

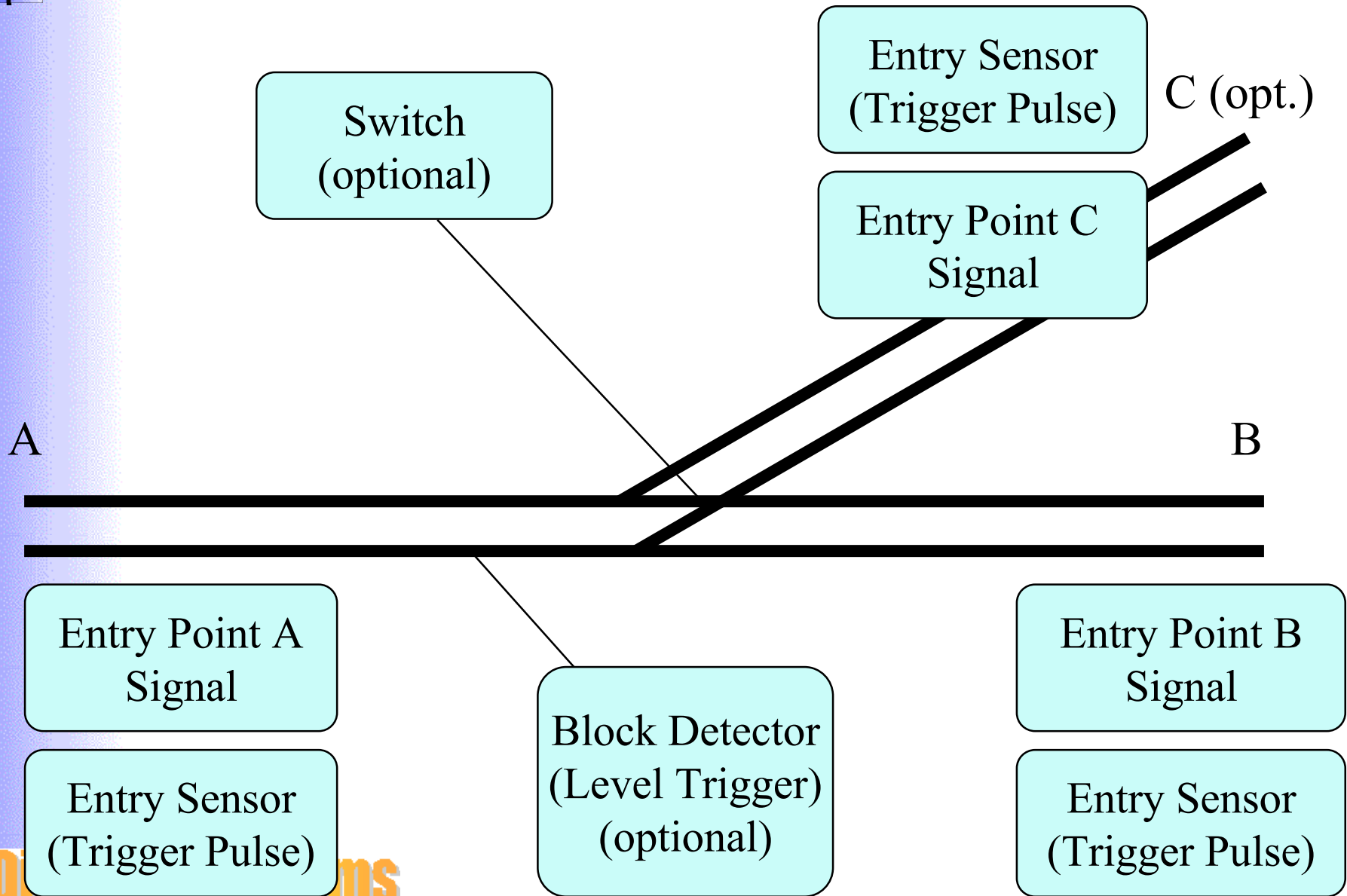
Tanner Declaration Exhibit D

Introduction of ROSA™ Railroad Open System Architecture

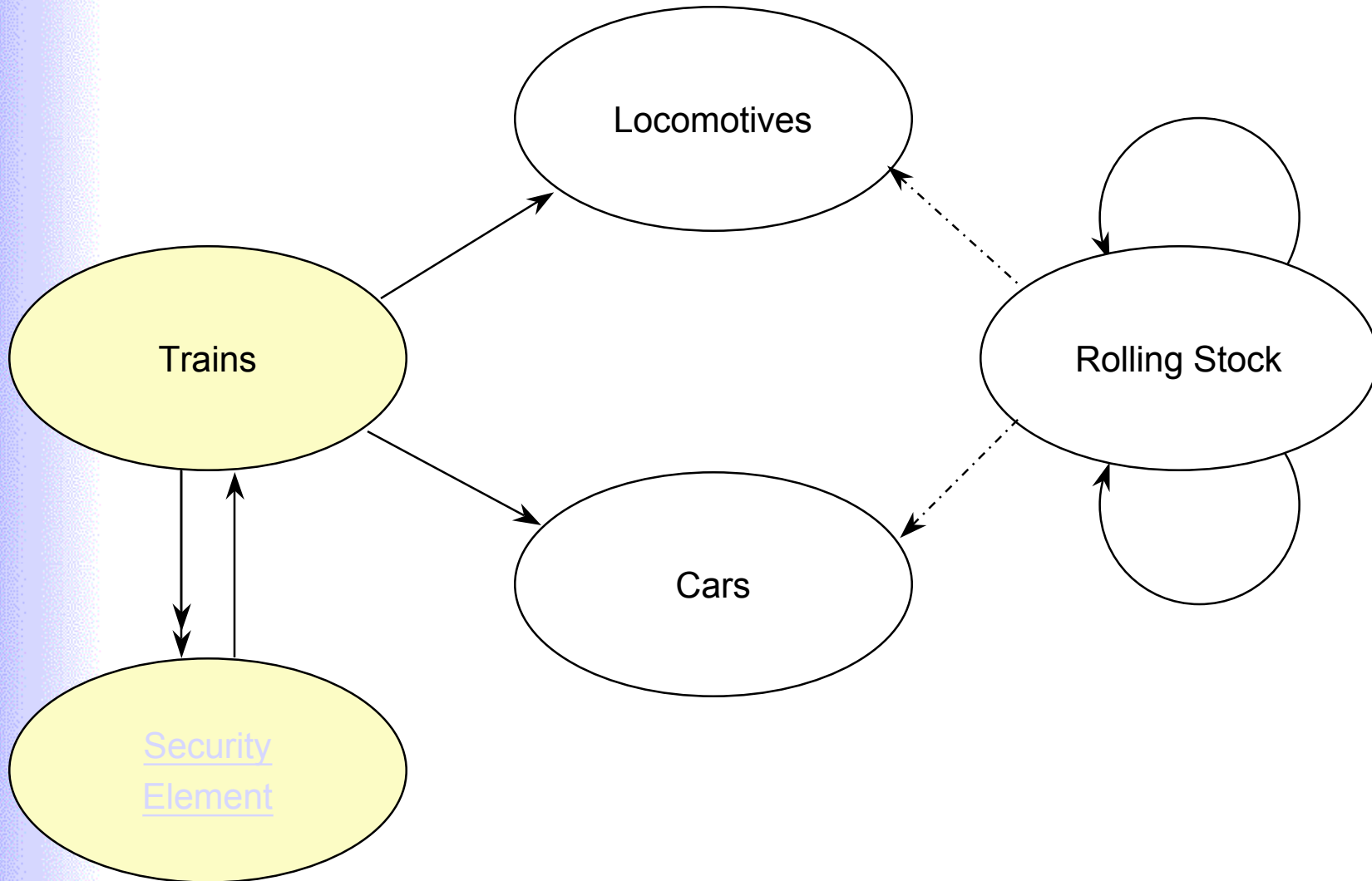
Presentation of Goals and Principles
DCC Working Group Meeting

- ◆ Realistic Model Railroad Operations
- ◆ International Compatibility
- ◆ Data Exchange between Applications
(ROSA Level 1)
- ◆ Cooperation of several Applications in
Networks (ROSA Level 2)

