



P2P-Next

<http://www.p2p-next.eu>

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1. INTRODUCTION

Today's context

- **Massive growth in demand for Internet TV**
 - **Traditional CDN** (Wave of growth and interest)
 - **Decentralised P2P** (30-60% of all download traffic)
 - Peer-assisted or **Hybrid CDNs**
- **Market outlook**
 - **Babelgum/Joost & Kontiki**-based services
 - Limited window **Catch-up TV** is common model
 - Movement to **CE devices** is slow
 - **UUSee** and **PPLive** signal success for P2P in China!

Consortium membership

- **Content Providers (BBC & EBU)**
- **Advertisers (MarkenFilm)**
- **CE (Pioneer & ST Microelectronics)**
- **4 x Research Institutes**
- **6 x Universities**
- **Steering Board**
(ISPs and CDN Providers)

Project Statistics:

IP (Networked Media)

21 Partners

48 months

1645 man months

total budget 19.23M€

EC contribution 14.03M€

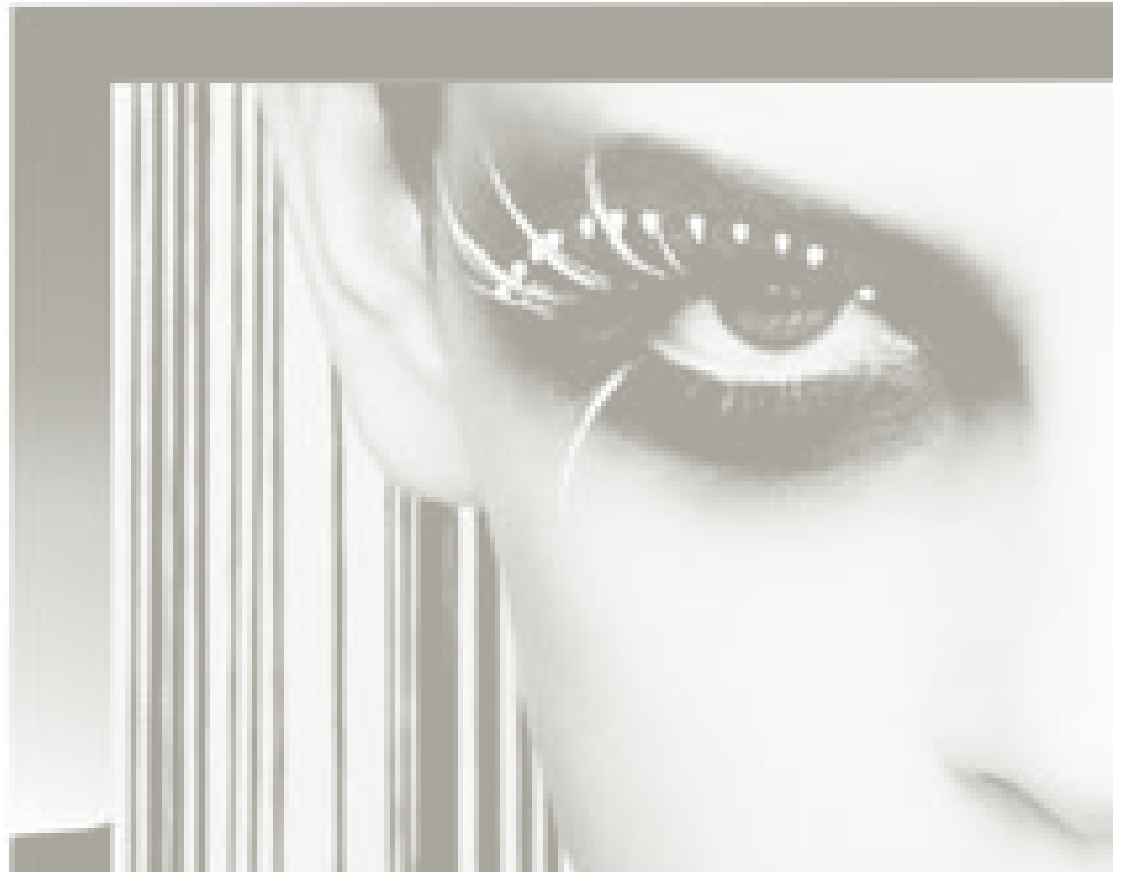
Vision

World leadership in Internet TV using P2P

To develop an open source, efficient, trusted, personalized, user-centric, and participatory television plus media delivery mechanism with social and collaborative connotation using the emerging Peer-to-Peer (P2P) paradigm, which takes into account the existing EU legal framework.

