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GES4 - Generic Environment Simulator for SoS (System of Systems)

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Difficulties in Simulating SoS

- **SoS includes many complex systems rich with software**
- **Software of Many types: Real Time, complex MMI, algorithms, information management systems**
- **Many Kinds of interfaces between systems: cyclic messages, event driven messages**

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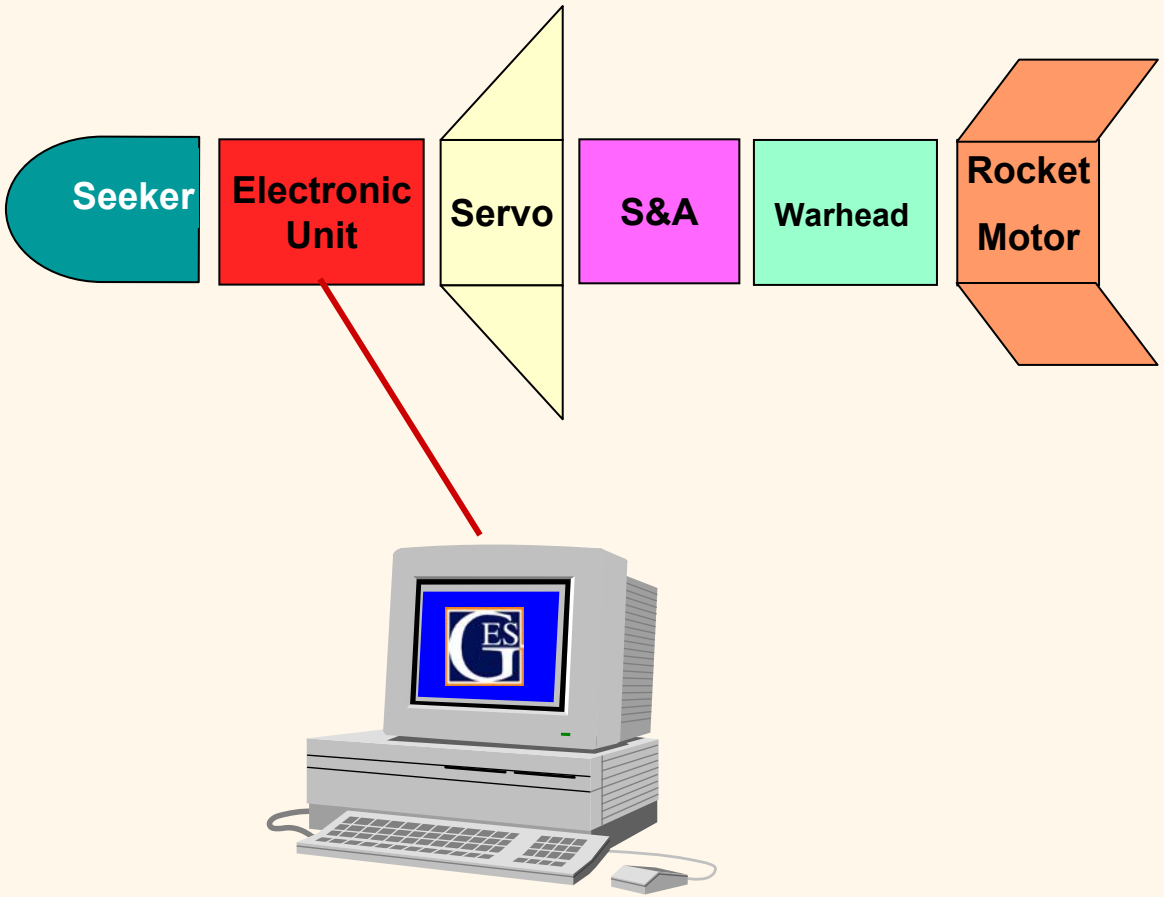
Simulating System Environment



