Metadata, the future of home entertainment



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What is a metadata?



Metadata taxonomy

Usage metadata

- Consumption (number of views, when, where, relative ranking vs. other content...)
- User's data (demographics, preference)
- Monetization (interstitial/embedded placement points, content/context-related offers...)

Descriptive metadata

- Marketing (title, actors, director, genre, studio, duration...)
- Contextual (scene breaks, action description, dialogue, objects in scene...)
- User-Generated (ratings, tags, comments...)

Technical metadata

- Production (atomic info for processing frame count, timecode, color grades, depth maps, EDLs...)
- Management/preparation (version, coding, language...)
- Delivery (codec, DRM, delivery platform, timing...)



Metadata lifecycle

- Metadata model definition
- Manual, automated, or semi-automated generation of metadata for new or catalogue video content

- Metadata storage
- Organization
- Enrichment
- Retrieval
- Delivery

Solutions to leverage metadata for

- Content access
 - Search
 - Recommendation
 - Discovery
- Monetization
 - Advertising algorithms
 - Rule-based targeting
 - Customer insights
- Licensing

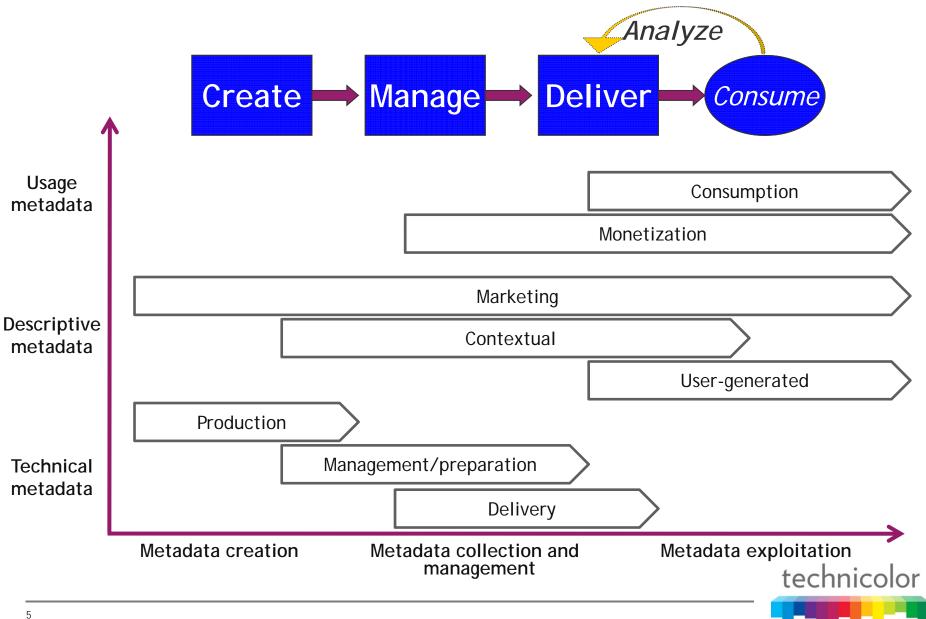
Metadata creation

Metadata collection and management

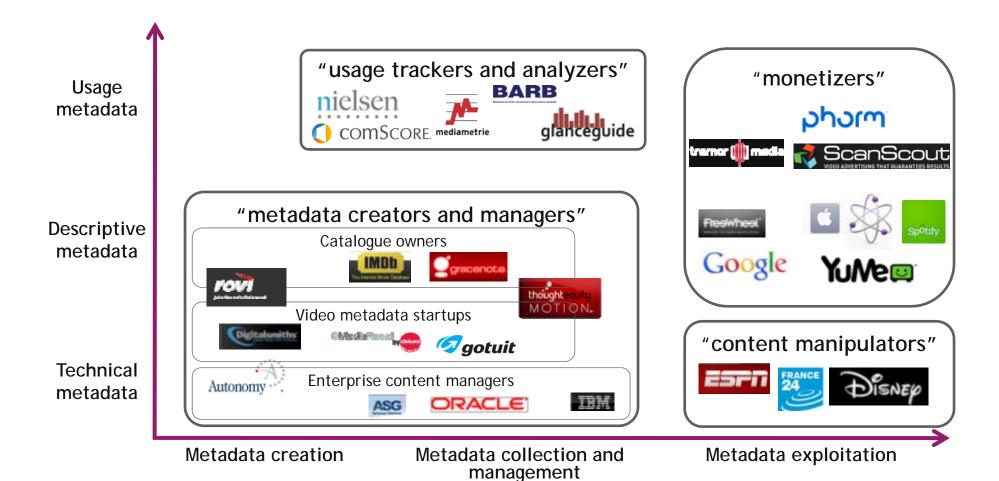
Metadata exploitation



Metadata & content lifecycle



Metadata players





What drives the need for meta-data?



