

# The W3C Emotion Incubator Group

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# Outline

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## ◆ 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
  - upcoming steps

# HUMAINE

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- ◆ A European Network of Excellence on Emotion-oriented Computing
- ◆ 34 partner institutions in 14 countries
- ◆ EU funding 2004-2007
- ◆ interdisciplinary: brings together engineers, computer scientists, psychologists, philosophers etc.
- ◆ reason of existence: to form a new research community on emotions in human-machine interaction
- ◆ portal: <http://emotion-research.net>

# Motivation

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- ◆ 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

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- ◆ 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

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“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

# Currently Existing W3C Incubator Groups (Nov. 06)

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<b>Group, Charter</b>	<b>Chair</b>	<b>Start Date</b>	<b>End Date</b>
<a href="#"><u>Content Label Incubator Group</u></a>	Phil Archer, ICRA	8 February 2006	Chartered until 7 February 2007
<a href="#"><u>Emotion Incubator Group</u></a>	Marc Schröder, DFKI GmbH	19 July 2006	Chartered until 10 July 2007
<a href="#"><u>Geospatial Incubator Group</u></a>	Joshua Lieberman, Traverse Technologies	05 July 2006	Chartered until 23 June 2007
<a href="#"><u>Multimedia Semantics Incubator Group</u></a>	Jeff Pan (University of Aberdeen) and Raphaël Troncy (CWI Amsterdam)	25 April 2006	Chartered until 1 May 2007

# W3C Emotion Incubator Group

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- ◆ 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

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## ◆ 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

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- ◆ “...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

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

# W3C Emotion Incubator Group: Tasks

<b>Task</b>	<b>state</b>
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.	pending
4. Critical investigation of the HUMAINE EARL spec (and potentially other relevant languages) in the light of the requirements documented in step 3.	
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

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- ◆ 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

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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
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	13 examples

## Use Case 2: Automatic recognition / classification of emotions

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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

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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
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	15 examples



# Use Cases: Summary

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- ◆ 39 examples of use cases, grouped into three types of use cases
- ◆ grouping of examples into use cases is likely to evolve during discussion of requirements

# Current Work: Discussion of Requirements

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- ◆ Individual use cases contain lists of requirements
  - more or less complete
  - more or less consistent
- ◆ Discuss requirements within each use case type
  - common points across several examples
  - where to draw boundary of what should be in the Emotion Language
  - for each use case type, 1-2 volunteers have agreed to drive the discussion
- ◆ Agreement about requirements may or may not be possible
  - if not possible, note disagreement, and proceed

# Upcoming Steps

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- ◆ Investigate HUMAINE EARL (and other languages?) in view of these requirements
- ◆ Discuss alternatives for specifying a language
  - ➔ revise HUMAINE EARL spec
  - ➔ propose new spec(s)
- ◆ Sketch possible uses in combination with other W3C languages (EMMA, SSML, ...)
- ◆ Discuss whether to continue work in the Recommendation Track

# Conclusion

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- ◆ Broad interest from academic and industrial partners
- ◆ Rich set of 39 use case examples of three main types
  - data annotation
  - automatic recognition of emotions
  - generation of emotional system behavior
- ◆ Discussion of requirements  
=> towards standardisation?