“Domain-Oriented Design Environments: Examples & Issues”

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A Brief History of AI

(my personal perspective)

1. AI software : a computer :: human mind : brain
2. AI models computational structure of mind
3. AI mimics human intelligence
4. AI heuristics do intelligent-looking tasks
5. AI can replace human decisions with representations of knowledge
6. Computers can support people with representations of knowledge
7. Computers can help people design by supporting communication & info retrieval (DODEs)
8. Computers should adapt generalized info to people's situated tasks

DODE systems and components

Lisp Critic	**critics**
Framer	**construction kit**
Phidias	**design rationale**
Janus	**combine construction & rationale**
Modifier	**end-user modification of objects**
KID	**specification**
Hermes	**perspectives**
Network	**communication medium**
VDDE	**non-spatial metaphor**
ProNet	**proactivity**
WebNet	**information space**

Seven Issues for the Next Generation of DODEs

Issue 1. Retrieval Mechanisms for Relevant Info.

Issue 2. Representations of Context

Issue 3. Retrieval of Domain Knowledge

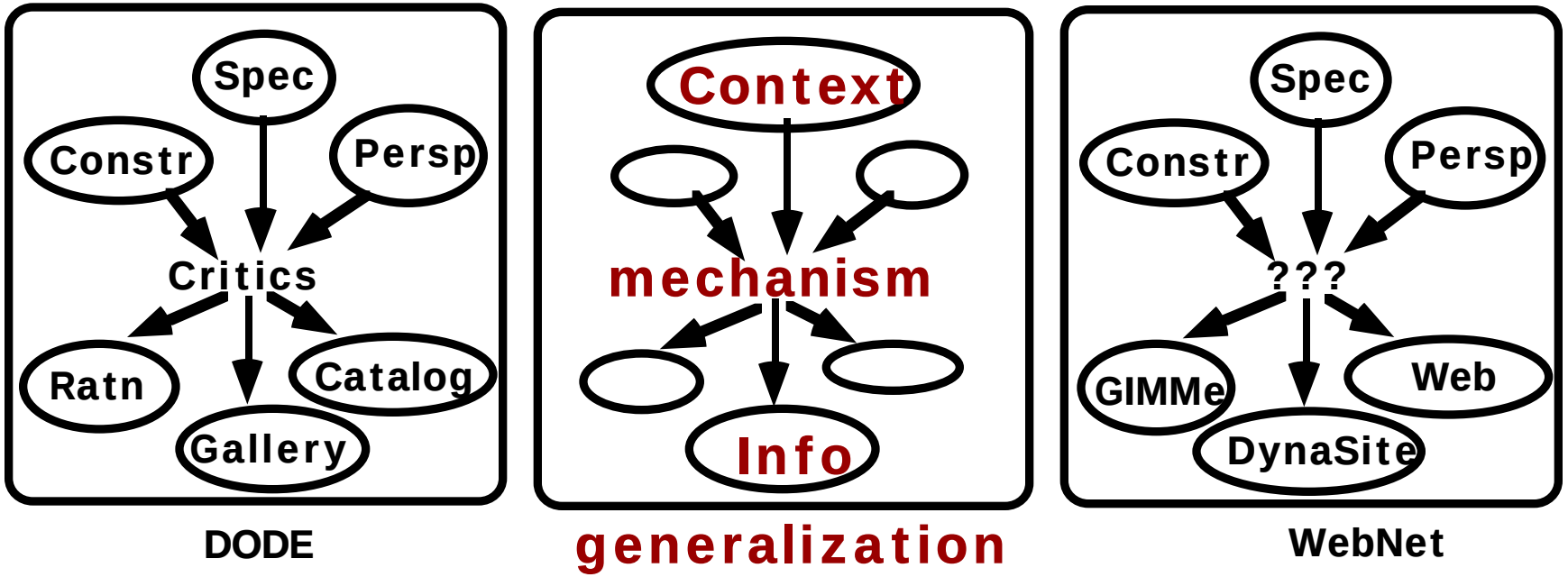
Issue 4. Representations of System Knowledge

Issue 5. Evolution of Knowledge

Issue 6. Management of Evolution

Issue 7. End-user Programmability and Extensibility

Issue 1. Retrieval Mechanisms for Relevant Info



critiquing assumes stable relations of context to info

Issue 2. Representations of Context

2-D constructions are not central to LAN management.

Network simulations are too complex.

Represent problem specs in domain language?

Model user or classify user interests.

Specify organizational context.

Issue 3. Retrieval of Domain Knowledge

Is LAN management a domain?

