

# Mobile Agent Communication in Wireless Networks

**Heikki Helin**

Sonera Ltd.  
(heikki.j.helin@sonera.fi)

**Heimo Laamanen**

Sonera Ltd.  
(heimo.laamanen@sonera.fi)

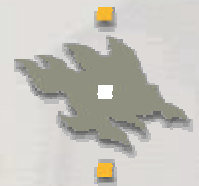
**Kimmo Raatikainen**

University of Helsinki  
(kimmo.raatikainen@cs.helsinki.fi)



# presentation outline

- Definition of an agent
- Agents and agent communication in wireless environment
- Optimizing agent communication
- Agent migration
- Conclusions



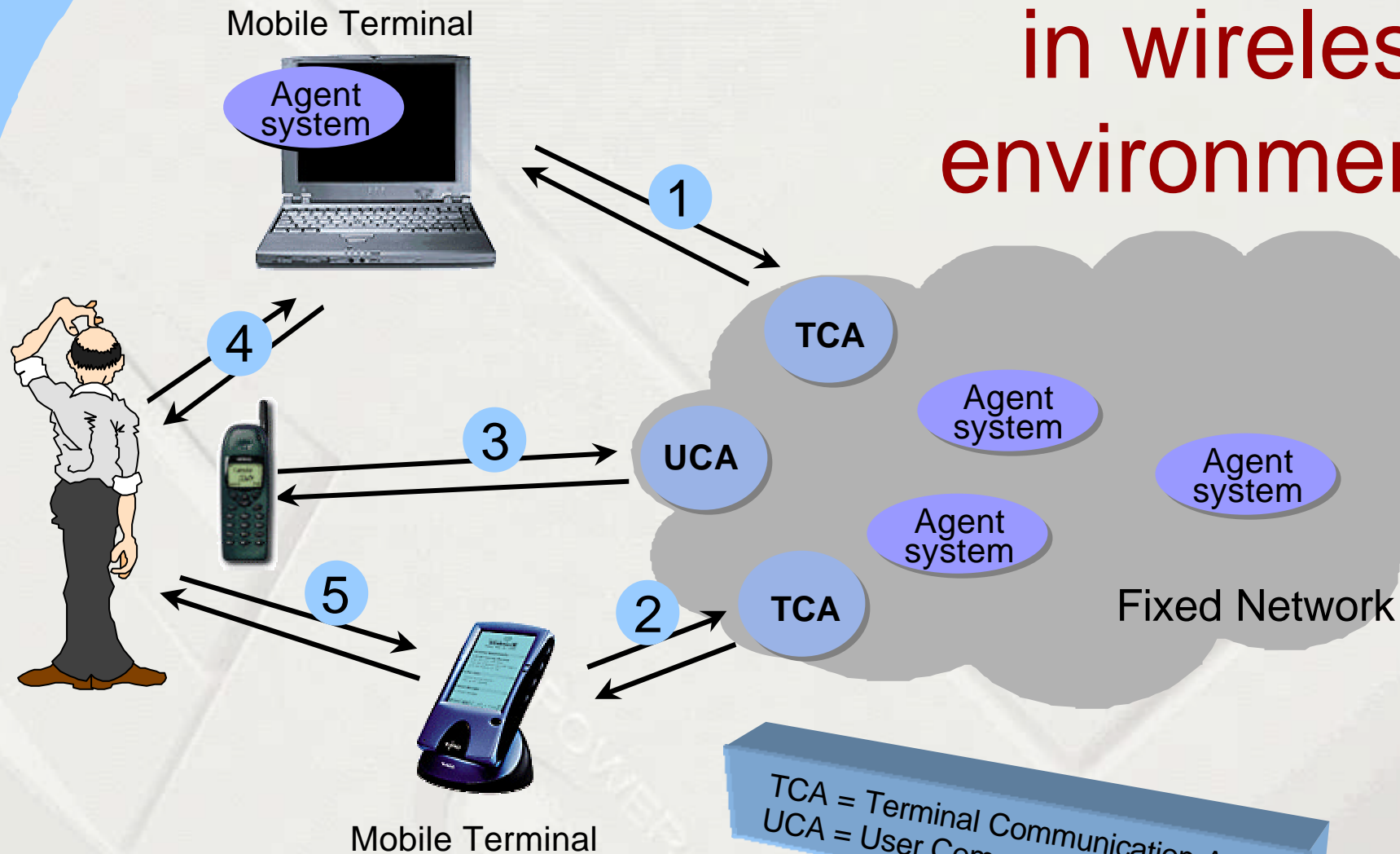
# what is an agent?