Key outcomes

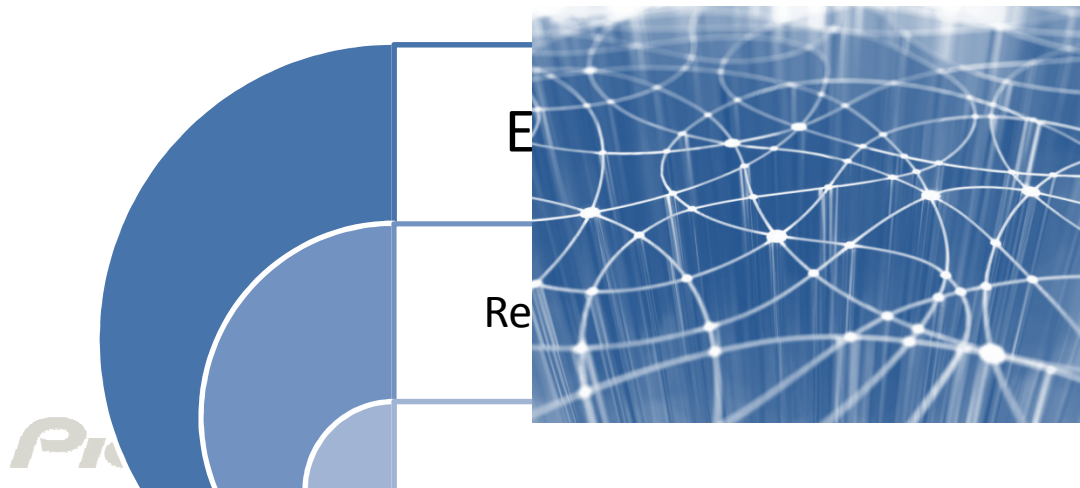
- **Rapid prototyping & living lab feedback:**
25,000+ PC and CE users
- Discover new **sustainable business models** in our living lab – built around legitimate content
 - FTA, targeted ads, PayTV, DL to own, BW as \$
- Participation in **standardisation activities** to drive the technology for global use (incl. DVB, IETF, MPEG, DLNA)



2. CHALLENGES

Basic considerations

- Live and VoD streaming
- Traffic localisation
- High perceived QoE
- Legitimacy
- Monitoring



Socio-technical challenges

- **Flash crowds and Peer churn**
- **Scalable and fair** platform (1.0 share-ratio)
- **Live and VoD experience** with *instant* access
- **Avoiding free-riding** and **incentivising peers**
- Understanding **dynamic nature of P2P**
- **Decentralisation** with high-level QoE (DHT)
- Defending against **many types of attack**
- **Asymmetric of Internet access** (MDC/SVC)

The really hard problems...