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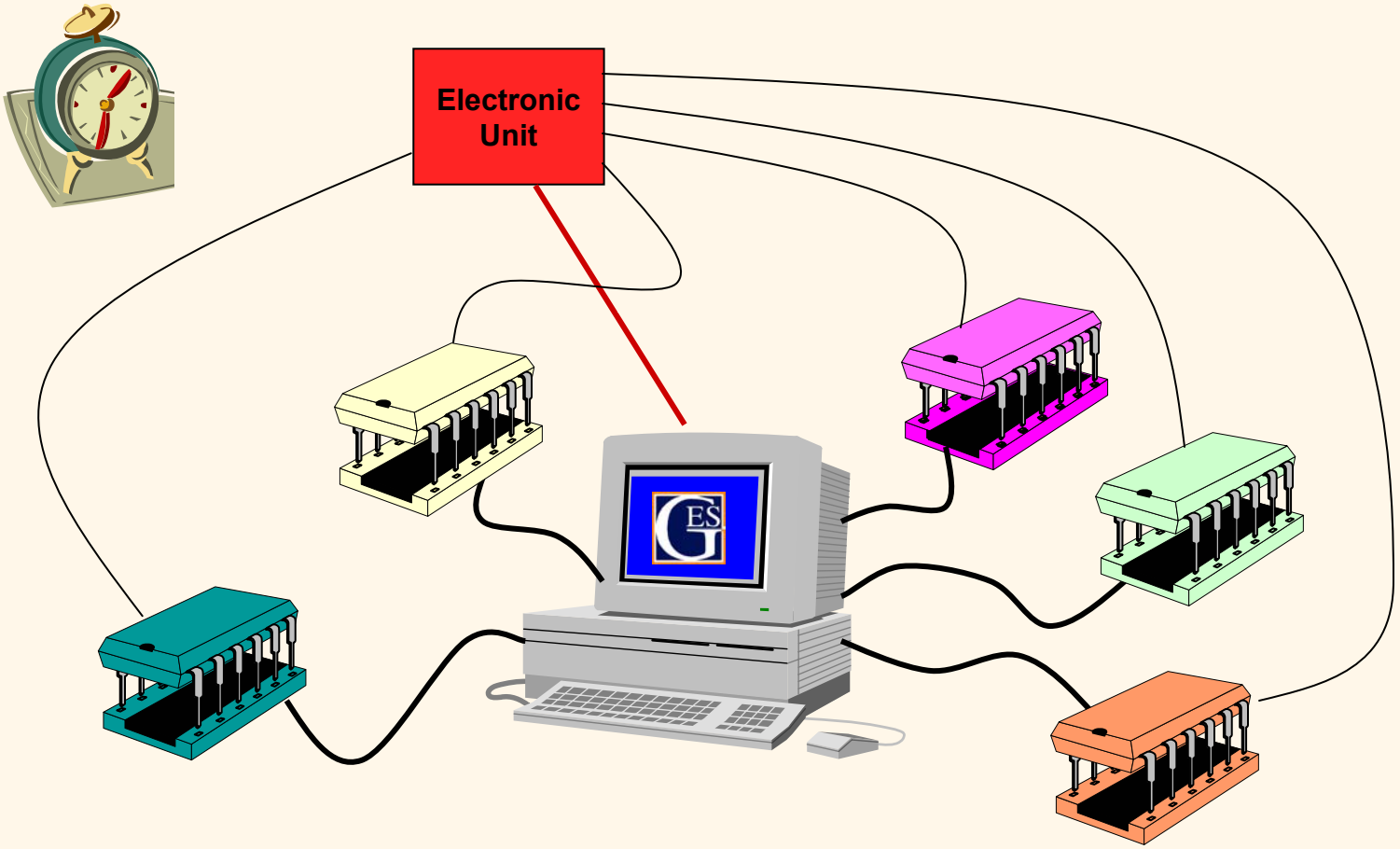
Simulating System Environment

