

The W3C Emotion Incubator Group

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a standardisation activity born out of HUMAINE

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Outline

◆ Motivation

- from HUMAINE EARL towards Standardisation?

◆ W3C Emotion Incubator Group

- what is the W3C
- what is an Incubator Group
- the Emotion Incubator Group
 - members
 - aims
 - work to date and current state
- the future

Motivation

- ◆ In HUMAINE, an Emotion Annotation and Representation Language (EARL) was developed
 - represent emotions in technological environments
 - multiple use cases
 - presented at LREC Workshop on Emotions, 2006
 - spec. proposal online at <http://emotion-research.net/earl>
- ◆ Is the field mature enough for a standard?
 - W3C Incubator Groups explore this kind of question!

W3C: The World Wide Web Consortium

- ◆ W3C produces Web Standards and Guidelines
- ◆ more than 90 standards since 1994
 - ➔ basic web: HTML, CSS, XML, XSLT, DOM, RDF, ...
 - ➔ multimodal: SMIL, VoiceXML, SSML, EMMA, ...
 - ➔ ...
- ◆ International consortium
 - ➔ more than 400 members
 - ➔ including the worlds biggest technology companies
- ◆ Administered jointly by
 - ➔ MIT (USA); Keio Univ. (Japan); ERCIM (France)

W3C Incubator Groups

“The W3C Incubator Activity fosters rapid development, on a time scale of **a year or less**, of **new** Web-related concepts. Target concepts include **innovative ideas** for specifications, guidelines, and applications that are **not (or not yet) clear candidates as Web standards** developed through the more thorough process afforded by the W3C Recommendation Track.”

- ◆ a sort of “experimental” track
- ◆ assess possibilities for standardisation
- ◆ final report after one year
 - ➔ then either stop or become a formal Working Group

W3C Emotion Incubator Group

- ◆ Idea born out of draft EARL spec in HUMAINE
- ◆ Proposed and accepted in July 2006
- ◆ Final report due July 2007

W3C Emotion Incubator Group: Members

◆ W3C Members

- DFKI
- Loquendo
- Deutsche Telekom
- U. Edinburgh
- EPFL
- NTUA
- U. Southern California
- U. P. Madrid
- Fraunhofer
- Chinese Acad. Sci.
- Citigroup

◆ Invited Experts from

- Emotion AI, Tokyo
- LIMSI
- U. Paris 8
- OFAI

W3C Emotion Incubator Group: Aims

- ◆ “...to investigate the prospects of defining a general-purpose Emotion annotation and representation language...”
- ◆ “...which should be usable in a large variety of technological contexts where emotions need to be represented.”

W3C Emotion Incubator Group: Formal Structure

- ◆ Web space:
<http://www.w3.org/2005/Incubator/emotion>
- ◆ Content discussions in
 - ➔ public mailing list
 - ➔ wiki
 - ➔ monthly phone meetings
 - ➔ face-to-face meetings
- ◆ Agreed on task structure leading to final report

W3C Emotion Incubator Group: Tasks

Task	state
1. Marc circulates a draft Use Cases Overview as the basis for discussion, initially containing a summary of use cases and requirements as proposed in HUMAINE.	done
2. Everybody writes concrete use case(s) describing their own work, as a contribution to an enriched Use Cases Overview document.	done
3. Discussion on the requirements resulting from the enriched Use Cases Overview document. If possible, agree on a set of requirements to be addressed by an emotion markup language, and on the limits of the types of information that should be or should not be contained in that language. If such agreement is not possible for all aspects, document the disagreement and reasons for disagreement, and proceed.	done
4. Critical investigation of the HUMAINE EARL spec (and potentially other relevant languages) in the light of the requirements documented in step 3.	ongoing
5a. Formulation of a revised specification. or	
5b. Discussion of various options and reasons for preferring/not preferring them.	

