W3C Multimodal Interaction Working Group Activities

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Multimodal Interaction Working Group

Multimodality

- Allows multiple ways for the user to interact with an application
- Speech, text, pointing device, handwriting…

Why Multimodality?

- Make new kinds of applications possible
- Simplify interaction with small devices with limited keyboard and display
- Leverage inherent advantages and disadvantages of different modes and different contexts
- Accessibility

Importance of Standards for Multimodality

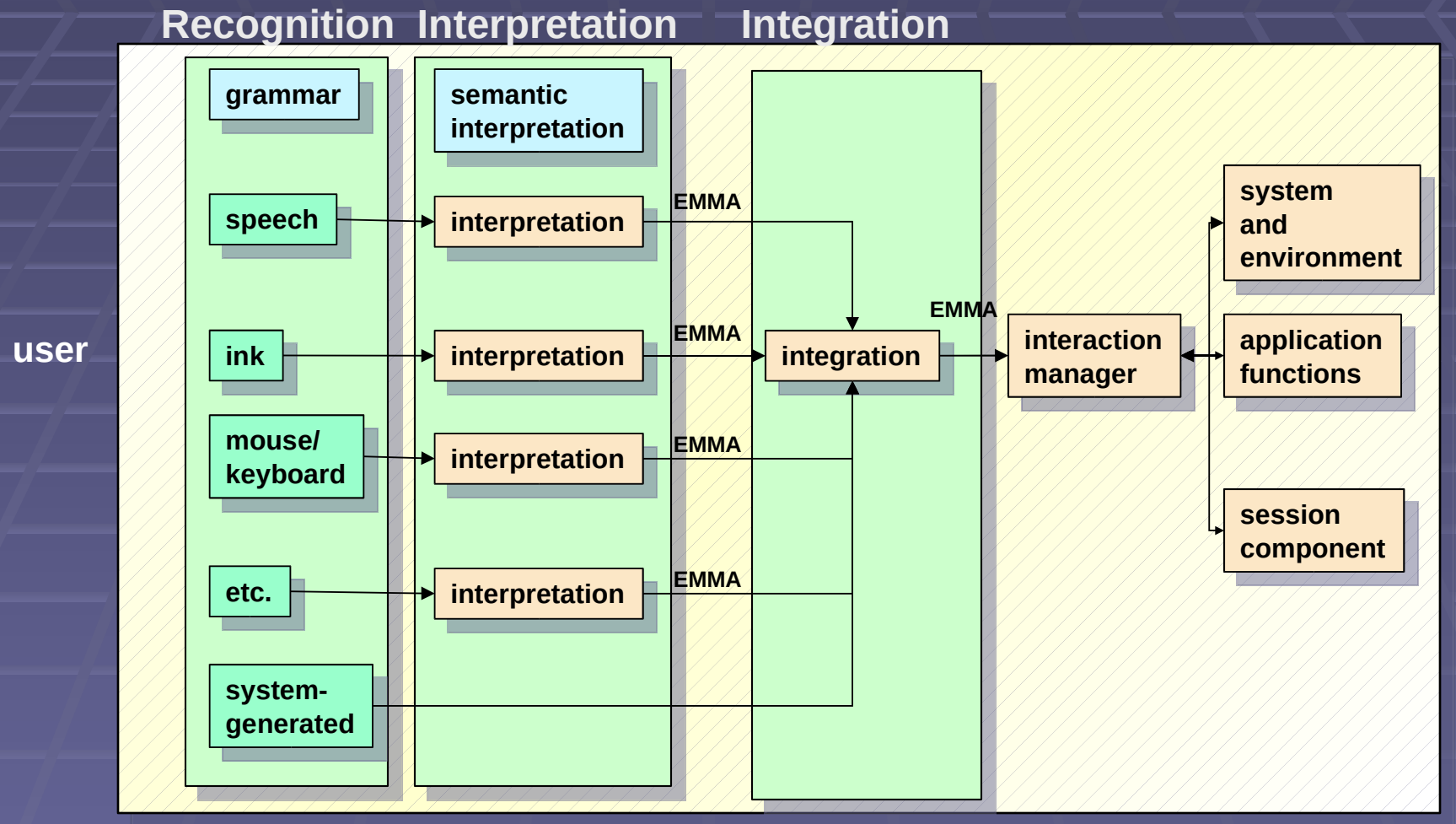
Multimodality integrates many complex technologies