- There is no unique agent definition
  - **Commonly used attributes**
    - autonomy, goal directed behaviour, social ability, reactivity, pro-activeness, mobility, etc.
- Only common attribute is *autonomy*

*“An agent is a computer system capable of autonomous action in some environment”*

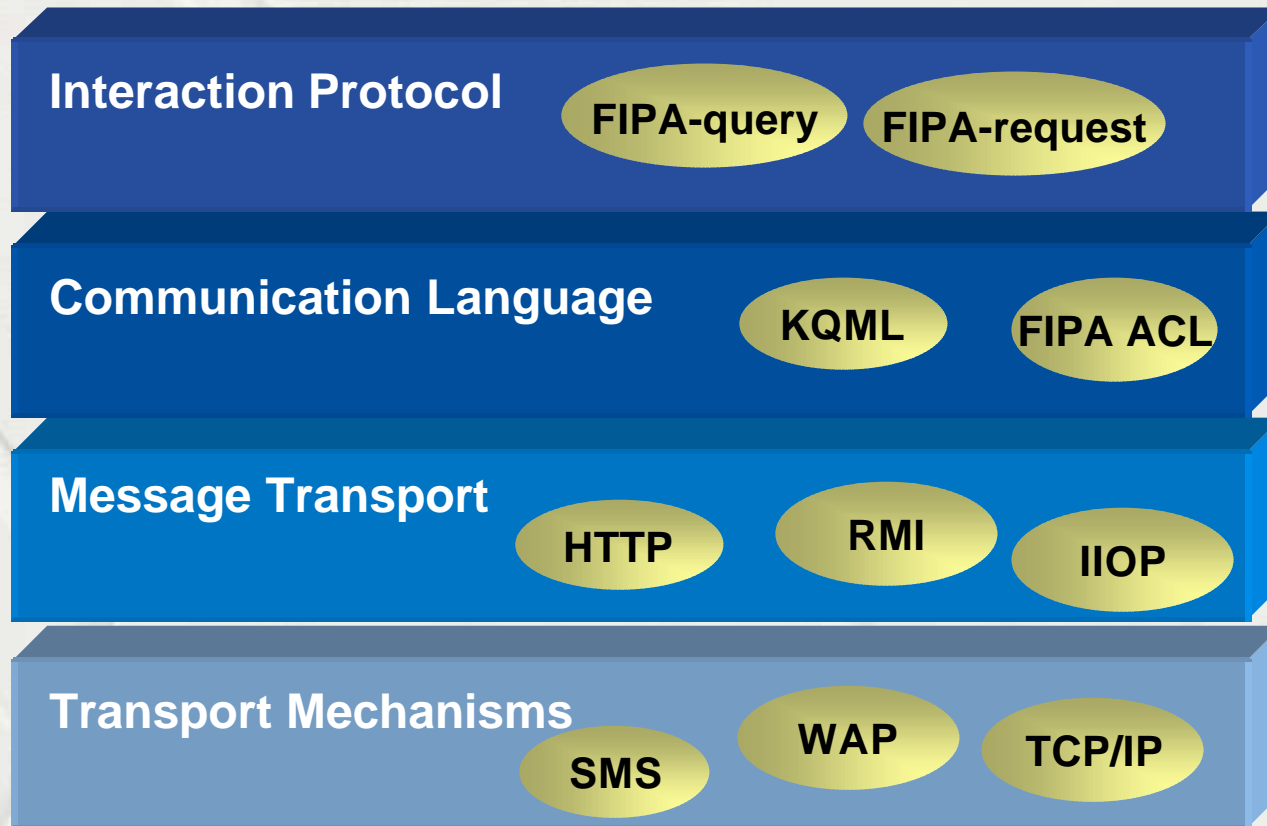


# agent communication in wireless environment



TCA = Terminal Communication Agent  
UCA = User Communication Agent

