# University of Twente

## Architecture Alignment in a Large Government Organization: A Case Study

Roel Wieringa, Pascal van Eck, Henk Blanken

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**University of Twente**
**The Netherlands**

# Agenda

- Project GRAAL

- Case studies: common misconceptions

- Main findings
  - Alignment at the application level
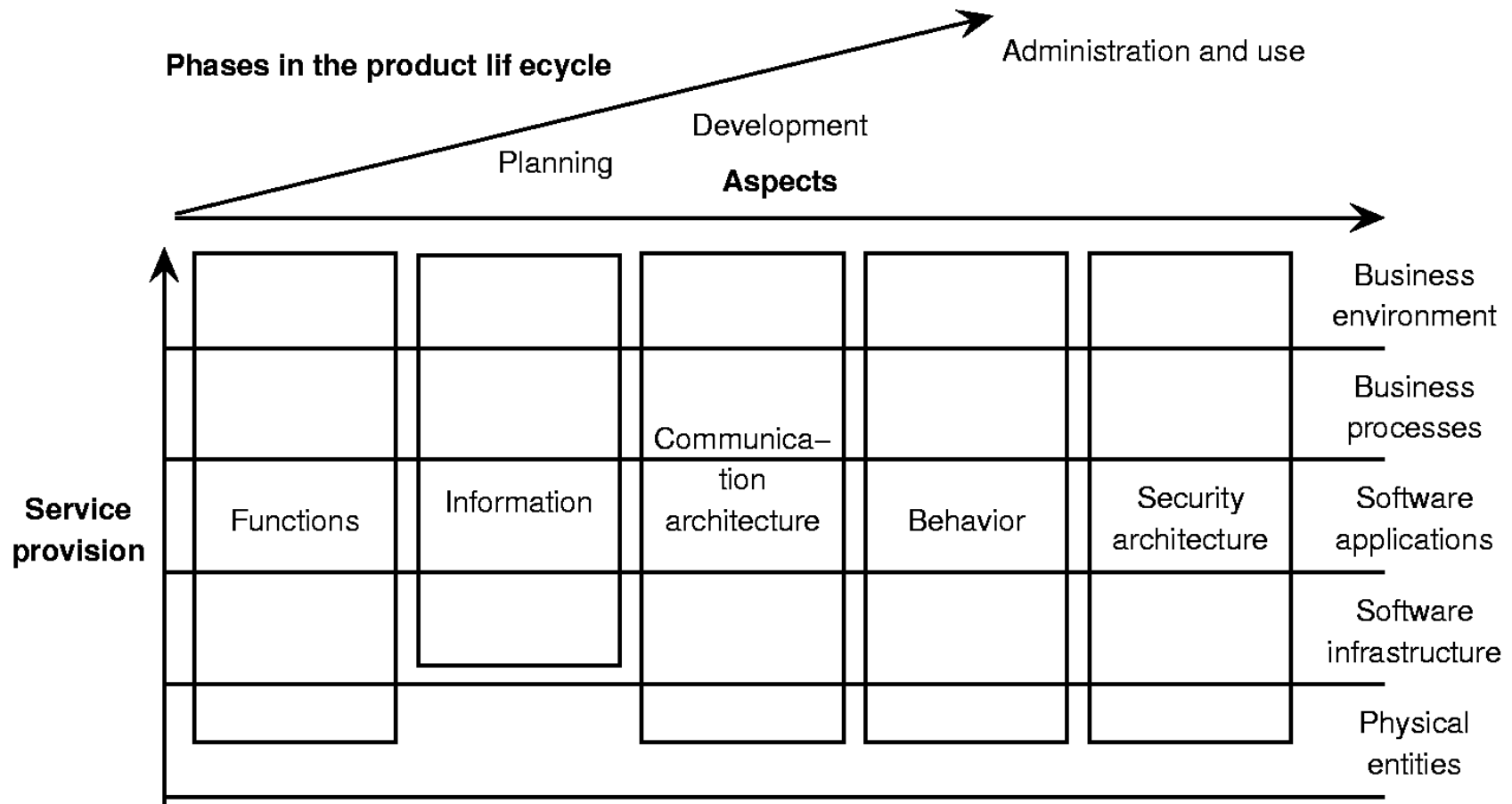  - Alignment at the infrastructure level