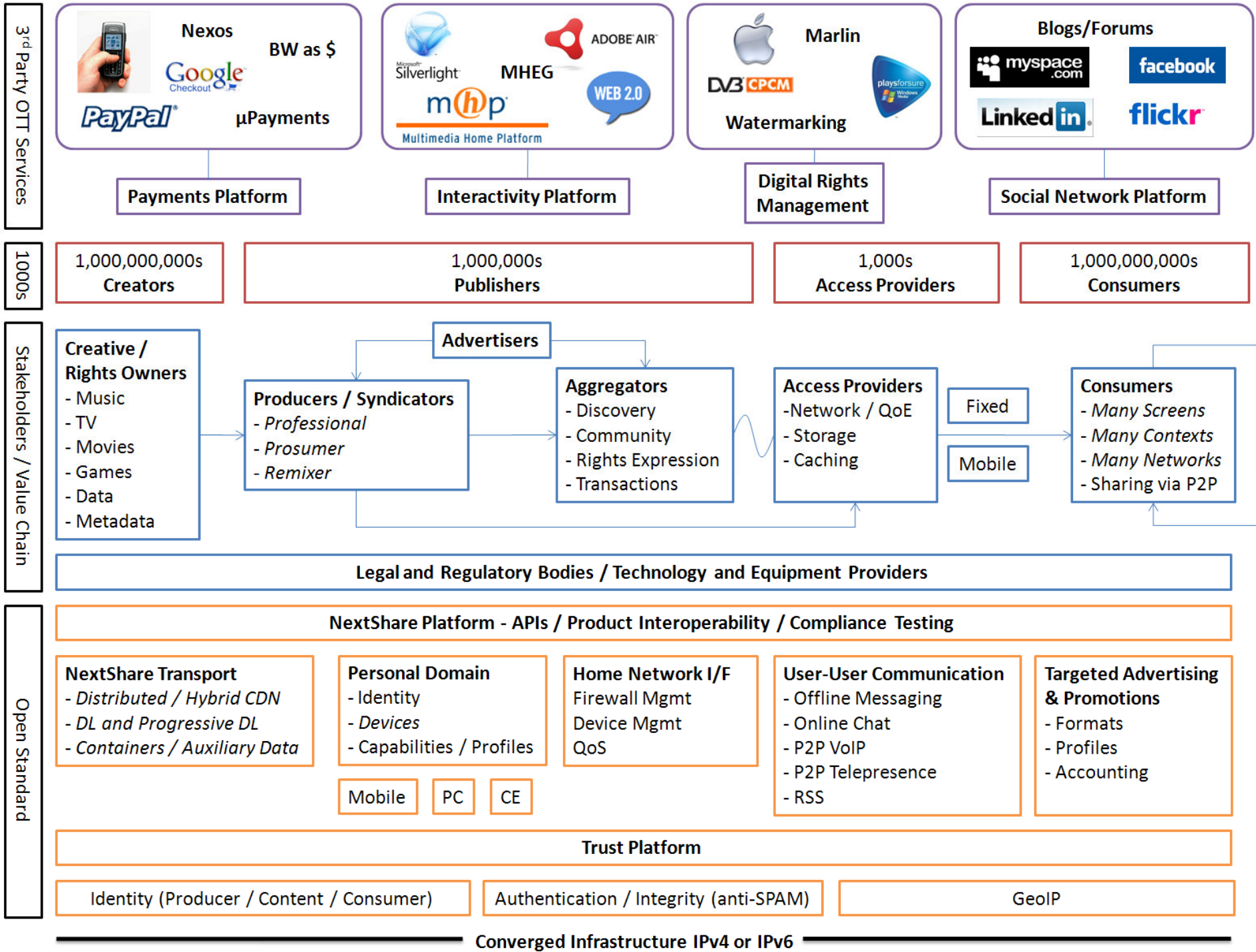
You can only sell the uncopyable...

Immediacy **Personalisation** **Interpretation**
Authenticity **Accessibility** **Embodiment**
Patronage **Findability**