# communication layers



Network Infrastructure

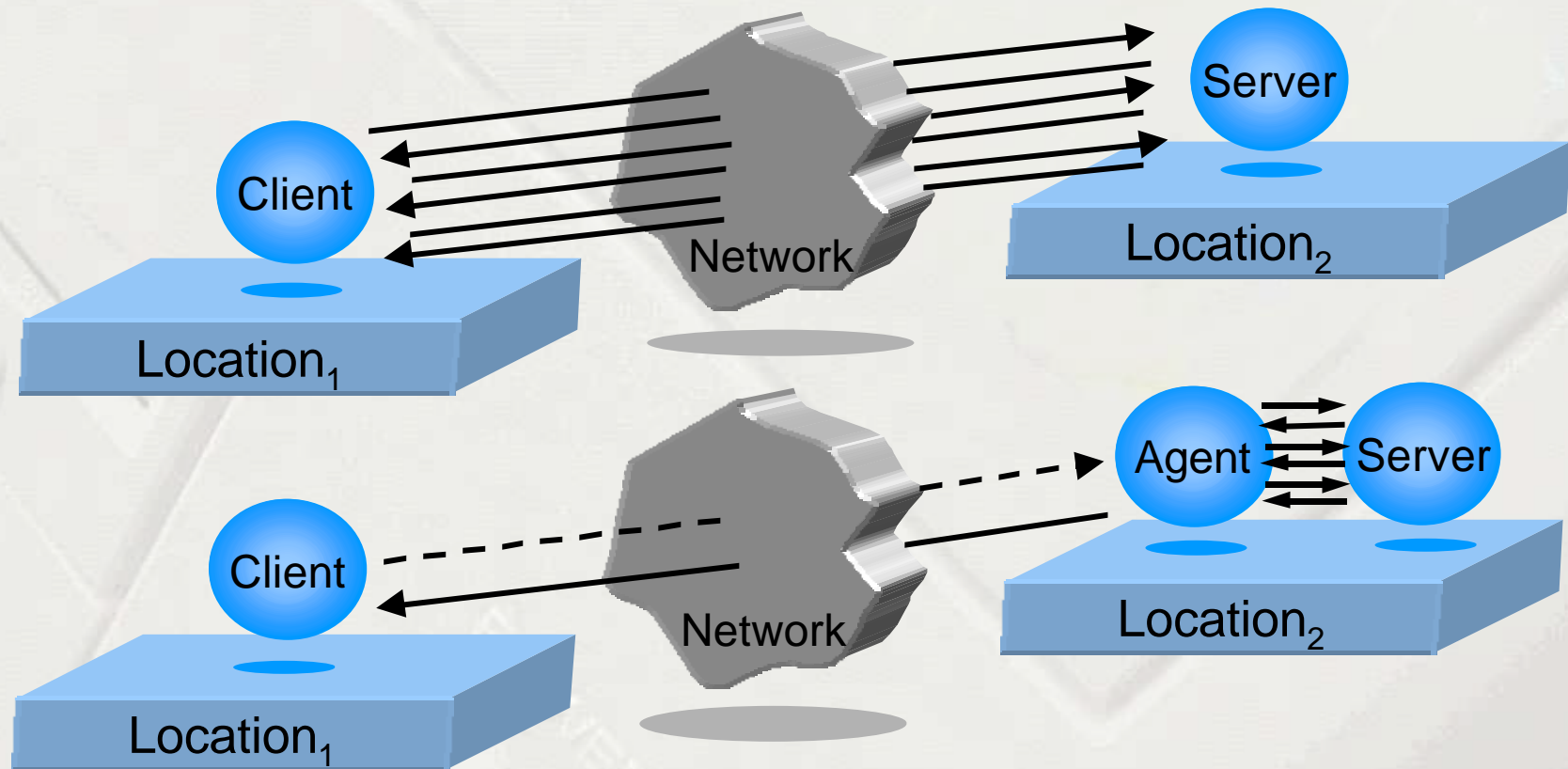
# optimization of communication layers

- Interaction protocol layer
  - remove (unnecessary) round-trips
- Communication language layer
  - efficient representation (ASCII vs. tokenized)
- Message transport layer
  - efficient protocol, location transparency
- Transport mechanism layer
  - efficient/suitable protocol, failure transparency