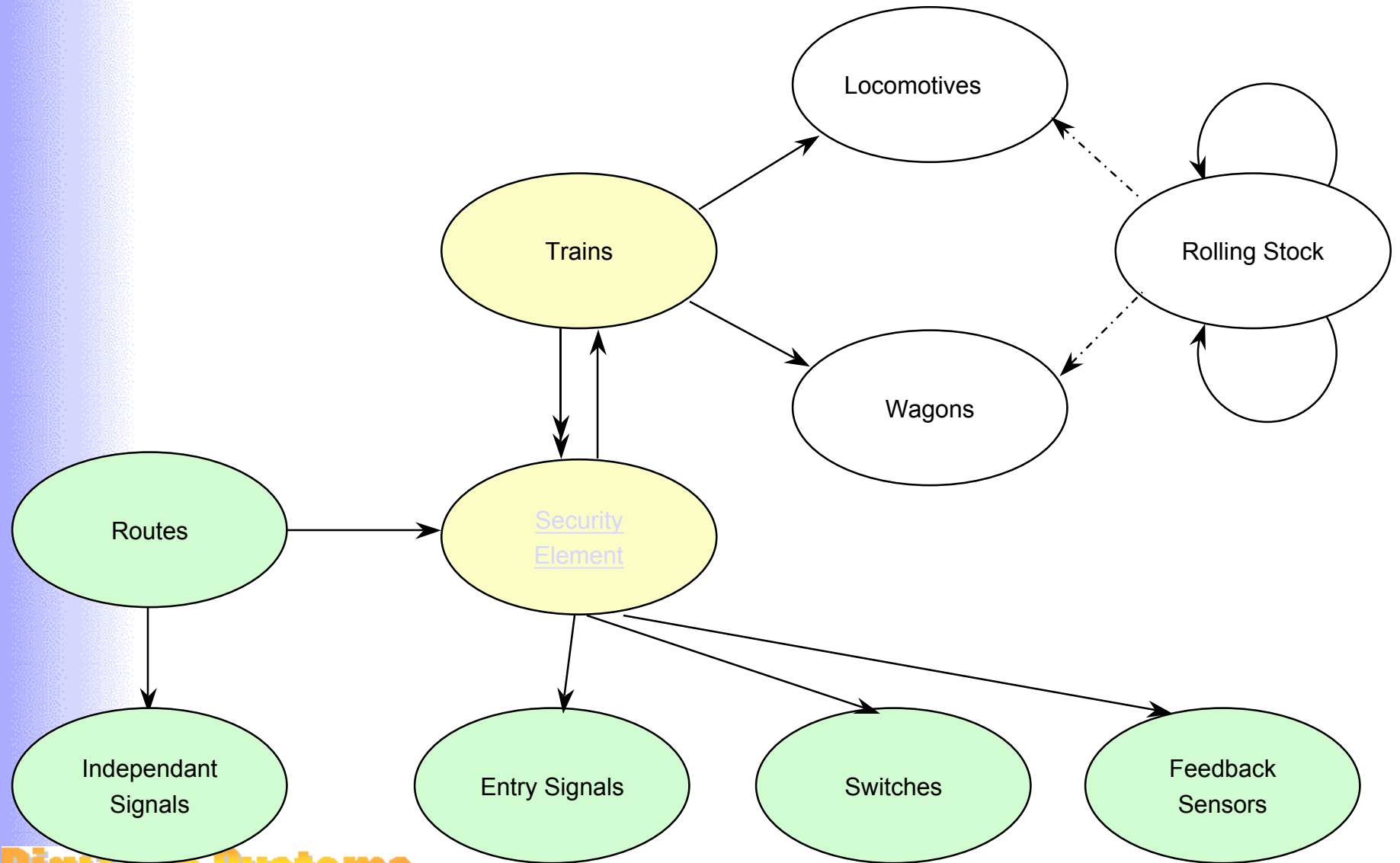
ROSA Basic Concept: Security Element



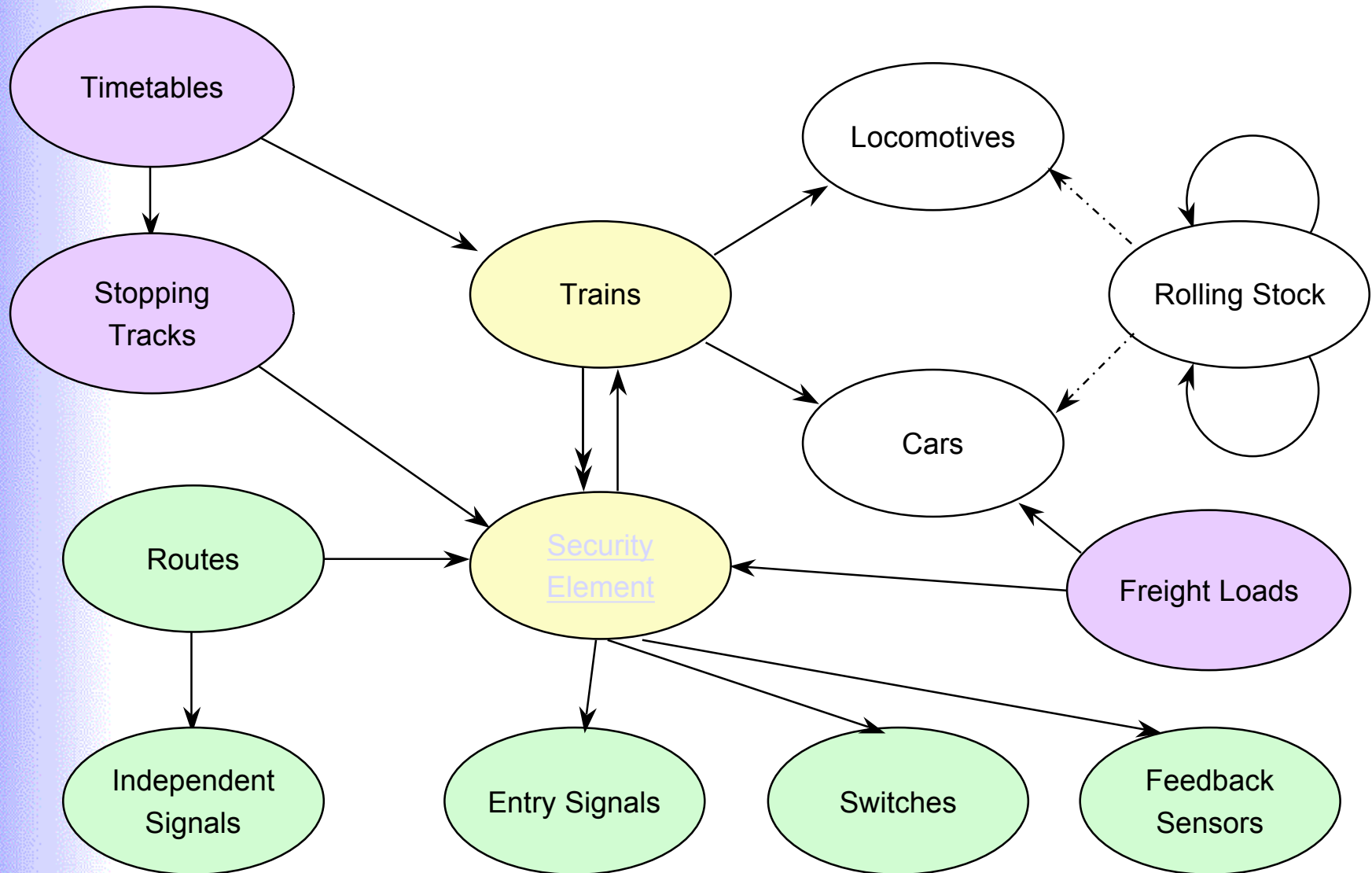
