

Who watches what where

What is the problem with searching in IPTV?

Ericsson TV vision

A new individual TV experience

**HD
TV**

Personalization

Communication

Interactivity

TV as we know it is changing

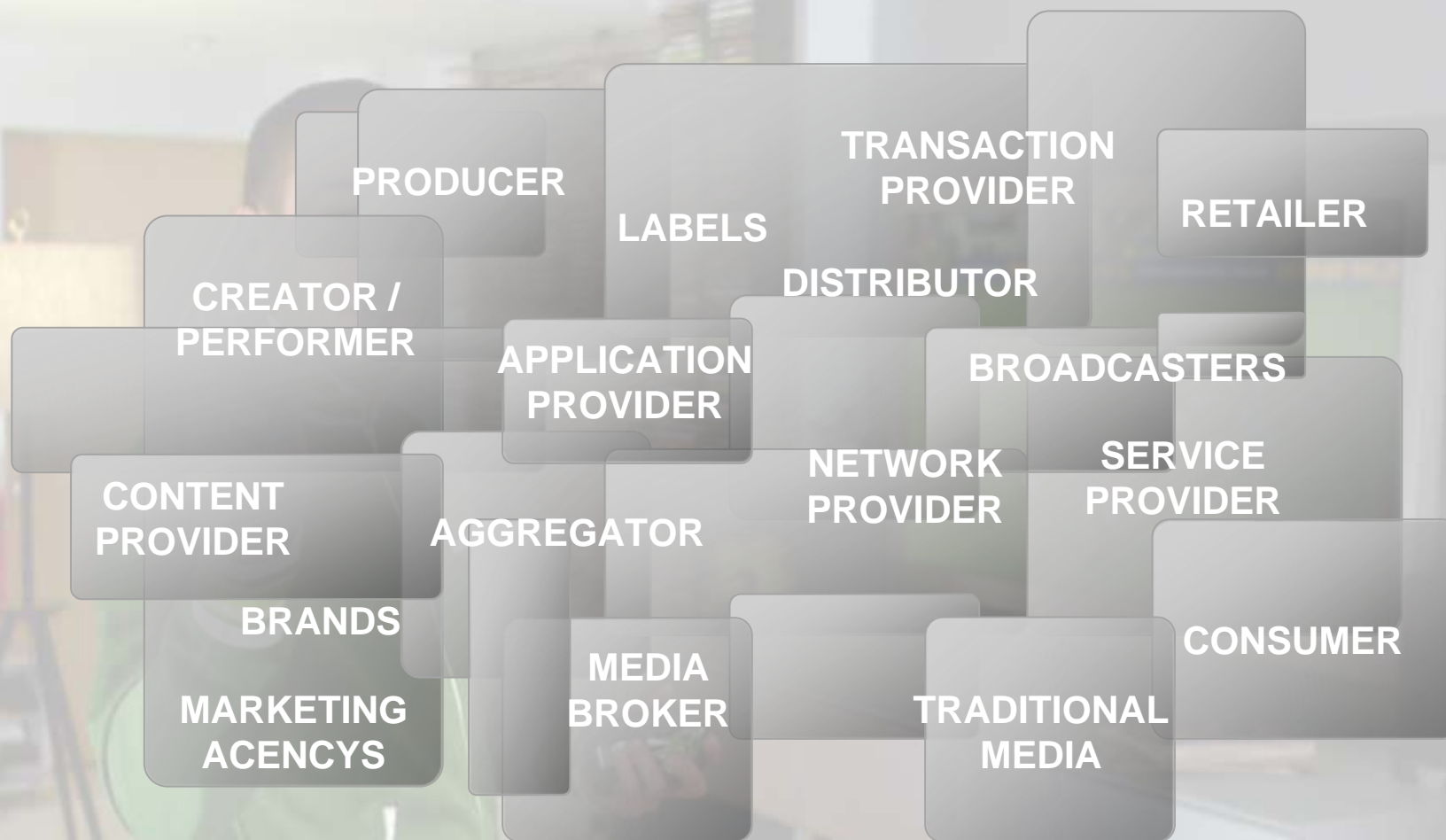
New consumer value proposition



The New Individual Television Experience

Business models are changing

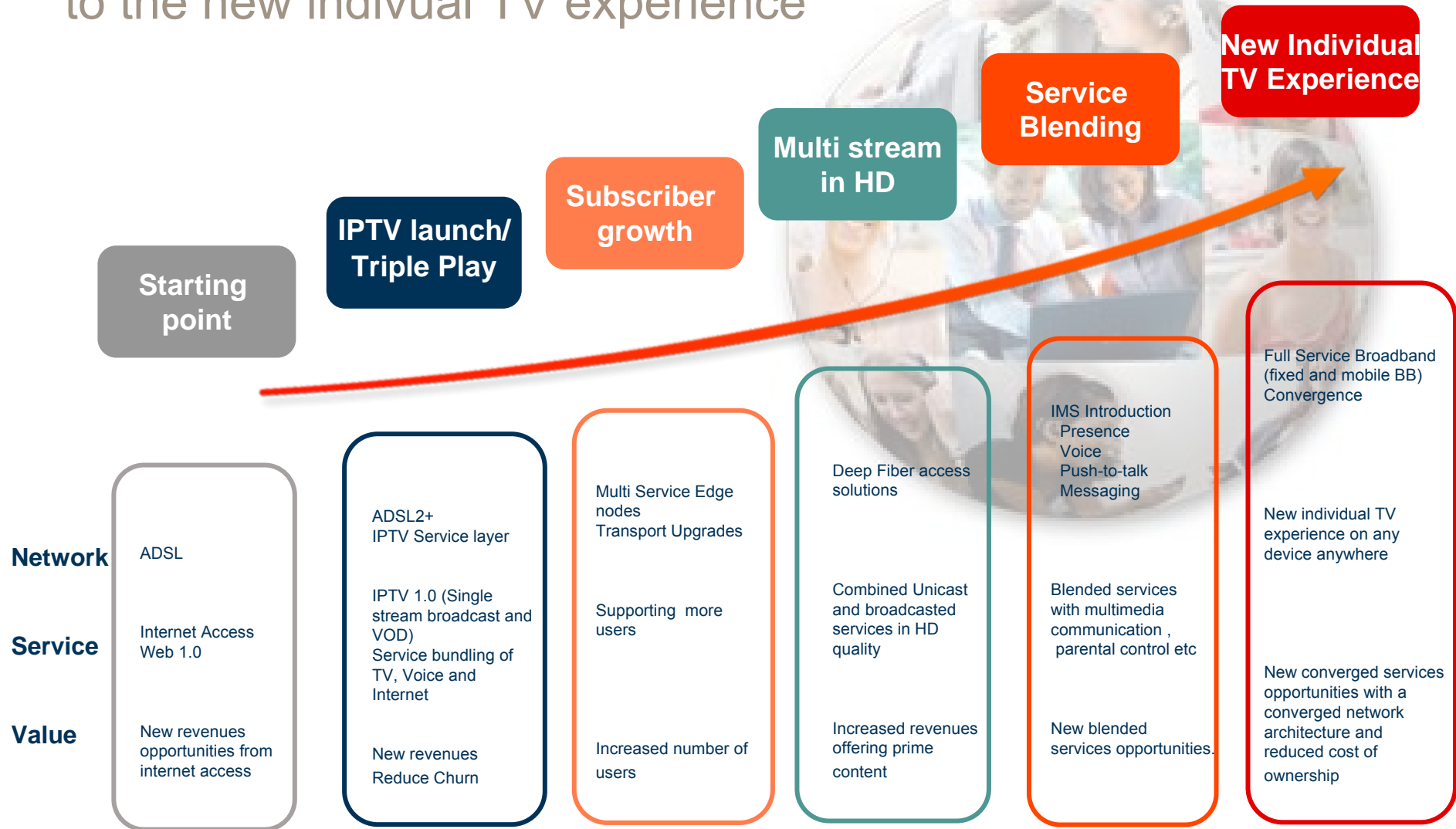
Ecosystem and new value chains



Collaboration, Interoperability, Interworking, Critical Mass

IPTV Evolution

to the new individual TV experience



Three IPTV search problems

- Visualization and user input
 - How do I search for someone who looks like Ebi-chan without a keyboard?
 - How does she look on my PC, and my mobile phone?
 - *OneSeg is not the solution, DVB-H also comes at the problem from the wrong direction*
- Dynamic data sets
 - Who is watching what where?
 - And how do I see it?
 - Do they see the same thing as I do, or a subset of it?
- User provided metadata