Real Time simulation is required



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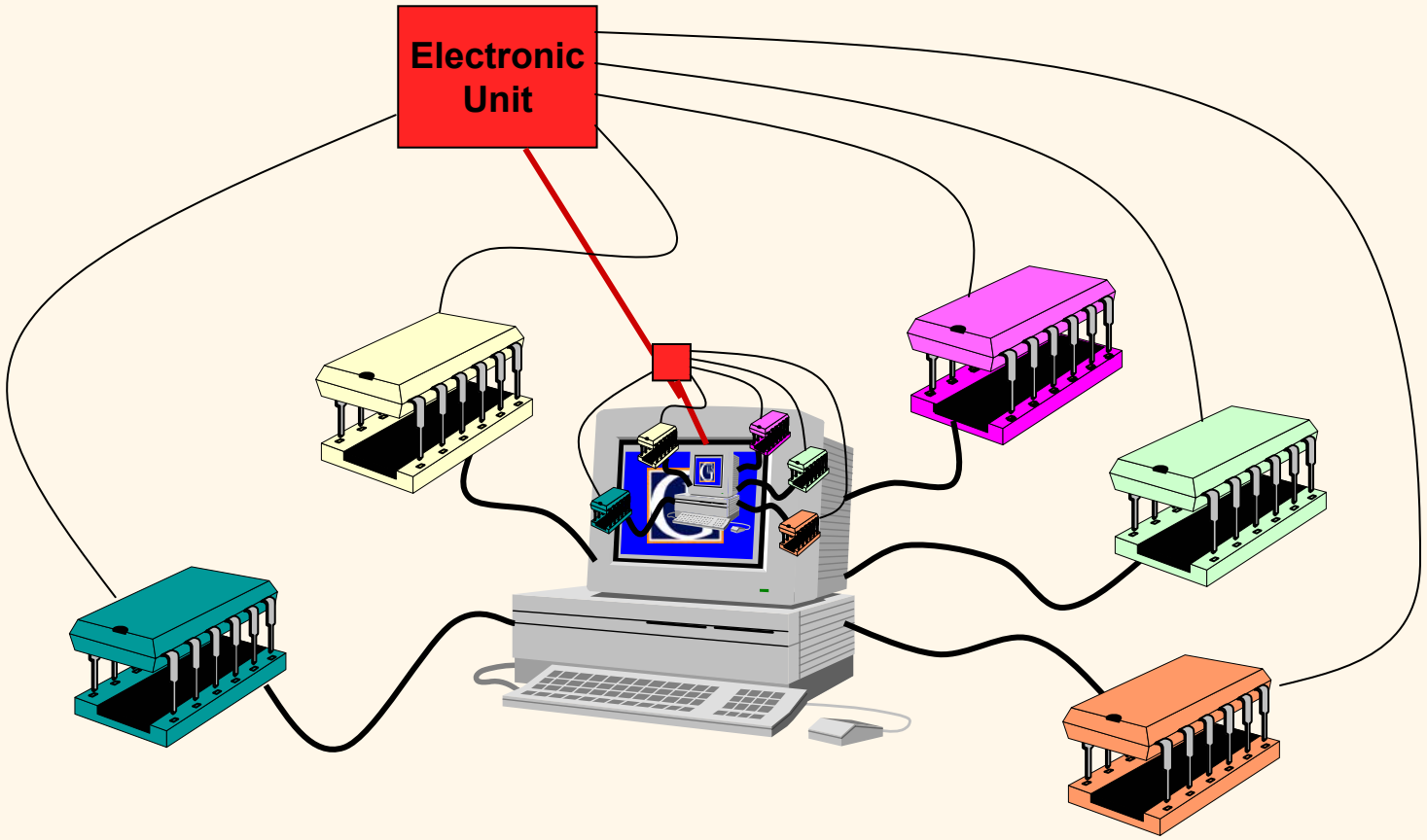
System of Systems Environment Simulatoion



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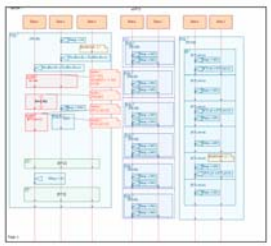
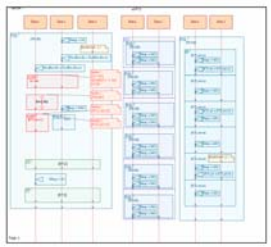
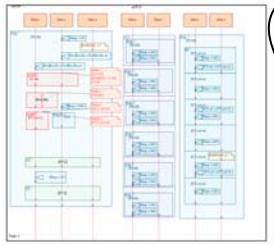
SoS Environment Simulation