- web (XML, XHTML, XForms, SVG, SMIL…)
- modality technologies
  - speech recognition
  - natural language understanding
  - TTS
  - handwriting recognition
  - camera input
- mobile technologies
  - small devices
  - wireless networks

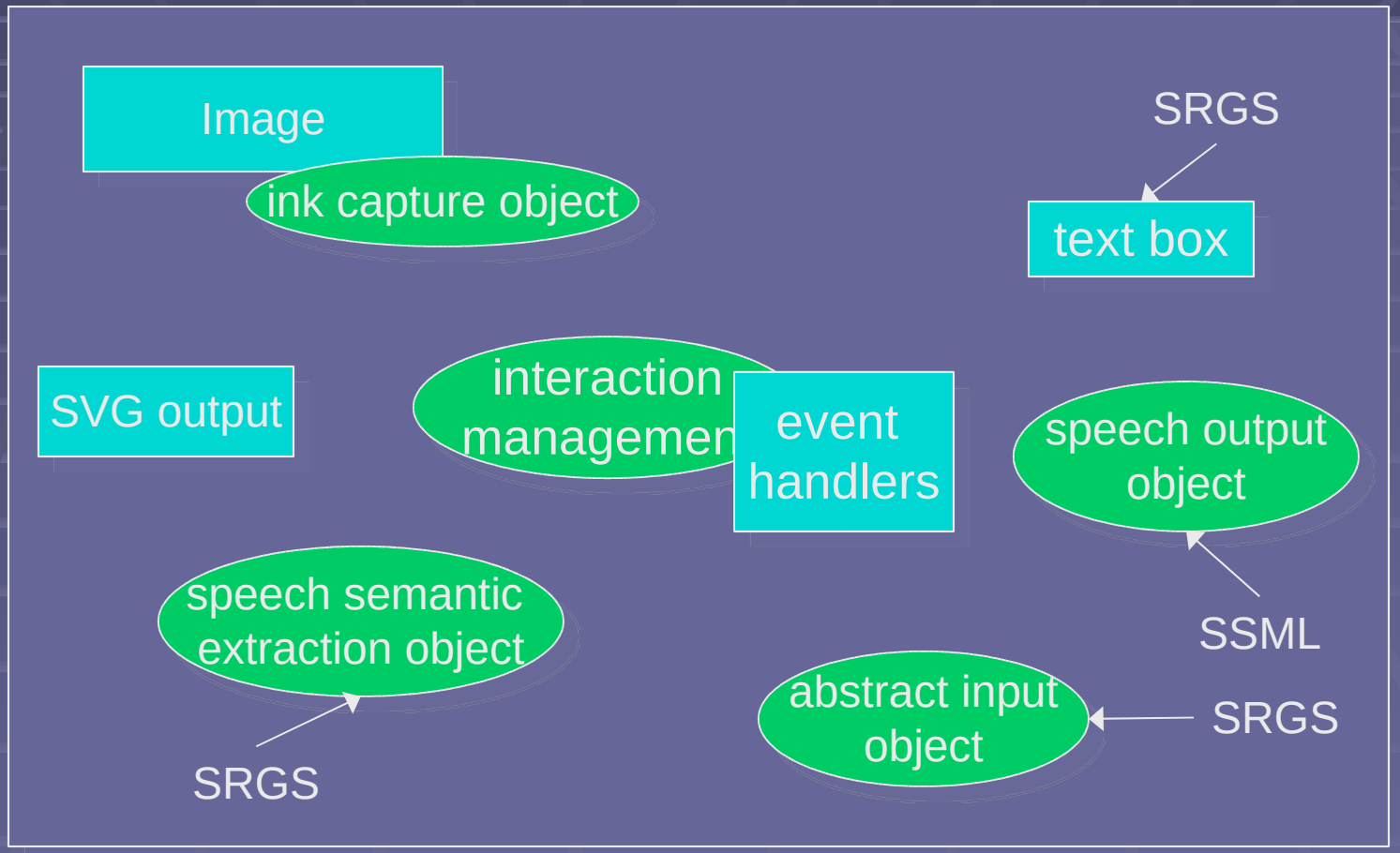
MMI WG

- Began in 2004, rechartering
- Developing standards for multimodal applications used on the World Wide Web which accommodate current and future modalities
- Supporting local, server-based, or distributed applications
- Supporting multiple devices

