

**European FET-Flagship initiative:**

**A cross-sectional ICT**

**"Ubiquitous Complex Event Processing,,**

**interdisciplinary together with  
computational socio-geonomics, neuroscience,  
epigenetics, brain research, epidemic,  
weather/global catastrophe emergency management  
etc.**

**WORKSHOP FET-FLAGSHIP INITIATIVE, Brussels, 9-10 June 2010**

Rainer von Ammon / Bernhard Seeger

# The forecast of Ubiquitous CEP for the next decades

## The forecast of Prof. David Luckham...



- ... until 2020 and beyond

- ... we are only at the end of the period of Simple CEP

European Challenges and Flagships 2020 and Beyond – Topics from the ISTAG, to be launched by 2013:

- Understanding life through future ICT
- Anticipation by simulation – Managing complex systems with future ICT
- Future Information Processing Technologies
- The Team Player: Future Problem Solving Technologies
- Robot Companions for Citizen

[ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/fet-proactive/press-17\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/fet-proactive/press-17_en.pdf)

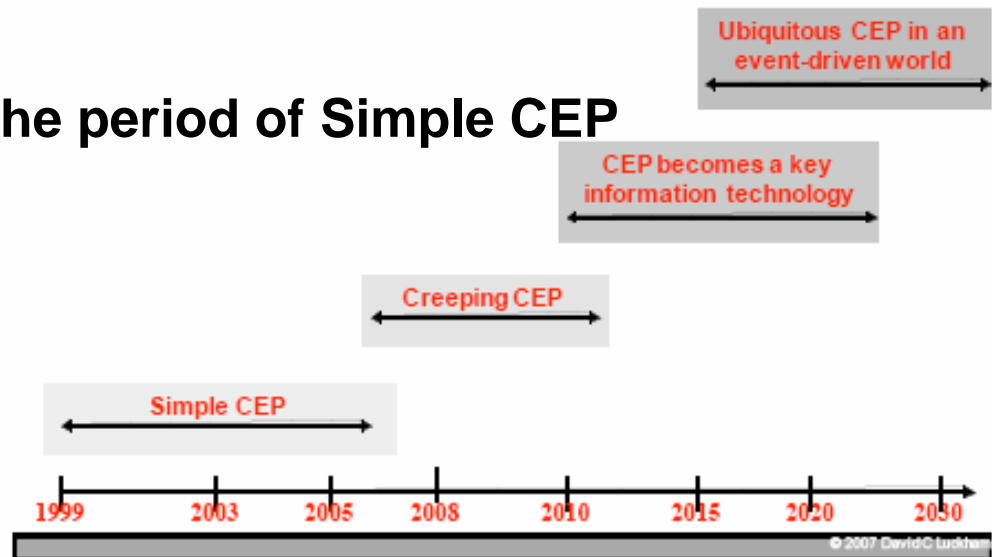
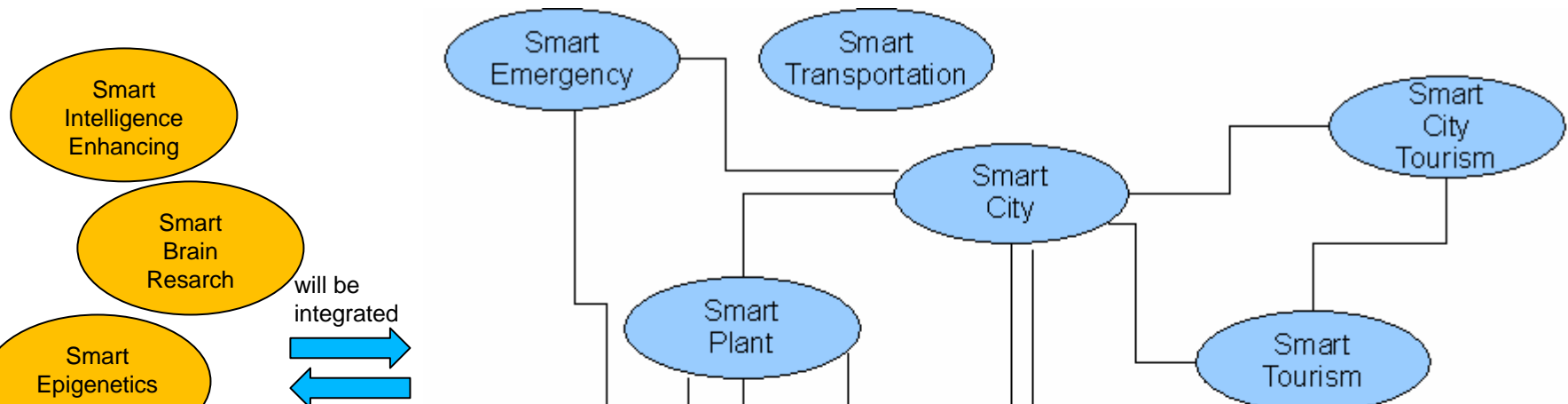
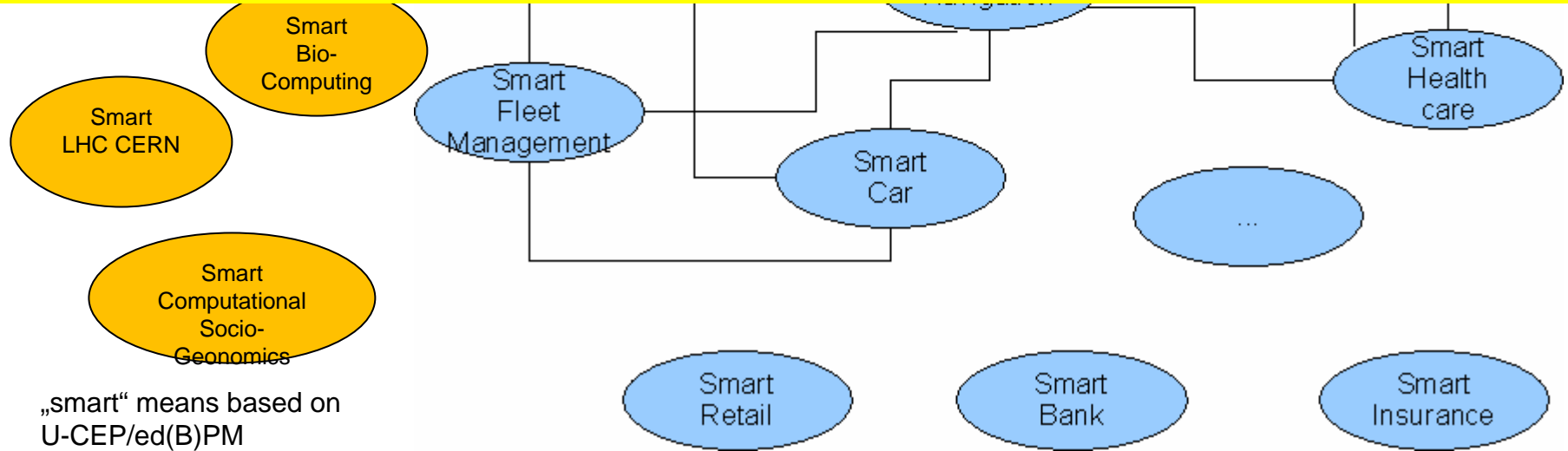