ROSA Data Structure I



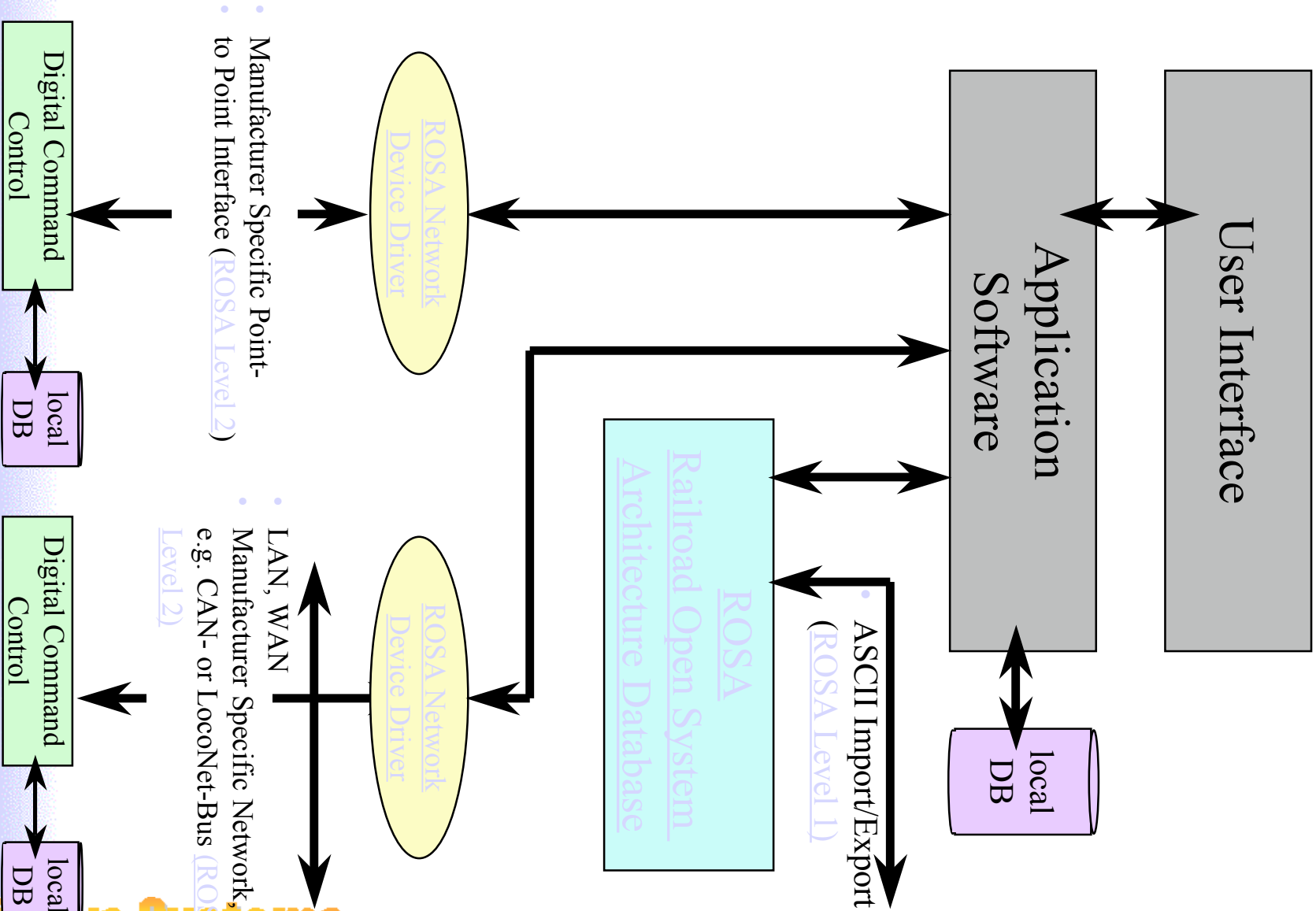
ROSA Data Structure II