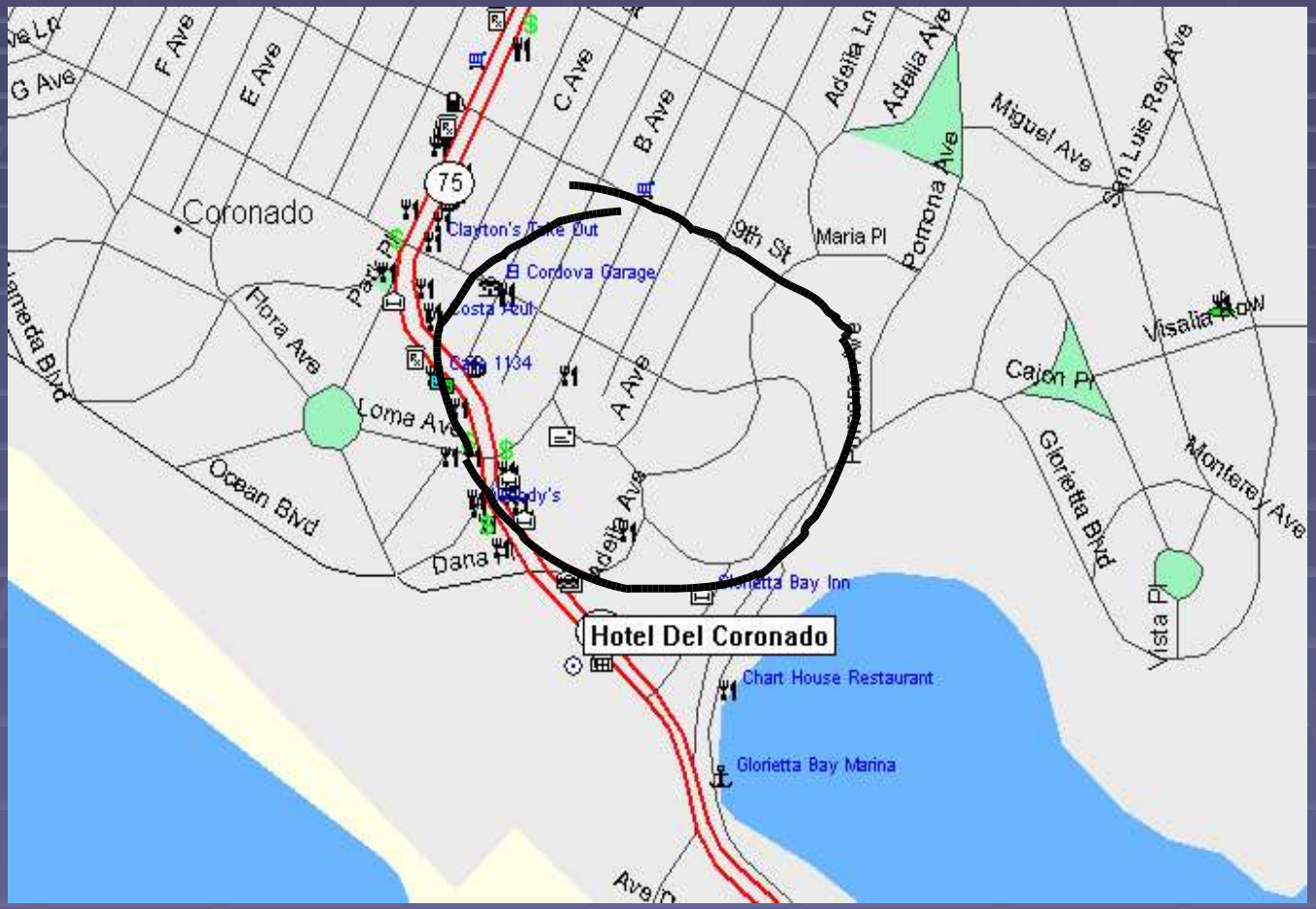
MMI Framework



A Conceptual MMI Document

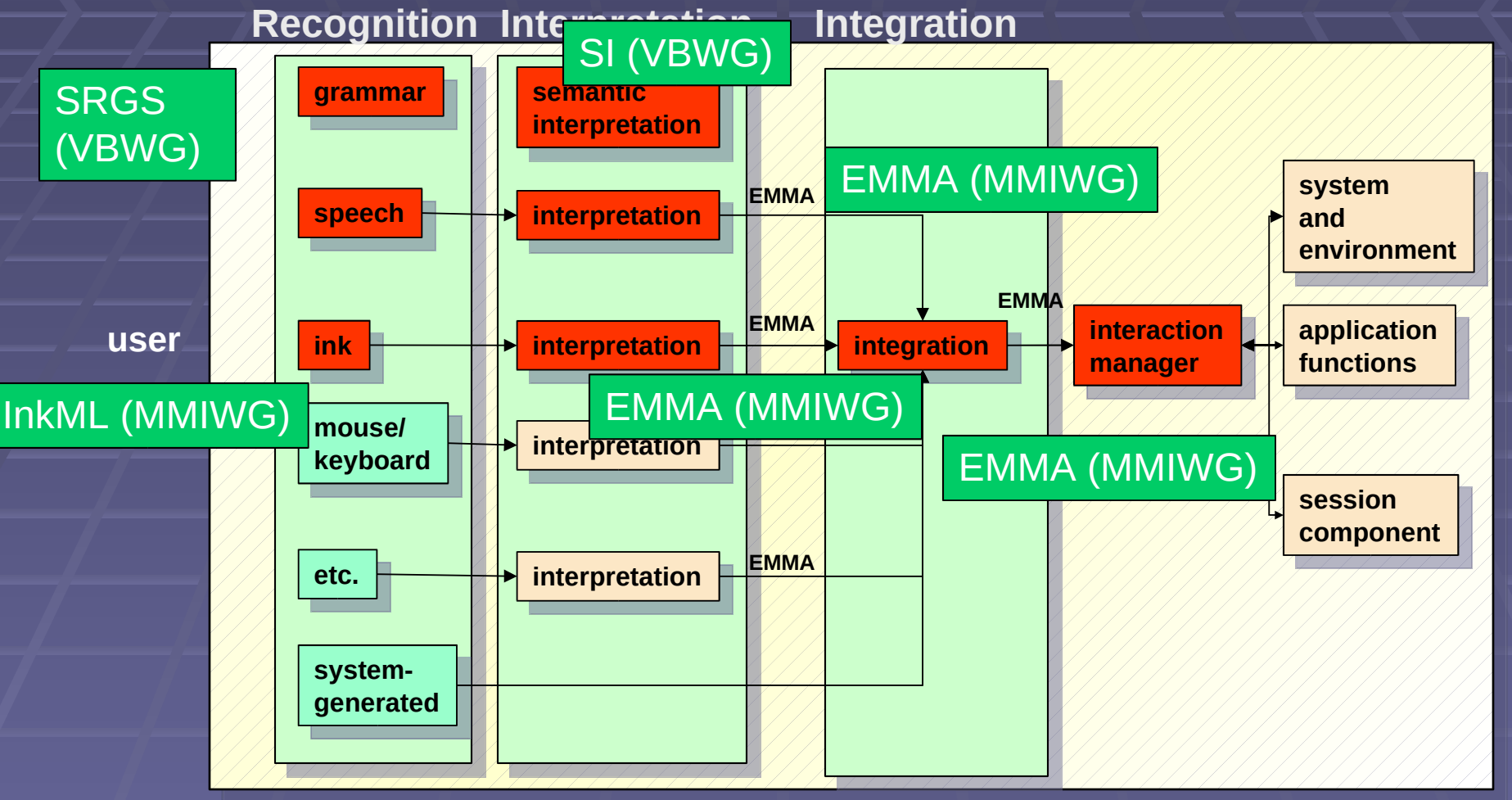


Example: Get Directions



Show me all the restaurants in this area.

What Happens?



Publications

- Requirements
  - Multimodal Interaction
  - Representation of user input (EMMA)
  - ink markup (InkML)
- Framework Documents
  - Framework Note describing the multimodal interaction framework
  - Modality Interface Framework – use of the DOM to integrate modality components into a host environment
- Specifications
  - InkML, EMMA, System and Environment (in progress)
- Studies (in progress)
  - interaction management
  - composite interaction

Submissions and Contributions

- Speech Integration Approaches
  - XHTML + Voice – submitted by IBM, Motorola, Opera and XHTML 1.1
  - SALT– contributed by the SALT Forum, and SALT+SVG profile
- Ink Approaches
  - InkXML contributed by IBM, Intel, the International Unipen Foundation, and Motorola

Find out More

- Multimodal Interaction Working Group home page:

http://www.w3.org/2002/mmi/

- W3C Home Page:

http://www.w3.org

Examples

- EMMA
- InkML

EMMA

- Represents user input
- Vehicle for transmitting user's intention throughout application
- Three components
  - data model
  - interpretation
  - annotation (main focus of standard)

