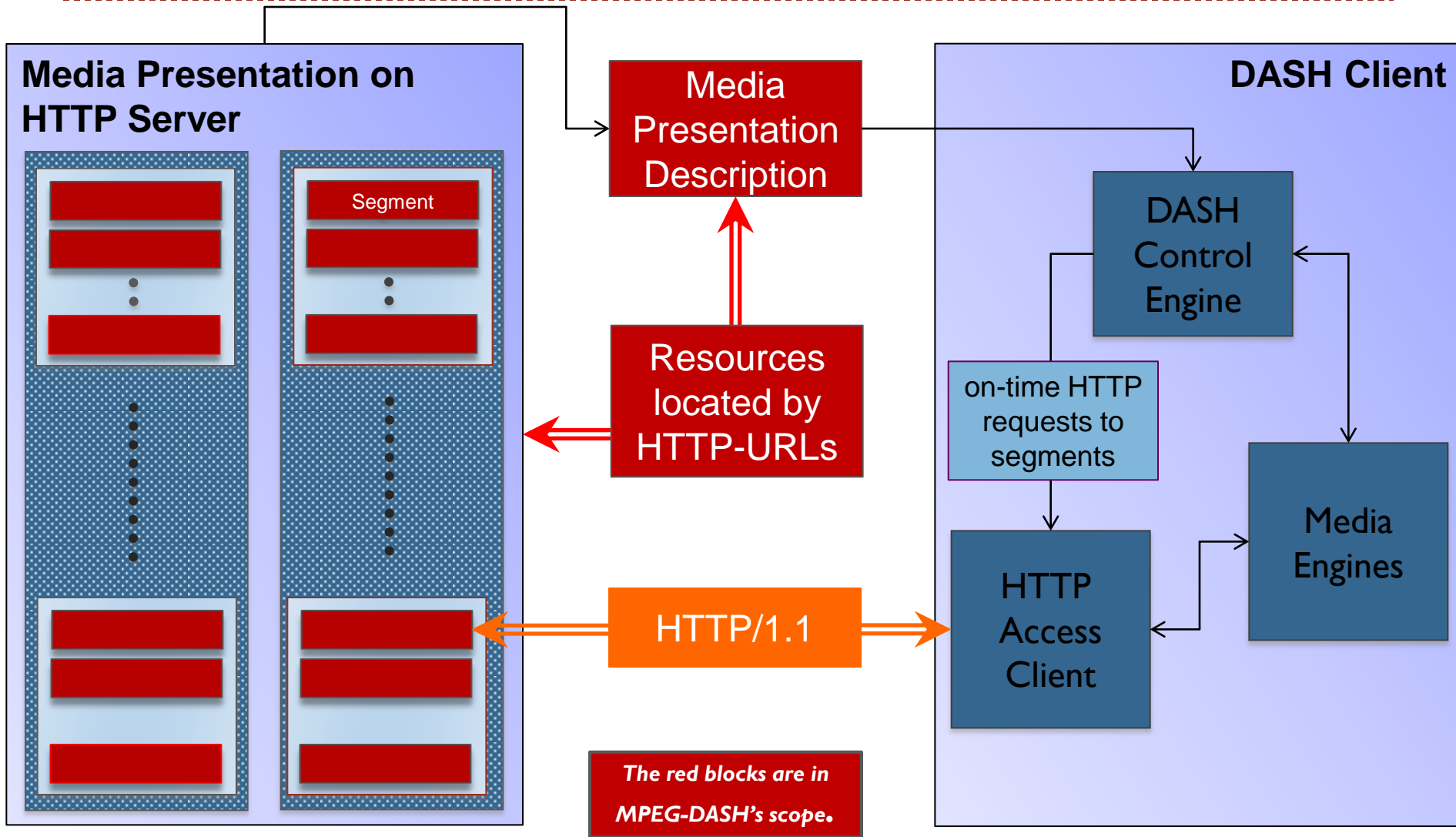
VoIP traffic forecasted to be 0.4% of all mobile data traffic in 2015.