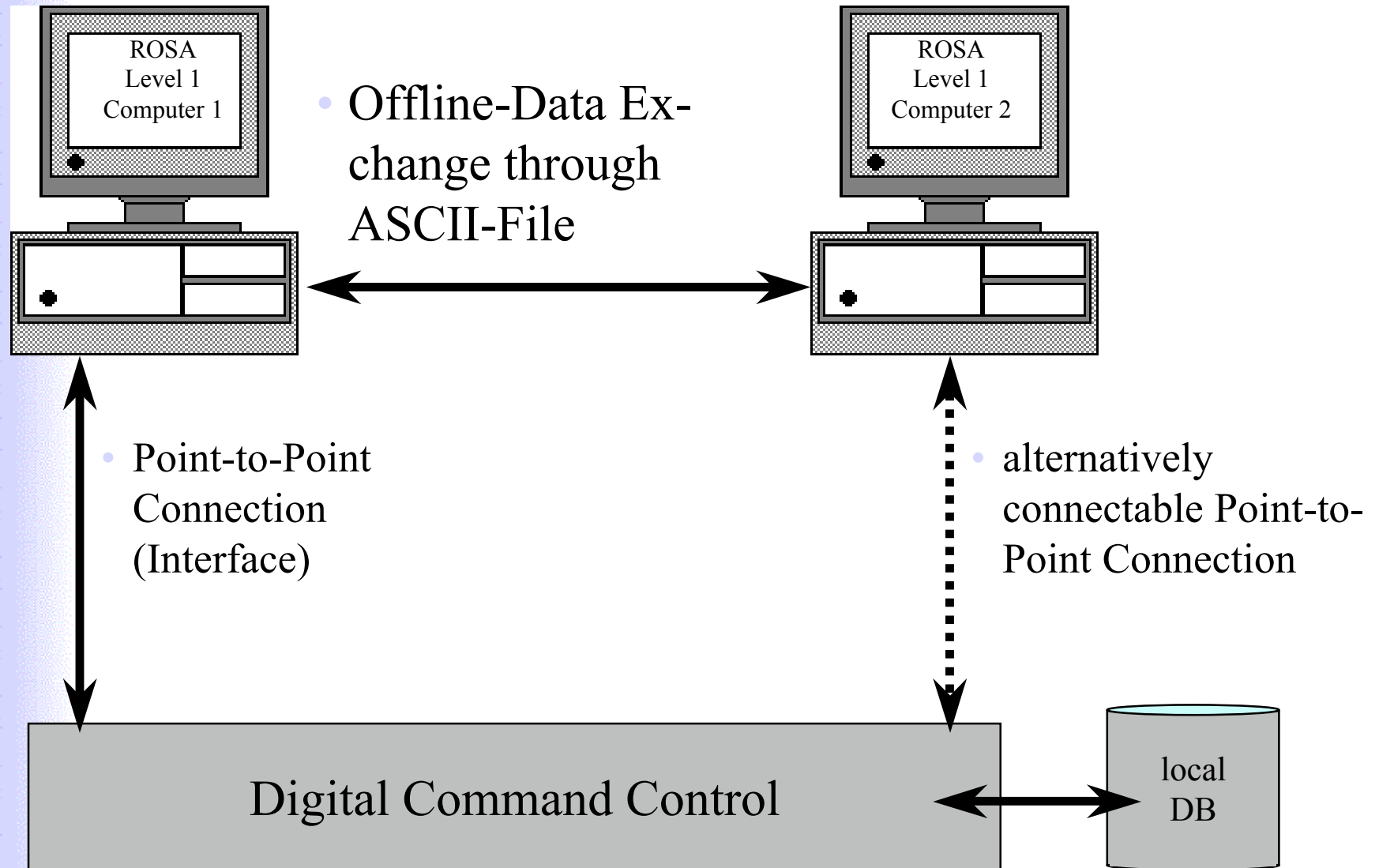
ROSA Data Structure III



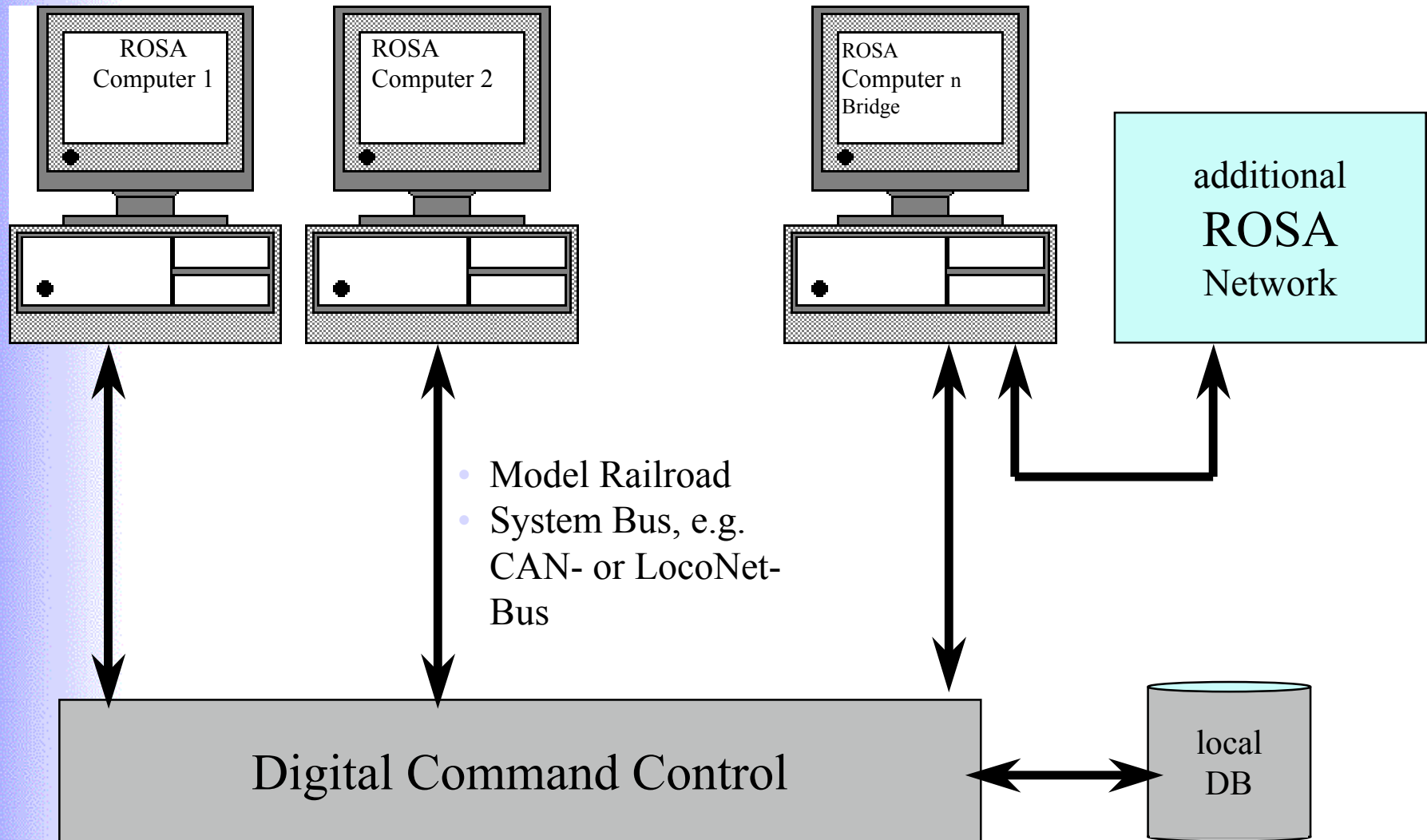