W3C Emotion Incubator Group: Use Cases

- ◆ Each group member contributed use cases
- ◆ Grouped into types of use cases:
 - ➔ Use case 1: Annotation of emotional data
 - ➔ Use case 2: Automatic recognition / classification of emotions
 - ➔ Use case 3: Generation of emotional system behavior

Use Case 1: Annotation of Emotional Data

Use case 1a: Annotation of plain text	1 example
Use case 1b: Annotation of XML structures and files	4 examples
Use case 1c: Chart annotation of time-varying signals (e.g., multi-modal data)	2 examples
Use case 1d: Trace annotation of time-varying signals (e.g., multi-modal data)	1 example
Use case 1e: Multiparty interaction	1 example
Use case 1f: annotation of emotional speech	1 example
Use case 1g: annotation of speech acts	1 example
Use case 1h: annotation of paralinguistic events	1 example
Use case 1i: Annotation of video clips of acted emotions	1 example
	<hr/>
	13 examples

Use Case 2: Automatic recognition / classification of emotions

Use case 2a: Recognition from speech	4 examples
Use case 2b: Multimodal recognition	4 examples
Use case 2c: Digital Radio Presenter	1 example
Use case 2d: Induction of emotional behavior using games	1 example
Use case 2e: Automatic emotion identification from plain text	<u>1 example</u>
	11 examples

Use Case 3: Generation of emotional system behavior

Use case 3a: Affective reasoner	3 examples
Use case 3b: Drive speech synthesis, facial expression and/or gestural behavior	9 examples
Use case 3c: generation of speech acts	1 example
Use case 3d: generation of paralinguistic events	1 example
Use case 3e: Digital Radio Presenter	1 example
	<hr/>
	15 examples

Requirements arising from use cases

- ◆ Iterative process of distilling requirements from use cases
 - ➔ first within each of the three use cases
 - ➔ then, in combination
 - vocabulary issues
 - challenge to distinguish domain-specific from generic issues
 - ➔ several rounds of discussion and restructuring
 - ➔ result: reasonable document

Requirements arising from use cases

1. Emotion 'Core'

- 1.1. Type of emotion-related phenomenon
- 1.2. Emotion category/type/word
- 1.3. Emotion dimensions
- 1.4. Description of appraisals of the emotion or of events related to the emotion
- 1.5. Multiple and/or complex emotions
- 1.6. Emotion intensity
- 1.7. Regulation
- 1.8. Temporal aspects

Requirements arising from use cases

2. Meta information about individual emotion annotations

2.1. Acting

2.2. Confidence/probability

2.3. Modality

Requirements arising from use cases

3. Links to the “rest of the world”

3.1. Links to media

3.2. Position on a time line

3.3. Different semantics for links to the “rest of the world”

- the experiencer (who "has" the emotion);
- the observable behaviour "expressing" the emotion;
- the trigger/cause/emotion-eliciting event of the emotion;
- the object/target of the emotion (the thing that the emotion is about)

Requirements arising from use cases

4. Global metadata

4.1. Info on persons

4.2. Purpose of classification

4.3. Technical environment

4.4. Social and communicative environment

Current work

- ◆ Investigate existing markup languages (including the HUMAINE EARL and the HUMAINE database annotation scheme) in view of these requirements
- ◆ Justify choice of emotion descriptions
 - ➔ input welcome
- ◆ Prepare final report and new charter
- ◆ Face-to-face meeting on 7 June, Paris

Future

- ◆ Initial contact to Multimodal Interaction group at W3C
 - clear interest
 - need to boil down scientific complexity to something industrials can understand and use
- ◆ Second year as an Incubator group
 - formulate a draft language specification
 - sketch possible uses in combination with other W3C languages (EMMA, SSML, ...)
 - get comments from existing working groups
- ◆ After that, possibly merge into an existing working group => move towards a standard

Conclusion

- ◆ Broad interest from academic and industrial partners
- ◆ Solid work in the first year
 - ➔ broad collection of use cases
 - ➔ rich collection of requirements
- ◆ Clear to-dos for the second year
 - ➔ become more “industry-friendly”