A Resource Access Decision Service for CORBA-based Distributed Systems

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Presentation Overview

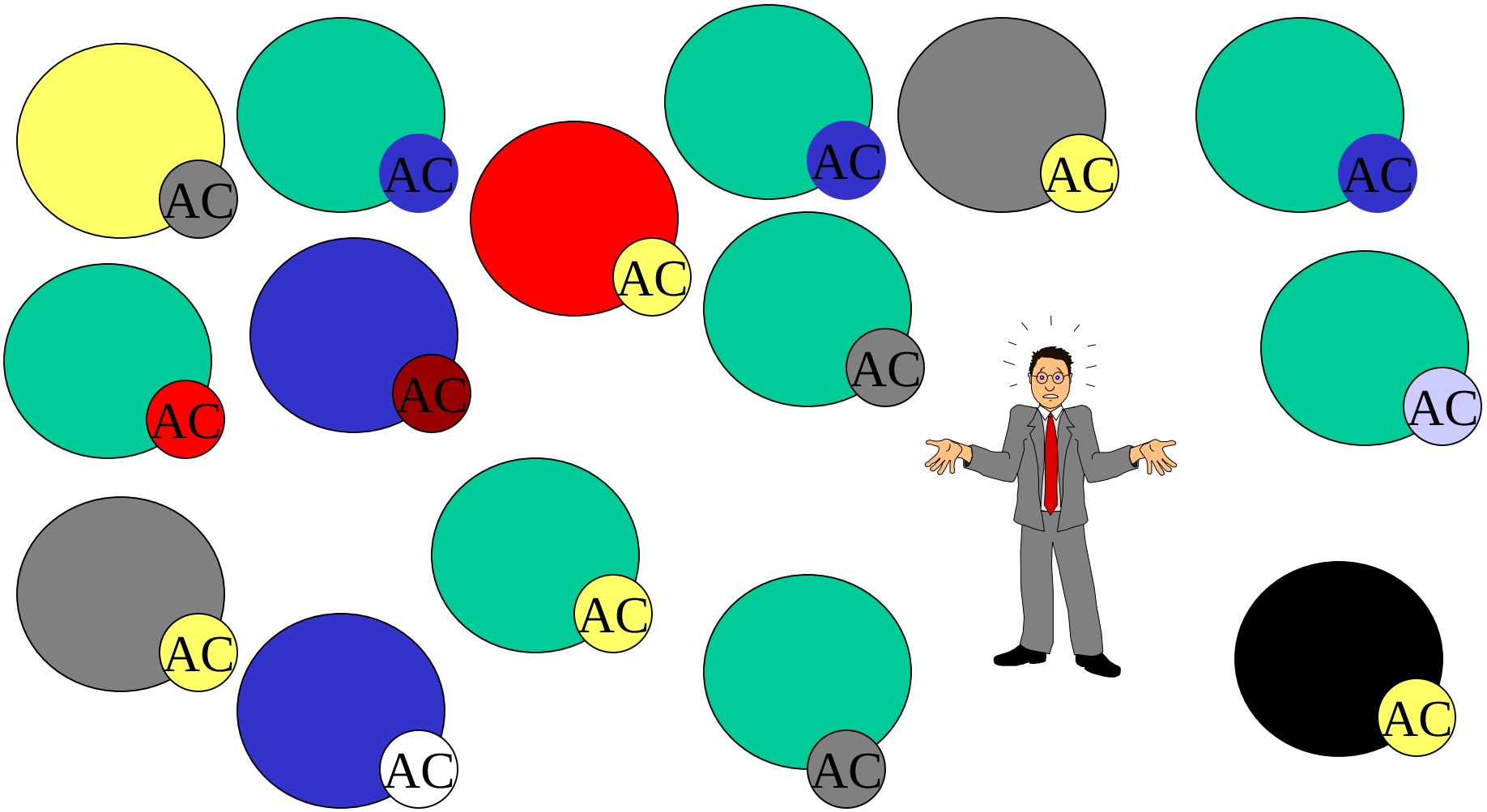
- Problem statement
- RAD logical design
- Discussion
- Status report
- Conclusions

Particular Problem

Application-level access control logic

- reasons to have
  - fine-grain access control (service-oriented systems)
  - policies are complex and/or dynamic
- mixed with application logic
- advantages
- disadvantages