EMMA Example

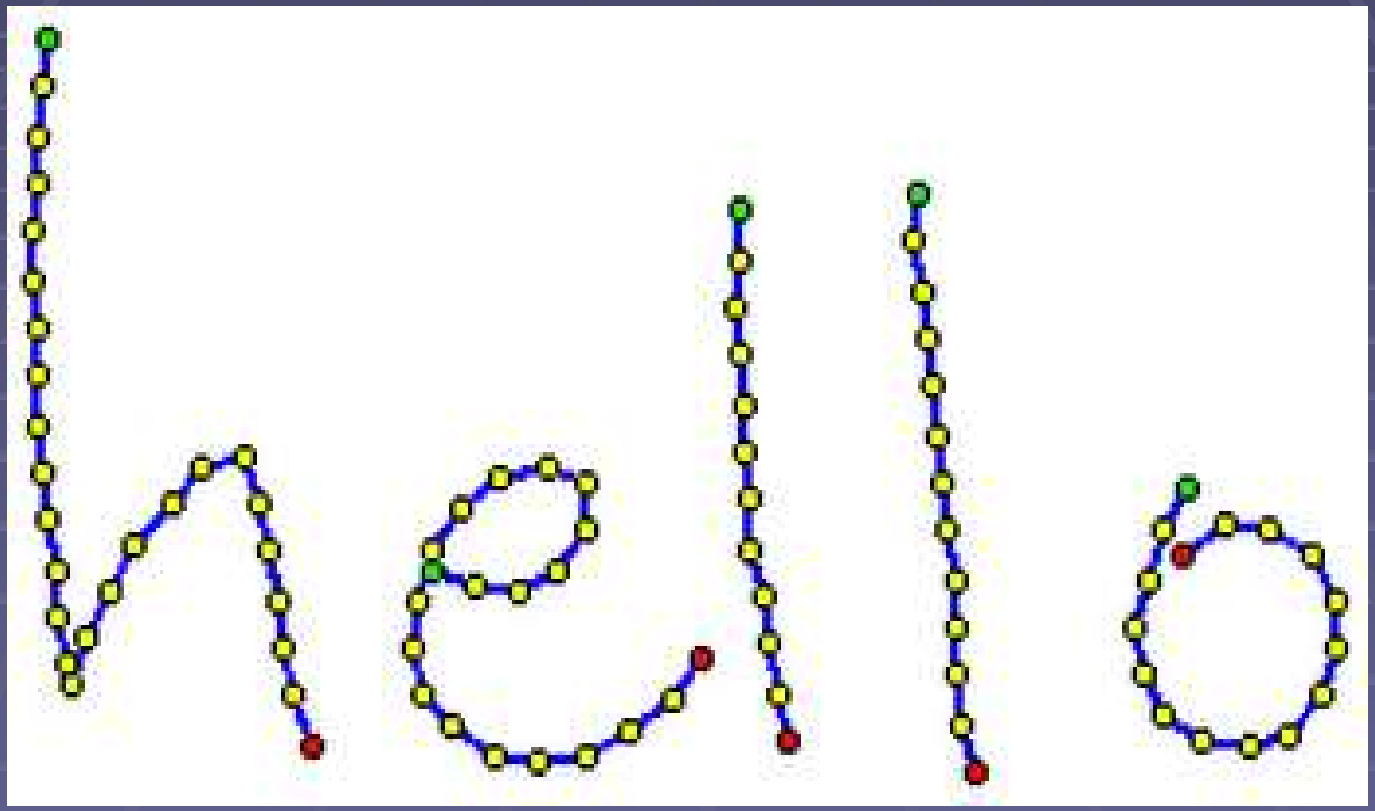
"I want to go from Boston to Denver on March 11, 2003"

```
<emma:emma emma:version="1.0"
        xmlns:emma="http://www.w3.org/2003/04/emma#">
        <emma:one-of emma:id="r1"
                emma:start="2003-03-26T0:00:00.15"
                emma:end="2003-03-26T0:00:00.2">
        <emma:interpretation emma:id="int1" emma:confidence="0.75" >
                <origin>Boston</origin>
                <destination>Denver</destination>
                <date> 03112003 </date>
        </emma:interpretation>
        <emma:interpretation emma:id="int2" emma:confidence="0.68" >
                <origin>Austin</origin>
                <destination>Denver</destination>
                <date>03112003</date>
        </emma:interpretation>
        </emma:one-of>
</emma:emma>
```

EMMA Working Draft

http://www.w3.org/TR/emma

InkXML Input Example



InkXML Representation

h e l l o

```
<ink>
<trace> 10 0 9 14 8 28 7 42 6 56 6 70 8 84 8 98 8 112 9 126 10 140 13 154 14
    168 17 182 18 188 23 174 30 160 38 147 49 135 58 124 72 121 77 135 80
    149 82 163 84 177 87 191 93 205
</trace>
<trace> 130 155 144 159 158 160 170 154 179 143 179 129 166 125 152 128 140
    136 131 149 126 163 124 177 128 190 137 200 150 208 163 210 178 208
    192 201 205 192 214 180
</trace>
<trace> 227 50 226 64 225 78 227 92 228 106 228 120 229 134 230 148 234 162
    235 176 238 190 241 204
</trace>
<trace> 282 45 281 59 284 73 285 87 287 101 288 115 290 129 291 143 294 157
    294 171 294 185 296 199 300 213
</trace>
<trace> 366 130 359 143 354 157 349 171 352 185 359 197 371 204 385 205 398
    202 408 191 413 177 413 163 405 150 392 143 378 141 365 150
</trace>
</ink>
```

InkML Working Draft

- URL http://www.w3.org/TR/InkML/