Searching for Ebi-chan in Dublin Core

RDF - Gravity (version 1.0)
File Apply Filter Graph View Configure HTTP Help
C:\Documents%20and%20Settings\erajehm\EAPACMy%20Documents\EricssonLäsning\Standards\dc/terms.rdf
5.15 fps

Global Filter

- BibliographicResource
- http://purl.org/dc/dcam/
- VocabularyEncodingScheme
- http://www.w3.org/2000/01/rdf-schema#
- subPropertyOf
- Class
- range
- comment
- seeAlso
- label
- isDefinedBy
- subClassOf
- domain
- Literal
- Data type

One Time Filter Query RDQL

One Time Filter

Filter Include Visible Include C

- http://www.w3.org/1999/02/22-rdf-syntax-ns#
- type
- http://www.w3.org/2004/02/skos/core#
- note
- http://purl.org/dc/terms/
- hasVersion
- description
- modified
- issued
- title
- publisher
- http://purl.org/dc/dcam/
- http://www.w3.org/2000/01/rdf-schema#
- subPropertyOf
- range
- comment
- seeAlso
- label
- isDefinedBy
- subClassOf
- domain

Open RDF Graph Scramble Clear Graph

Zoom

Start

2:02 PM

Dublin, we have a problem!

Visualization does not mean adding information

- In the mobile phone, presence is visualized in the presence enabled phone book
- Key: Avoiding information overload
- How to make less more: Contextualizing information
 - Making sure users get what they want
 - Depending on where they are
 - Depending on who they are
- Graphical presentation aspects
 - 3D visualization
 - How to do it in a handheld?
 - How to associate search and object?
 - Other presentation models
 - Audio presentation
 - Effective ≠ beautiful
- How is creation (of content/metadata) associated with the visualization (of the content/metadata)?
- How is the visualization of metadata associated with finding it?