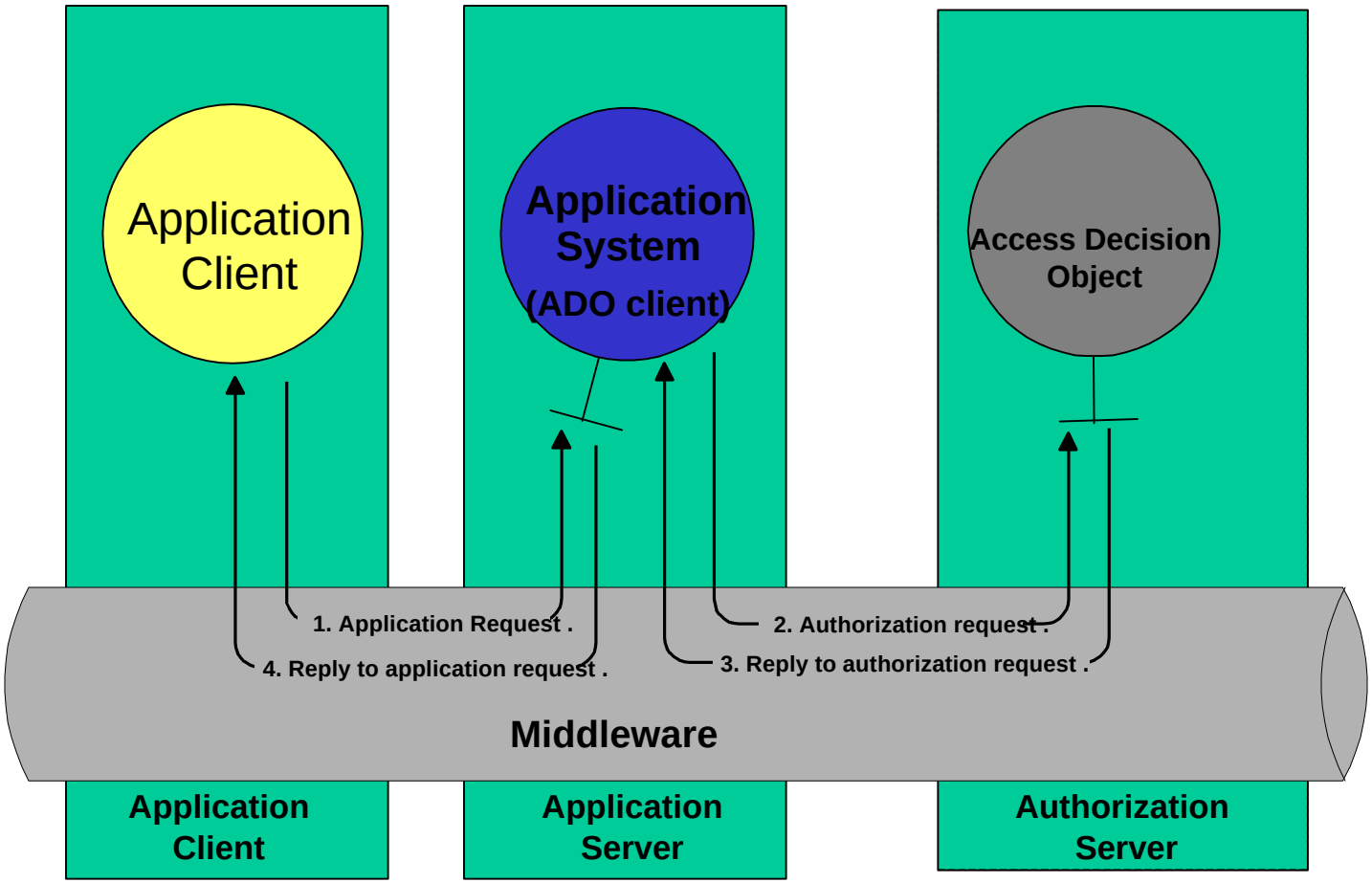
Application AC -- headache for vendors and owners



