SCXML for Multimodal Applications

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Introduction: SCXML

• A State-Machine Language
  – Based on Harel State Charts
  – Developed by W3C Voice Browser Group

• Designed for Sophisticated Control Flow
  – Fits DPF (Data/Presentation/Flow) Paradigm
  – Multimodal a special case
    • Multiple presentation layers

• Has Powerful Control Abstractions
Feature: Nested States

• Represent Task Decomposition

• If in Parent State, in 1 of Child States
  – Will transition among child states
  – Child states may themselves have children
  – Parent State Complete when reaches final child state
SCXML Equivalent

- <state id="GetCreditCard">
  <initial id="GetName"/>
  <state id="GetName">
    <transition target="GetNumber"/>
  </state>
  <state id="GetNumber">
    <transition target="GetExpirationDate"/>
  </state>
  <state id="GetExpirationDate">
    <transition target="Done"/>
  </state>
  <state id="Done" final="true"/>
</state>
Feature: Parallel States

- Represent Fork/Join Logic
- Multiple Child States Active At Once
- Represent Loosely Coupled Logic
- Terminates When All Child States Reach Final State
SCXML Equivalent

<state id="GrowUp">
  <parallel>
    <state id="professional">
      <initial id="HighSchool"/>
      <state id="HighSchool">
        <transition target="College"/>
      </state>
    </state>
    <state id="College">
      <transition target="Job"/>
    </state>
    <state id="Job">
      <transition target="Final1"/>
    </state>
    <state id="Final1" final="true"/>
  </parallel>
  <state id="personal">
    <initial id="date"/>
    <state id="date">
      <transition target="steadyRelationship"/>
    </state>
  </state>
</state>
<state id="GetCreditCard">
  <initial id="GetName"/>
  <state id="GetName">
    <onentry>
      <send target="server" event="run" namelist="name.vxml"/>
      <send target="browser" event="setFocus" namelist="name"/>
    </onentry>
    <transition event="HTML.change" target="GetNumber">
      <send target="server" event="halt"/>
      <assign location="DM.cardNumber" expr="_eventData.number"/>
    </transition>
    <transition event="VXML.done" target="GetNumber">
      <assign location="DM.cardNumber" expr="_eventData.newValue"/>
    </transition>
  </state>
</state>

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Conclusion

• **SCXML is a Powerful Language**
  – Compact representation of complex logic

• **Browsers Must be More Flexible**
  – For multimodal applications
  – Push HTML pages, halt VXML scripts…
Empowering Your customers and employees with speech technologies

Thank You