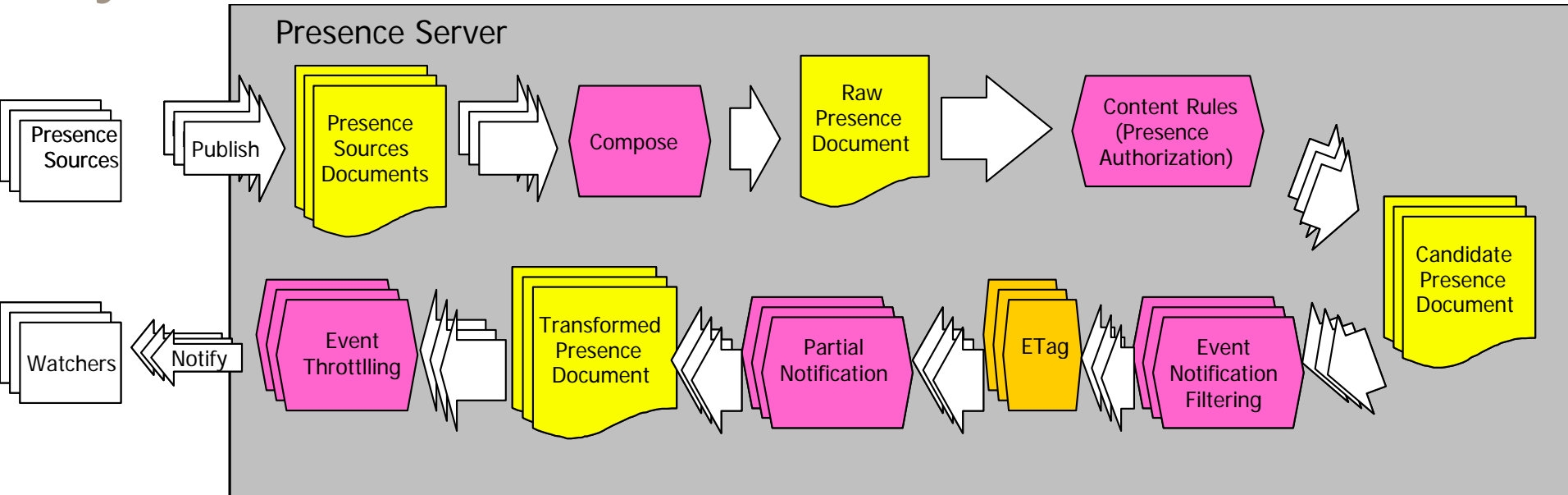
Mobile visualization

- Control point and personalization issues
- Visualization
 - Small screen problem
 - Big screen problem
 - Cross-modality issues
 - Video to voice?
 - Interactivity?
- Input and output



