MARS (Media Asset Retrieval System): Puget Sound's Digital Archive

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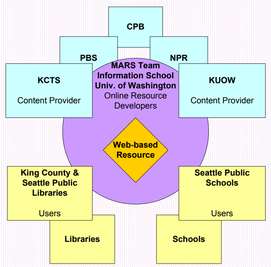
♦Introduction

The MARS (Media Asset Retrieval System) Project is the collaborative effort of public broadcasters, libraries and schools in the Puget Sound region to create a digital online resource that provides access to content produced by public broadcasters via the public libraries.



Convergence Consortium

The Convergence Consortium is a model for community collaboration, including organizations such as public broadcasters, libraries, museums, and schools in the Puget Sound region to assess the needs of their constituents and pool resources to develop solutions to meet those needs. Specifically, the archives of public broadcasters have been identified as significant resources for the local communities and nationally. These resources can be accessed on the broadcasters websites, and through libraries and used by schools, and integrated with text and photographic archives from other partners.

MARS' goal

Create an online resource that provides effective access to the content produced locally by KCTS (Seattle PBS affiliate) and KUOW (Seattle NPR affiliate). The broadcasts will be made searchable using the CPB Metadata Element Set (under development) and controlled vocabularies (to be developed). This will ensure a user friendly search and navigation mechanism and user satisfaction.

Furthermore, the resource can search the local public library's catalog concurrently and provide the user with relevant TV material, radio material, and books on a given subject.

The ultimate goal is to produce a model that can be used in cities around the country.

The current phase of the project assesses the community's need, analyzes the current operational systems, and makes recommendations for the design of the resource.

Deliverables

- Literature review of the issues surrounding the organization, description and representation of media assets
- Needs assessment report of internal and external stakeholders
- Profile of the systems in the area of managing and organizing media assets for public broadcasting nationwide

Activities

- Analysis of information seeking behavior
- Analysis of collaboration within the respective organizations
- Analysis of the scope and context of the proposed system
- Examining the availability of information resources and exchange of resources among users

Further information about the MARS project is available at: http://www.ischool.washington.edu/mars/

♦Methodology

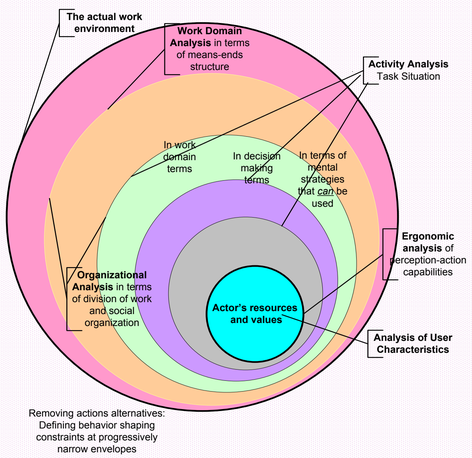
The methodology we are using is the work-centered conceptual framework that has been developed by Rasmussen & Pejtersen [1] as a general approach to help information system designers analyze and understand the complex interaction between (a) the activities and organizational relationships and constraints of work domains, and (b) users' cognitive and social activities and their subjective preferences during task performance.

The framework is the result of generalizations of experiences from field studies that led to the design of support systems for a variety of modern work domains, such as processing plants, nuclear power stations, manufacturing, hospitals, and libraries.
This work-centered approach to the evaluation and design of information systems assumes that information interaction is determined by a number of dimensions. To facilitate an evaluation, a framework for cognitive work analysis is constructed first. This analysis addresses dimensions such as:

- the actual work environment
- the work domain
- task situation in terms of (a) work domain, (b) decision making, and (c) mental strategies that can be used the organization in terms of division of work and social organization
- user characteristics, resources and values.

Each dimension is analyzed according to five abstraction levels: goals and constraints, priorities, tasks, work processes, and physical resources.

Framework for Cognitive Work Analysis



The framework for *system evaluation*, which is based on the *cognitive work analysis*, answers questions such as: Does system support cooperative work and coordination? Does system support task repertoire of a work situation? Does system support relevant decision task? Are all relevant strategies supported? Does presentation match sensory characteristics? The answers to these questions are based on the data collected during the *cognitive work analysis*, which is primarily descriptive. Thus, *cognitive work analysis* is the framework for data collection, and the *system evaluation* is the framework for data analysis.

