

**A Dialog Control Framework  
for Hypertext-based Applications**

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GI-Informatiktage, November 8, 2002 1/26

**YOU ARE HERE** ♦

- ♦ Introduction
  - Motivation
- Dialog Flow Notation
  - Dialog Elements and Graphs
  - Dialog Modules and Nesting
- Dialog Control Framework
  - Dialog Flow Specification Language
  - Framework Architecture

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**Evolution of Web Sites**

Complexity

+ ideal thin clients  
- limited user interface

Information Interaction Transaction Application

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**Hypertext Application (Step 1)**

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General Discussion of any content on this site	0	0	No Posts
Travel Destinations, Itineraries and Travelogues	4	9	Sat Apr 27, 2002 8:44 am [Last Post]
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**Hypertext Application (Step 2)**

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Topics	Topics	Author	Views	Last Post
Norway trip	2	stasaa	3	Sat Apr 27, 2002 8:44 am [Last Post]
Alaska	1	danonaid	2	Sat Apr 27, 2002 8:40 am [Last Post]
Igneous Falls	1	stasaa	4	Fri Apr 27, 2002 8:38 am [Last Post]
Going someplace warm...	1	stasaa	3	Sat Apr 27, 2002 8:26 am [Last Post]

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**Hypertext Application (Step 3)**

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### Hypertext Application (Step 4)

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### Hypertext Application (Step 5)

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### Hypertext Application (Step 6)

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### Conceptual Models of Dialog Flows

**Window based application**

**Hypertext based application**

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### Media Dependent Dialog Flows

**Example: Online Shop Checkout**

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### Need for a Dialog Control Framework

- Problems:
  - Dialog flows cannot be nested
  - Dialog flows vary on different media
  - Dialog control logic often complex, neglected
- Wanted:
  - Reusable solution for any app
  - Dialog Control Framework
  - Dialog Flow Notation

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**Dialog Graph**

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**Dialog Module**

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**Nesting Dialog Modules**

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**Event Semantics**

- events are results of elements, not calls to them
  - same event generated by same element may lead to different elements in different contexts
- module reusability and flexibility

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**Multiple Presentation Channels**

Example: Online Shop Checkout

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### Key Notation Features

- Consecutive, fine-grained actions or masks
  - flexible dialog graphs
- Dialog modules encapsulate dialog graphs
  - reuse in different contexts, nesting
- Events are results, not calls
  - dialog control not performed by model or view
- Advanced features (*not shown here*)
  - complex dialog structures

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### From Spec to Implementation

- Req Analysis, Specification, Design phase
  - dialog flow specification refined incrementally
- Implementation Phase
  - smooth, efficient transition desired
  - diagrams serve as input for framework

Translation

XML Dialog Flows Doc XML Dialog Elems Doc

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### User Authorization Flow Spec

```

<dfs-flows>
...
<in-module name="User Authorization">
  <channel name="HTML">

    <on-init>
      <call-action>check login status</call-action>
    </on-init>

    <ex-action name="check login status">
      <on-event name="not yet logged in">
        <call-mask>Login</call-mask>
      </on-event>
      <on-event name="already logged in">
        <call-action>has admin rights?</call-action>
      </on-event>
    </ex-action>
  ...
  
```

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### Front Controller Architecture

- Dialog Flow Specification, Dialog Control Logic distributed over all actions
  - inflexible dialog flow specification
  - limited dialog control capabilities
  - no support for different channels' interaction patterns

Client Controller View Model

Request Set view Dispatch Forward Extract Update

Response

Dialog Spec, Control Logic Application Logic Action

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### Dialog Ctrl Framework Architecture

Client Channel Interface Dialog Controller Mask Model


Request Event Forward Extract Update

Response

Compound Stack OO Dialog Flow Model XML Dialog Flows Doc XML Dialog Elems Doc

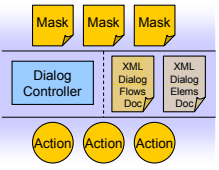
push, pop, top Look up Import


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### Advantages of DCF Architecture

- strict separation of tiers
  - presentation logic
  - dialog control logic
  - dialog flow specification
  - application logic





- reusability, maintainability
- presentation channel independence
- support for complex dialog structures
- black-box reuse of framework

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Thank you!

Q & A

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