ROSA Software Architecture



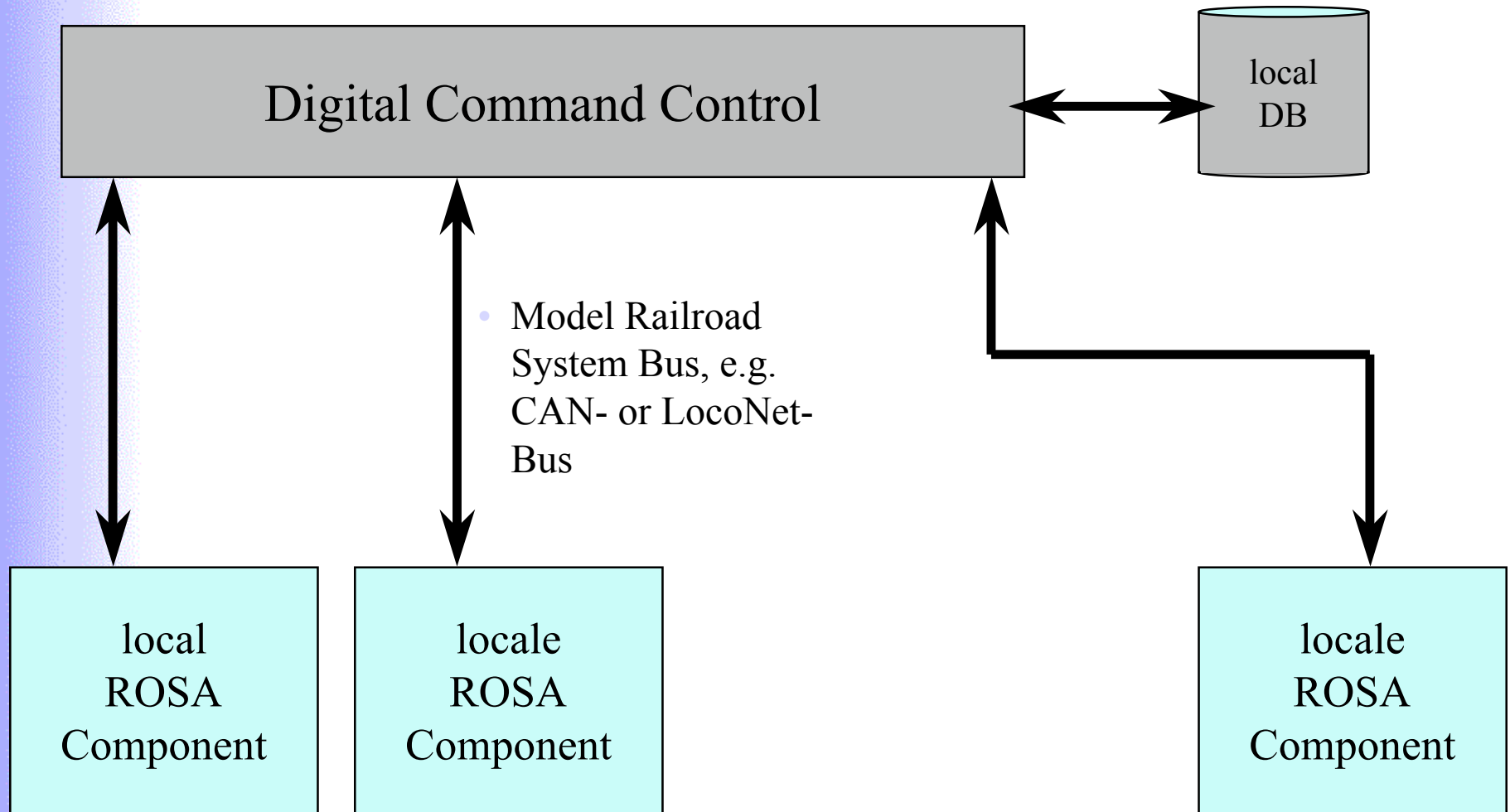