Source: Cisco VNI Mobile, 2011

MPEG-DASH Standard

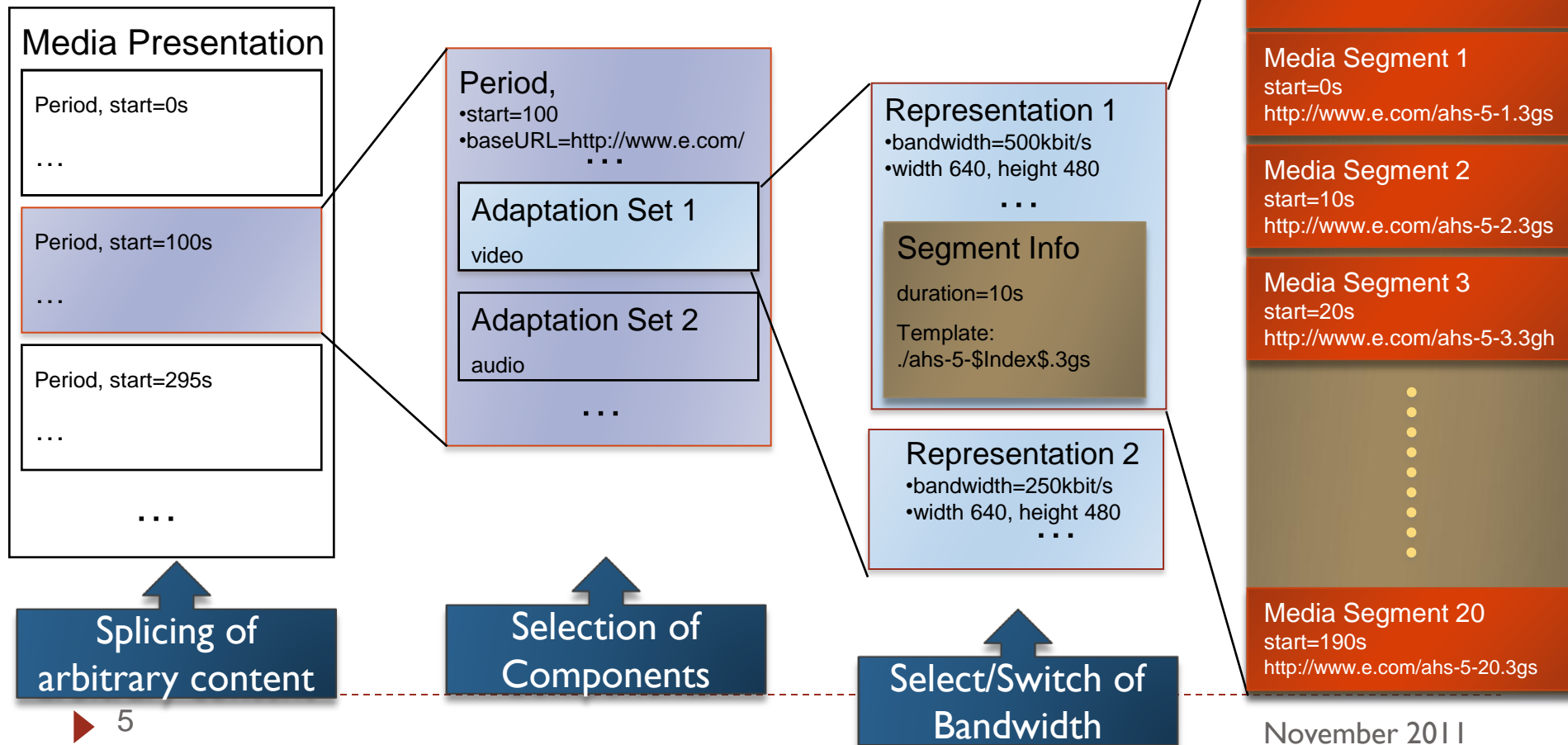
- ▶ MPEG: Moving Expert Group (MPEG) is working group of ISO/IEC: JTC1/SC29/WG11
 - ▶ Developed MPEG-2, MPEGV-4, AVC, MPEG-7, MPEG 2I and others
- ▶ DASH: Dynamic Adaptive Streaming of HTTP
 - ▶ A specification defining standard delivery format for streaming multimedia over Internet.
 - ▶ Defines minimum formats for achieving interoperability between servers and clients
- ▶ Developed by industry
 - ▶ Over 50 companies and 90 experts
 - ▶ Competition and collaboration to achieve the best solution.

The Standard's Scope



Media Presentation Description (MPD) Data Model

- ▶ MPD describes accessible Segments and corresponding timing



Highlighted Features

- ▶ Live, on-demand and time-shift services.
- ▶ Efficient and ease of use of existing CDNs, proxies, caches, NATs and firewalls.
- ▶ Control of entire streaming session by the client.
- ▶ Independency of request size and segment size (byte range requests).
- ▶ The concept of selectable and switchable streams.
- ▶ Support of seamless switching of tracks.
- ▶ Supporting various segment formats:
 - ▶ ISO base media FF and MPEG-2 TS.
 - ▶ Codec independent: guidelines for integrating any other format.

