

Interactive Experiential Dynamic

Do you know one when you see it?

19 September 2005

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Interactive System

- InterPARES 2 adopted the Institute of Electrical and Electronics Engineers definition of an interactive system as “one in which each user entry causes a response from or an action by the system”.
- The definition needs to be expanded to “one in which each user entry *or input from another system* causes a response from or an action by the system.”

Interactions

- Simple: user selection of fixed options
 - E.g. “next page,” navigation of website, image magnification.
- Complex: number of possible user inputs is so great that what is presented in a given instance is not predictable
 - E.g. totality of information viewed in a single session at amazon.com
- More complex: where user choices or inputs change the content or form of what is presented.
 - E.g. web site where user inputs cause system to fetch data from other sites.

Experiential System

- Experiential digital object: “an object whose essence goes beyond the bits that constitute it to incorporate the behavior of the rendering system, or at least the interaction between the object and the rendering system.”
 - Clifford Lynch, 2000a
- IP2: experiential systems: that immerse the user in a sensory experience.

Experiential Computing

- Enriches cognition through sensation:
 - “Experiential environments free users from the tedium of managing enormous volumes of disparate heterogeneous data. They don’t try to interpret an experience; instead, they provide an environment that can be used to naturally understand events....”
 - Ramesh Jain. Experiential Computing. Communications of the ACM. July 2003. 46/7. Pp. 48 – 54.

Experiential Computing Examples

- story telling, folk computing, personal event experience
 - “[Users] must be able to explore and experience events from multiple perspectives and revisit them as often as needed to obtain that insight. In an experiential computing environment, users apply their senses directly, observing event-related data and information of interest. Moreover, users explore the data by following their own personal interests within the context of an event.”
- business-activity monitoring, homeland security, bioinformatics research
 - “draw from a vast network of disparate data sources, including databases, sensors, and systems in which data is entered manually. All produce streams of data for a variety of applications.... Real-time data analysis must be combined with real-time data assimilation from all sources in order to present a unified model of the situation in some intuitive form.”
- EventWeb
 - “Users would experience the events in the medium—text, video, audio, or some combination—they find most appealing and useful at the moment. In such a Web, each node represents an event, whether past, current, or future. Users might post events on this Web by connecting one or more cameras, microphones, infrared and other sensors, databases, and related textual information to let visitors experience them as they wish.”

Dynamic System

- Dynamic computing: “dependent upon data that might have variable instantiations and be held in databases and spreadsheets.”
 - Seamus Ross, 2000

“Dynamic computing”

- “a term that is used to describe flexible and adaptable approaches to tailoring computing resources to demands.”
 - Real-time distributed computing,
 - Adaptive computing, which can automatically adapt or configure computing resources to suit different tasks, and
 - Agent-based computing uses freestanding software agents that are variously described as intelligent, intentional, mobile, and remote acting....
- Dynamic computing has emerged as a dominant trend in the information technology in the twenty-first century.”
 - Summit Strategies. The 2005 Summit Seven: Dynamic Computing Gets Down to Business. Market Strategy Report 4EC-07. December 2004. [<http://www.summitstrat.com/store/4ec07detail>].

Dynamic Computing Examples

- dynamic routing of network traffic,
- automated email answering,
- business process management,
- military applications,
- multidisciplinary problem solving in scientific research.

Interactive, Experiential & Dynamic Systems

- Interactive, 'Experiential' & 'Dynamic' are attributes of systems, not types of systems
- Not mutually exclusive
 - Experiential and dynamic systems are inevitably interactive

Necessary Characteristics of Electronic Records: Fixed Form & Unchangeable Content

- Rock hard fixity
- Bounded variability
 - Allowed by the technology used to reproduce the record
 - Intended by the author or writer
- Open-ended variability
 - Document in a system which allows it to be modified
 - Document which is forever “in process”

Interactive, Experiential & Dynamic Objects

- An interactive object
 - one which, when presented to a person or another system, allows the person or other system to input data, which engender changes in the subsequent presentation of the same object in the same interaction.
- An experiential object
 - one which gives rise to experience or in some way captures an experience.
- A dynamic object satisfies one or more of the following:
 - (i) it has a fixed form, but draws its content in real time from other sources,
 - (ii) the content data available for presentation are fixed, but their presentation, both in form and selection of elements of content to be presented, varies in response to real-time inputs from a person, another system, or an input device, or
 - (iii) the content data, though stored as part of one or more digital components, change frequently by additions, deletions or replacements.

Documents in Interactive, Experiential & Dynamic Environments: 1

Static documents.

1. Documents that are the electronic equivalents or counterparts of traditional documents.
 - E.g., records of sales transacted in online retail systems; reports of scientific experiments or observations of natural phenomena output from dynamic systems; digital sound recordings, digital motion video, and visual art works.
2. Documents that have no exact counterpart in hard copy or analog form but have fixed documentary form and content. This category includes the results of any method of capturing or freezing something presented by an interactive, experiential, or dynamic system.
 - E.g., snapshots of web pages, and recordings of performances of artworks which have characteristics only possible in a digital environment, as well as the results of freezing and capturing the output of a system which modifies its own instructions for processing or presenting content data.

Documents in Interactive, Experiential & Dynamic Environments: 2

Documents with **variable content and/or form** but **fixed rules** which govern the content and form of presentation.

1. Documents where the content presented in any instance is selected from a fixed store of data within the system.
 - E.g., online sales catalogues, interactive web pages, and documents which enable performance of music and other works of art.
2. Documents where the content and/or its presentation vary because it includes or is otherwise impacted by data which changes frequently.
 - E.g., documents in systems whose design permits updating, replacement or alteration of data but do not provide for keeping older or superseded data, and online marketing and sales applications, which collect data in real time from users or about user interactions with or actions on a web site and use those data either to generate or determine subsequent presentation.
3. Documents where the content varies because it includes data received from external sources and not stored within the system.
 - E.g., web sites which present information on topics such as the weather or currency exchange rates, as well as many interactive artworks.

Documents in Interactive, Experiential & Dynamic Environments: 3

Documents with **variable content and/or form** and **variable rules** which govern the content and form of presentation themselves vary.

1. Documents produced in dynamic computing applications, which select different sets of rules – software applets or service components – to produce the documents depending on variations in user inputs, in the sources of content data, and in the characteristics of that content.
2. Documents produced by adaptive or evolutionary computing applications, where the software which generates the documents can change autonomously.

Candidate Records in IED Environments

- A document which freezes an output or state of an interactive, experiential or dynamic system.
- A document which is made in an interactive, experiential or dynamic system, where the system has the capability to set aside and subsequently “retrieve” it.
- A document which is received in a ‘frozen’ state.