



# Presence



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# *Overview*

- Motivation
- System Architecture
- Research Areas
- Agent Architecture
- Current Position
- Where Next?

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## *Motivation*

- Advance Our Understanding of the Fundamental Technology Needed To Drive Life-Like Characters:
  - Natural and Intuitive User Interface
  - Engaging and Enjoyable Experience
  - Enhance Believability of Virtual Characters

# Application Domains

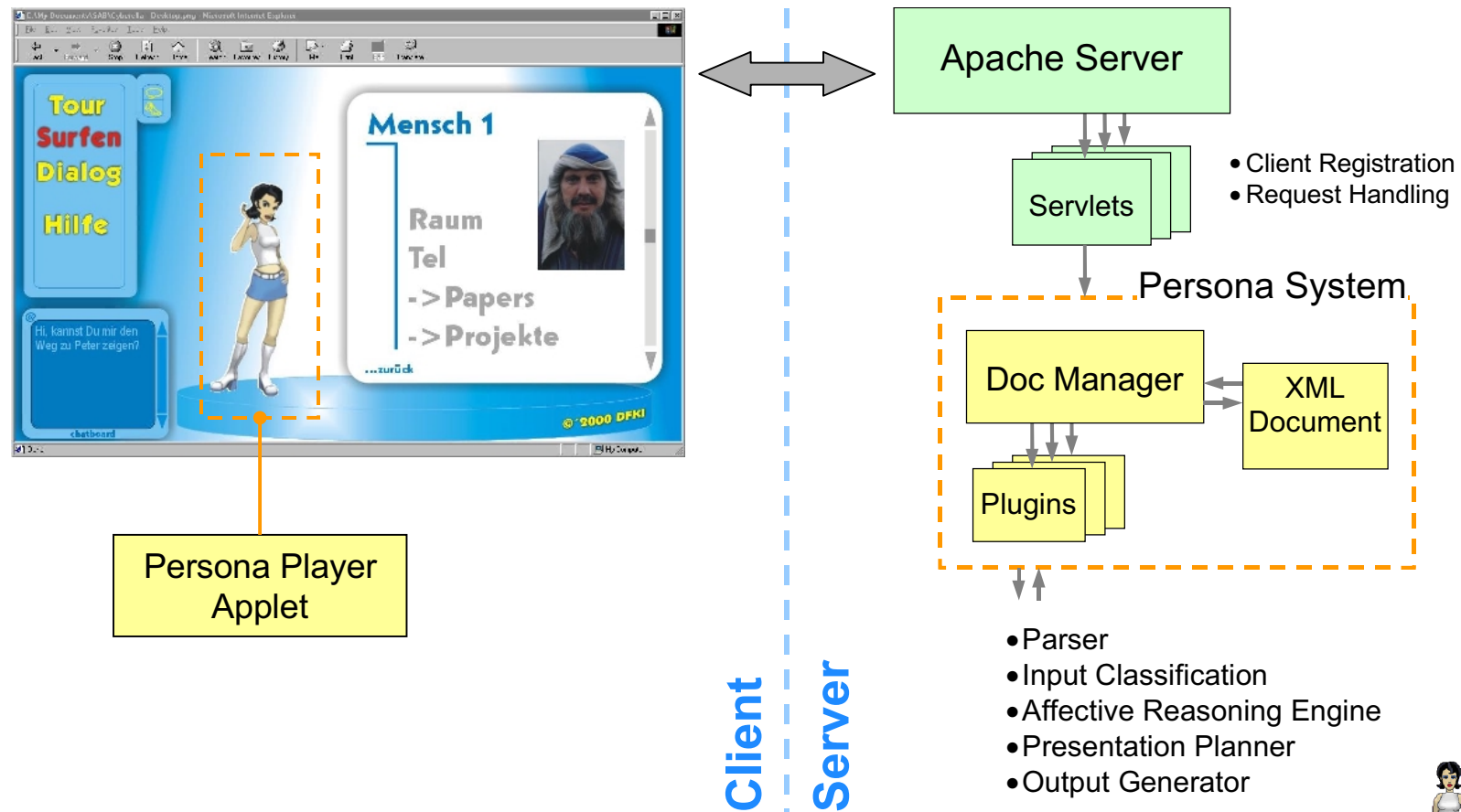


- Receptionist
  - Entrance Hall
- Infotainment
  - Remote
- Guide
  - Portable

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# System Architecture



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## *Research Areas*

- Capture Emotion and Personality
  - Compensate for lost affective channels
- Also
  - Investigate expressive power of Gestures
  - Develop a descriptive language for character definition
  - Tailor Agent-User interaction (by inferring the user's affective state)



