OMA Service Enablers for Broadcast 2.0

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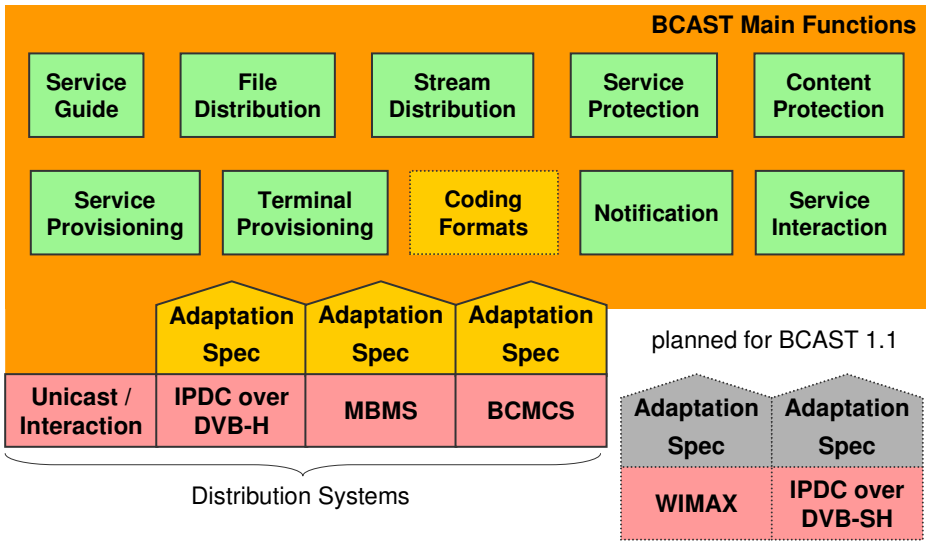
Broadcast 2.0

- "A wide field"
  - a mix of different services related to "a/v media content"
  - innovative services over classic broadcast bearers
  - digital media content and related interactive applications
  - anytime, anywhere, any device, any network
- Focus of this talk: Related enablers as defined by the Open Mobile Alliance
  - Mobile Broadcast Services – OMA BCAST
    - Mobile TV services: free vs. encrypted, linear vs. podcast-type
    - Simple interactivity
    - Broadcast and Unicast convergence
  - Interactive Broadcast Services – OMA RME
    - Interactive applications synchronized with linear content

OMA Enablers for Interactive Mobile TV – Landscape

Rich Media Interaction Support Status: Spec to be completed in 2008	**Application Layer** **OMA RME** *"Rich Media Environment"*
Service Enabler for Mobile TV Status: Spec in Candidate status, IOP Testing ongoing	**Service Layer** **OMA BCAST** *"Mobile Broadcast"*
IP Layer	
Distribution System Optimized for mobility, battery efficiency, error resilience	**Bearer Layer** **DVB-H** **3GPP MBMS** **3GPP2 BCMCS** **Unicast**

BCAST – Functions and Structure



BCAST – Service Guide

Describes all aspects of the service offering

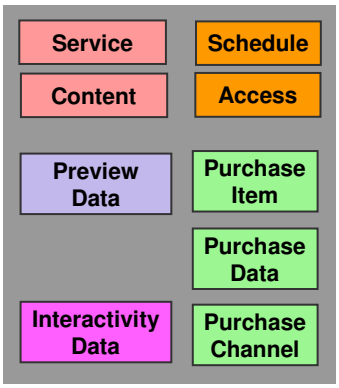
- information describing the service, **displayed to the user**
- information about how to **purchase** access to the service
- **technical information** for the terminal to access the service

Datamodel allows different Services

- Broadcast streaming
- 3G Unicast streaming
- "Cachecast" (broadcasted files)
- **Service Previews**
- **Simple interactions**

Technical realization:

- Representation as XML fragments
- Packetized fragments transmitted via FLUTE/ALC



BCAST – Service Protection

Broadcast service can be received by all terminals in the covered area.

→protect revenue by access control and restriction

- Encrypting the service
- Delivering the rights (keys) to authorized (i.e. usually paying) users only

OMA BCAST defines two Profiles for Service Protection.