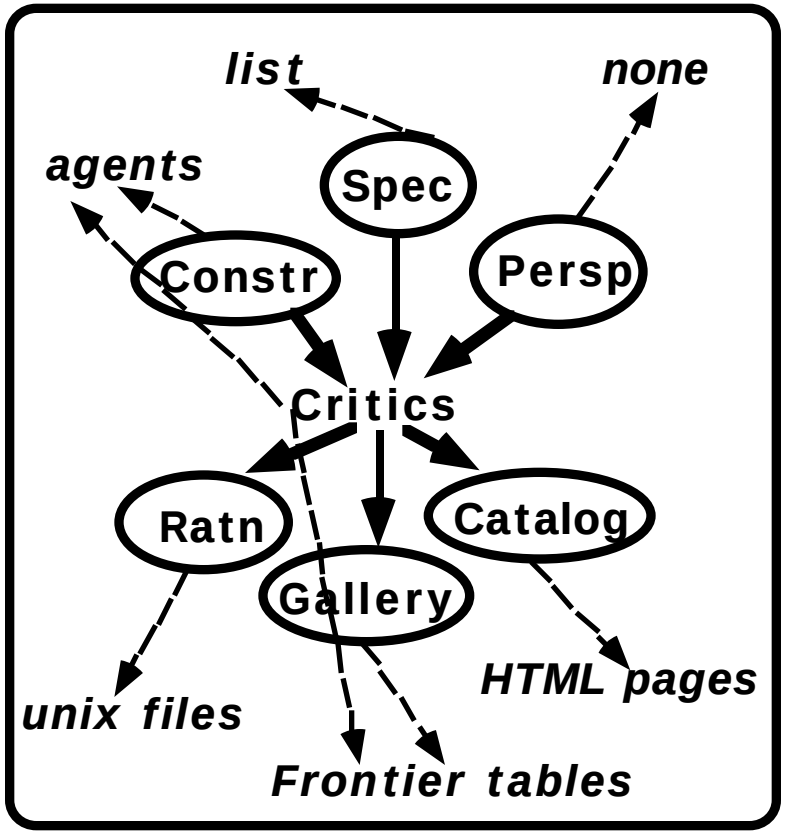
Why we picked it -- old view of domains.

Multiple-domain hardware/software problem solving.

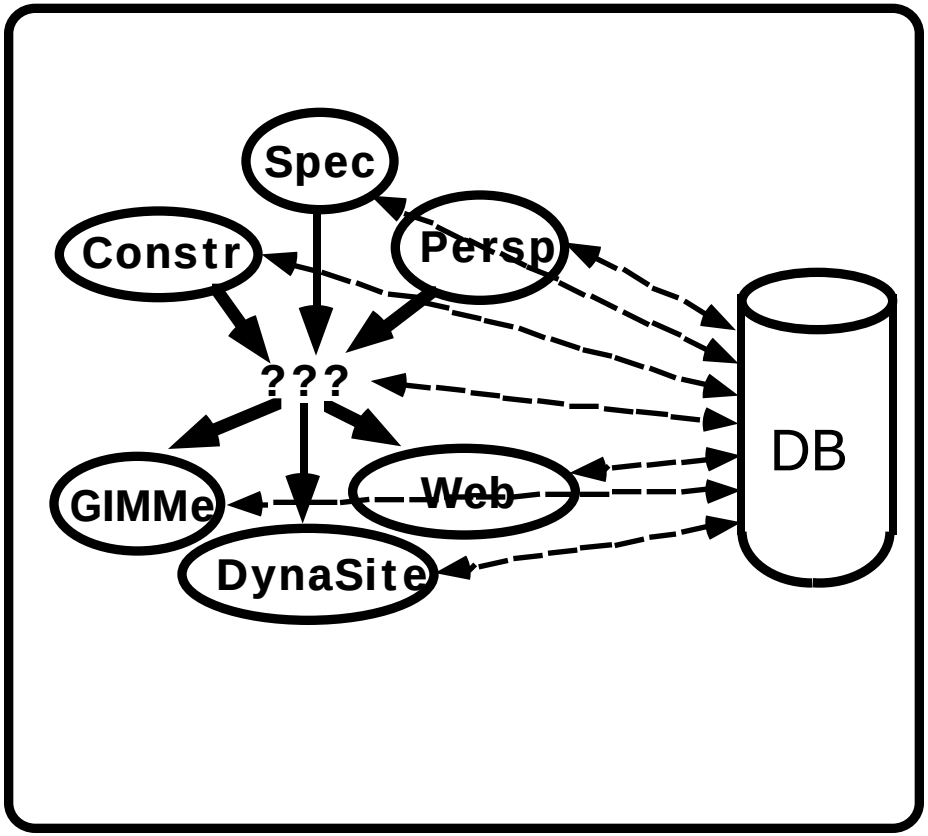
Very contextual to local equipment config & history.

Group communication among individual actors.

Issue 4. Representations of System Knowledge



current WebNet



future WebNet

support universal linking, querying, perspectives.

Issue 5. Evolution of Knowledge

User needs change (more than maintainance)

Technology evolves

Organizational contexts transform

Knowledge is constructed in project activities

Knowledge is negotiated in communities of practice

Issue 6. Management of Evolution

Collect & capture info (seed & growth; low cost)

Update & structure (prune & organize)

Reseed with new functionality

Index for retrieval

Display for user context

Inter-link by relevance

Use Web (sparce, poor quality, changing, unindexed)

Issue 7. End-user Programmability and Extensibility

Extend gallery with Web repository (Martin)

Program construction/simulation agents (Agentsheets)

Define critic rules

Add retrieval queries (GIMMe, WebNet)

Interactive, evolving Web sites (Elmo, DynaSites)

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