Meaningful mapping: Appreciating music through accessible structures

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Overview

- Introduction
- Modelling Musical Knowledge
- Accessible Musical Knowledge - Adding the user perspective
- Understanding Musical Knowledge
- Design issues for MPEG environments

Introduction

- Music is a rich corpus of data meaning different things to different people
- Requires communication between several participants(Virtual or actual)
- Question of modelling communication and interaction

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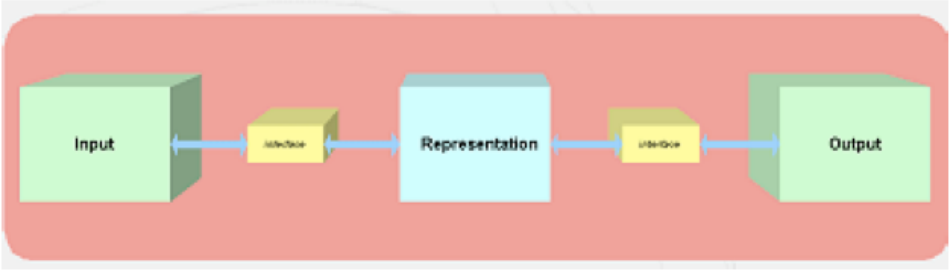
Modelling Musical Knowledge

- Requires the appropriate representation components
- Aims not to filter the information between processing stages
- Representation processes aim to describe the communication processes - focusing particularly on musical communication
- Traditional technological communication is separated from creative communication - aim is to bridge this gap.

Mapping Meaning

- Three layer processing architecture based on input, representation and output.
- These can exist on their own, but usually one systems output is another's input.
  - Input: Collecting, structuring and ordering of input information ready to be processed by a representation system
  - Representation: The brains of the system which process the multimodal information, deducing whichever procedures are required to enhance the input data and prepare the data for output.
  - Output: Restructuring of the data relevant to the requirements of the end user or the next system

Graphical representation of three layer processing architecture



Meaningful mappings - Interfacing the layers

- Good interfacing results in high data integrity with data loss kept to a minimum
- Raises the model to a new level of complexity, as interfacing has to be implemented at a fundamental level throughout the system
- Interfacing objects can be seen as axon's built on the same three layer principle which ensure that the correct perspective is taken on input information for the "accesor" to use the information entity in the next layer of the structure.
- This requires that the information isn't structured based on it's primary use, but on the input information, such that no data is lost in translating secondary or future uses. i.e. Accessibility.

Accessing Musical Knowledge

- User requirements for Musical Knowledge processing architectures are implemented within the input and output layers of the architecture.
- These user requirements have to take in the multiple perspectives and viewpoints which are taken on music.
- Musical knowledge can be considered to be represented implicitly and explicitly using procedural descriptions.

The User Perspective

- Composers: Specifying musical structures
- Performers: Interpreting musical structures
- Distributers: Providing interpreted musical structures
- Audience: Digesting interpreted musical structures

Composers: Specifying musical structures

- The musical structures in a musical processing system represent the composers canvas.
- Traditionally music is extremely structured in the form of established hierarchies of musical information. This system is structured in such a way that it has struggled to embrace to modern forms of avant garde and serialism sufficiently.
- This canvas then represents the composers vision or musical concept.

Performers: Interpreting musical structures

- Building on a frame of reference, performers interpret the musical structures which the composer has put down on paper.
- The element of freedom dictated by the composer, genre or environment dictate to what level the performer can add his own interpretation to the mix
- The quality of this interpretation represents the level of the performer's virtuosity.

Distributers: Providing interpreted musical structures

- Distribution of the combined vision's of the composer and the performer.
- This is combined with marketable elements from the distributer such as choice of venue, choice of performers and marketing and distribution choices
- All these combined criteria provide an interface between the content creators and the audience

Audience: Digesting interpreted musical structures

- The audience have their own personal set of user requirements which dictate which distributed offerings they will choose to buy/listen to.
- Their levels of respect and experience for particular composers and performers.
- The communities and environments which they act in and which influence their opinion.