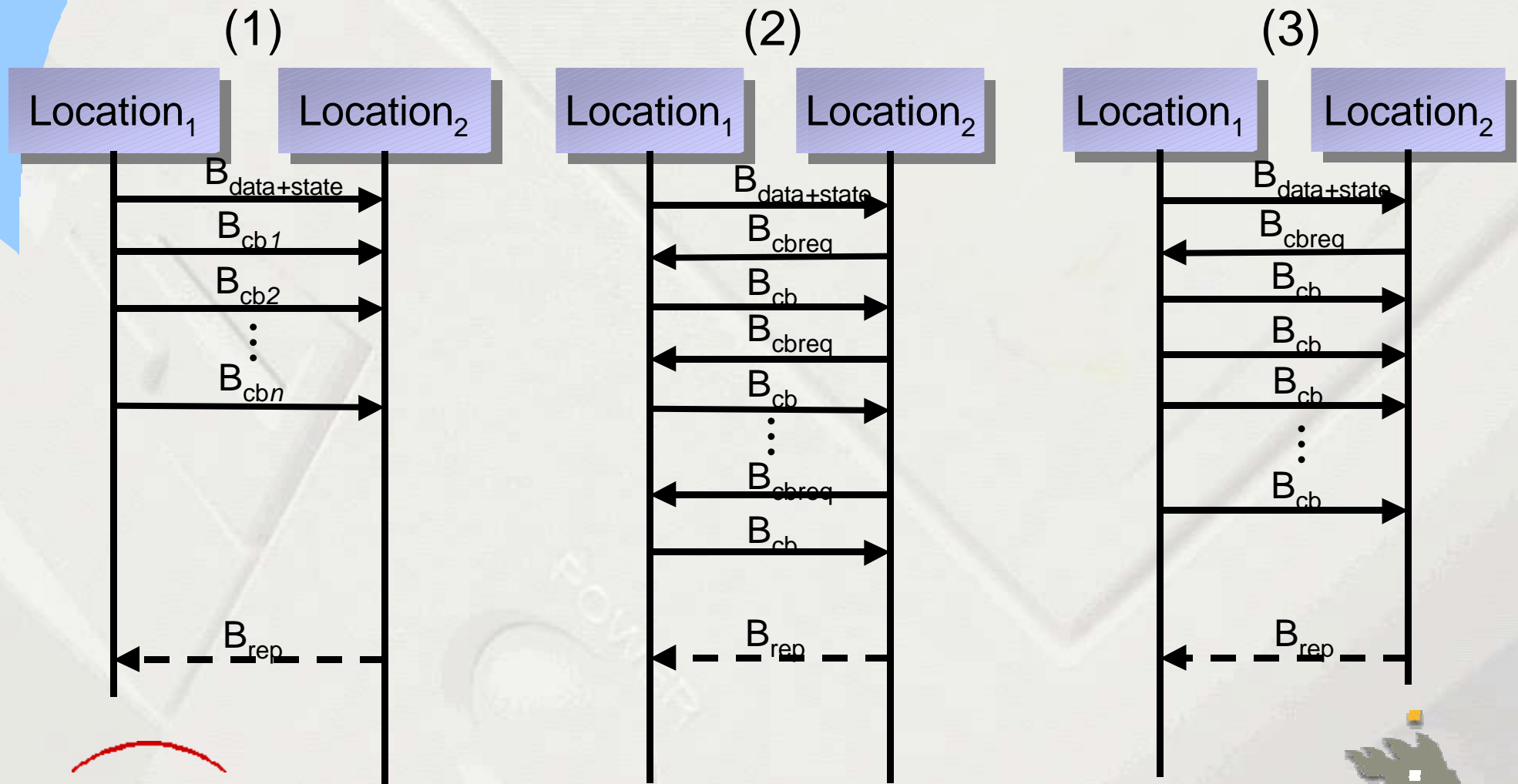




# agent migration



# agent migration scenarios





# conclusions

- Agent communication in wireless environment needs special support from underlying architecture
- Optimization is needed in all communication layers
- Whether to migrate or not?
- Monads project
  - [www.cs.helsinki.fi/research/monads/](http://www.cs.helsinki.fi/research/monads/)