The data deluge problem

Too much information available!

Results of Internet search are more and more irrelevant.

Selecting a movie among all available VoD services is a nightmare.

Too many TV channels.

The end of the linear or bundle models?

Poor UIs

"Content" is more that just music and videos





Future of content and media industry

Immersive experience

- User experience and quality matters
- Win-win situation (NSP, content creators, aggregators)
- Opportunity in 3D, Virtual effects. User interfaces
- Leapfrogging technology and standards battles
 - Complexity for content creators
 - Quality and management challenge for NSPs

Content sophistication

Over-the-top

- Multiplication of home devices sold directly to consumer channels. Uncontrollable quality as NSPs doesn't manage services.
- Content aggregator game. No value-add for NSPs. Limited value for content creators.
- Opportunity in versioning, repurposing and interactivity. Greater demand for "back-office" infrastructure, tracking and security. Increased value in software and "plug-ins"

Quality of Experience

Private networks

- Low quality content delivered through managed services (very similar to current triple play services)
- ISP game , challenging content producers and content aggregators
- Same opportunities as unmanaged, plus high-end home devices.

Unmanaged UGC

- Huge amount of low quality content that does not require high quality delivery and home device interoperability
- Content aggregator game (net neutrality). Open standards, open source
- Only business model is advertisement
- High quality content production at risk
- Opportunities in search optimization, personalization, content production tools and automated content tagging