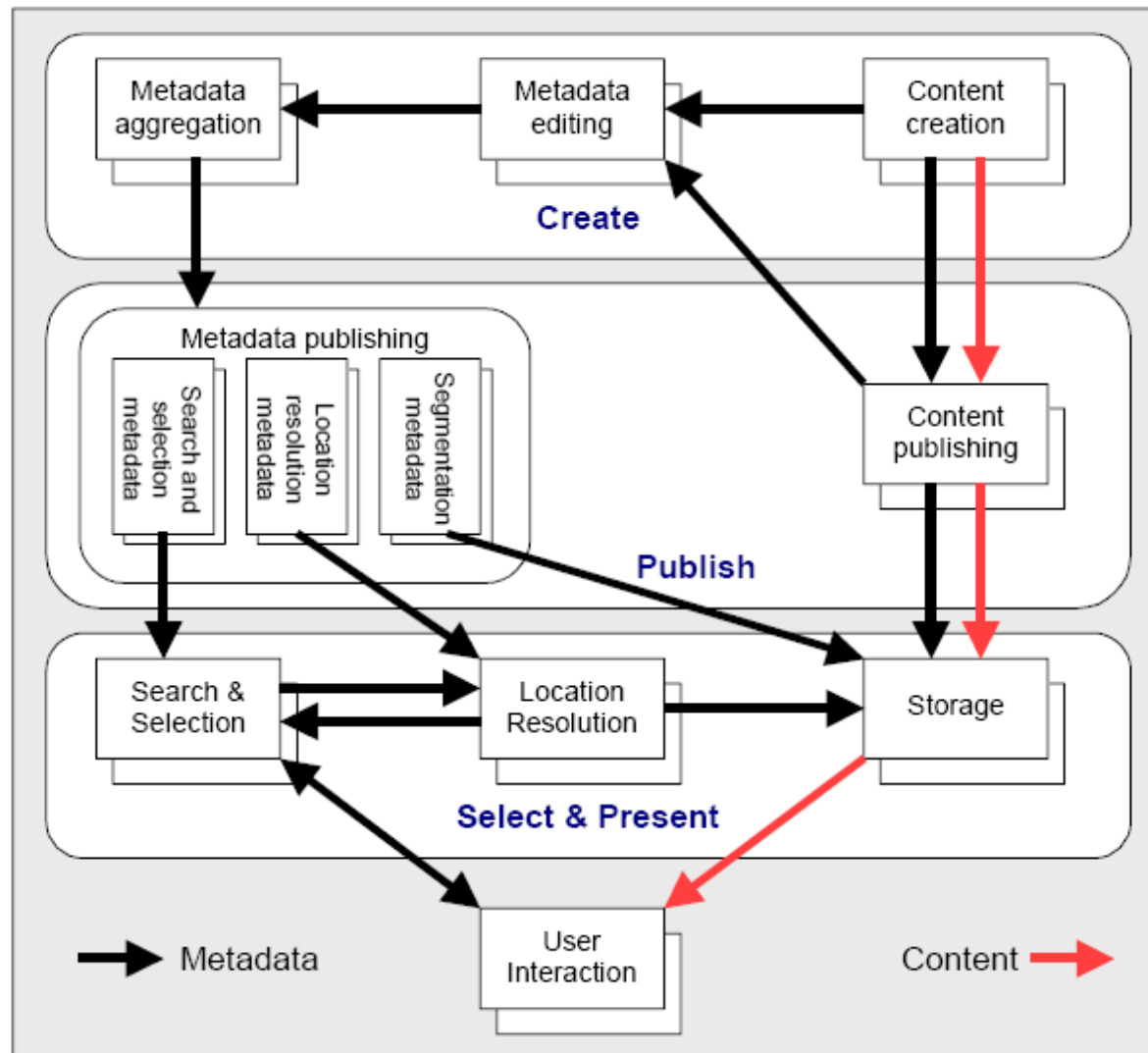
Mobile telephony vision, 1908

Who watches what where: Dynamic data



- In IPTV, you can find out who watches what at the same time as you are
 - Using presence
- This creates a dynamic data set which is liable to change at any time
 - Searches as we know it become impossible
 - Indexing has to be managed differently
 - This is compounded when users create the content
- Presence creates real-time social graphs

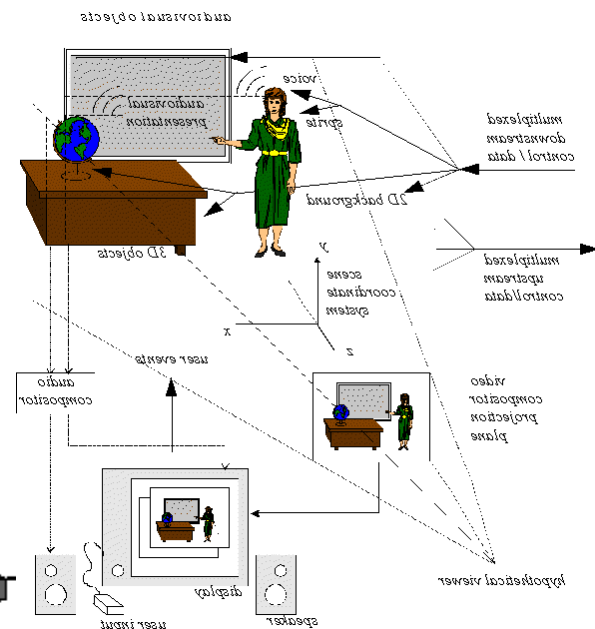
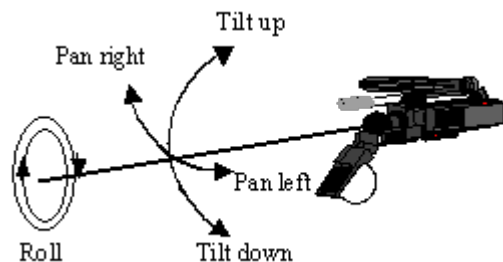
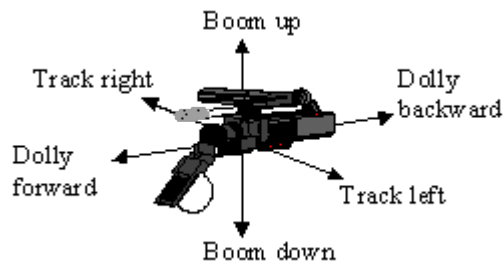
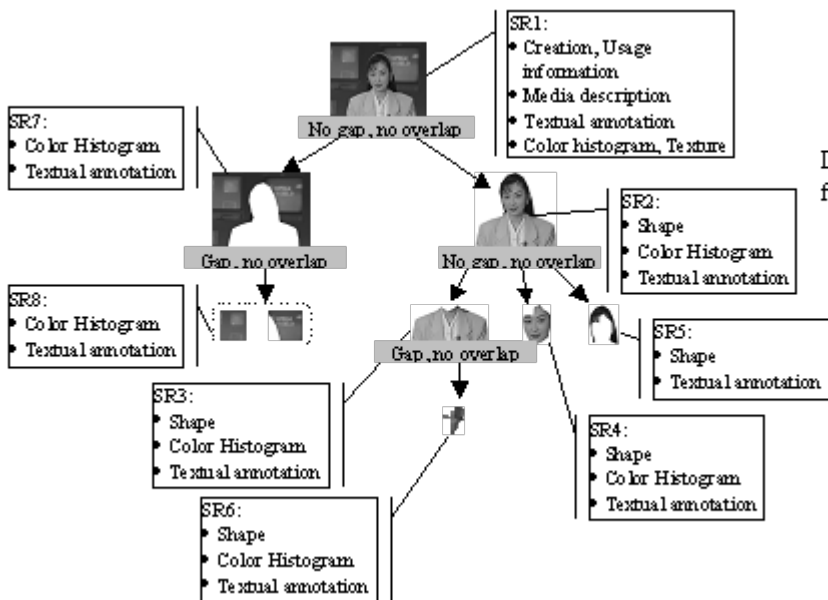
Is there anything wrong with this picture?