OMA DRM Profile

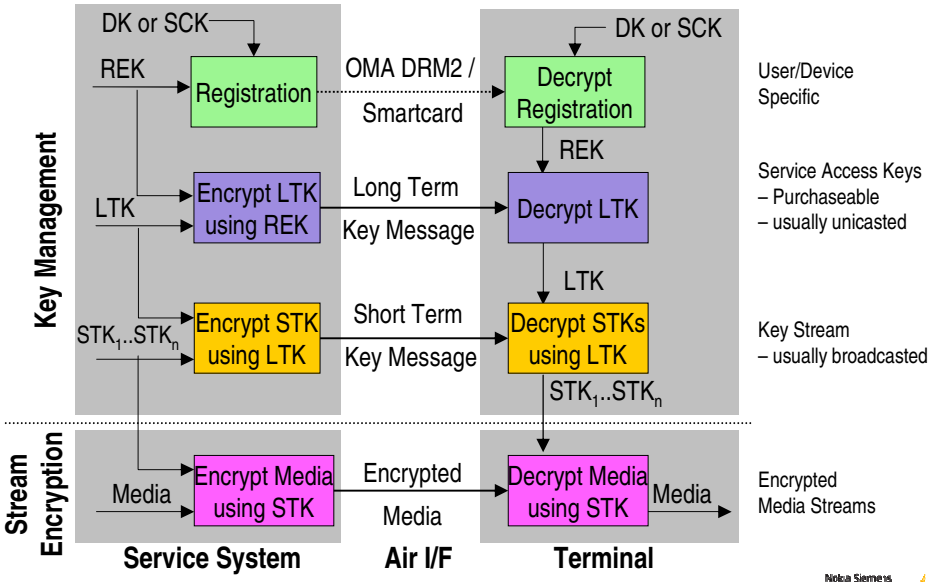
leverages OMA DRM 2.0 (with extensions) for rights acquisition

Smartcard Profile

integrates the 3GPP/3GPP2 Smartcard into the rights acquisition process, tying it to MNOs' user management

DRM Profile	Smartcard profile
OMA DRM 2.0 REK	3GPP GBA_U SMK
SEK/PEK via OMA DRM ROAP	MIKEY LTKM
STKM	MIKEY STKM
IPSec, *SRTP*, ISMACryp 1.1	

BCAST – Key Hierarchy for Service Protection



Interactivity in Mobile TV – BCAST vs. RME

BCAST: Basic Interactivity

- **Send SMS**
- **Enable basic voting (SMS or Web page)**
- **Display web pages**
- **Slow updates: 10s of seconds up to several minutes**

RME: Rich Media Interactivity

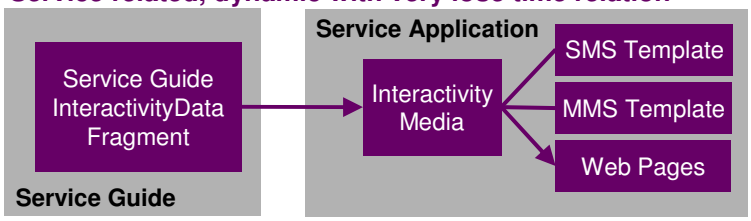
- **Streaming service with integrated interactive multimedia objects**
- **Appealing screen layout**
- **Tightly synchronized with video**
- **Server-driven fast updates**

BCAST – Basic Interactivity Support

Metadata in Service Guide and Services support basic interactivity (like following a link or selecting a voting option in a template)

Service Guide related, mostly static

Service related, dynamic with very lose time relation



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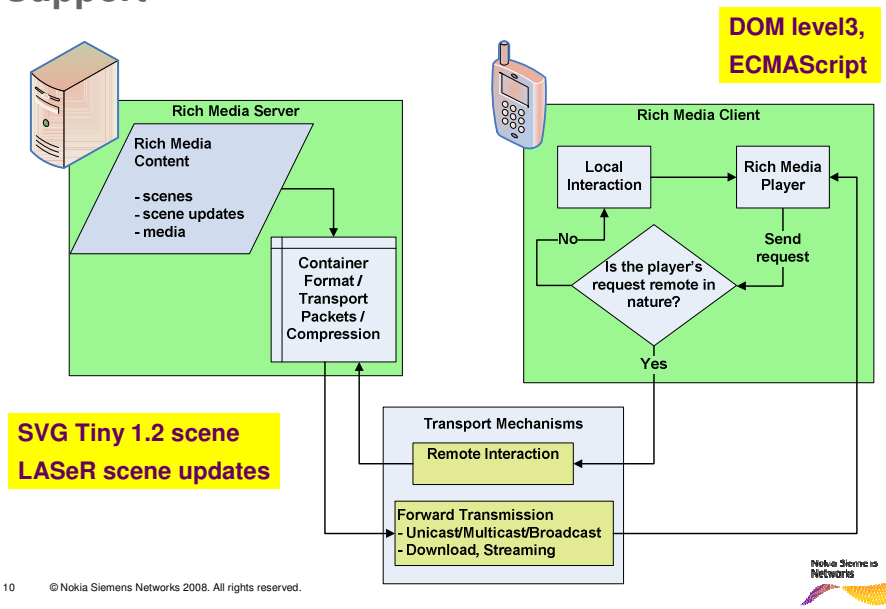
RME – Architecture for Rich Media Interactivity Support



