The OMRAS2 project

Bringing together semantic audio, music informatics and computational musicology

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Music Information Retrieval is maturing

- Components for
  - Beat tracking
  - Temporal segmentation
  - Instrument separation and identification
  - Key and chord analysis
  - ...

- Systems for
  - Recommending artists
  - Following lyrics
  - Generating playlist
  - Navigating collections
  - Personalized radio

So what's missing...

- integrated systems for non-programmers (musicologists)
- intuitive interaction for music professionals (producer or musicologist)
- infrastructure for music informaticists to test new algorithms in a meaningful workflow
- Few facilities for distributed researchers to work together

Questions people would like answered: Artifical Music Intelligence

- "Find all guitar recordings that exhibit performance influences of either Robert Johnson or Jimi Hendrix".

- "Find a score that is strongly related to an audio query"

- "Find the recording that exactly matches the audio query (Shazam etc)"

- "Find similarities within pieces and across collections"

- "Help me understand this singer's vibrato"

- "Represent structure (movement, chorus, etc.) and find the chorus start"

- "Tell me if this will be a hit"
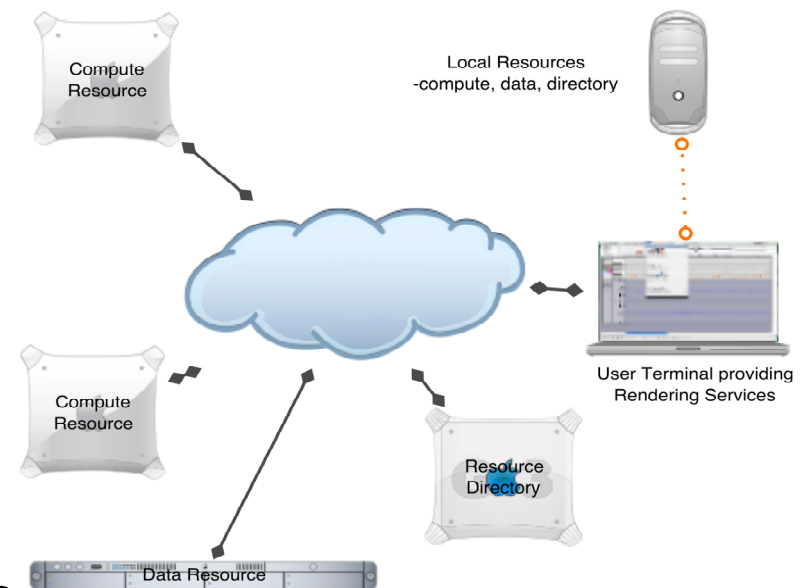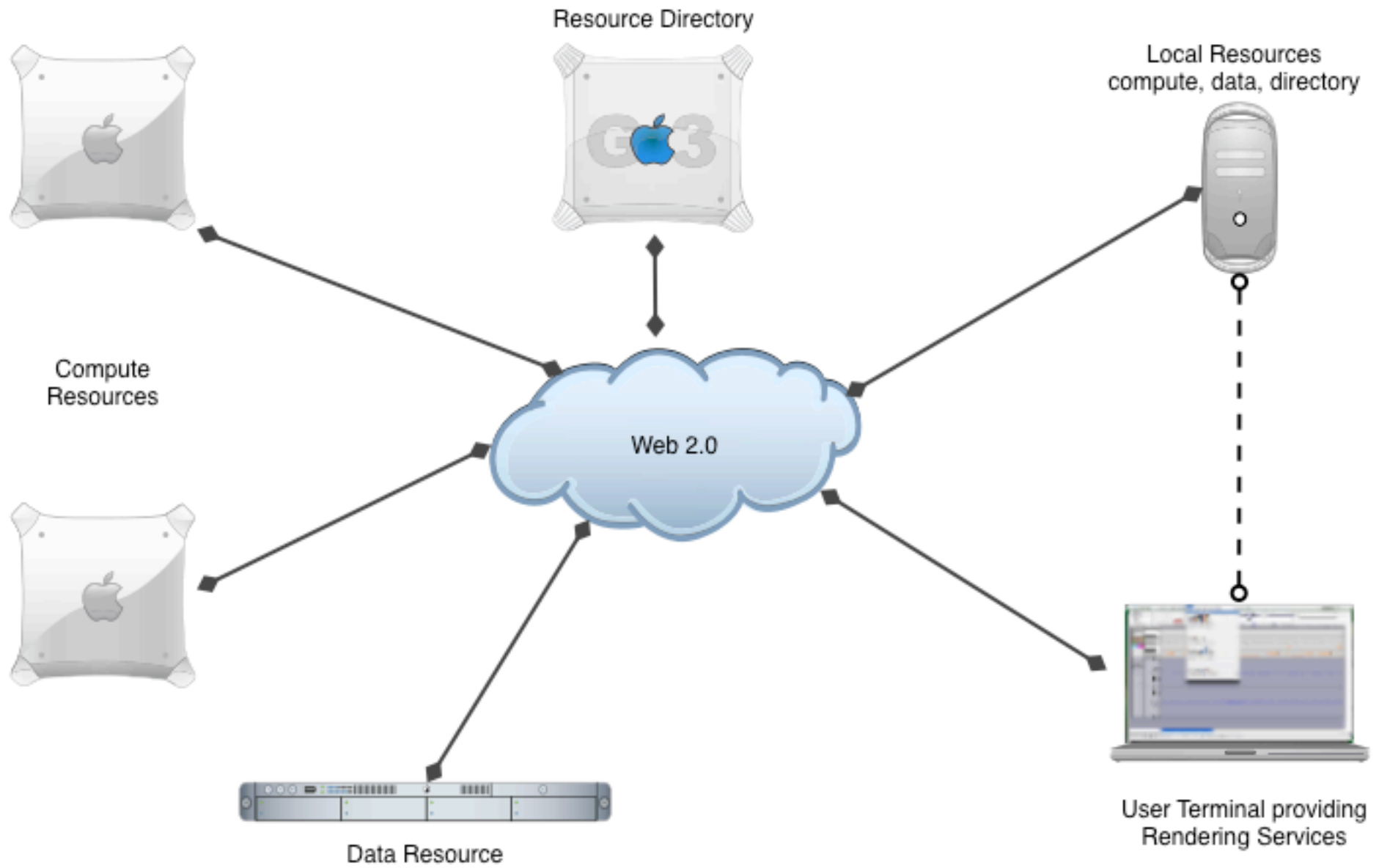
- "Make me a sad (happy) playlist"