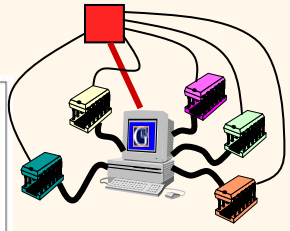
Command Post



Launcher







C4I

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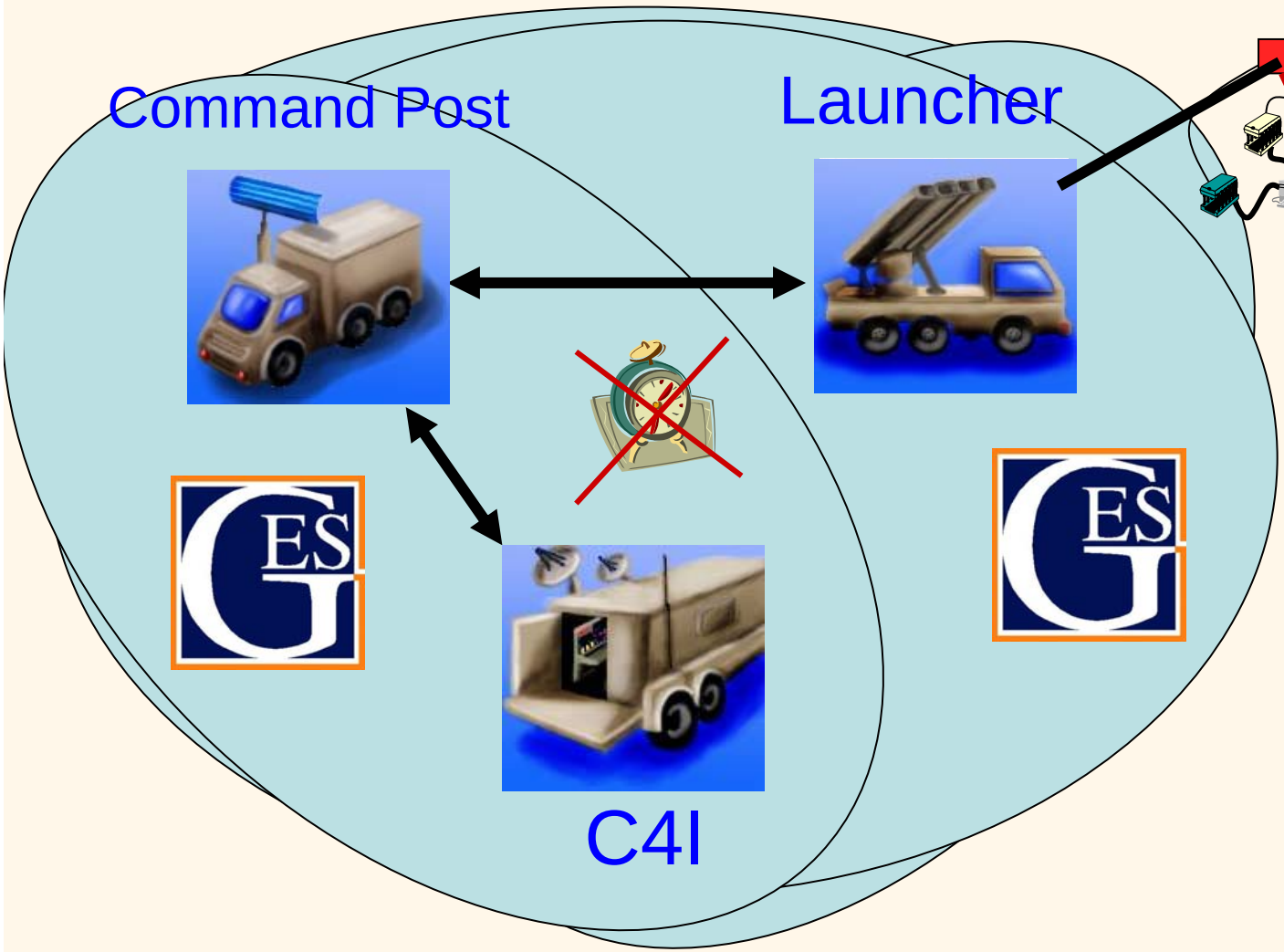
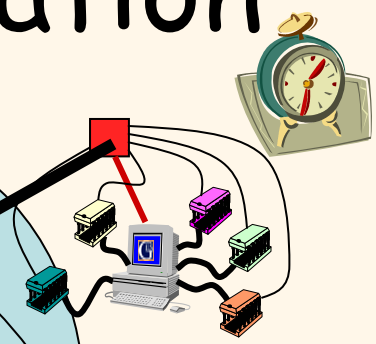
SoS Environment Simulation





All Simulated

Real Launcher

Real Command P.