# *Life-Like Characters require an integrated model of Emotions and Personality*

- Emotions

- Emotion Process [Frijda 86]
- *Primary* and *Secondary* Emotions [Damasio 94; Sloman 99]
- Cognitive Structure of Emotions [Ontony et al. 88; Elliott 92]

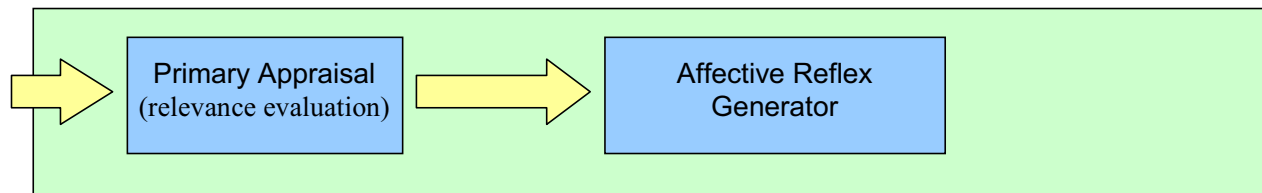
- Personality

- Five Factor Model [McCrae and John 92; Revelle 95]
- Purely Descriptive personality traits
- *Extraversion, Agreeableness, and Neuroticism*



# *Agent Architecture*

**Reactive**

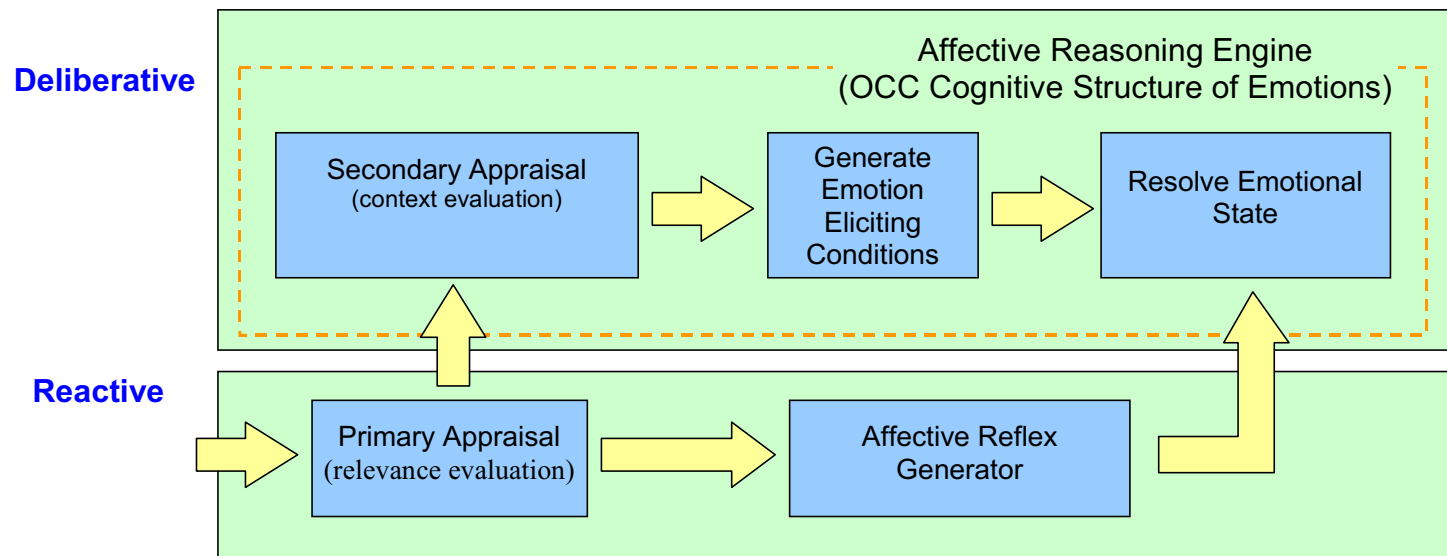


