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# Proposed Evaluation Framework for the Adaptive Hypermedia Systems

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# Earlier Evaluation Frameworks

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## ■ Monolithic Evaluation Frameworks

### ■ Disadvantages:

- Exact source of adaptation failure difficult to point out
- Comparison of adaptive vs nonadaptive systems (adaptive versions with switched off adaptivity) not “optimal”



## ■ Layered Evaluation Frameworks

### ■ Advantages:

- Exact source of adaptation failure can be pointed out

### ■ Disadvantages:

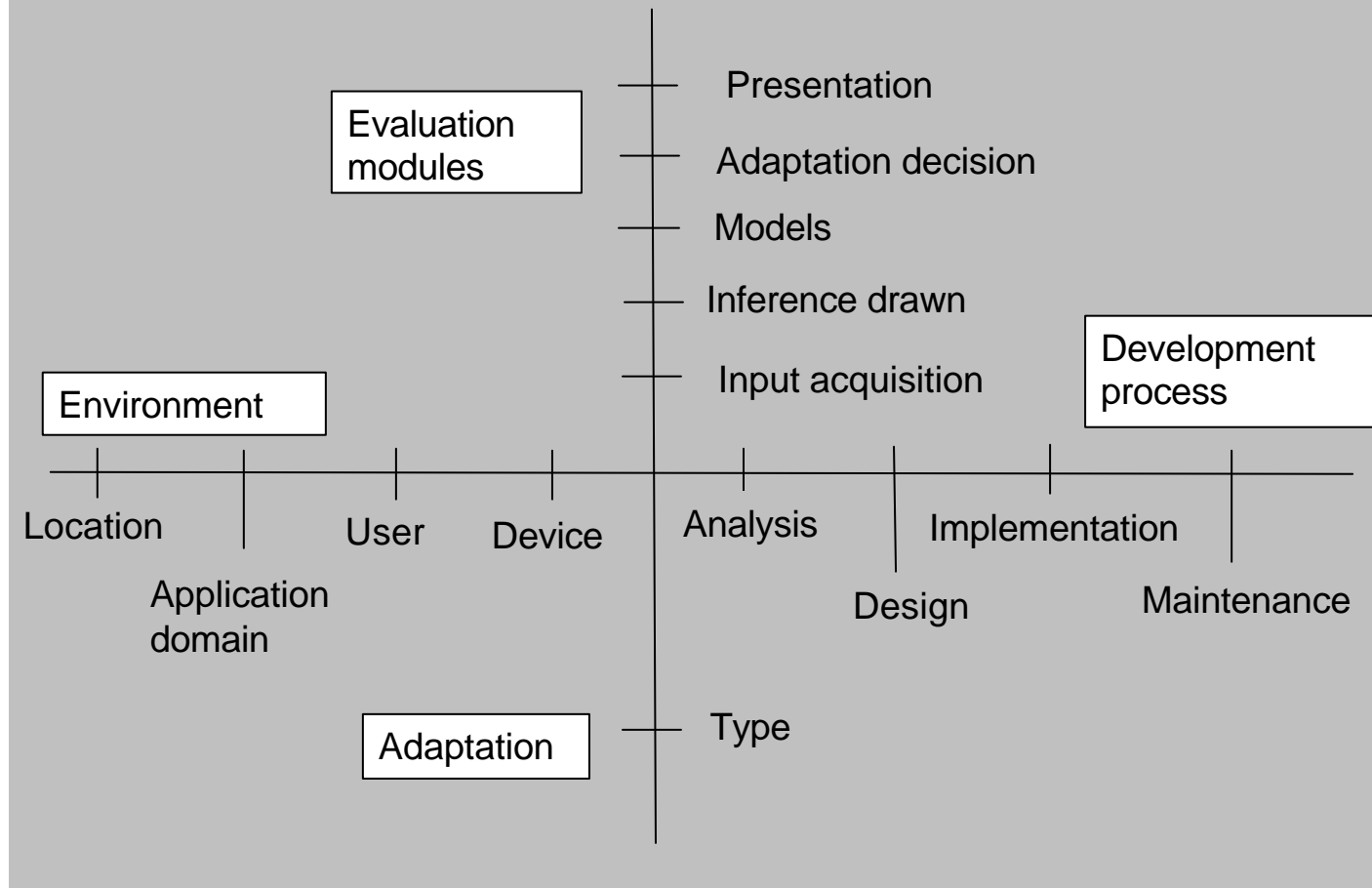
- Most of them do not follow development process
- Issues like maintenance and extensibility not considered
- Factors arising in internet based AHS not addressed

# Proposed Evaluation Framework

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- Framework is an extension of existing layered frameworks and adds new dimensions to them
- Treats evaluation as integral part of development process
- Evaluates the successful access of AHS on internet

# Proposed Evaluation Framework



# Framework description

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- Dimensions of Framework
  - Environment
  - Adaptation
  - Evaluation Modules
  - Development Process
- All dimensions are orthogonal to each other

# Environment

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- Evaluation of set of conditions to which AHS has to adapt itself
- Can be divided into
  - Device
  - User
  - Application Domain
  - Location

# Adaptation

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- There can be two types of adaptations based on time and process of adaptation
  - **Static:** specified by the author or occurs once only at the startup of application
  - **Dynamic:** occurs during runtime, depending on factors like inputs given by users, changes in user model etc.

# Evaluation Modules

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- **Input Acquisition:** This module evaluates inputs taken by the system manually or automatically for factors like reliability, accuracy, precision etc.
- **Inferences Drawn:** This module evaluates the inferences drawn from the inputs of previous layers for correctness.

# Evaluation Modules

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- **Models:** Involves evaluation of various models used by AHS such as user model, domain model, navigation model etc.
- **Adaptation Decision:** Evaluates the “optimality” of the decision of AHS’s choice of adaptation technique.

# Evaluation Modules

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- **Presentation:** Evaluates the human computer interaction for criteria like presentation, coherence, timeliness of adaptation etc.

# Development Process

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- Comprises of the evaluations carried out during the software life cycle of AHS
- During each phase of this dimension, evaluation of individual elements of environment, adaptation and evaluation modules is done with respect to each other.

# Development Process

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- **Analysis:** evaluates the information gathered about the problems of current system, and/or identifying the requirements of the system to be developed by preparing checklists etc.
- **Design:** It involves the evaluation of various designs such as architectural design, content design, navigation design and interface design. Metrics are prepared for this purpose.

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- **Implementation:** Each software module needs to be evaluated individually and in integration with each other after the coding has been done. Metrics are used for carrying out the evaluation.
  - **Maintenance:** There is a need to evaluate the maintenance of AHS since they might require updation at any moment. Features like modular hyperspace design, automatic link generation etc facilitate maintenance. Metrics for the same can be used.

# Example

Precision of content during implementation phase of presentation module	Adaptation			
			Static Adaptation	Dynamic Adaptation
Environment	Device	PDA	85%	80%
		Mobile	80%	80%
		Desktop	95%	96%
	User	Novice	70%	76%
		Average	90%	90%
		Expert	80%	85%
	Location	.		
		.		
		.		
	Application Domain	.		
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# Future work

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- Develop an AHS using this Evaluation Framework at all software engineering steps.
- Development of metrics for various stages of the framework

THANK YOU