Real C4I

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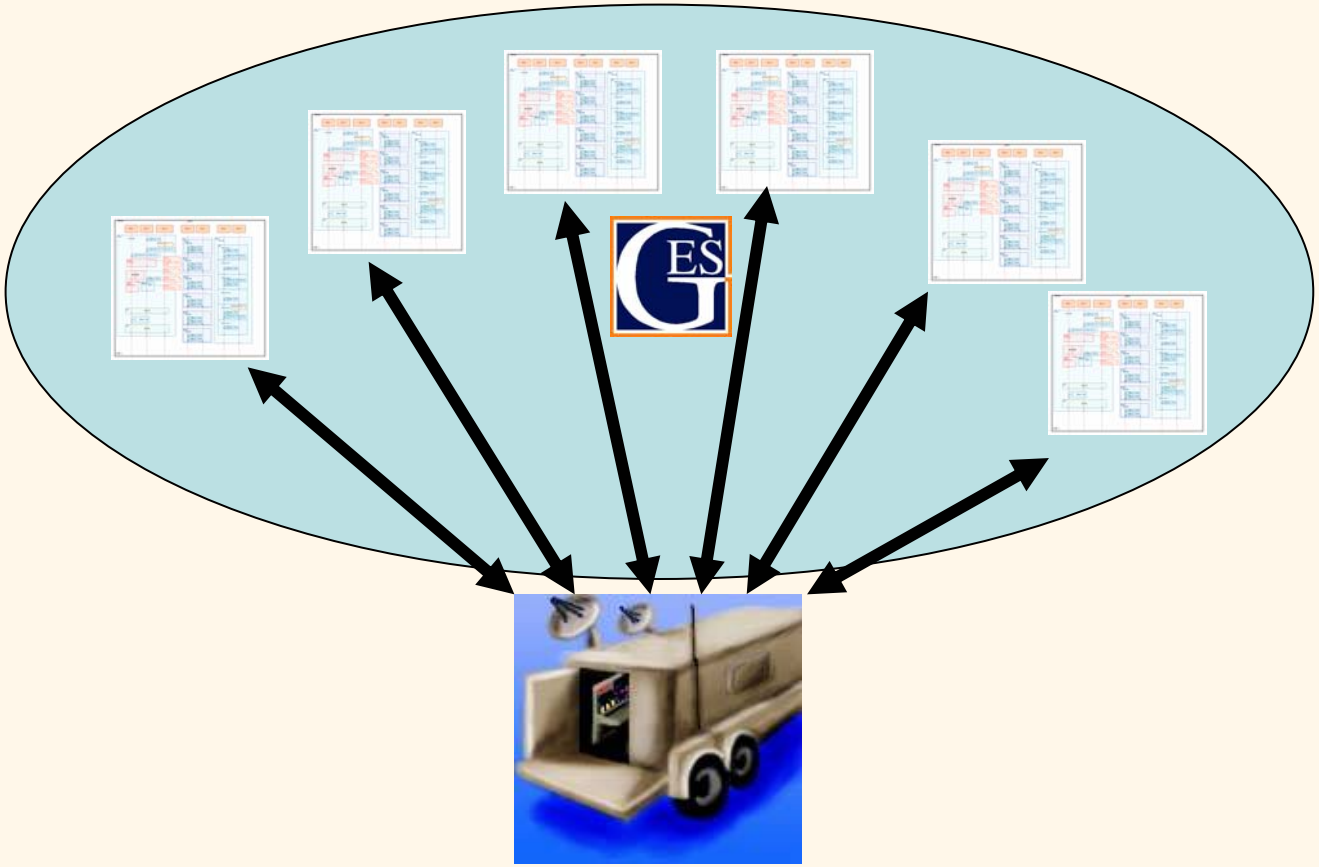
SoS Environment Simulation