Figure 1: The four stages in the evolution of CEP applications.

# Ubiquitous CEP - Current domains and their interdependencies: What we are already going to start and what we will do until 2020 and Beyond



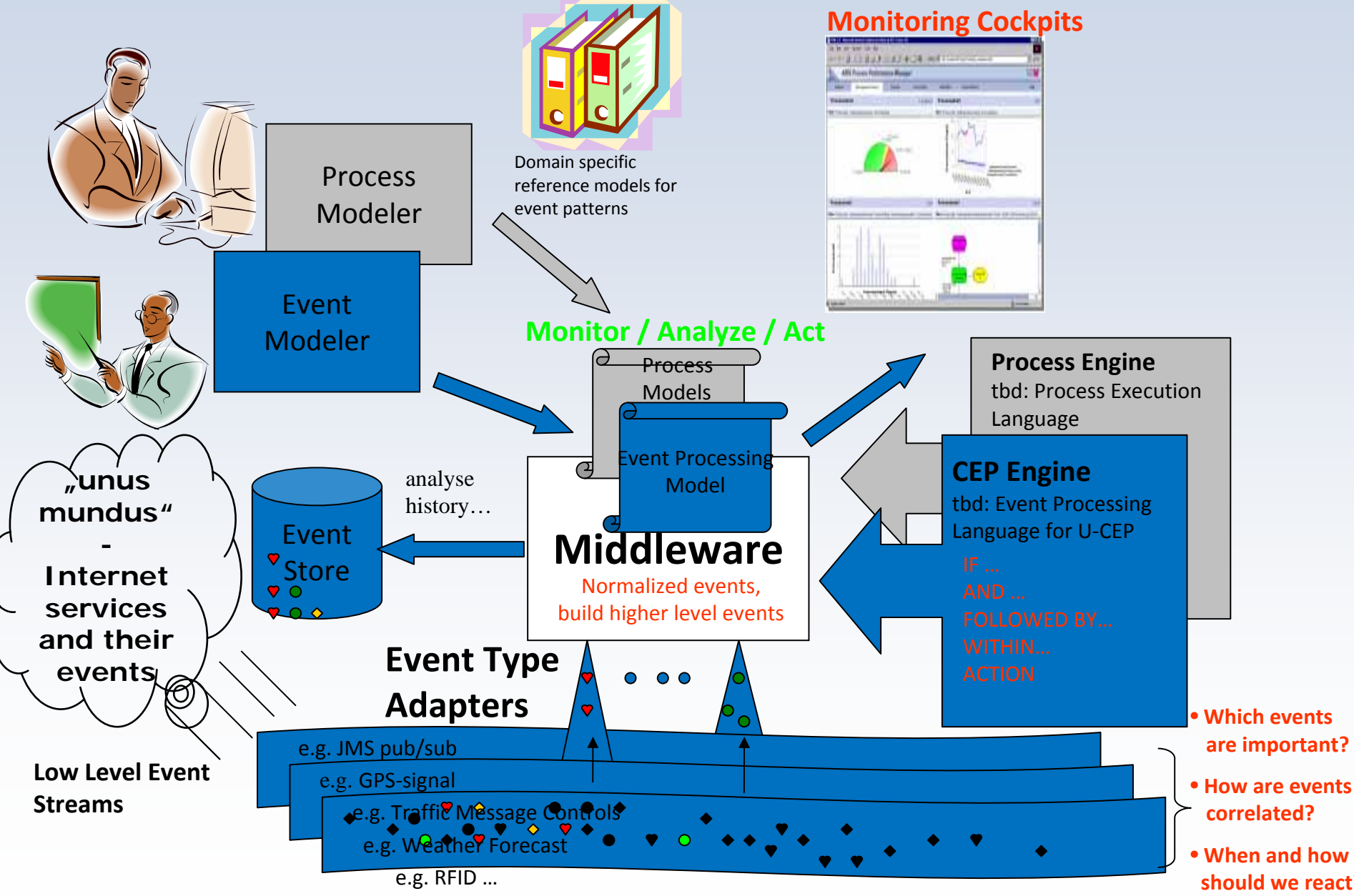
Interdisciplinary FET-flagship proposal based on Computational Socionomics, Epigenetics, Brain Research, Bio- and Quantum Computing, ... and Ubiquitous Complex Event Processing / Event-Driven Process Management



# The Principle of U-CEP – Reference Model

Integration with other proposals:

e.g. Towards a theory of the evolution of the web (Wendy Hall)