In a nutshell..

- Music Informatics is all about semantics, extracting and representing information hidden inside the music (audio and score) and then using it
- There is a natural and obvious affinity to the Semantic Web

OMRAS2: Musical Informatics and Computational Musicology

- Multi-platform UIs
- Web services API
- Distributed compute & data resources
- Users unaware of resource location
- QMUL, Goldsmiths, Royal Holloway, King's, Lancaster, Surrey, ..
- £2.5M UK investment
- 3.5 yrs
- 6 FTE Post Docs, 5 PhDs

Resource Directory

Local Resources
compute, data, directory

Compute
Resources

Web 2.0

Data Resource

User Terminal providing
Rendering Services

For Whom?

- Music Information Scientists and Technologists
- Music Information Retrieval(ists)
- Musicologists
- Other Music professionals
- Music Fans

Purpose

- Construct open framework for Music Informatics research using available Intellectual Property
- Test it with novel components
- Test it on real problems
- Disseminate, esp. with workshops
- Software releases
  - v1 2Q 08
  - v2 4Q 09

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OMRAS2 Technologies

- Audio - Segmentation, key, chords, BPM etc
- Symbolic - theme finding
- Hybrid - esp. for automatic annotation
- SOAP and Web Services
- Semantic Web, esp. Music Ontology and RDF
- Sonic Visualiser and other user interaction modalities

Fundamental Research

- Knowledge representation for music
- Music ontologies
- Large-collection user interfaces
- Harmonic analysis
- Semi-automatic annotation
- Subjective evaluation of MIR systems
- Distributed temporal data-bases
- Semantic Grid indexing and searching of music

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Summary

- Today's research provides musical semantic features

  - Structure, rhythm, harmony, melody, sources

- Semantic Web provides means to process, reason, search using appropriately represented features

- OMRAS2 project builds on this

  - Providing intuitive tools to supercharge research

- And provides a test-bed for Music 2.0

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