ROSA Level 1 Application



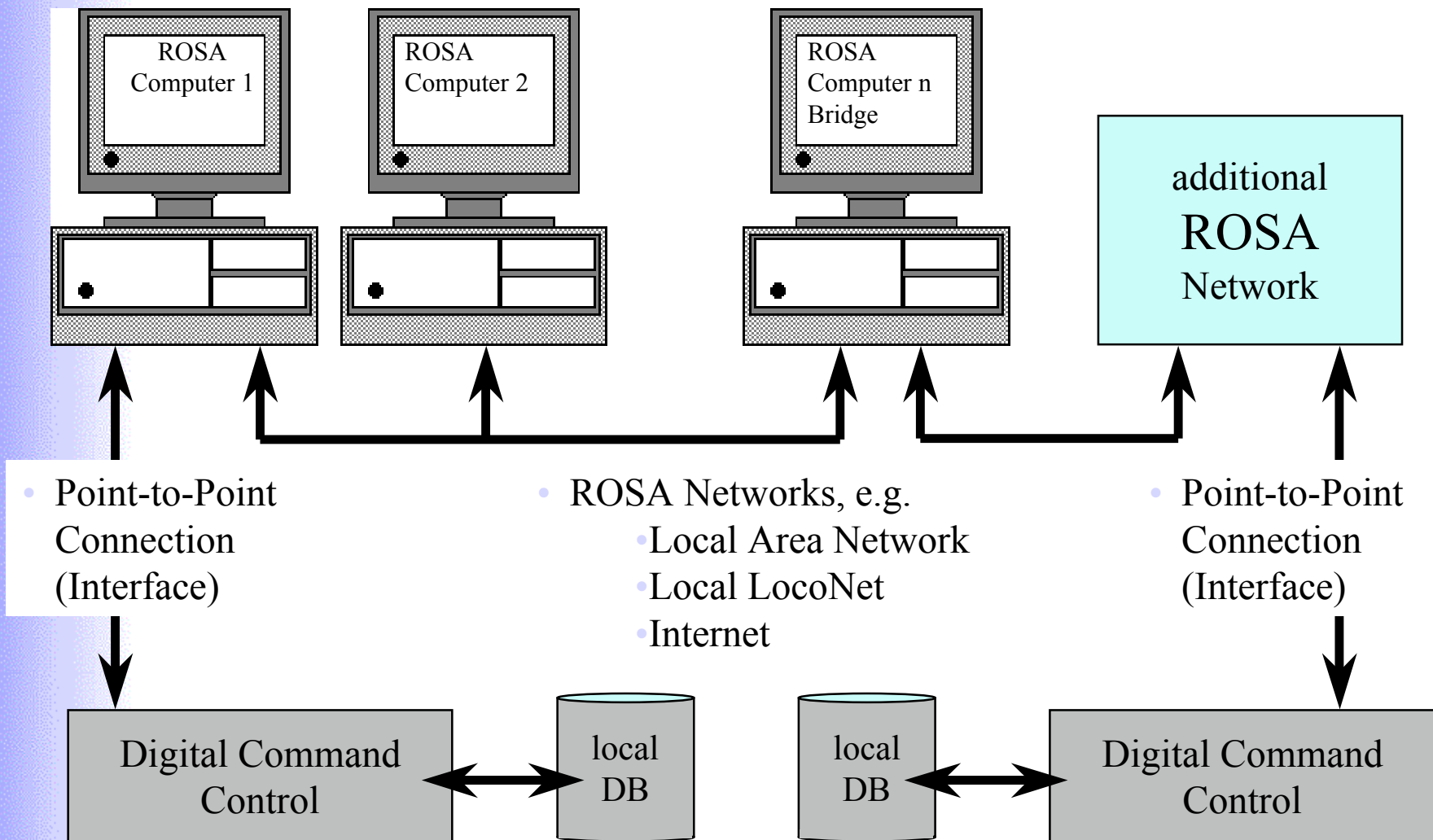
ROSA Level 2 Application with Model Railroad Network