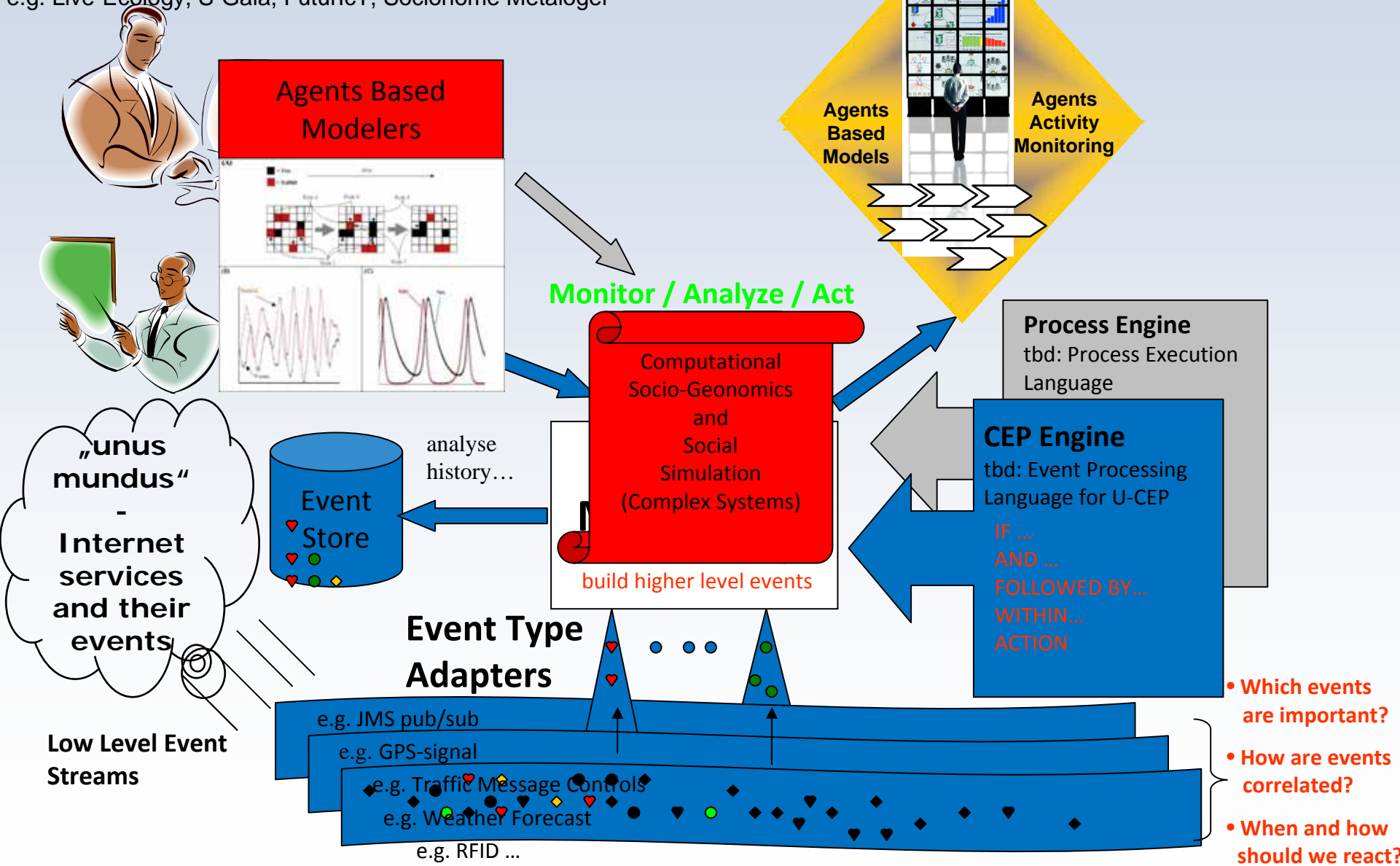


# Computational Socio-Geonomics / Social Simulation / e.g. 10 Billion Agents

“Emergences” of the Computational Socio-Geonomics discipline correspond to “Complex Events” of the U-CEP discipline

Integration with other proposals:

e.g. Live-Ecology, S-Gaia, FuturIcT, Socionome Metaloger

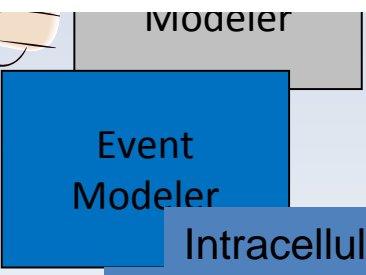
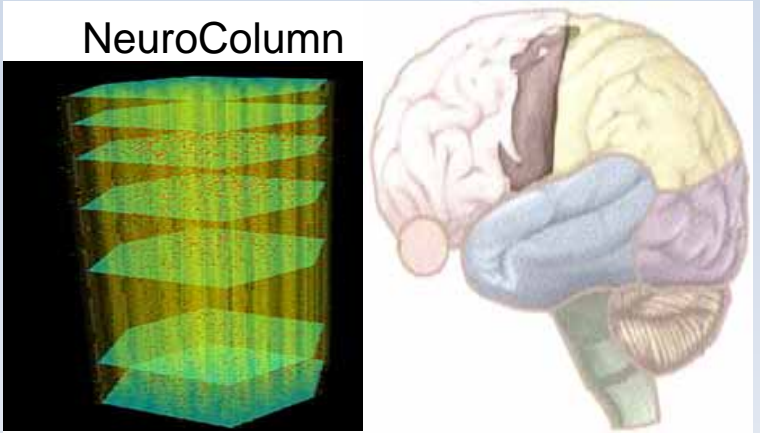