Originator (Kevin Kelly) – www.edge.org



3. NextShare PLATFORM



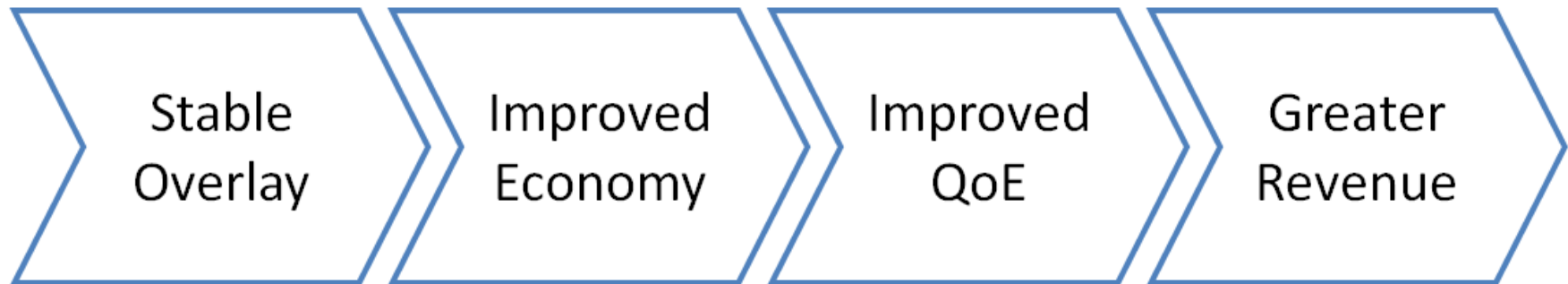
NextShare overlay network

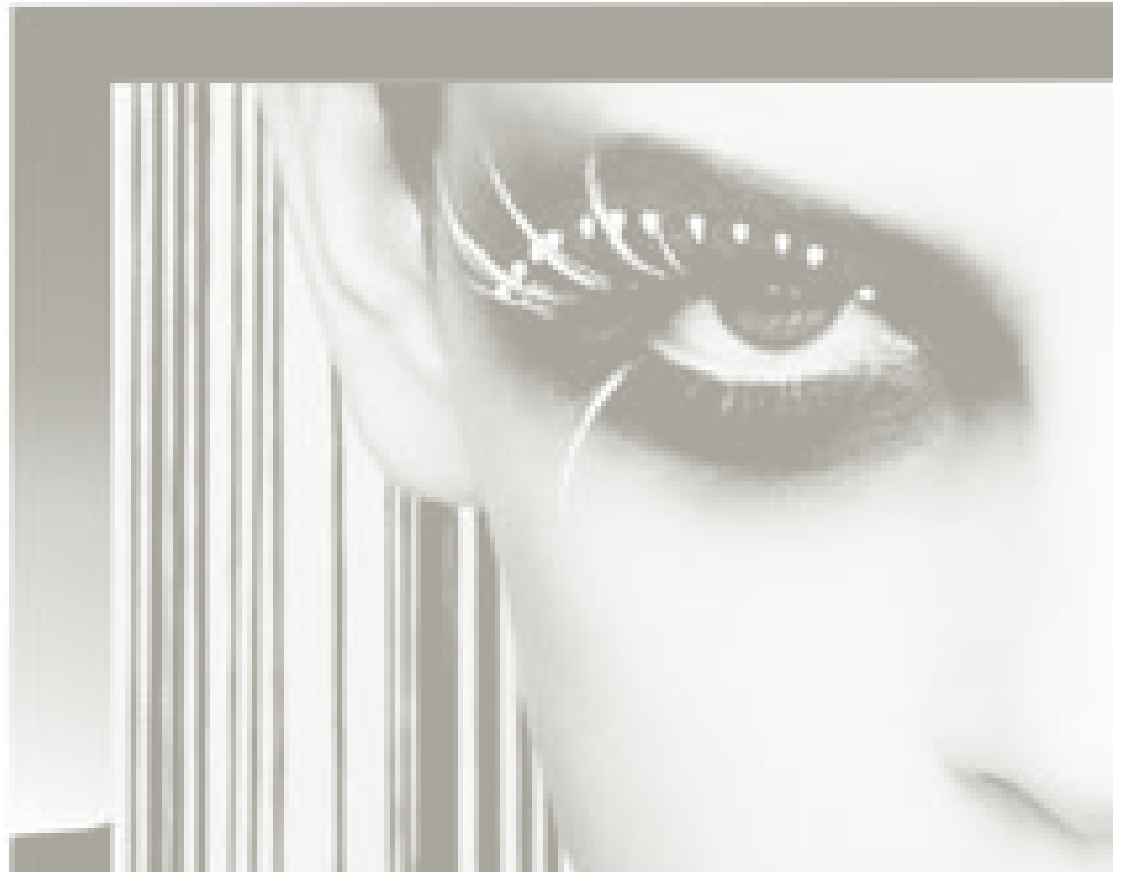
- Based on **Tribler** from TUDelft
 - Support for **Live and VoD** use cases
 - **Give-to-get** incentives and **Bartercast**
 - Efficient **stream authentication/verification**
- **Zero-server** approach
 - Integration with **Caches** and **P4P DB** planned
- Comprehensive **NAT traversal** solution
- Dynamic and static **Network Awareness**



How does CE change things?