♦Data Collection

In this phase of the research, the objective is to understand current information seeking practices of users within KCTS (public television) and KUOW (public radio) in order to determine how MARS would improve the management and sharing of information about media assets within the organizations.

Needs assessment

- KCTS and KUOW: Focus group interviews, in depth individual interviews, formal and informal interactions
- Community: Web-based questionnaire to public broadcasters, focus group interviews with teachers , regional telephone survey with teachers and general public.

Parameters	Descriptions
Settings	•KCTS (public television) •KUOW (public radio) •Schools •Information School, UW •Market research
Actors	•Users: staff of public broadcast stations, school district teachers, students •Experts: Information system analysts, designers, Classification analysts, research analysts
Events	•Focus group meetings •Individual meetings •Walkthroughs •Web-based questionnaires
Methods	•Interviews •Questionnaires •Discussions •Observations

♦Data Analysis

KCTS Case Study

The means-ends relations form an abstraction hierarchy where *reasons* propagate downward from goals towards specific work processes and physical objects, whereas *causes* propagate upward from work processes and physical objects toward goals. If we focus on what goes on at a certain abstraction level then the level above provides the reasons *why* it is going on, and the level below describes *how* it is carried out. [2]

Level of abstraction	Means-ends relations	Examples (from KCTS)
Goals and constraints	Why	Inform, involve and inspire the public through delivery of representative, educational content
Priorities	Why / What	Fundraising, increased Internet presence, new facilities design
Tasks	Why / What / How	In-house production, web development, content creation
Work processes	What / How	Production meetings, video logging, airing programs
Physical objects	How	Programs, Internet, raw footage tapes, databases, computers

Uncovering common ground

KCTS producers creating content for both broadcast and delivery through the Internet depend on finding the footage they need in the Tape Library. The ability to find programs and raw footage efficiently directly relates to the level of organization maintained by the Tape Library.

The figure below shows three of the staff groups at KCTS and hints at the differences in their goals, tasks, etc. The figure also illustrates how abstraction levels and stakeholder domains provide a way of breaking the concept of common ground into a number of its constituent elements.

Level/Domain	Tape Librarian	Producers	Interactive Group
Goals and constraints	Organize Tape Library	Produce programs	Produce companion web pages for programs
Priority measures	Identify contents of tapes	Produce programs on time and on budget	Support needs of production projects
Tasks	Finding footage	Finding raw footage to re-use for new programs	Build websites, create streaming video, log raw footage
Work processes	Information seeking for producers	Searching for footage, working with librarian	Searching for footage, working with librarian
Physical objects	Tapes, databases, computer	Tapes, edit switches, AVID Unity server	Tapes, logging machines, computers, databases

Needs arisen from work analysis of KCTS

A MARS system should support and facilitate existing work processes and collaboration within KCTS. Currently the Tape Library is in a state of disorganization that producers cannot effectively search for and find content they need. The Tape Librarian's priorities do not fall within the context of library maintenance and service. Library reorganization and service to users within KCTS are given low priority. Fundamental to the success of MARS is the existence of a central, highly organized and searchable library which staff can utilize to acquire the program and raw footage tapes they need to make available through MARS. Efforts should be made to make library reorganization a priority for KCTS to better support its function.

- Tapes need to be identified, labeled, cataloged, and organized
- Metadata about tape contents should be created and made accessible through a central online database
- Search strategies should be accommodated that allow users to search using a variety of metadata attributes of tape content
- Subject description should be provided at shot or sequence level within a particular tape of programming or raw footage

♦Next Steps

Based on our analyses, we will design a digital online resource that will be interoperable with the future MAM systems of KCTS and KUOW. The system will be built with the funding of Phase-II of the MARS Project. Aspects of the design include:

- Use of the CPB metadata element set
- Development of controlled vocabularies for radio, television, and related subject matter
- Linking of media assets to curriculum and lesson plan standards as identified by teacher focus groups
- Provide a model that could be replicated across public broadcasting stations around the nation irrespective of size

♦References

[1] Rasmussen, J., Pejtersen, A.M. & Goodstein, L.P. 1994. *Cognitive Systems Engineering.* New York: Wiley.
[2] Hertzum, M., Pejtersen, A.M., Cleal, B. & Albrechtsen, H. 2002. An Analysis of Collaboration in Three Film Archives: A Case of Collaboratories. *Proceedings of the Fourth International Conference on Conceptions of Library and Information Science (CoLIS4),* Colorado: Libraries Unlimited.

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