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# Agent Architecture

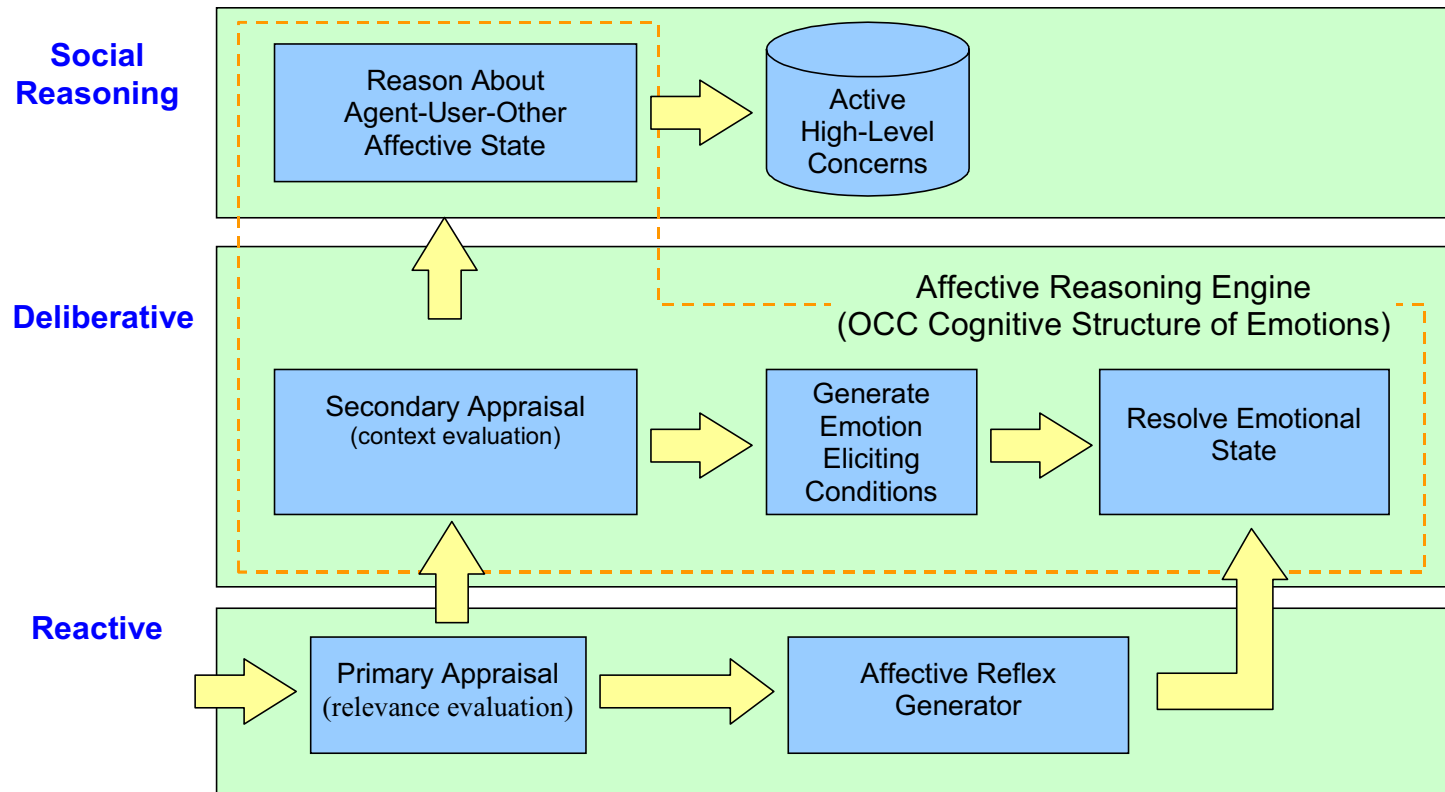


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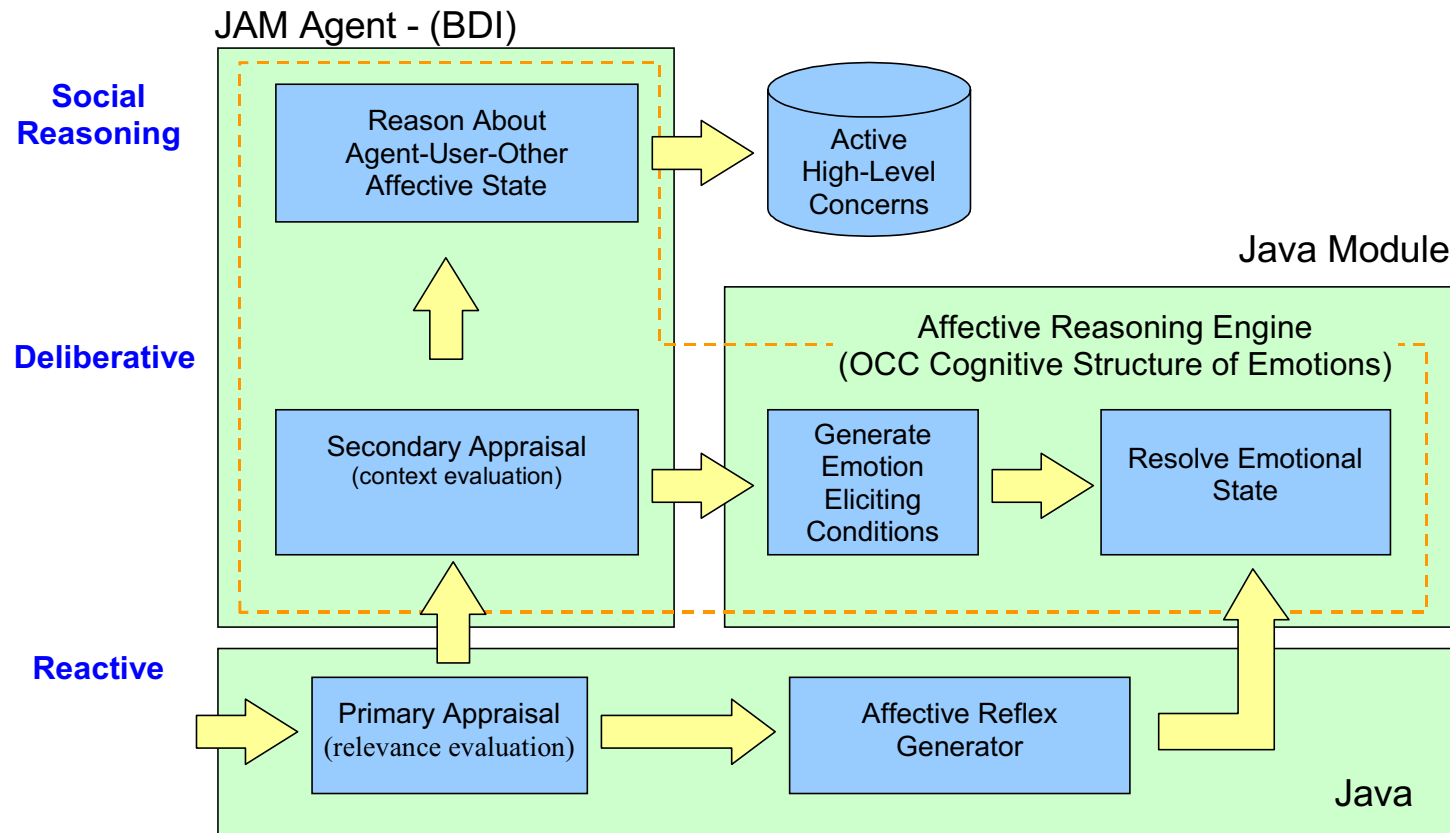