Highlighted Features

- ▶ Simple splicing and (targeted) ad insertion.
- ▶ Support for efficient trick mode.
- ▶ Clock drift control.
- ▶ Content descriptors for protection, accessibility, rating, etc.
- ▶ Signaling, delivery, utilization of multiple DRM schemes.
- ▶ Manifest fragmentation and assembly for external referencing.
- ▶ Multiple base URLs for the same content.
- ▶ Support for Scalable Video Coding (SVC), Multiview Video Coding (MVC) and any interdependent coding.
- ▶ Definition of quality metrics for logging processes.
- ▶ Profile: restriction of DASH and system features.

Next Steps

- ▶ **Complete the standardization work**
 - ▶ Specification completion in the next few months;
 - ▶ Conformance, interoperability and reference software.
- ▶ **Make it simple to deploy**
 - ▶ DASH is rich and simple at the same time, understand more detailed market needs.
 - ▶ Collaborate with system creators on how to integrate DASH in various systems.
 - ▶ Integrate it into the web – HTML5.
 - ▶ Promotional efforts: Licensing, interops, etc.
- ▶ **Get it deployed.**



MPEG-DASH

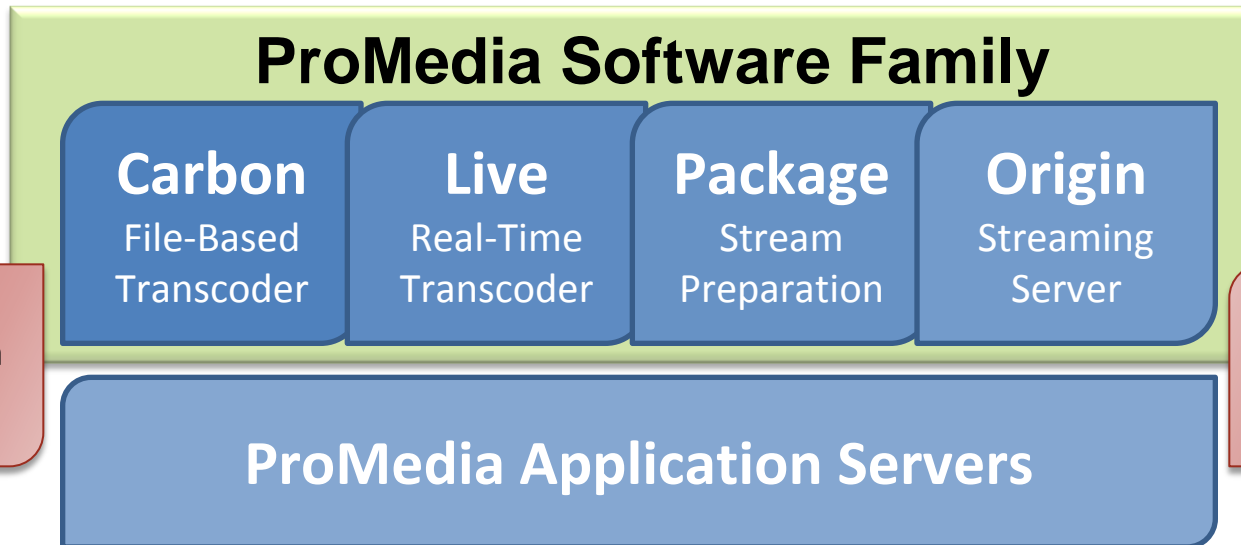
Key Features for Mobile

- Adaptive-optimized format → superior user experience
 - Standard web servers → converged services
 - Common encryption → higher value content
 - Unmuxed A/V → greater efficiency
 - Modern file format → greater flexibility
 - Open standard → commonality confidence
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- ▶ A leader in streaming media over **HTTP for 5 years** – SmoothHD, HDNI, HLS and HDS.
- ▶ Pushing **8.5 Terabits/s today**, many times that tomorrow – HTTP is the only way we can scale to build the future broadcast network.
- ▶ **Convergence** allows for improved quality of end-user experience by allowing encoding, delivery and client companies to FOCUS.
- ▶ Akamai believes that DASH offers a viable solution to HTTP streaming fragmentation and **is committed to supporting DASH** as it builds out the next generation broadcast network.
- ▶ Timelines, profile support and product details will be **dependent on customer demand** and have not yet been determined.
- ▶ We can use our **intelligent cloud** to do some interesting things at the edge with DASH that standard HTTP servers cannot.