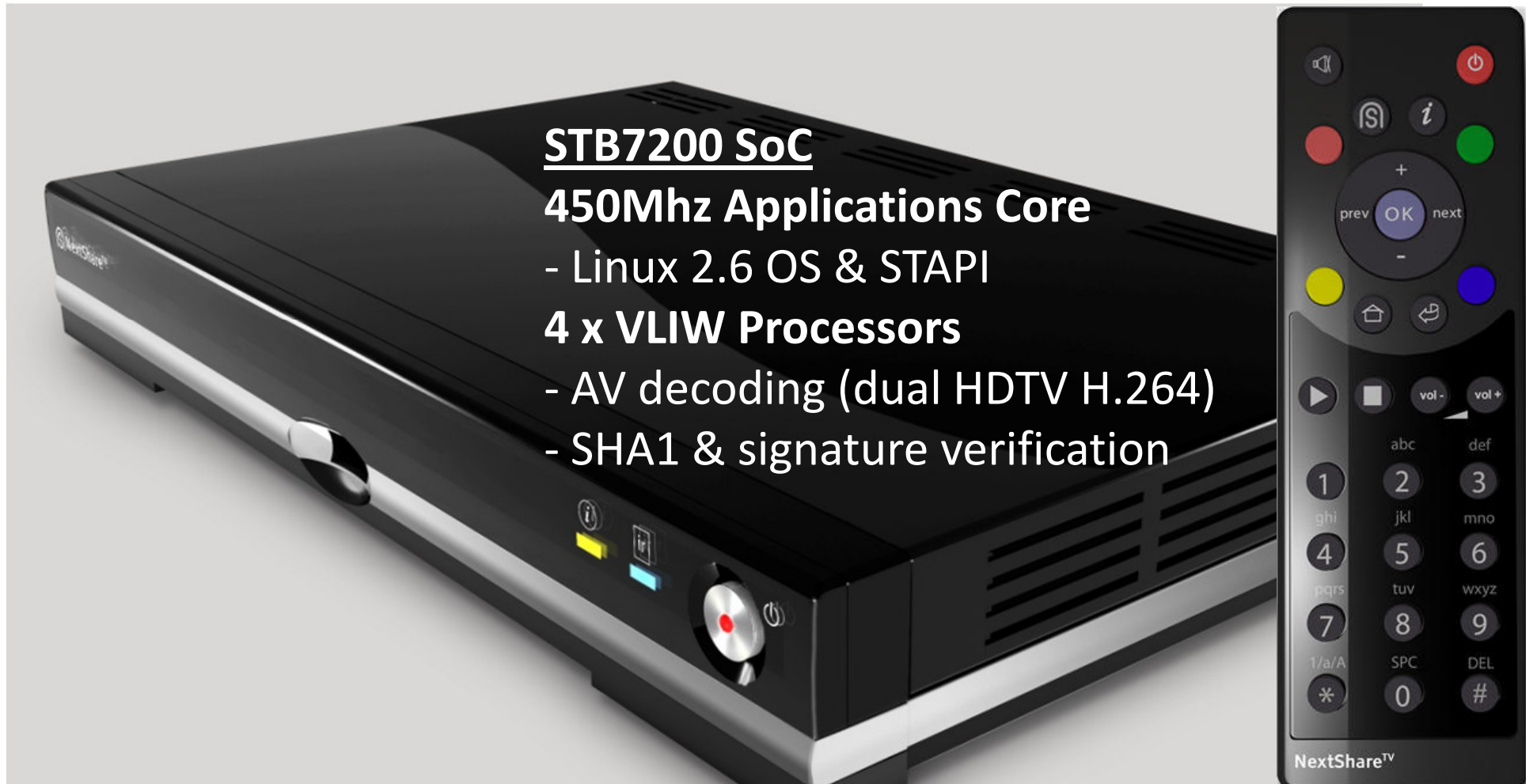
- Community of **CE peers** in early stages of life
- United by a common **Open Standard**
- **Interoperability** between multiple vendors
- **Ubiquitous** (100s millions of TVs)





