User-Preferred Interface Design with Abstract Interaction Description Language

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Increasing services:

- Appliances
- Shopping
- Reservations
User Interfaces

Increasing services

Increase of Interfaces with intermediary computers
Problem

• Users' characteristics
  – Environment
  – Body description
  – Preference for interfaces
• Interfaces are
  - predefined and fixed
  - mostly GUIs
  - slightly different
Solution?

Service developers prepare all kinds of interfaces.
Solution

\[ m \times n \text{ interfaces} \]
Proposal Architecture

Interface Client

Logic Server

Specification of Interface

Interface Client/Logic Server (ICLS)
One Interface
Any Service
One Service
Any Interface
Solution

m + n interfaces
ICLS Architecture

Specification of Interface

Interface Client

Logic Server
How To Describe Interface?

For independence from devices:

“Push button”
“Input from keyboard”
“Command with voice”
Description of Interaction

Interaction:
information exchanged between user and service.

Focusing on:
“How do you select from among choices?”

Interaction model
Interaction Model

Presentation and Indication Model (PIM)
Graph Expression

Interaction graphs represent interactions abstracted by PIM.

Abstract Interaction Description Language (AIDL)
• AIDL:
  - is an application of Semantic Web
  - is a vocabulary of RDF
  - uses classes as meanings of selection acts

Highly extensibility
Example

- Desk Lamp Control Service
  - Power State (ON, OFF)
  - Brightness (Bright, Normal, Dim)
Tree Structure

- aidl:Dialog
  - aidl:Selection
    - Selection of power state
  - aidl:Selection
    - Selection of brightness
  - aidl:hasPiece
Expression of Selection

Selection of power state

aidl:Selection

aidl:EnumResources

ex:off

ex:on
Users' Response

• Interaction Graphs in AIDL represent:
  - Specification of Interface
  - State of Current Interaction
Selection of power state:

- `aidl:Selection`
  - `aidl:hasResult`
  - `ex:on`
  - `ex:off`

- `aidl:item`
Cooperation of C/S

As specification of interface
As state of current interaction
Difference information

Change log
Implementation

GUI

Desk Lamp

CLI

Mobile
Conclusion

• Proposal
  - Interface Client/Logic Server (ICLS)
  - Abstract Interaction Description Language (AIDL)

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References

7. E. Miller, R. Swick, and D. Brickley, “Resource Description Framework (RDF).”