- Conclusions

# Project GRAAL

- Guidelines Regarding Architecture ALignment

- Goal: to discover patterns in enterprise-level application architecture

- Based on case studies in Dutch financial services industry and large government branches
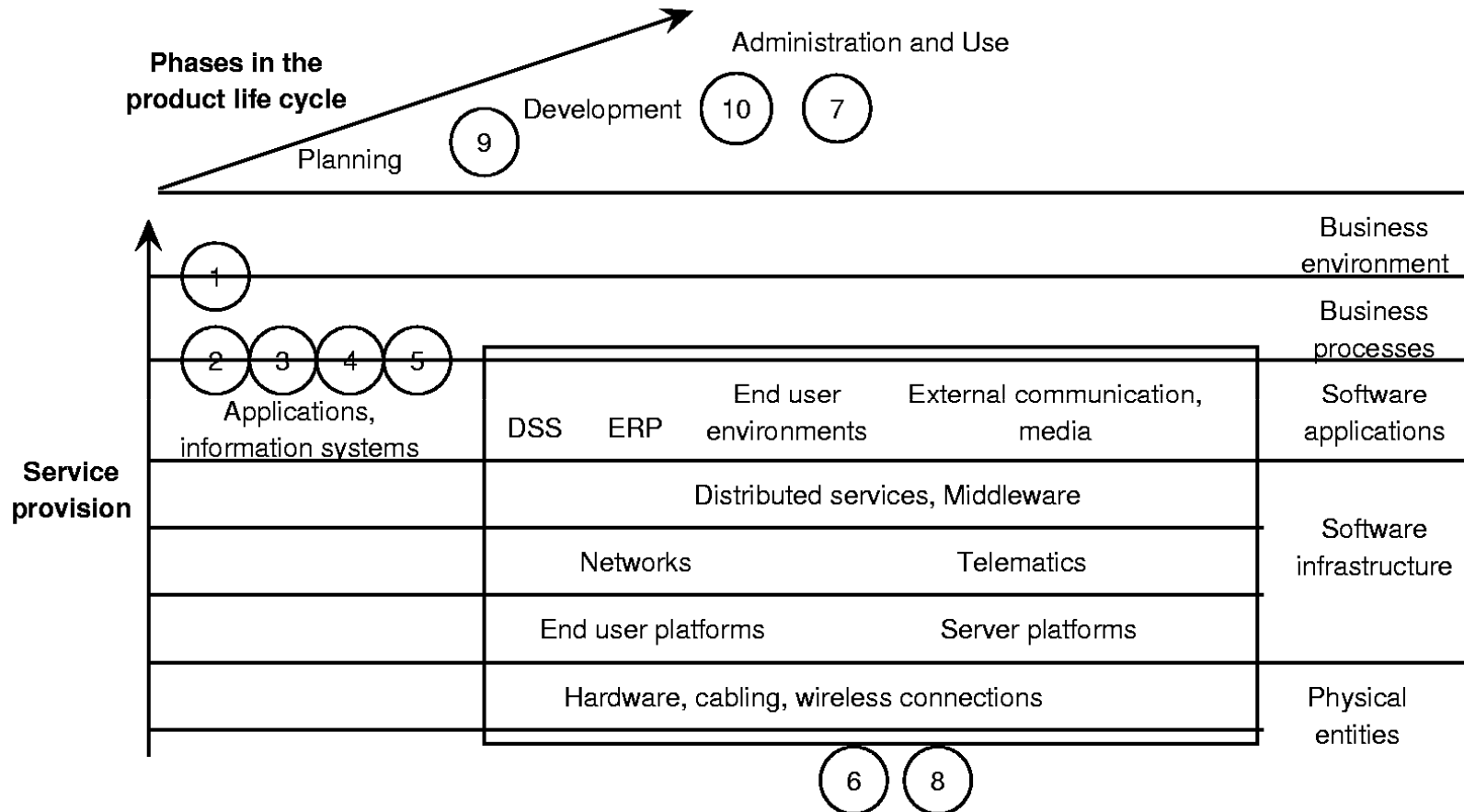
# Case studies: common misconceptions