4. NextShare^{TV}

Hardware - NextShare^{TV}



STB7200 SoC

450Mhz Applications Core

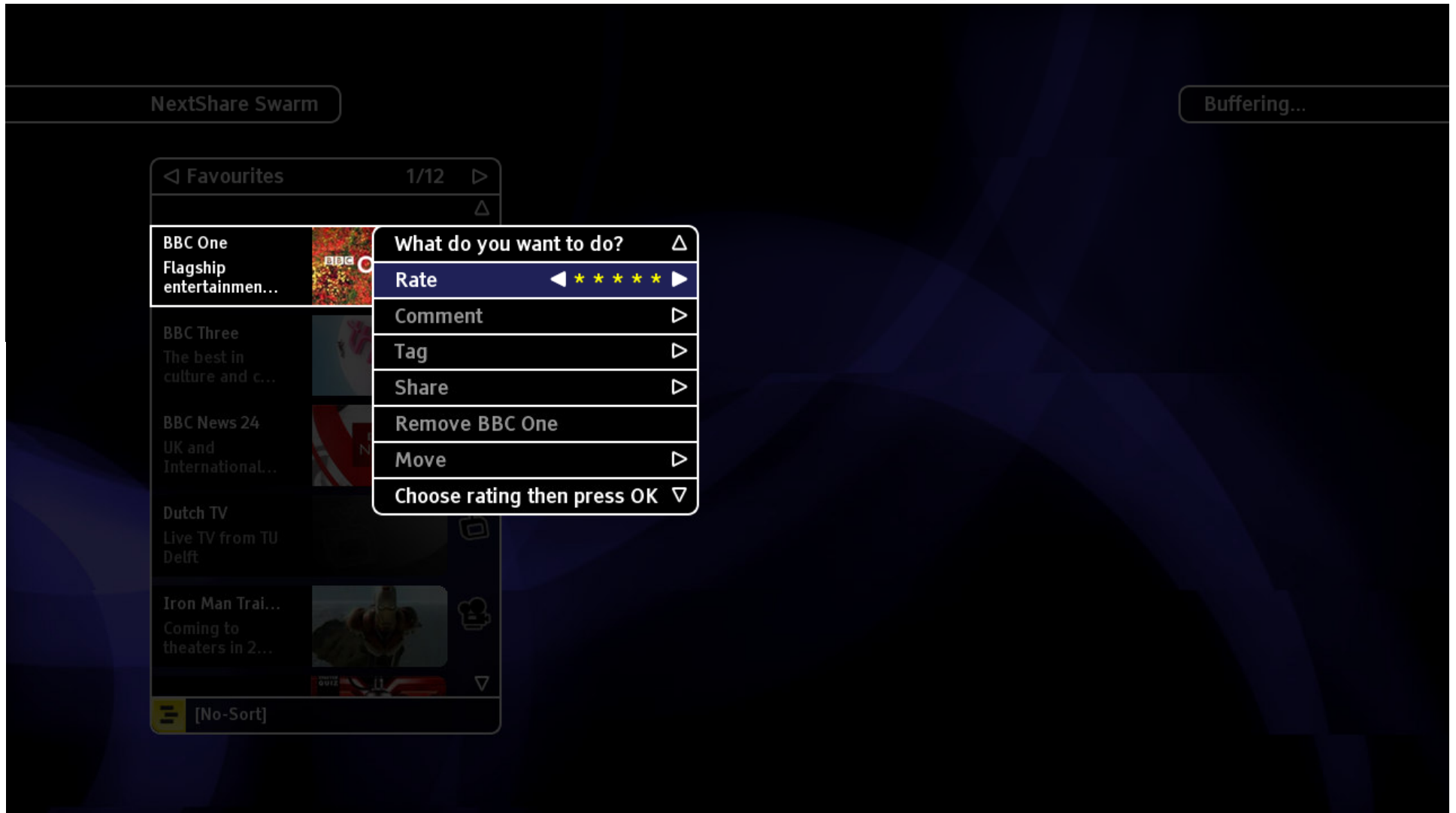
- Linux 2.6 OS & STAPI

4 x VLIW Processors

- AV decoding (dual HDTV H.264)

