Design Environments

An Historical Overview

AI in Design

Software Architecture

Evolving Artifacts

Theory and mechanisms for computer supported design
AI and Design

Strong vs Weak AI
   An HCI perspective aims to augment human intelligence

Role Distribution
   Delegation of responsibilities

Design Media
   Trading off between Tradition and Transcendence

Research Approach
   Theory, System Building, Evaluation
Critiquing - the LISPcritic

Critiquing systems should be domain-oriented
Software Architecture

Architecture and Theory Co-Evolve

Domain Independent vs Domain-Oriented

Domains
The Multifaceted Architecture

- Construction Kit
  - Specification Linking Rules
  - Construction Analyzer

- Specification
  - Catalog Explorer
  - Argumentation Illustrator

- Argumentation
  - Catalog Explorer
  - Specification Linking Rules

- Catalog
Argumentation

ISSUE 133:
133: What should the location of the refrigerator be?

ANSWER:
Near the entrance to the kitchen.

ARGUMENTS:
If there is frequent snacking, then locating the refrigerator near the entrance will decrease traffic conflict between the persons getting snacks from the refrigerator and those preparing meals or doing cleanup.

ARGUMENTS:
This will only be a problem when there is more than one person in the household at a time.

This might also be a problem if members of the household don't eat meals together.

Close to the service entrance

Argumentation Must Serve Design
Construction Kits do not, in themselves, ensure a good artifact.
Integration produces a synergistic effect
Reuse and case-based reasoning require computational support
Specification

- Size of family?
  - Seven or More
  - One
  - Two
  - Three
  - Four to Six

- How many cooks usually use the kitchen at once?
  - two
  - one
  [answer suggested because size-of-family three or more]

- Is the primary cook right-handed or left-handed?
  - Right handed
  - Left handed
  - Switchable

Specification Increases Shared Context
Argumentation Illustrator

Argumentation

Issue (Stove)
What should the location of the stove be?
See also: "Subissue (Stove)"

Answer (Stove, Door)
The stove should be away from a door.

Figure 5: stove-door

Argument (Fire Hazard)
By placing the stove too close to a door it will be a fire
and burn hazard to unsuspecting persons by (such as small
children)

Argument (Dining Room)
If the door leads into a dining room, it will be easy to
bring hot food from the stove into the dining area

Answer (Stove, Window)
The stove should be away from a window.

Table: Default Viewer

Commands
- Show Outline
- Resume Construction
- Search For Topics
- Show Argumentation
- Show Examples
- Show Counter Example

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