Users will create exabytes of data



Production metadata (MPEG-4)



- There can be close to infinite amounts of metadata
- Who needs it, where is it stored, and who manages it?
 - What about user created content?

How will they create metadata?

- ~~Typing it in Emacs?~~
- ~~Filling in a form on a web page~~
- Generating it

- What is the relevant metadata for user-created content?
 - This depends on who wants to use it!
 - Flickr Taj Mahal tags: tajmahal, agra, india, zoomzoom, architecture, taj, mahal, reflection, sunglasses, agra, raj, trip, building, sky, nikon, asia, white, art, love, film, cross, canon, bravo, sigma, sunrise....
- Who checks the metadata for consistency and adherence to formal structures?
- All metadata can not be stored in the object
 - In that case, the object becomes bigger than the data
- We can do the association, we can do the creation, but not yet the visualization

Energy efficiency in IPTV search

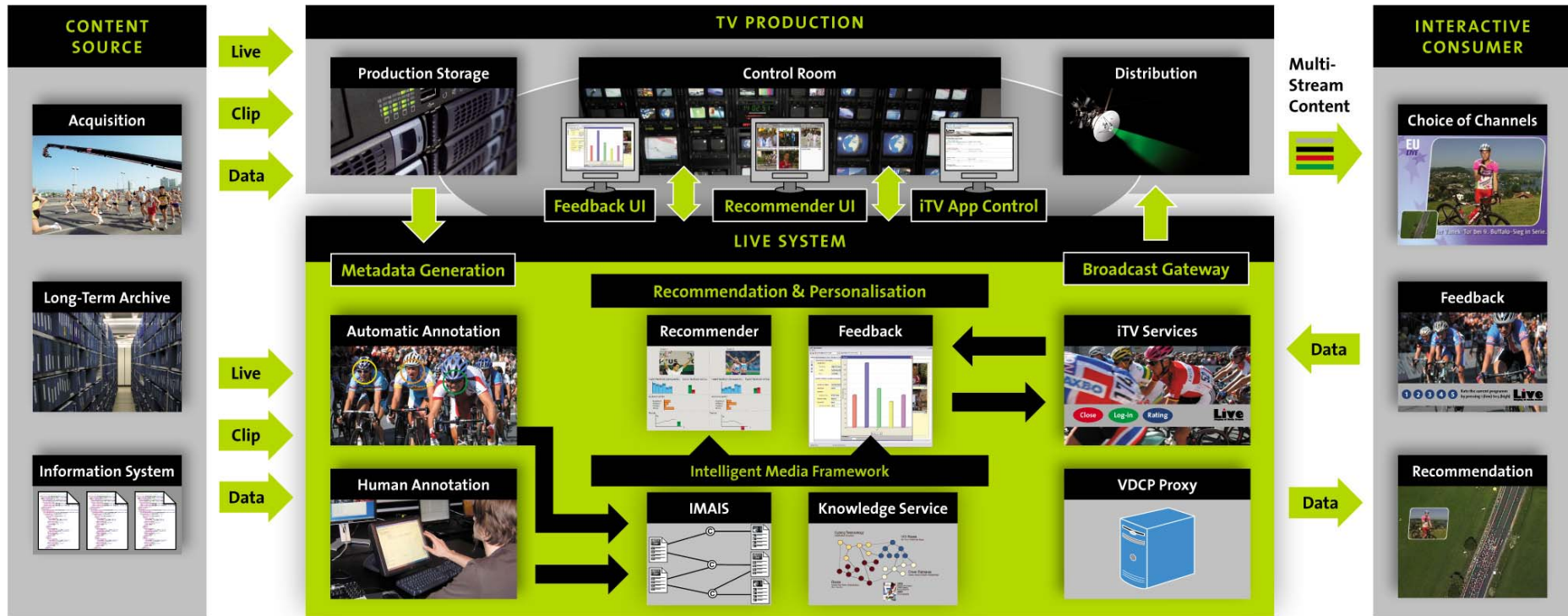
- What costs energy in IPTV?
 - Transmission
 - Display
- How can searching help?
 - Finding the most energy-efficient format to display
 - Finding the format which requires least energy
 - Tradeoff: Transport vs conversion
 - Transport over fiber is cheaper than ADSL!
 - Finding the most efficient topology
- But this may not apply to the TV of today....
 - Building television shows out of the most energy-efficient video clips
 - Using program information, looking at the total value