- SHA1 & signature verification

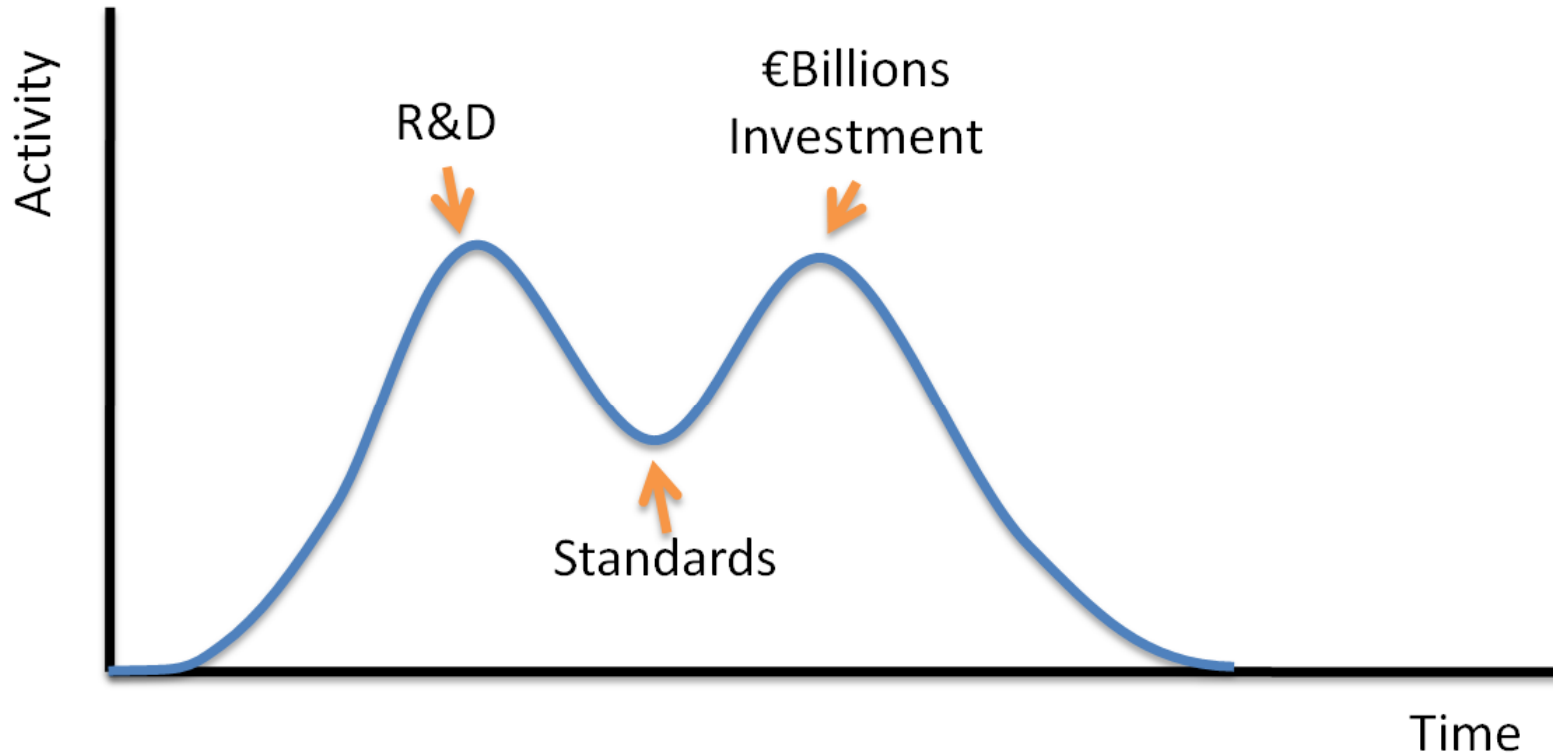
User Interface- NextShare^{TV}



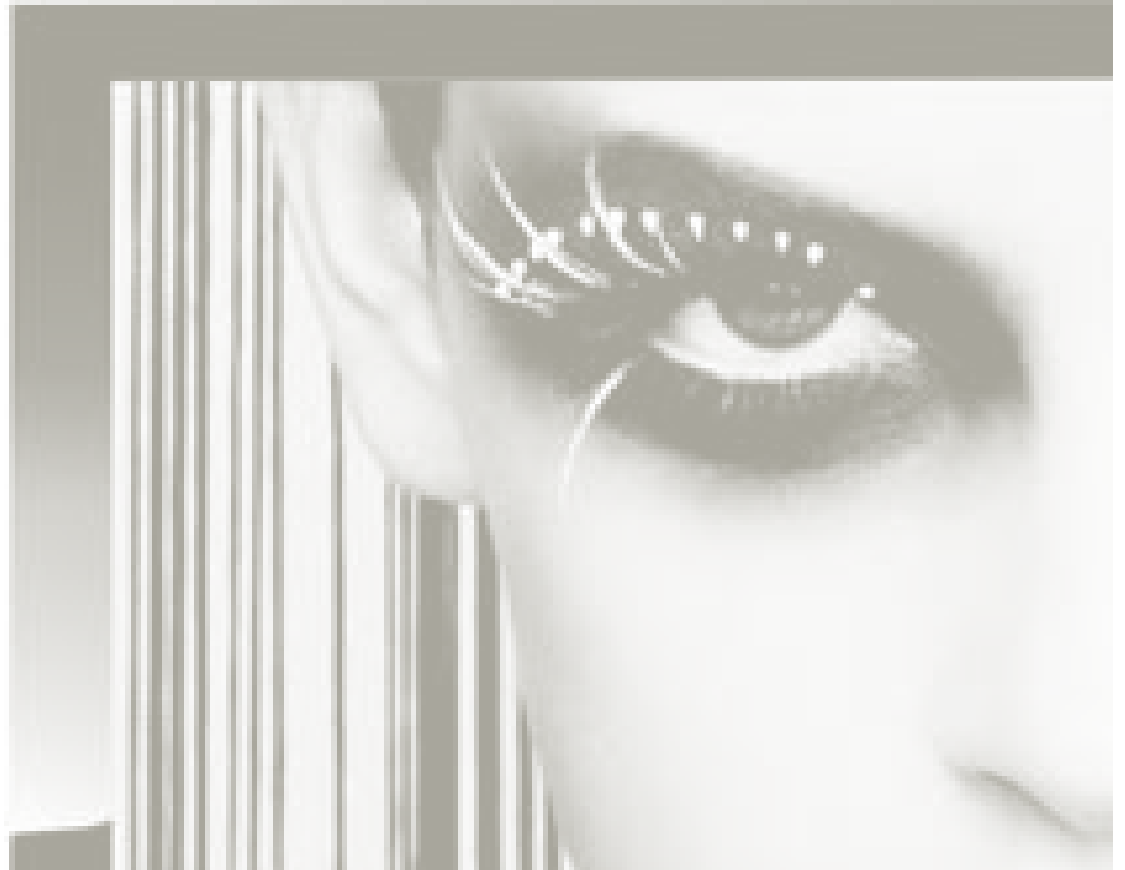


5. STANDARDISATION

Standardisation - approach



- Timing is critical – David Clark's two elephants



6. VISIONS FOR THE FUTURE...

Revolutionary change

- Abundant choice – the **Universal Catalogue**
- **Everything On-Demand**
- **Zero Management** => **All Storage On Edge**
- **Passive & Individual** becoming **Active & Social**
- **Participation!** Everyone is a broadcaster...
- **High Definition+** with **Social Interactivity**
- **Customer relationships** between CP and consumers more important than ever before!
- **Open standards** are the key driver!



Thanks for listening

Liaisons from stakeholders interested in
Open Standards for P2P Media Delivery
are invited

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