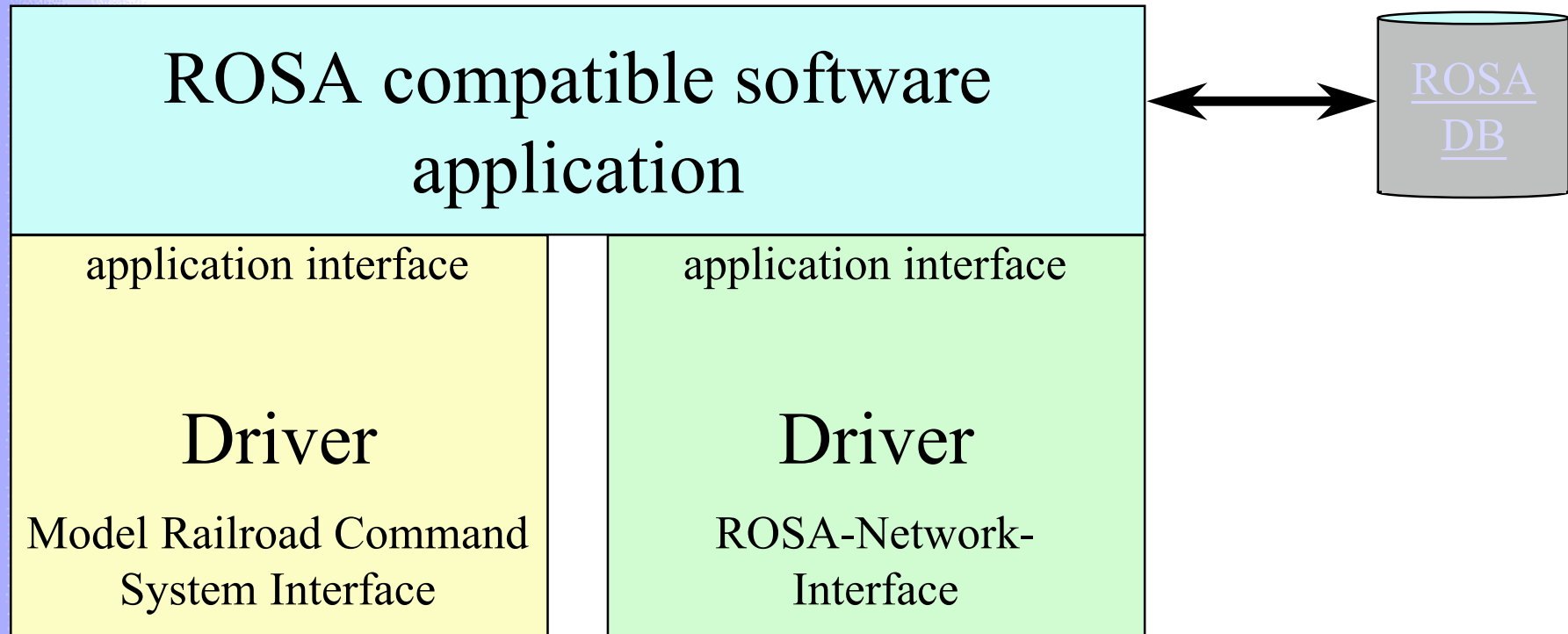
ROSA Level 2 Application within DCC Equipment



