

Fluid Design Architecture for Function-Limited User Interface Devices

Disclosed is an architectural framework for Function-Limited User Interface Devices (FLUIDs). User interface devices having limited functions, e.g., phones and remote-control clickers, are pervasive in our world. They are used effectively by most everyone from age five and older. The current function of FLUIDs is communication. However, for FLUIDs to reach their full potential of effectiveness requires extensive computation. Thus, the disclosed framework specifies how to link the communication function of FLUIDs with computation in a new and inventive manner.

The Table shows the layers of the FLUID architectural framework. Disclosed here are three features believed to be new: First, is an architecture that effectively can connect computers to humans through FLUIDs. This architecture turns FLUIDs into effective computer workstations. Second, the framework enables the systematic and effective construction of new user-interface objects and processes. For example, fast-forwarding through meeting notes or a text file could be implemented just as the current function exists for video tapes. Third, the framework provides a separate semantic layer, Associative Memory Objects, for taskflows. In general, prior expert systems and artificially intelligent programs have one layer for semantic representations. The disclosed framework has two, enabling the semantic representation of object and action elements in one (Semantic Structure Objects), and compound objects and scripts in the other (Associative Memory Objects). Taskflows, which are of primary importance in engineering effective computer-human interaction, thus have a separate and primary layer in the disclosed architectural framework.

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Table Layers - Architectural Framework for FLUIDs				
Layer	Process	Input side	Output side	Comments
S-R objects	User Perception and Response	Buttons	Voice, auditory signals, TV screens	These are the real-world device objects.
Transducer & transmitter objects	Codification for transmission	DYME, Infra-red, Micro-wave Pulses	Analogue to sound conversion	This layer is provided by phones, clickers, etc.
Computation-code objects	Codification for computation	ASCII numeric strings	Digitized speech	This is the bridge layer between communication and computation.
Surface-structure objects	Word identification	ASCII character strings	Text strings	This is a computation layer. It is the layer in which, e.g. current voice-response units operate.
Semantic-structure objects	Meaning identification & generation	Deep structure analysis	Deep structure synthesis	This is a computation layer. It is where linguistic analysis and synthesis will take place.
Associative-memory objects	Script identification & generation	Intention analysis	Plan & design synthesis	This is a computation layer. It contains objects representing the system's real-world model, e.g. mental scripts describing taskflows.