EU search engine R&D – is the focus right?

❖ Current focus:

- ❖ Future user and service requirements including ubiquitous access (fixed / mobile)
 - ❖ Handling the context of search (eg geographical awareness)
 - ❖ Multiple environments (local, enterprise, open internet)
 - ❖ Placing work in a systems context (standardisation, interoperability, bottom-up management of complex adaptive systems)
 - ❖ Addressing search as a packaged offer, integrated with networked services
 - ❖ Capturing the semantic aspects of search
 - ❖ R&D with a clear exploitation drive (industrial participation)
- ❖ *Not real-time data sets and visualization*
- ❖ *Not user-provided content metadata*





- The objective of the LIVE project is to enable broadcasters to deliver a rich broadcast viewing environment composed of multiple story streams themed around a live sporting event and transmitted as 'the live broadcast show'.
- In response to consumer feedback the 'show' is adapted in real-time and other stories created to meet the unforeseen demand - allowing viewers to switch between stories (sub-channels) according to their mood and interest.
- What distinguishes our approach from other approaches for interactive TV is, that we do not only want to produce several live audio-visual streams beyond the main stream, but in addition create transitions (switching points), where the consumer is invited to switch to another sub-channel. Thus our aim is to prevent a mere "zapping" between channels and instead guide the consumer to navigate through the content of a live show of interlinked streams with a coherent overall dramaturgy. Events such as the Olympic Games, offer the perfect scenario for multiple points of view on one and the same sports event.
- <http://www.ist-live.org/>

The EU research initiatives are just beginning....

- A first IST R&D action focused just on multimedia search engines was launched by the European Commission. Ten search engine projects started work in January 2007.
- This R&D effort aims to master the complexity of future media search-and-retrieve technology
 - hence algorithm and innovation oriented, focused on EU technology benchmarking and ultimately on interoperability
 - fostering pre-competitive R&D for new services in personalized media
 - facilitating search and retrieval of large audiovisual collections of digital objects
 - (including 3D objects, context awareness, location-based device adaptation,...).
- These ICT research efforts are in addition to the more policy oriented activities of the eEurope Action plan, the Communication on Digital Libraries, the Communication on On-Line Content, the data protection rules.
- What can be done to make semantic and non-semantic searches easily accessible to users?

Where to find out more

- eContentPlus:
http://ec.europa.eu/information_society/activities/econtentplus/index_en.htm
- ICT pages:
http://ec.europa.eu/information_society/index_en.htm
- ICT Event 2008:
http://ec.europa.eu/information_society/events/ict/2008/index_en.htm
- Ericsson: <http://www.ericsson.com>

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TAKING YOU FORWARD

Ericsson strategic differentiators

Driving the **new individual TV experience**

Own portfolio for all strategic solution elements

Architectural flexibility enabling cost-effective growth

Open value chain leveraging on open standards

Global **customer base** & global service capabilities

Deep **end-user insights**