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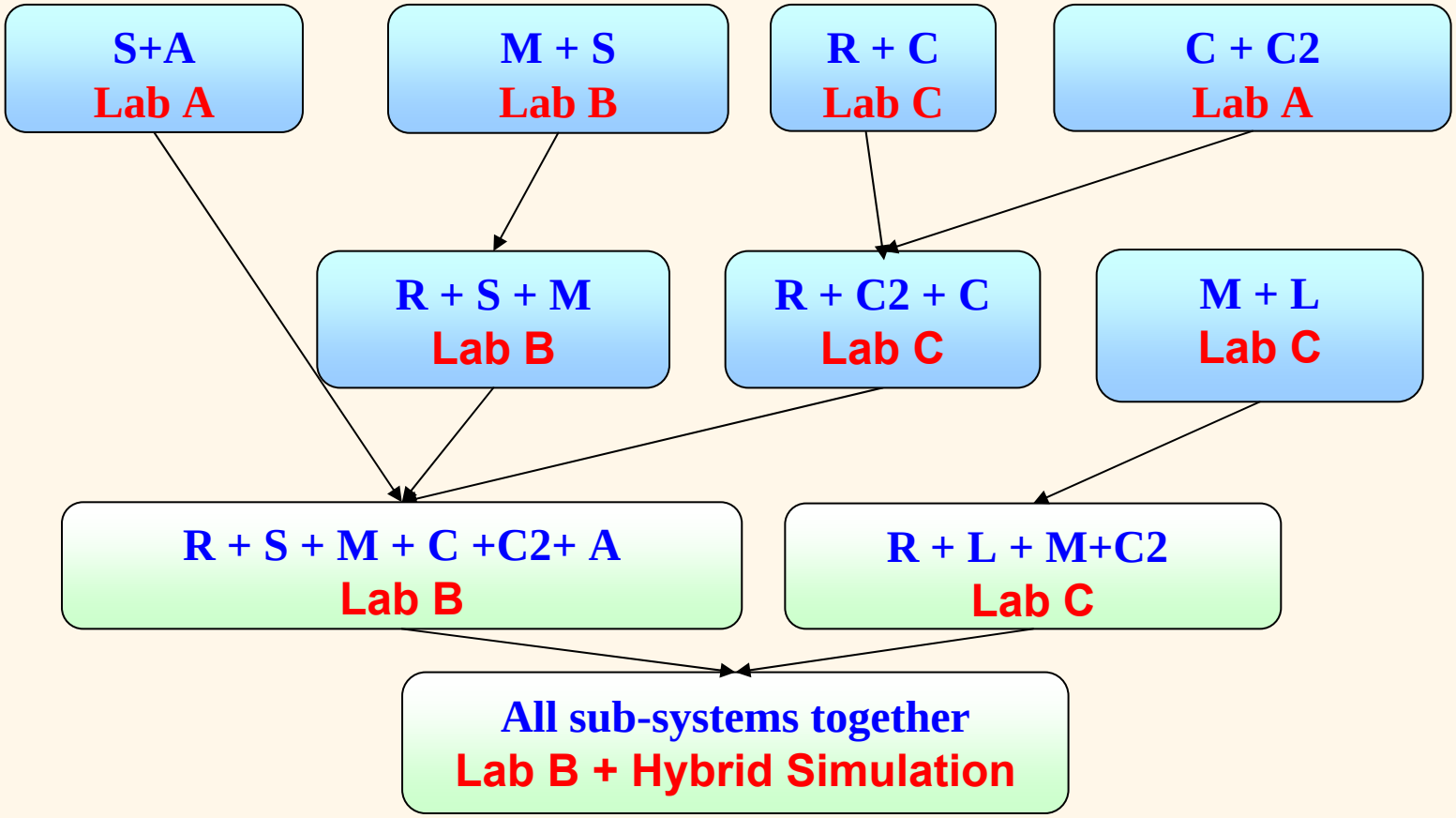
SoS Verification Process:

By advancing through the integrations tree



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Testing SoS - Methodology

- **Describe the Use Case of the System Functional Requirements with UML2 Sequence Diagram (Describing a system behavior by sending massages with the proper data)**
- **The Sequence Diagram describes the requirements in the SoS level as well as its components**
- **The Sequence Diagram is <u>common model</u> for the systems engineer and the testing engineer**
- **It is essential to use a unified data base for all the operational software and the testing equipments ICD's**

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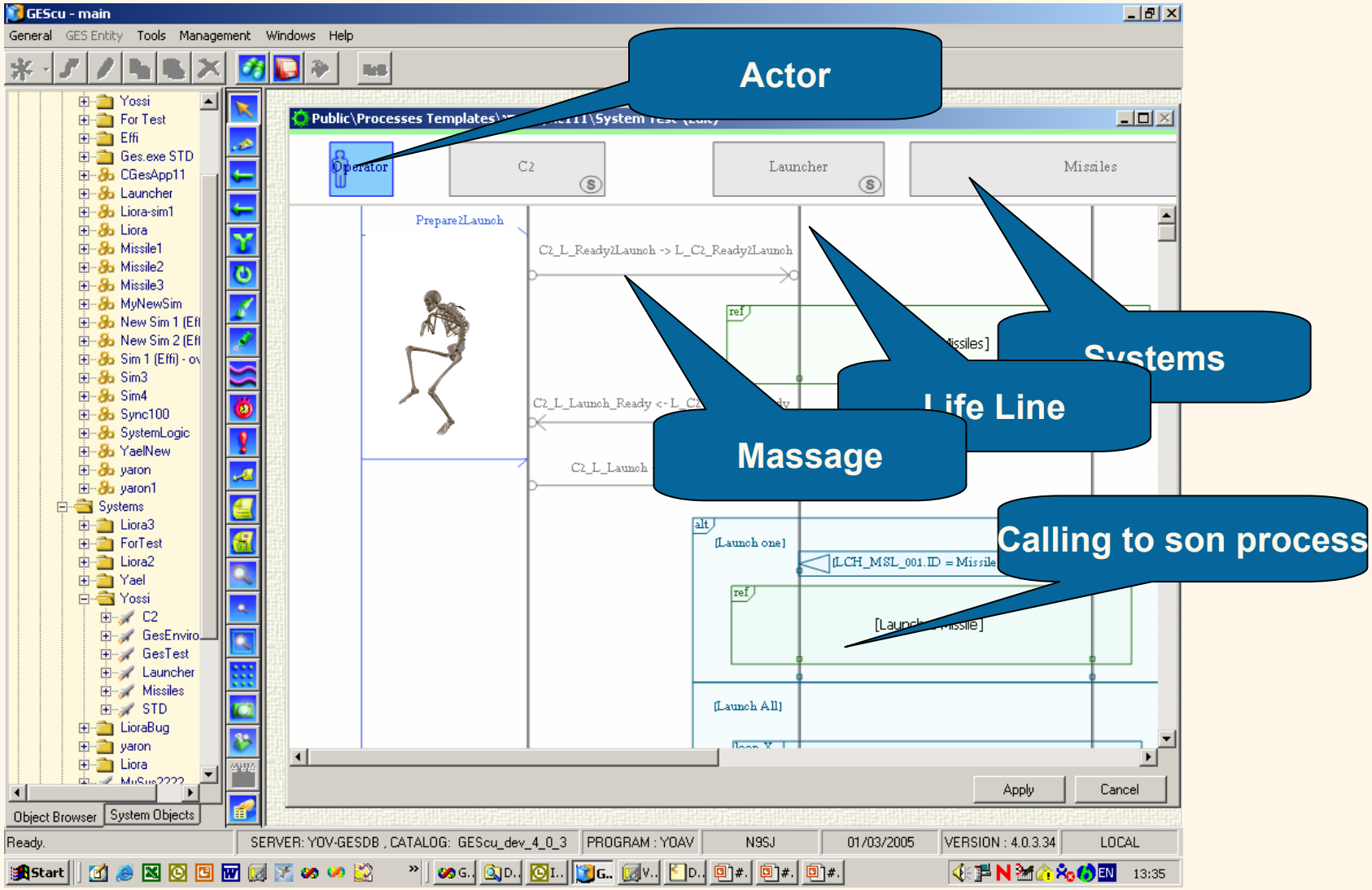
Process definition in SoS level



