Invite: A Multiprotocol E-Negotiation System

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http://interneg.org/enegotiation
# Review of Electronic Negotiation Systems (ENSs)

<table>
<thead>
<tr>
<th>EMT System</th>
<th>Type</th>
<th>Agent</th>
<th>Protocol/ Variation</th>
<th>Issue</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspire</td>
<td>Bilateral</td>
<td>One-to-one</td>
<td>Fixed</td>
<td>Multiple, Fixed</td>
<td>Web-based</td>
</tr>
<tr>
<td>(Kersten 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WebNS</td>
<td>Bilateral</td>
<td>One-to-one</td>
<td>Fixed</td>
<td>Multiple, Flexible</td>
<td>Web-based</td>
</tr>
<tr>
<td>(Yuan 1998)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SimpleNS</td>
<td>Bilateral</td>
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<td>Web-based</td>
</tr>
</tbody>
</table>

Based on EMT (Extended Montreal Taxonomy)
Review of Frameworks/Platforms

• SilkRoad Framework: (Stroebel 2001)
  • Framework for designing and implementing electronic negotiation systems
  • Supports different protocols but not multi-protocol ENSs

• Generic Negotiation Platform (GNP): (Benyoucef 2000)
  • Platform for combined negotiations
  • Negotiations are based on auction-type protocols
  • Workflow management system deals with interdependencies
Why multiprotocol ENSs?

- Analyze different protocols in one ENS
- Keep differences in UI to a minimum
- Keep data in one database
- Leave users with a choice of protocols
- Allow users to construct their own protocols
Invite: Design and Implementation Goals

- Run different protocols in one ENS at the same time
- Let user select a predefined protocol
- Let user customize protocols and user interface
Implementation Challenges

• Translate process model (e.g. Gulliver 1979) to negotiation protocol

• Interdependency of counterparties: synchronization

• Keeping track of state of a negotiation

• Keeping the system/platform modular and generic
Prototype: System Overview

User interfaces
- User interfaces
- Page composer
- Negotiation controller
- Protocol instance
- External applications
- Components
- System
- User
- Databases

Applications
- Composers
- Page composer
- Web application server
- OS
- DBMS

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Protocol and Sequence

Sequence A
- State (optional)
- State (optional)

Sequence B
- State (initial)
- State (initial and mandatory)
- State (optional)
- State (optional)
- State (optional)

Sequence C
- State (optional)
- State (initial and mandatory)
- Exit

Diagram showing the flow between sequences A, B, and C.
## Protocol example: SimpleNS

<table>
<thead>
<tr>
<th>User_id</th>
<th>Sequence_id</th>
<th>Initial_State</th>
<th>Optional_State</th>
<th>Exit_point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>readPublicCase</td>
<td>N/A</td>
<td>2,6</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>readPrivateCase</td>
<td>readPublicCase</td>
<td>3,6</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>sendOffer / Message</td>
<td>readPublicCase, readPrivateCase</td>
<td>4,6</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>readOffer / Message</td>
<td>readPublicCase, readPrivateCase, history, agreement</td>
<td>3,5,6</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Agreement</td>
<td>readPublicCase, readPrivateCase, history</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>terminateNego</td>
<td>readPublicCase, readPrivateCase, history</td>
<td></td>
</tr>
</tbody>
</table>

### State Diagram

- **State (optional)**
  - Exit
  - Exit

- **State (initial and mandatory)**
  - Exit
  - Exit
Negotiation Controller

- Run-time environment for the execution of protocol instances
- Execution of multiple protocol instances at the same time
- Independent of the set of components and page composers
- Control access of page composers
- It gets the user’s protocol instance from database
- It interprets protocol instance into the browser layer (links)
States, Sequence Exits (Links)

• To guide user, what states or sequences are accessible from the current state

• 2 types of links:
  • Link to other page composer within the same sequence. i.e. Transition from ReadPublicCase page composer to ReadPrivateCase composer within ReadPrivateCase(2) sequence.
  • Link to other sequence in the protocol. i.e. Transition from ReadPublicCase(1) sequence to ReadPrivateCase (2) sequence.
Invite Screenshots (1)

Send Message and Offer

You can communicate with your counterpart in the current negotiation by entering a message below and pressing the "Send" button.

Price($US) 10
Quantity(unit) 400
Delivery Time(day) 1
Warranty(day) 60

Clear  Send
 Invite Screenshots (2)

Send Offer and Message

You can counter-offer via INVITE with your counterpart in the current negotiation by constructing an offer below and pressing the "Send" button.

You can communicate via INVITE with your counterpart in the current negotiation by entering a message below and pressing the "Send" button.

Your utility values for this offer is: 0

<table>
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<tr>
<th>Price($)</th>
<th>10</th>
</tr>
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<tbody>
<tr>
<td>Quantity</td>
<td>400</td>
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<tr>
<td>Delivery Time</td>
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<tr>
<td>Warranty</td>
<td>60</td>
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</table>

Clear  Send

Links

- Back to the Case
- Make and Offer Rating
- Option Rating
- Issue History
- Negotiation Questions
- Send Message Rating
- Package Rating

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Questions & Answers

Thank you for your attention