# Agent Architecture





# Agent Implementation



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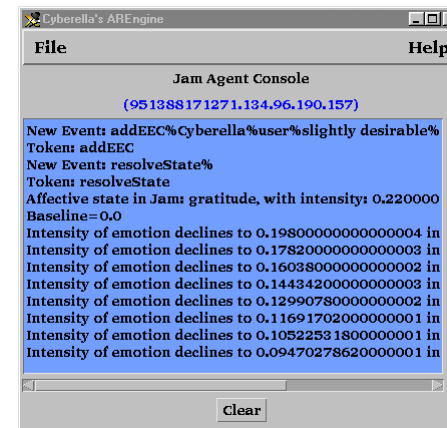
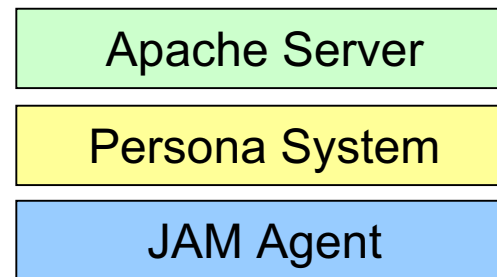
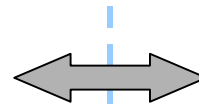
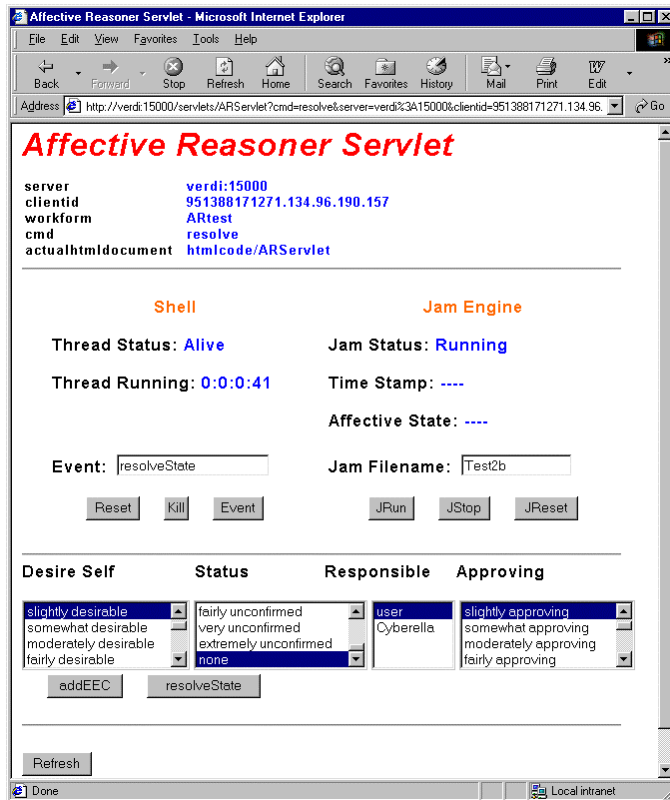


## *Role of Personality Traits*

- **Reactive Level**
  - determine relative relevance of concerns
- **Deliberative Level**
  - determine threshold for emotion generation
- **Social Level**
  - determine importance of other's affective state
- **Expressive Level**
  - determine intensity of emotion expression



# Development Environment



Client  
Server

Presence





## *Current Position*

- **Persona System** (User Interface Group)
  - Stable Persona Platform ✓
  - Working Demonstration System ✓
  - Basic set of Gestures and Development Tools ✓
- **Affective Reasoning Engine** (MAS Group)
  - Resolve Affective State Java Classes ✓
  - Integration of Java Classes into JAM Agent ✓
  - Integration of JAM Agent into the Persona System ✓