# Enhancing human intelligence and cognitive or physical abilities

connect humans to more events of the universe (resp. Internet services)

## Integration with other proposals:

- e.g. - Ray Kurzweil: Singularity is Near / Henry Markram Blue **Brain** /
- Bruce H. Lipton: Epigenetics – Intelligent **cells** /
- Karlheinz Meier: Design, construction and Operation of a Neuromorphic Computation facility
- Plamen Simeonov Integral **Biomathics**,
- Francois Képès, Marc Schoenauer : Using Evolution to compute
- Kevin Warwick: Brain Computer Interface - **Cyborg**

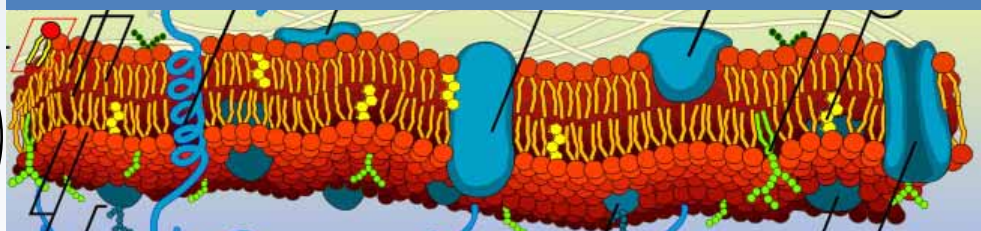


Monitor / Analyze / Act

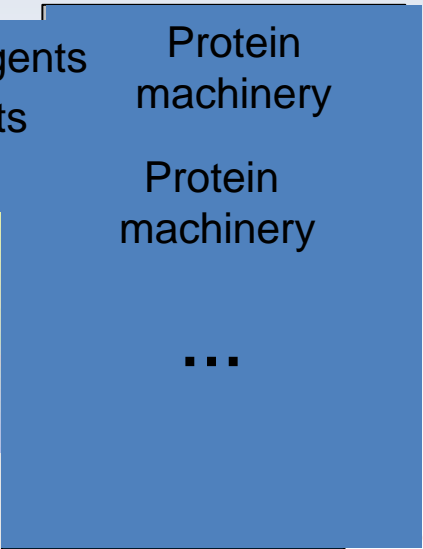
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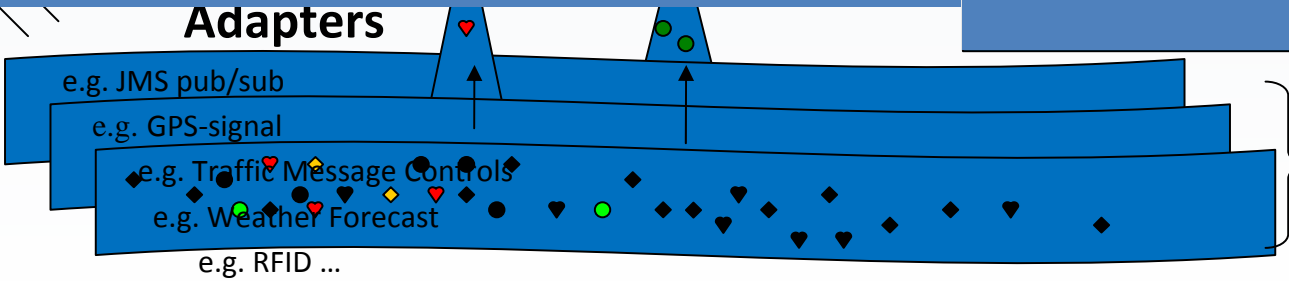