Understanding Musical Knowledge

- There are many different perspectives on accessing musical content, each use and user have their own particular perspective on how they structure and interact with the structured musical information
- A user's experience can be represented by modelling their taste, choice and actions relating to interacting with the musical structures
- All this modelling and interfacing represents the adaptability that is required when dealing with musical information processing environments. This in itself requires procedures for dealing with multiple viewpoints which can yield represetnation fo various users views.

Accessible design

- Accessibility from Scratch
- Design for all
- Openfocus

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Accessibility from scratch

- Redefining Accessibility
- Building Accessibility at source on generic foundations
- Embracing standards
- Facilitating re-use in order to meet several current and future user needs.

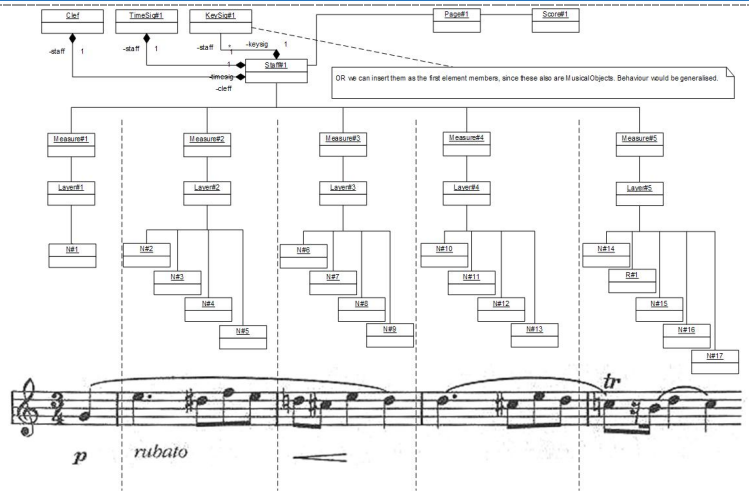
Design for All

- Solutions for everyone - including the mainstream. Emphasis on adaptability for the mainstream rather than deterioration for the niche market
- There is no mainstream - just many niches (44% of users use some type of accessible technology when they use their computer)
- Let user requirements be pulled from what is available rather than pushing one interfacing method on a user. For example, everybody uses a different selection of keyboard shortcuts
- Building accessibility into the production chain earlier. More robust implementations will enhance the overall product for everyone

Openfocus

- Philosophical implementation of the Design for All process
- Requires looking at the bigger picture and seeing that accessibility is about communication, and not about blind people
- Moves accessibility up to the macro level, where accessible solutions reside in content management systems, new policies and in new and emerging standards

Example - Music Modelling



Core Experiment

- Specification gathering for proposed work on including Accessible Music Notations within the SMR Software
- Covers Braille Music and Talking Music formats.
- Core Experiment outlined in w7377

Milestones

		Planned date
M.0	Start of the CE	July 29 2005
M.1	Delivering of the missing input material	October 2005 Š 74th MPEG Meeting
M.2	Specification of use cases and test of present solution	October 2005 Š 74th MPEG Meeting
M.3	Specification of changes to SMR Reference software	October 2005 Š 74th MPEG Meeting
M.4	Workplan for software to implement changes	January 2006 Š 75th MPEG Meeting
M.5	CE final report	January 2006 - 75th MPEG Meeting

Materials submitted in m12562

- M12562 CE Report
- Appendix A - AccessMusic Source
- Appendix B - Installation Readme
- Appendix C - User Readme
- Appendix D - Test Cases
- Appendix E - RM0 Additions

Future Work

- Possible follow up core experiment which implements the notions.
- Embracing standards by offering structured text scores in MPEG 4 structured audio.
- Further lobbying for use of accessible and open standards in information stream through projects such as EUAIN
- Encouraging technology uptake within specialist organisations

Summary

- In order to represent musical information structures are required which can take into account the various perspectives people hold on music.
- These structures can take in the perspectives that various user groups hold and allow them to interact in the any way that they see fit.
- The users can use the same consumption means to interact back into the structures which enhances and facilitates learning.
- The resultant communities which bring together all the stakeholders of musical information then interact in new and meaningful ways.

Thank you