## *Where Next?*

- **Persona System** (User Interface Group)
  - Expand Gesture Library
  - Create Presentation Plan Library
  - Add depth to Persona System Modules
- **Affective Reasoning Engine** (MAS Group)
  - Reason about events using JAM Agent
  - Integration of full ARE into the Persona System
  - Evaluate effectiveness of Emotion and Personality Model



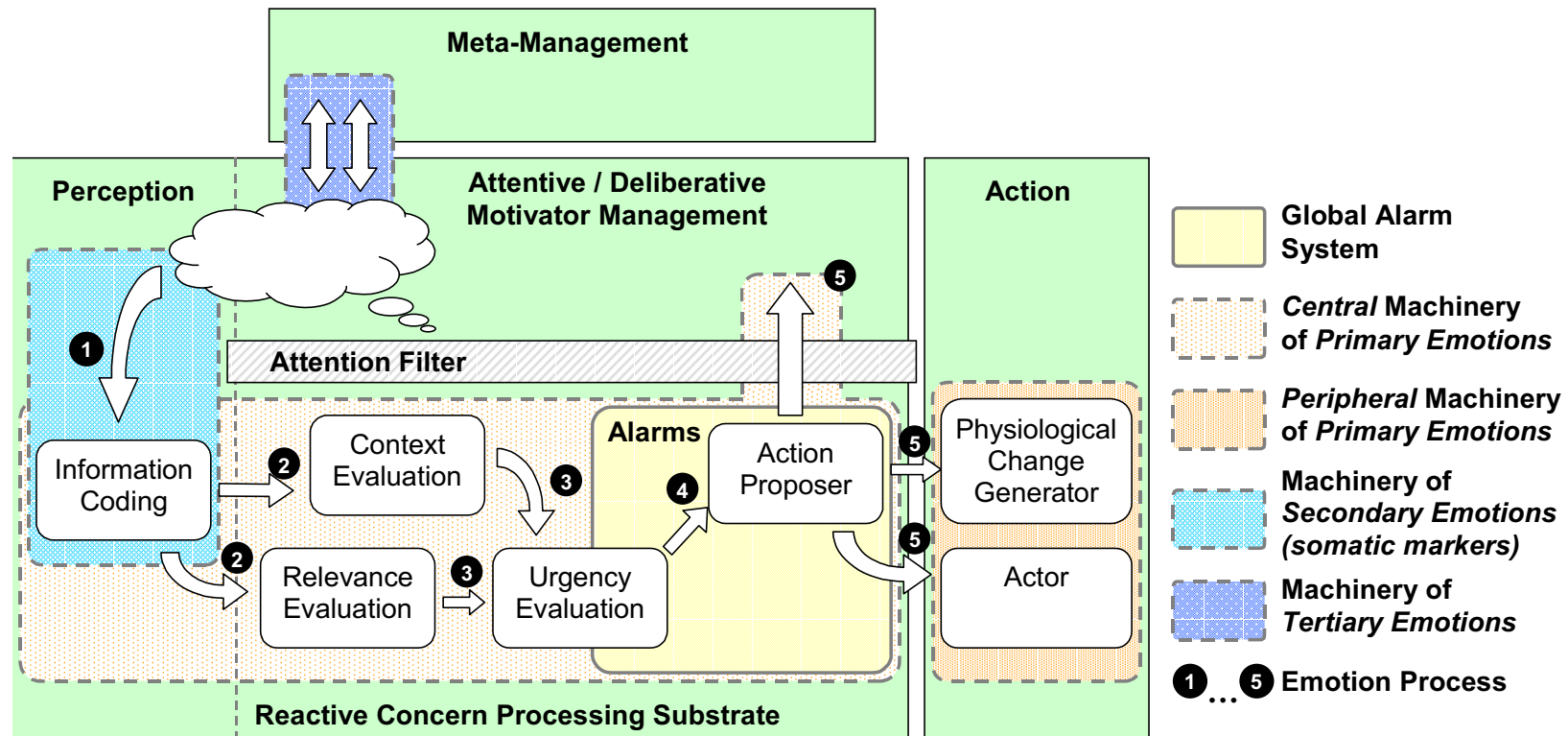
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# The Emotion Process



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