

INTEGRATED MEDIA SYSTEMS CENTER
A National Science Foundation
Engineering Research Center at the
UNIVERSITY OF SOUTHERN CALIFORNIA

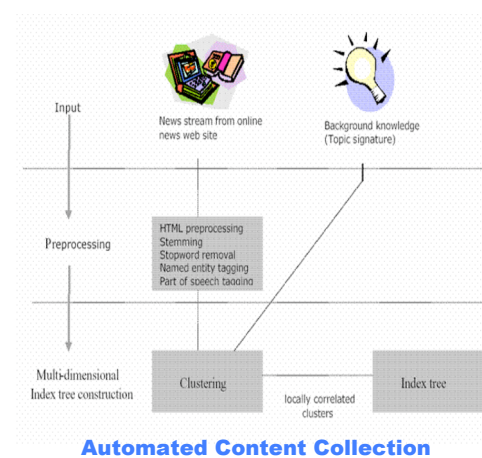
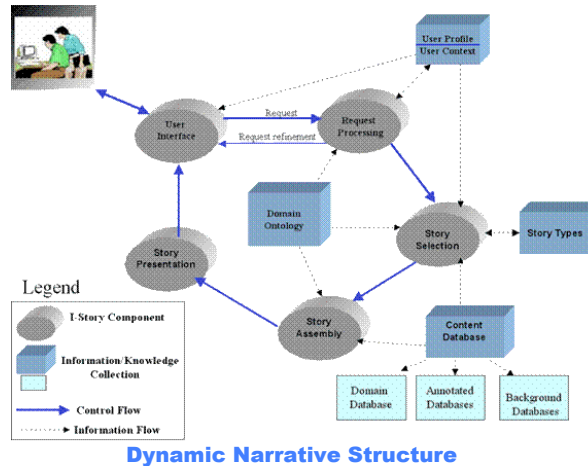
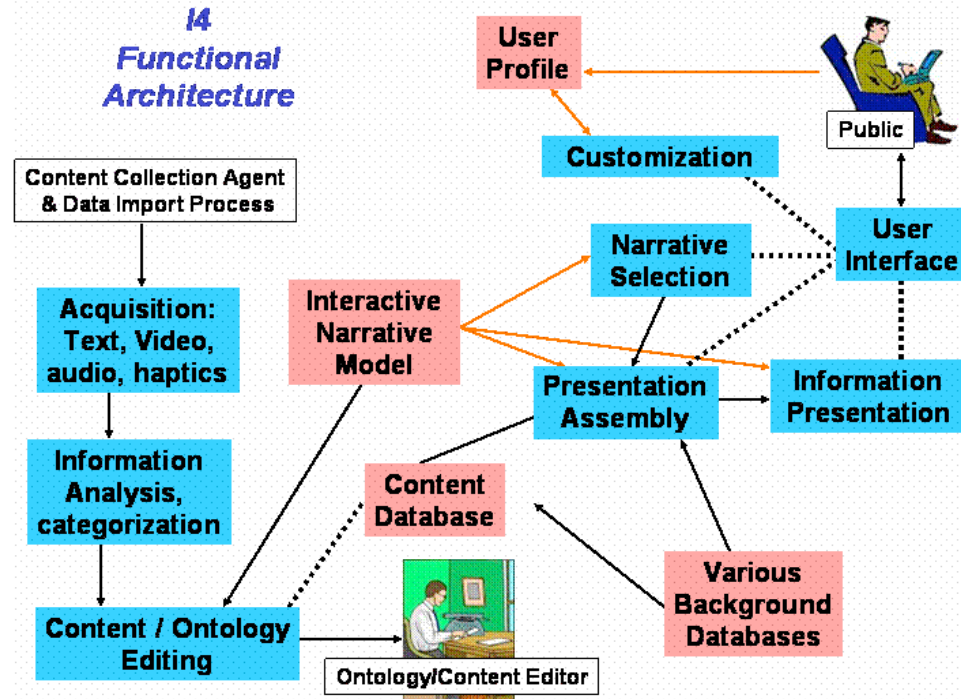
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i4: Immersive, Interactive, Individualize Information

**i4
Functional
Architecture**



USC STUDENTS, DEGREES

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BRIEF DESCRIPTION OF DEMONSTRATION

The goal of Immersive, Interactive, Individualized Information or I4 is to immerse people in interactive, customized multimedia information experiences and to provide organic, intuitive tools for maintaining the underlying content system. Rather than a person querying an information system and getting back some search results, they will receive an integrated information presentation or 'story'.

The next generation of information presentation requires a new paradigm of structure and narrative that changes according to a person's preferences, interests and choices. A person will not only be immersed in interactive "stories" filled with multimedia elements and a wealth of customized background, but the information presentation will reform and change into different 'experiences' depending upon the viewer

UNIQUE OR DISTINGUISHING CHARACTERISTICS RELATIVE TO STATE-OF-THE-ART

- (Semi-)automated content analysis and storage
- Dynamic and self-maintaining ontologies
- Use and authoring of models and templates for information presentation.
- Organic authoring interface that can directly interact with not only the content in the system but its underlying ontology
- The capability for Modality Conversion between drastically different content types, including the combination of those elements.
- Mining of rich user history and behavior data for customization of the system's operation and content and model selection

APPLICATIONS

- Back-end information system (and ontology) for next-generation consumer information presentations in areas like news, education and entertainment.
- Creation of interactive, immersive, customized information 'experiences' based on user queries and information
- Automated collection, analysis, and storage of content in any information domain, including dynamic creation of underlying ontology.

RECENT HIGHLIGHTS, LEVEL OF DEVELOPMENT, UPCOMING MILESTONES

- Initial research into information presentation models resulted in categorization of model components and a small number of manually constructed information presentation templates.
- Research into user behavior historical modeling represented the first component in I4's User Profiling. A user's request history is used to narrow or expand the requests from that user. This research parallels similar user history and modeling efforts in area of education; these projects will share research in acquiring, querying and analyzing user immersidata.
- A topic-based ontology was introduced into the system. In parallel with the concept-based ontology, the creation of topics is semi-automated from analysis of concept and topic clustering across content.
- The initial content agent collection information from select Web sources and analyzed, deconstructed and stored the information into the content database.
- A dynamic, limited vocabulary was created from the system ontology and synonym list. Spoken requests can be processed with speech recognition using that vocabulary; recognized terms are processed as user requests into the story system

UNDERLYING TECHNOLOGIES

- A technique for representing the structure and alternatives in the presentation of a personalized story to the user (information presentation template or model).
- An ontology model for collection and personal context representation.
- Capabilities to represent and fuse multi-modal data, and integrate information from several sources/collections.
- Communication style differentiators and metrics for measuring the effectiveness of customization based upon the differentiators.
- An approach to ontology and communication style matching, using applied knowledge processing techniques.
- An approach to real time dynamic information acquisition (including immersive continuous media).
- Ontology-based natural language interface techniques for story selection and interaction.
- Facilities to support the real-time scheduling and wired or wireless delivery of presentations.

LIST OF PUBLICATIONS, REFERENCES, URLS

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