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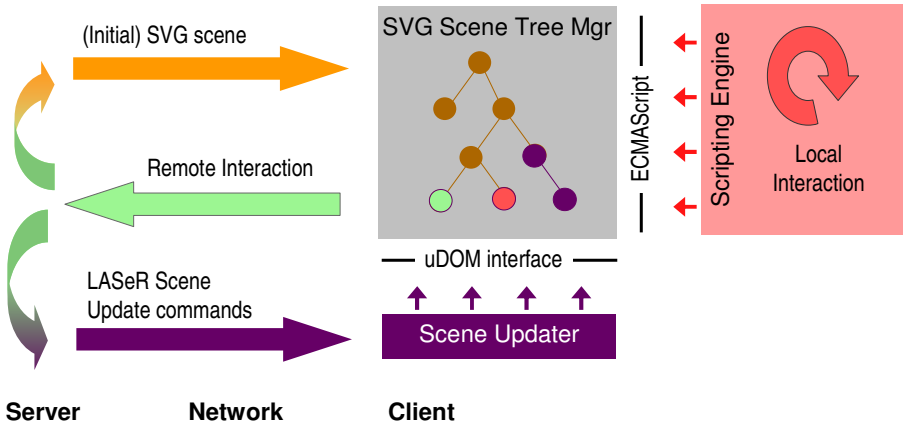
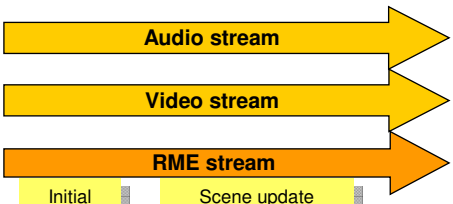
RME – Basic Principle

Ingredients: SVG Scene Tree + LASeR Update Commands + ECMAScript + Remote Interactivity



RME Example – Rendering of service specific, interactive menu



Initial Scene Description

Scene update with voting buttons and associated scripts

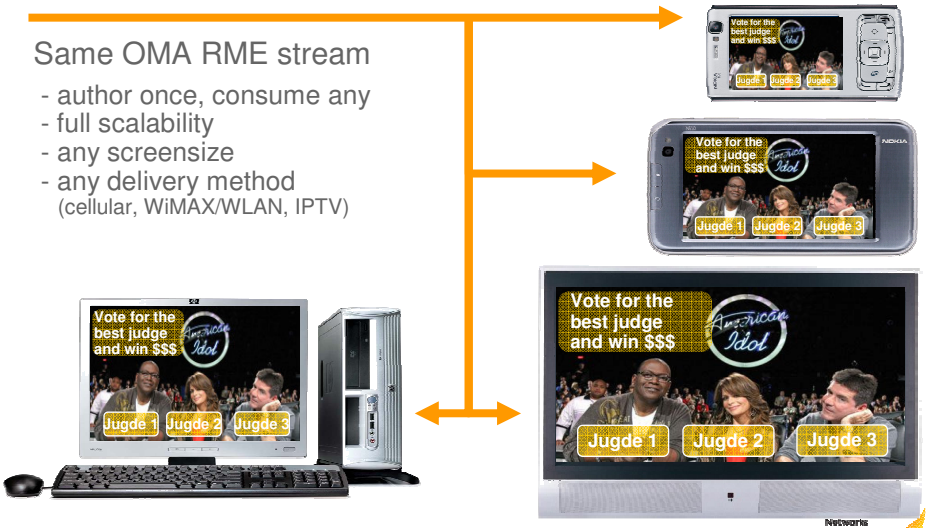
```
<lsr:Insert href="nano">
  <script>
   function vote(selection) {...}
  </script>
  <rect x="0" y="0" width="120" height="50" rx="5" fill="..."/>
  <text x="10" y="10" font-size="12" font-family="Verdana" fill="none"/>
  Vote for the best judge and win $$$</text>
  <rect x="0" y="250" width="90" height="30" rx="5" fill="..." onclick="vote(1)"/>
  <text x="10" y="260" font-size="12" font-family="Verdana" fill="none"
onclick="vote(1)">
  Judge 1</text>
  -- same for Judge 2 and 3
</lsr:Insert>
```


Courtesy of Toni Paila, Nokia

RME – Scalability across consumption environments

Same OMA RME stream

- author once, consume any
- full scalability
- any screensize
- any delivery method
  (cellular, WiMAX/WLAN, IPTV)



Courtesy of Toni Paila, Nokia

Summary and Outlook

- Two OMA Enablers for interactive Mobile TV exist or are nearing completion
  - OMA BCAST – support for Mobile TV Services
  - OMA RME – with the potential to revolutionarize interactive Mobile TV
- OMA BCAST is currently starting the work on the next releases (BCAST 1.1 and 2.0).
- Upcoming challenges
  - integrate BCAST and RME for improved user experience
  - bring mobile and fixed line TV closer together
  - support advertisements in the mobile (TV) world
  - add support for more IP-based distribution network technologies

Thank You!

BCAST Functions

Function group	Description
Audio/Video Codecs	High compression ratio codecs for audio and video
Service Guide	Service Discovery, Service List, Service Metadata
Stream Distribution	Protocols for Live Streaming
File Distribution	Protocols for File broadcast point to multipoint
Service Protection	Encryption methods to control access to services
Content Protection	Encryption methods to control access to content
Notifications	Real-time messages about events
Service Provisioning	Methods to buy access to services and content
Terminal Provisioning	Methods to provide configuration parameters to terminals
Service Interaction	Methods to enrich services with interactivity

BCAST – Content Delivery Protocols

Different protocols for

- real-time content (audio/video streaming)
- non-real-time content (file carousels)