Content distribution challenges

Help the user find its way through the data deluge

Personalized services

Contextual recommendation

Provide a unique user experience

Home network management

Service portfolio personalization and management

Protect the customer

Preserve privacy

Personal data monetization

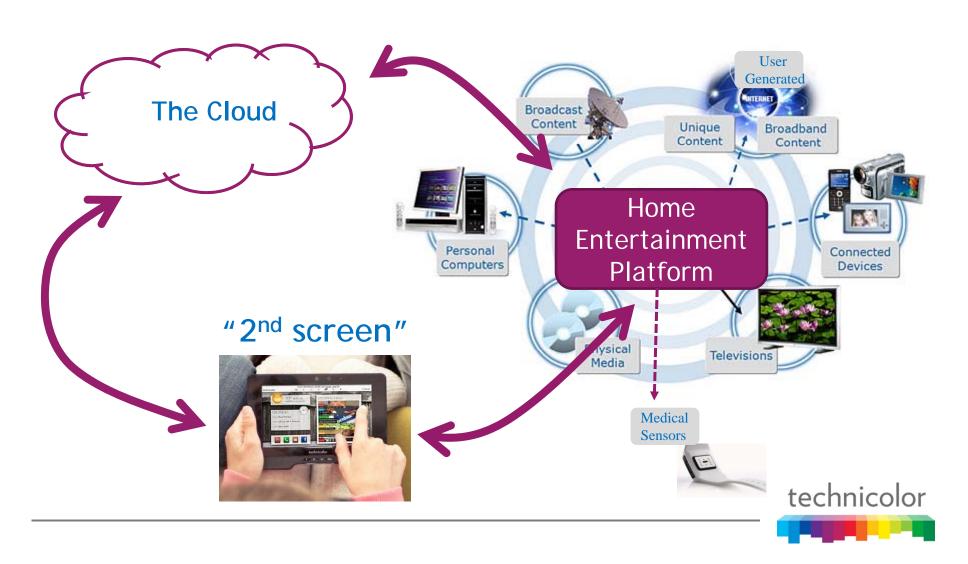


Technicolor's approach to metadata



Technicolor's vision

Manage an outstanding digital home experience from the home



An open platform for home

Service personalization

- Run locally third-party applications
- Store personal/volatile content

Contextual recommendation

Data aggregation

Preserve privacy

Management

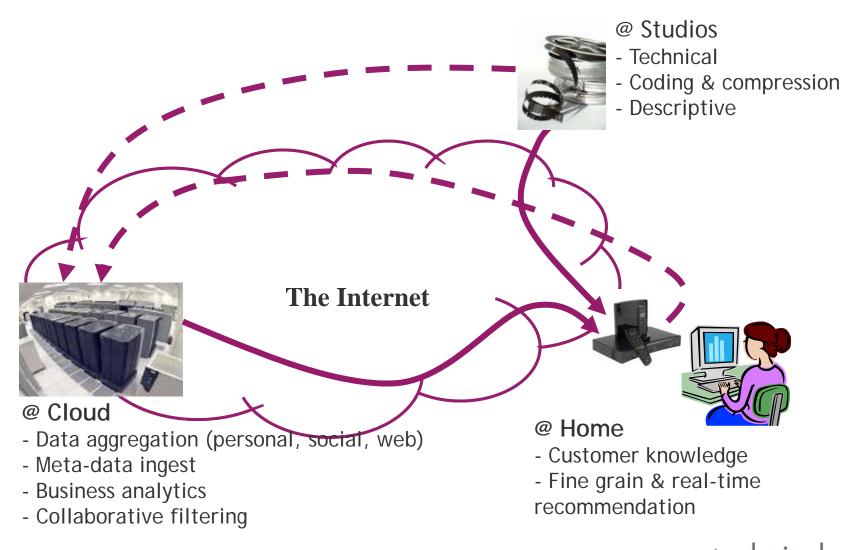
- Home network
- Services

Personal data monetization

Proxy to the Cloud

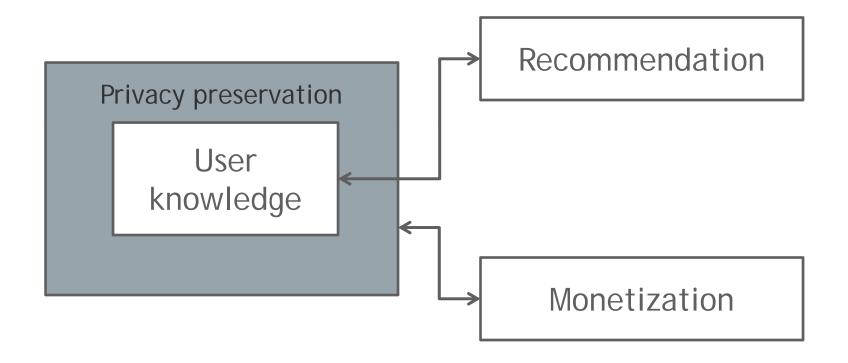


The metadata ecosystem





Personalized User Experience





Understand the User

Collect personal data

- Sensors
- Internet services
- DPI
- Home devices

Recognize users

- Image recognition
- Home habits

Build "users" profiles

- Multiple profiles per user
- Groups of users



Recommend and Discover

Rich metadata tagging enables detailed search and discovery

- Take advantage of rich user profile and contextual data
- Group recommendation
- Recommend everything (not only music and movies)

The Second screen (e.g.: tablet) experience

- Synchronizing video streams to second screen
- Personalized content
- Additional information



Privacy preserving communication

Make personal data available while preserving privacy

- Who you are (user profile)
- Where the data is coming from

Applications

- Recommendation
- Advertisement
- Search

Approaches

- Do not export personal data!
- Add noise
- Use a trusted broker
- Peer-to-peer (Thor)



Balance privacy and monetization

Transparency to users

- identify potential threats
- inform users
- Give the user the control of her/his privacy

Privacy architecture for home management platform Privacy preserving recommendation

Monetization

Get paid for your data!



Limitations of meta-data tagging

Meta-data are not universal

- Cultural
- Personal
- Time dependent

Meta-data are not ubiquitous

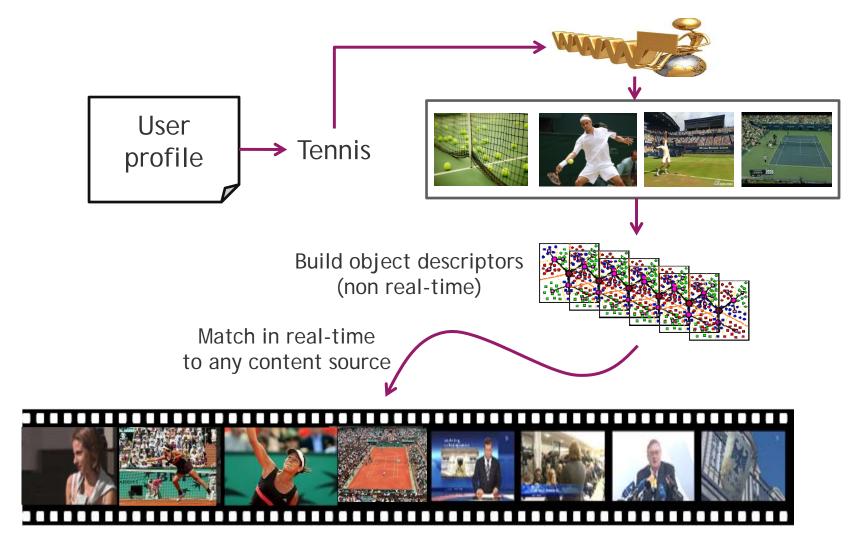
- Massive amount of content to tag
- Tagging is too expensive for some content
- No clear value for UGC

Meta-data can be voluminous

- Difficult to store
- Even more difficult to search



Real-time annotation





BACK-UP