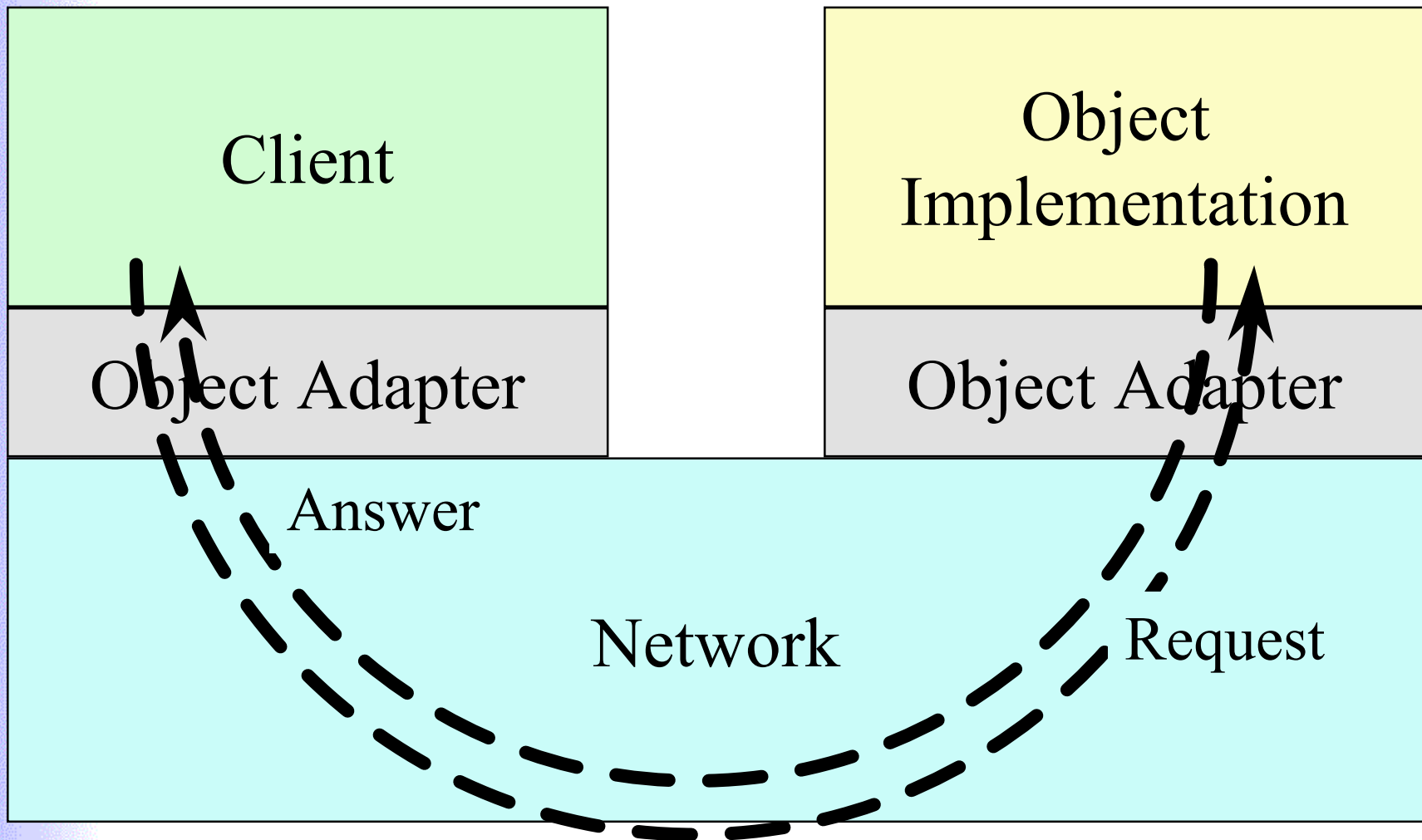
ROSA Level 2 Application with use of Multiple Network



ROSA Interface Concept



Object based communication within ROSA Networks



- ROSA implements
 - Data Exchange between software applications of different manufacturers
 - Standardized Data Structures and Driver Interfaces
- ROSA allows
 - realistic Model Railroad Operations with stand alone computers as well as in Networks
 - Dynamic Data Exchange between Software Applications and hardware based modules in the model railroad framework