- "Case study research needs many 'random' cases"
  - Case studies generalize to theory, not to a population
  - Multiple case studies add confidence
- "Case study research = action research"
  - Action research involves changing conditions ('disturbing the environment')
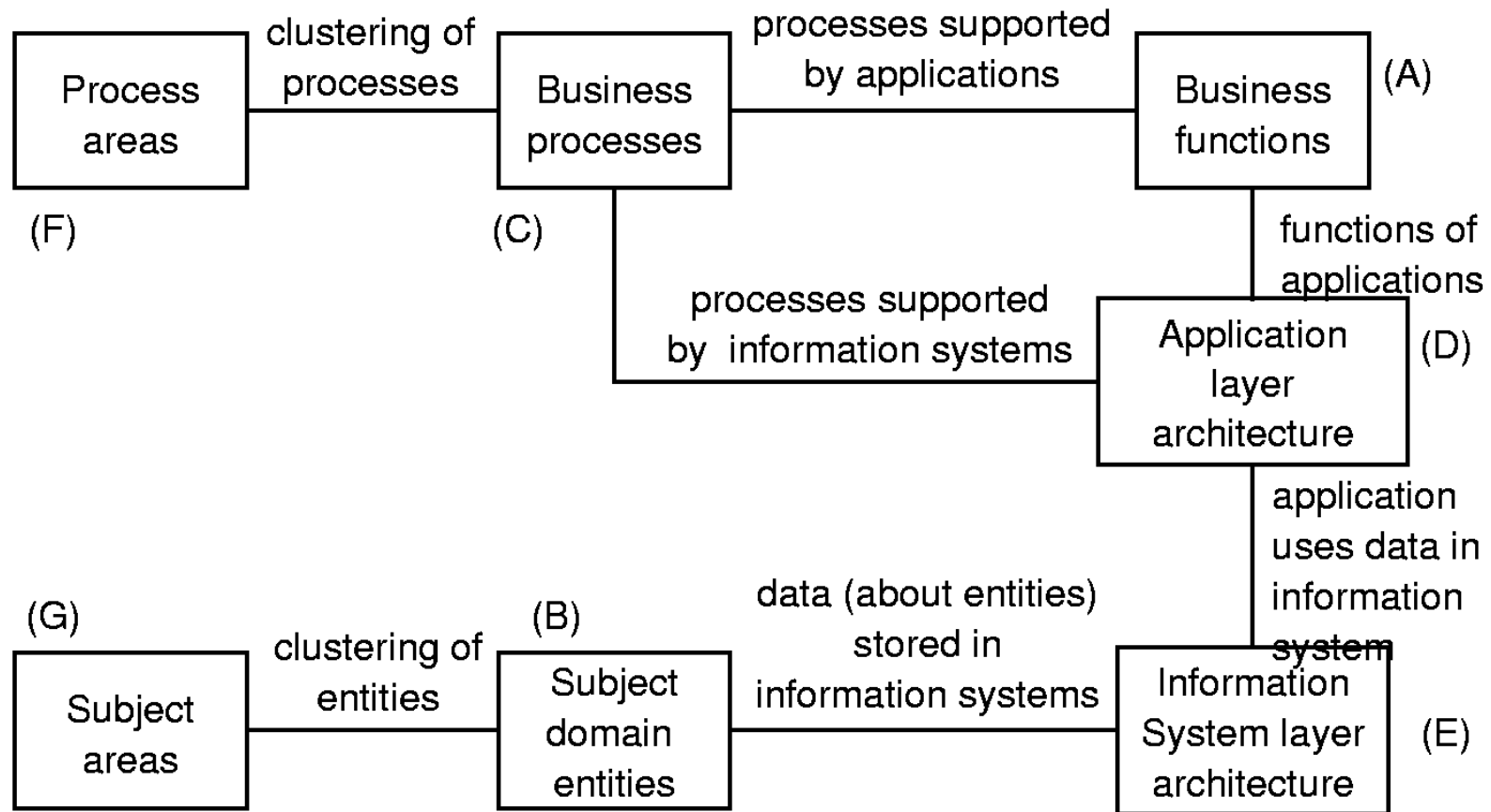
# GRAAL framework