Harmonic DASH Solution

- ▶ A new family of software and appliance solutions for Adaptive Streaming
- ▶ Complete solution SW upgradable to MPEG DASH *



(*) Requires special SW license



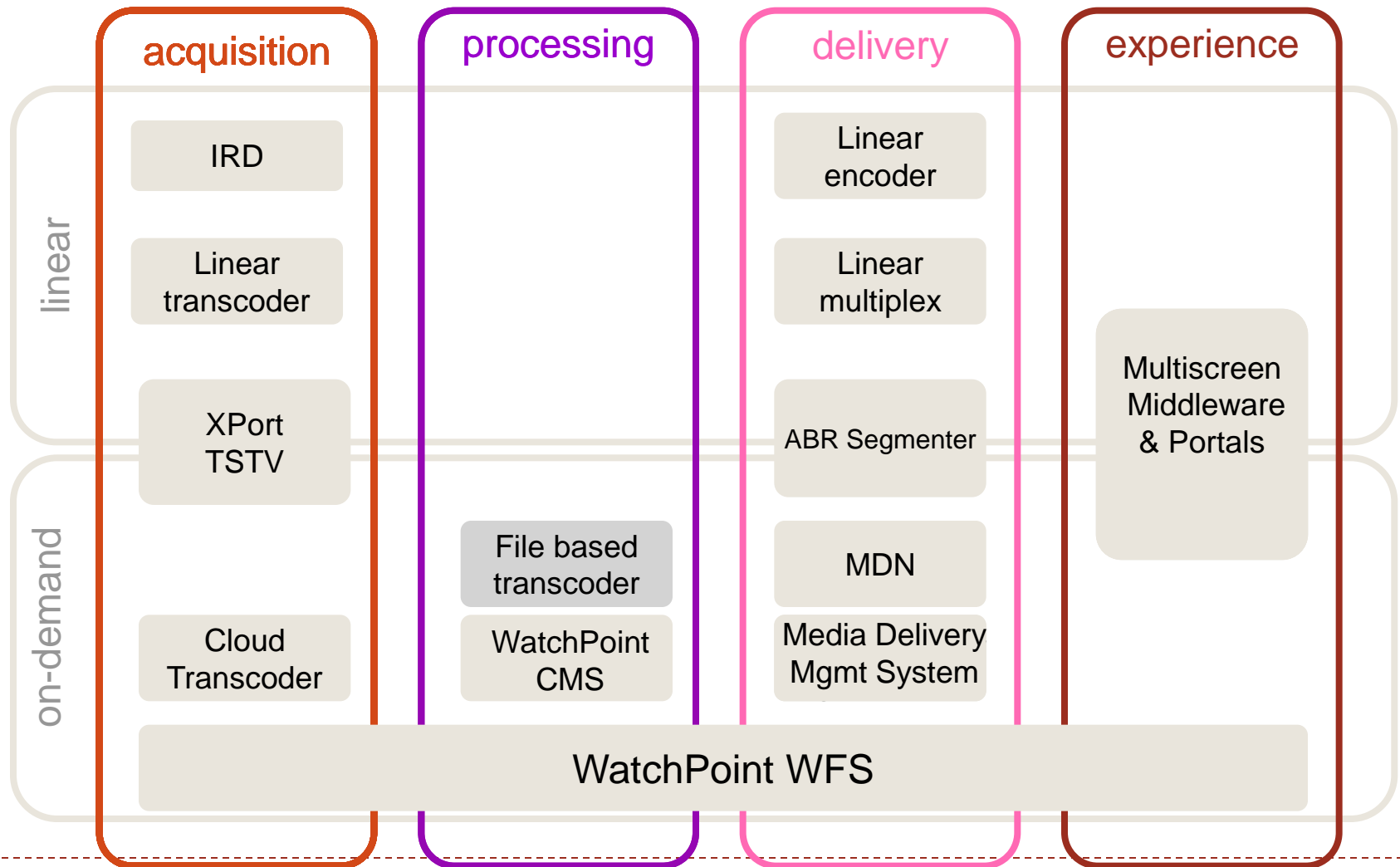
Key features for scalable on-demand services

- Single file format → cache efficiency
- Standard web servers → lower CDN costs
- Common encryption → DRM agnostic
- Unmuxed A/V → multi-language
- Modern file format → simplicity

An open standards development process



Ericsson multiscreen ecosystem



Questions?
