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The FML-APML language

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FML-APML language

- derived from APML [DeCarolus et al., 2004]
- based on the taxonomy defined by Poggi [Poggi, 2003, 2007] where each tag is a communicative intention
 - *certainty*: degree of certainty the agent intends to express.
 - *meta-cognitive*: communicate the source of the agent's beliefs.
 - *performative*: the agent's performative, intended strength of the speech act.
 - *theme/rheme*: the topic/comment of conversation; part of the discourse which is already known or new for the conversation's participants.
 - *belief-relation*: agent's meta-discursive goal; ie goal of stating the relationship between different parts of the discourse;
 - *turn-allocation*: agent's meta-conversational goals; ie intention to take or give the conversation floor.
 - *affect*: agent's emotional state. Emotion labels are taken from the OCC model
 - *emphasis*: convey the importance the agent puts on what he communicates

Example

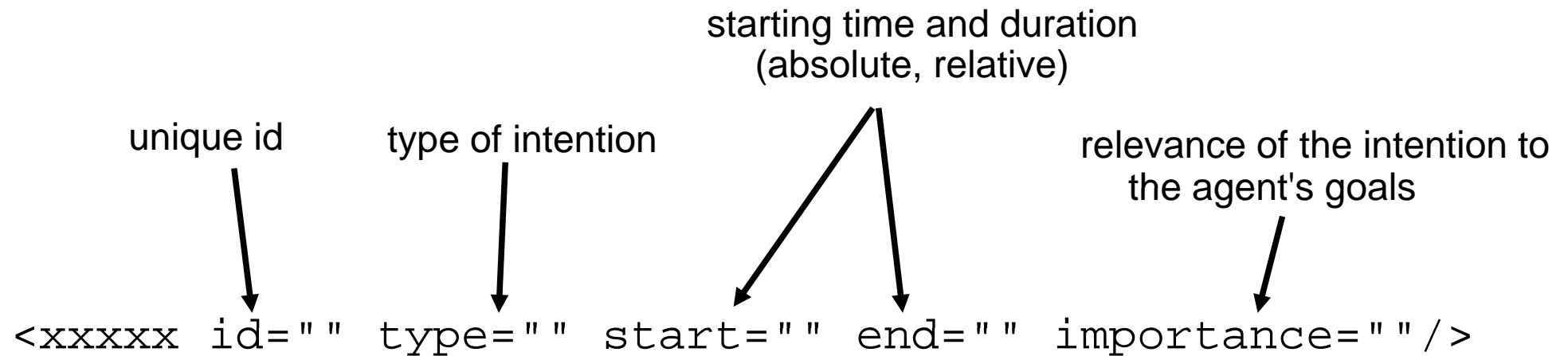
```
<apml>  
  <performative type="inform">  
    <rheme certainty="certain">  
      I'm the Greta agent  
    </rheme>  
  </performative>  
</apml>
```

FML-APML language

- introducing new features:
 - tags are not nested but parallel
 - communication of emotional states using the EARL specification [Schröder et al., 2006]; and soon W3C emotion descriptors
 - representation of the information about the world [Poggi, 2003]
 - encoding importance of a communicative intention [DeCarolus et al., 2000][Cassell et al., 1996][Castelfranchi, 1996][Nayak, 2005][Theune, 2001]

FML-APML tags

- general syntax: follow BML syntax



↑
tag name represents the communicative intention:
from APML: certainty, turntaking, theme, rheme, performative,
emotion (affect in APML), belief-relation, emphasis
we introduce: world

Differences with APML

- timing:
 - APML: tags can be either sequential or nested
 - FML-APML:
 - tags can be in any temporal order
 - starting/ending time of a tag can be expressed as algebraic combinations of other tags starting/ending time
- text to be spoken
 - APML: text is specified in the file, tags timing is determined from text timing
 - FML-APML: text is **not** specified in the file!

Example

- we use APMML tags plus the **world** tag and **importance**. We use a BML-like timing system

```
<fml-apml>
  <performative id="p1" type="announce" start="tm1" end="tm4"/>
  <performative id="p2" type="warn" start="tm4" end="tm8"/>
  <world id="w1" type="location" target="self" start="tm7" end="tm8"/>
  <performative id="p3" type="suggest" start="tm8" end="tm11"/>
  <emotion id="e1" type="anger" start="tm9" end="tm16" importance="0.8"/>
  <world id="w2" type="object" target="foreign" start="tm10"/>
  <performative id="p4" type="order" start="tm11" end="tm16"
  importance="0.7"/>
  <world id="w3" type="location" target="away" start="tm12" end="tm13"/>
  <world id="w4" type="location" target="away" start="tm14" end="tm15"/>
</fml-apml>
```

Importance attribute

- Importance of a message linked to the relevance to sender's goals
- Linked to the notions of urgency (Castelfranchi) and importance (Theune)
 - Senders vary in their attribution of goals
 - Model as **priority** of co-occurring communicative goals: the most important gets to be communicated first
 - **Redundancy**: As the importance raises, increment the number of modalities on which the agent's intentions are communicated.

Emotion tag

- Distinction between felt and expressed emotions
- Notion of complex emotions
- Introduction of a regulation attribute of the emotion tag
 - Felt
 - Fake
 - Inhibited

```
<FML-APML>
```

```
<emotion id="e1" type="anger" regulation="felt" intensity="0.5"  
  start="0" end="3"/>
```

```
<emotion id="e2" type="joy" regulation="fake" intensity="0.9"  
  start="0" end="3"/>
```

```
</FML-APML>
```

World tag

- Link to objects/events/places in the world
- *ref type*: class of the referenced world entity: an object, a place, a time, an event. This attribute is required.
- *ref id* : is an identifier to specify one or more world entities. This attribute is required.
- *prop type* (optional feature): refer to a property of the referenced entity: its shape, location or duration.
- *prop value* (optional feature): describes the value of the property

Example

Generic referencing

```
<FML-APML>
```

```
  <world id="w1" ref type="object" ref id="book"/>
```

```
</FML-APML>
```

Or, we can refer to the book which is on the table:

```
<FML-APML>
```

```
  <world id="w1" ref type="object" ref id="book" prop  
    type="location" prop value="table"/>
```

```
</FML-APML>
```

FML to BML

- Agent's baseline
 - Modality preference
 - Expressivity for each modality
- Instantiation of FML tags:
 - Agent's Baseline
 - Communicative intent
 - Emotional state
 - Agent's dynamicline
 - Behavior selection

conclusion

- FML-APM: rewriting of APML following BML specification
- Some tags and attributes added
- Issues:
 - How to specify how a function tag (eg emotion tag) modulates other tags («colours» the realization)
 - How to specify/manage adaptation to conversation partners?
 - Check for feedbacks
 - Try to get attention
 - Maintain interest
 -