# Documents studied

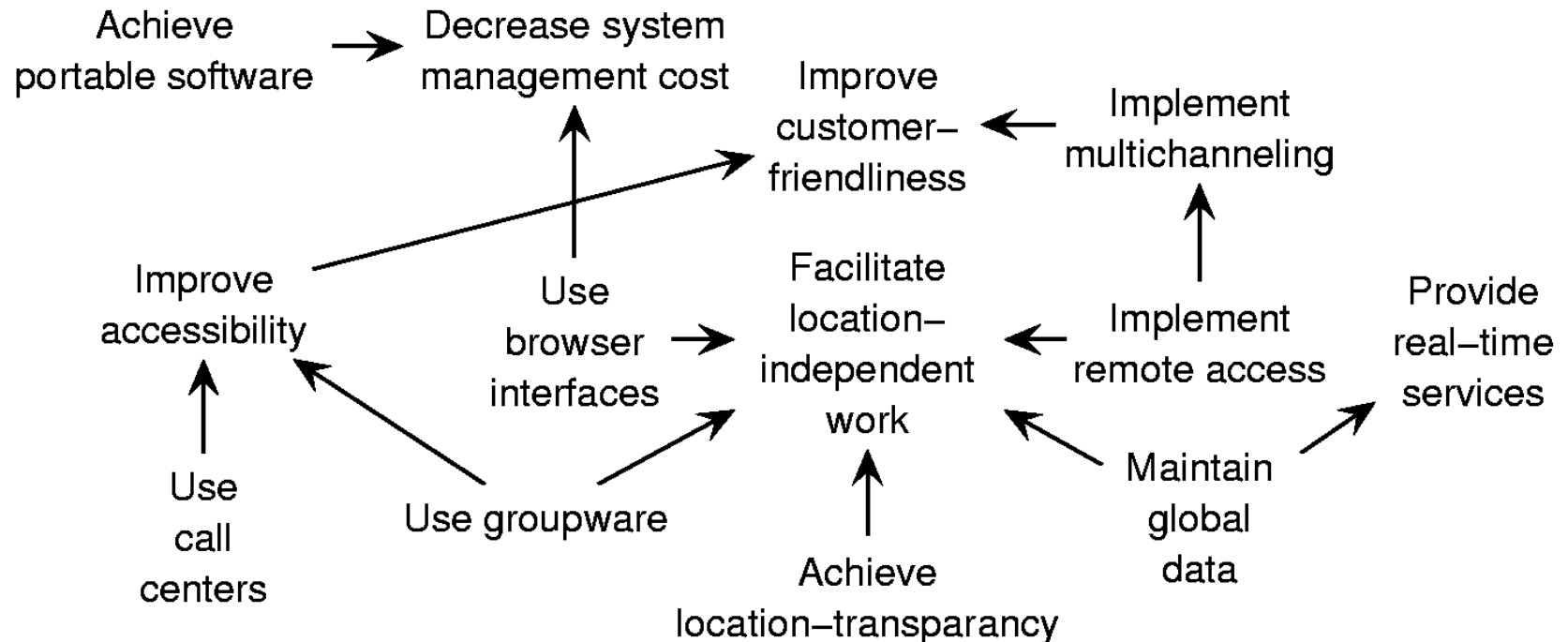# Main findings

- Development of application level and infrastructure level are different

  – Application level:

    - Event-driven

    - Structured according to user groups

  – Infrastructure level:

    - Time-triggered

    - Structured according to technology domains

# Application alignment



```
Process          clustering of        Business      processes supported      Business      (A)
areas            processes            processes     by applications          functions

(F)                                   (C)

                                                    processes supported                    functions of
                                                    by information systems   Application   applications
                                                                             layer         (D)
                                                                             architecture

(G)                                   (B)           data (about entities)                  application
                                      clustering of stored in                              uses data in
Subject          entities            Subject        information systems      Information   information
areas                                domain                                  System layer  system
                                     entities                                architecture  (E)
```

# Goals

# Problems

many applications use outdated parts
of the infrastructure

There is no time to transfer functionality
from old infrastructure components
to new infrastructure components

It takes a long time to phase out
the outdated parts of the infrastructure

Complexity of infrastructure increases

Infrastructure management cost increases

Management costs must be
lower than X Euro per year

Causal
relationships
between
phenomena

Conflict

Norm

# Conclusion

- Exploratory case study to find hypotheses for architecture alignment research

  - To be validated in further case studies

- Architecture alignment at the application level differs from infrastructure level

  - Does misalignment result from this?