Extracellular receptors = event adapters



“unus mundus”  
- Internet services and their events

Low Level Event Streams



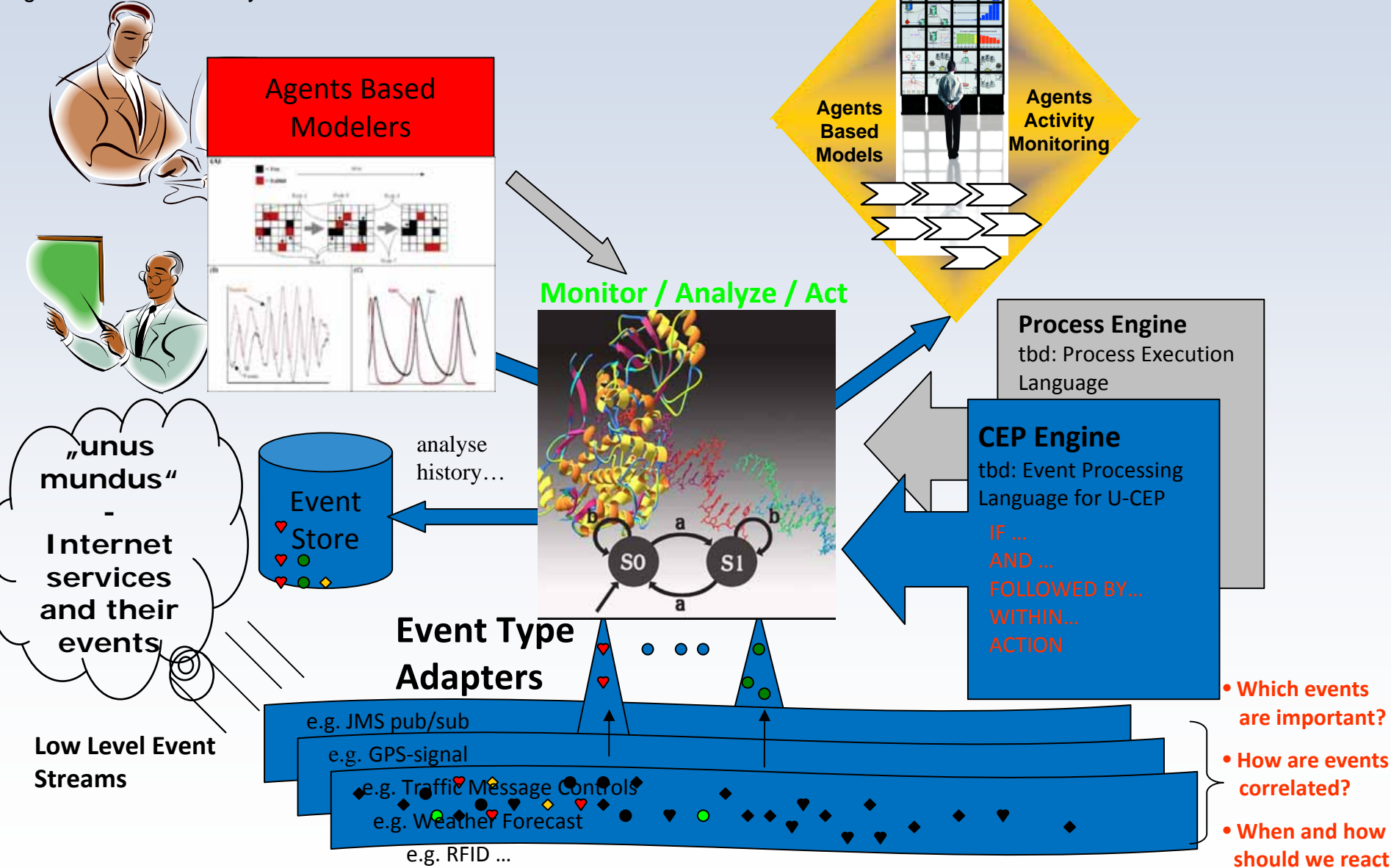
- Which events are important?
- How are events correlated?
- When and how should we react?