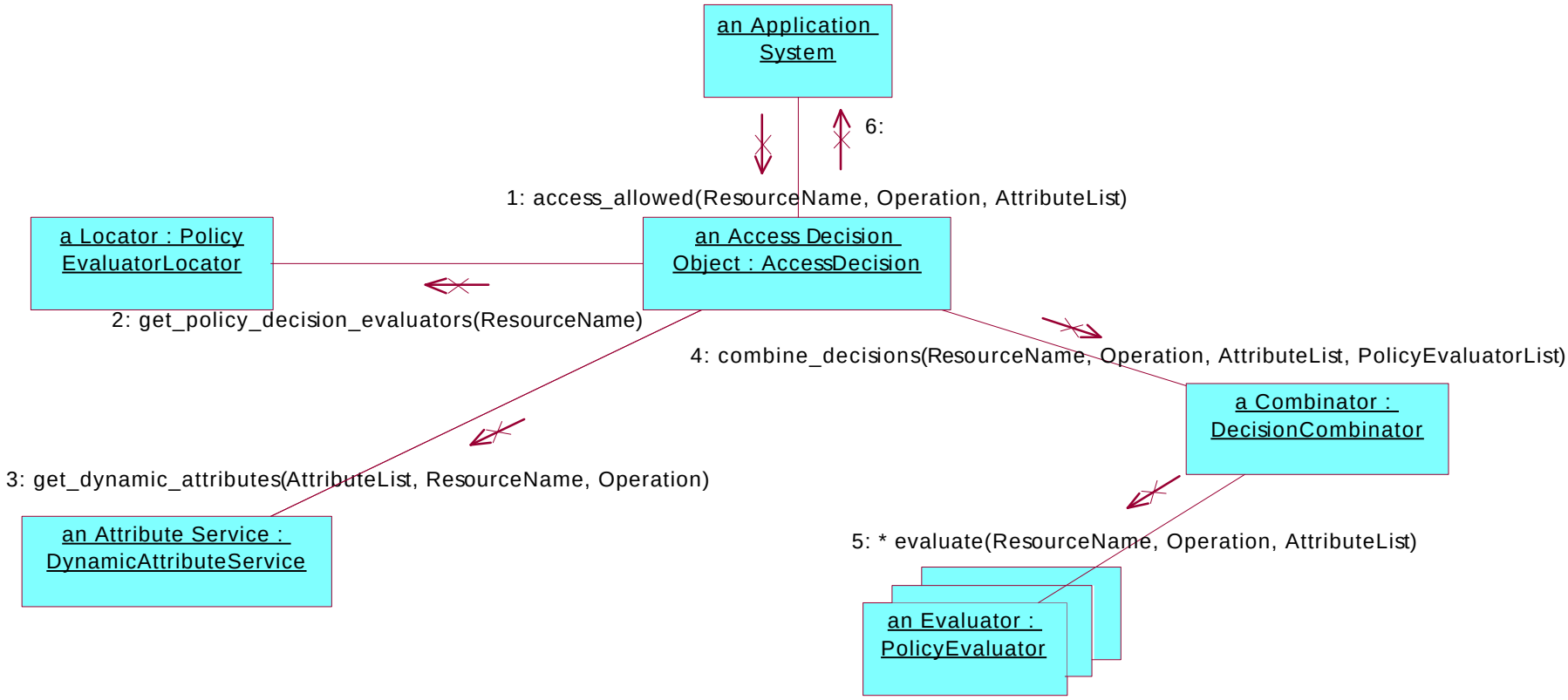
Disadvantages of embedded authorization logic:

- need to administrate on an application-by-application basis
- multiple access control models
  - difficult to ensure correctness of mapping organizational policy into authorization mechanisms
- difficult to ensure the consistency of changes
- application has to be re-designed/re-implemented/re-tested if authorization logic changes