# DNA-based Biocomputers / Quantum Computing

the obviously appropriate computer technology for U-CEP because of massive parallel processing

Integration with other proposals:

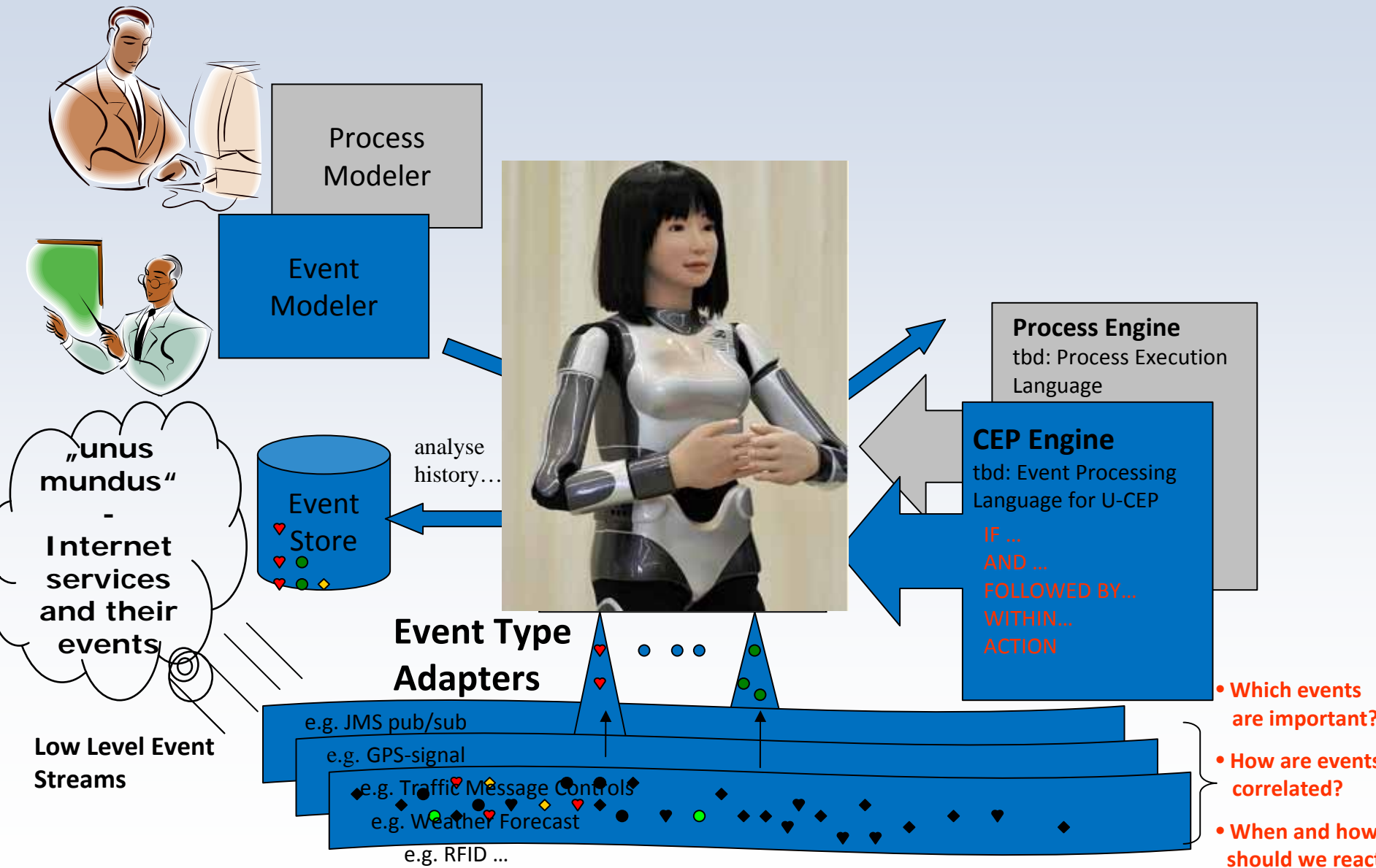
e.g. Peter Zoller ICT beyond limits



- Which events are important?
- How are events correlated?
- When and how should we react?

# Robot Companions for Citizen – driven by Event Processing

Integration with other proposals:  
e.g. Paolo Dario Robot companions for citizens



- Which events are important?
- How are events correlated?
- When and how should we react?