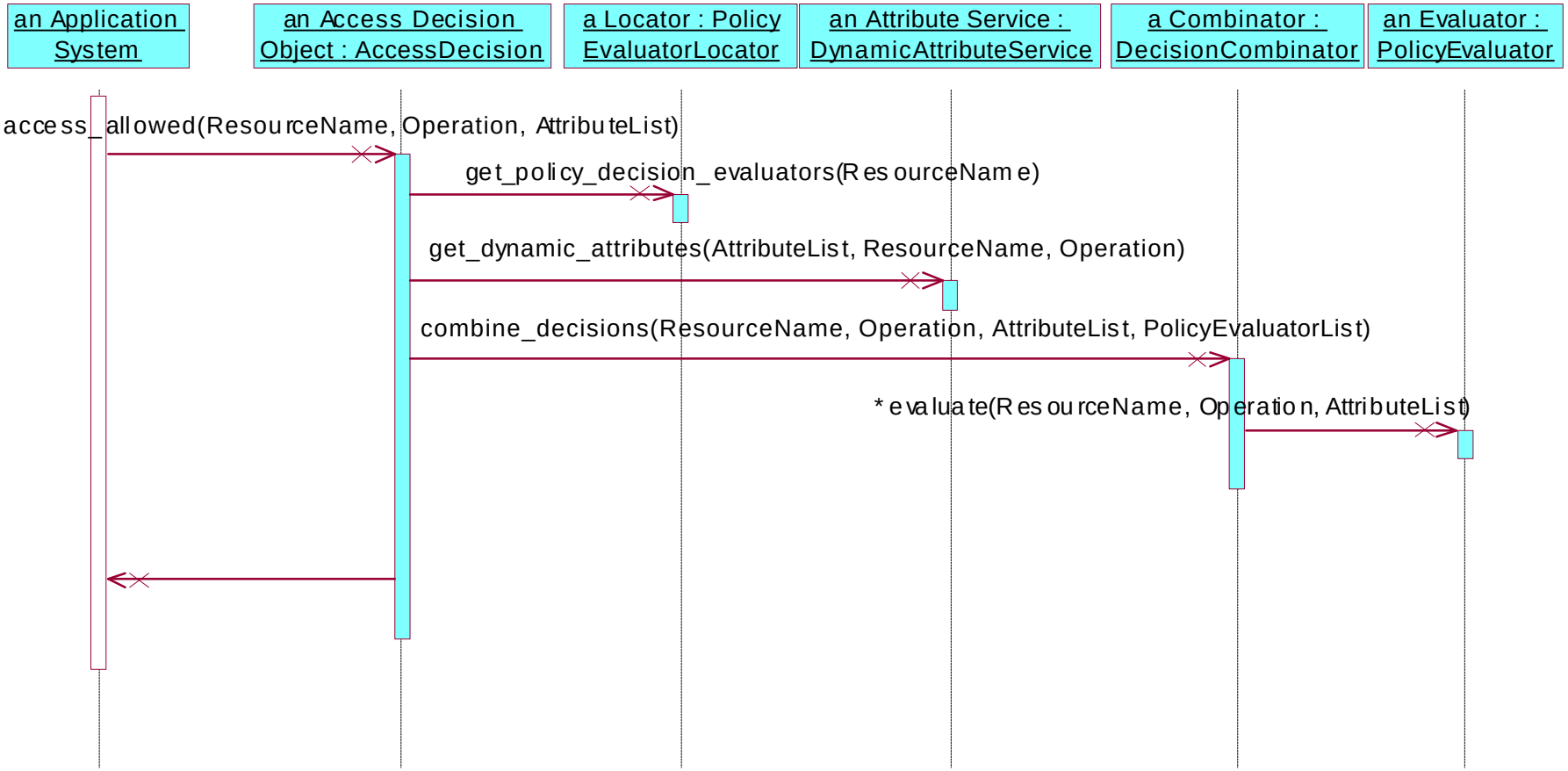
RAD high-level view



RAD Component Collaboration



RAD Sequence Diagram



Discussion

- Simplicity
  - simple interfaces and data structures
  - nominal amount of data is passed
  - complexity encapsulated in RAD components
- Generality
  - resource and operation names provide generic abstraction
  - generic framework for AC
- Flexibility
  - Existing authorization engines can be used

Discussion (cont'd)

- performance
- scalability
- "resource $\rightarrow$ resource name" abstraction
- semantics consistency among different RAD components

Prototype Implementations

- 2AB
  http://www.omg.org/docs/corbamed/99-01-19.zip
- Telemed project at Los Alamos Labs
  http://www.acl.lanl.gov/TeleMed/
- FIU
  http://cadse.cs.fiu.edu

Current Status

- OMG pre-final **Resource Access Decision Facility** standard since August 24, 1999.

  http://www.omg.org/docs/corbamed/99-05-04.pdf
- DASCOM Inc. announced plans for commercial availability on September 7, 1999
- Center for Advanced Distributed Systems Engineering (CADSE) at FIU continues the research.

Conclusions

Main contributions

- Logical design of generic authorization service.
- Decoupling of authorization logic from application logic can be done.
- Dynamic factors can be supported in authorization process using traditional access matrix as an underlying implementation.