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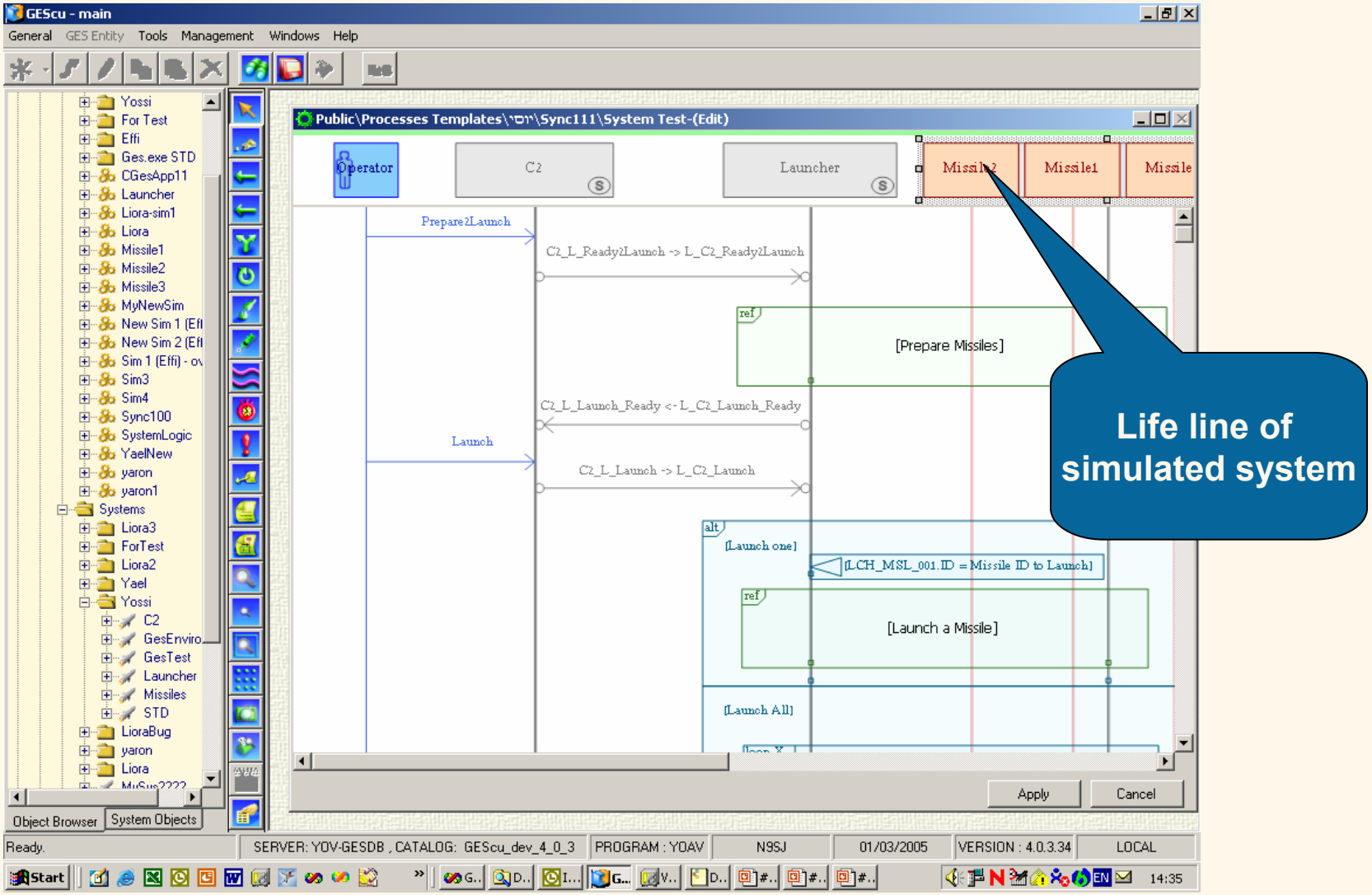
Process definition in SoS level



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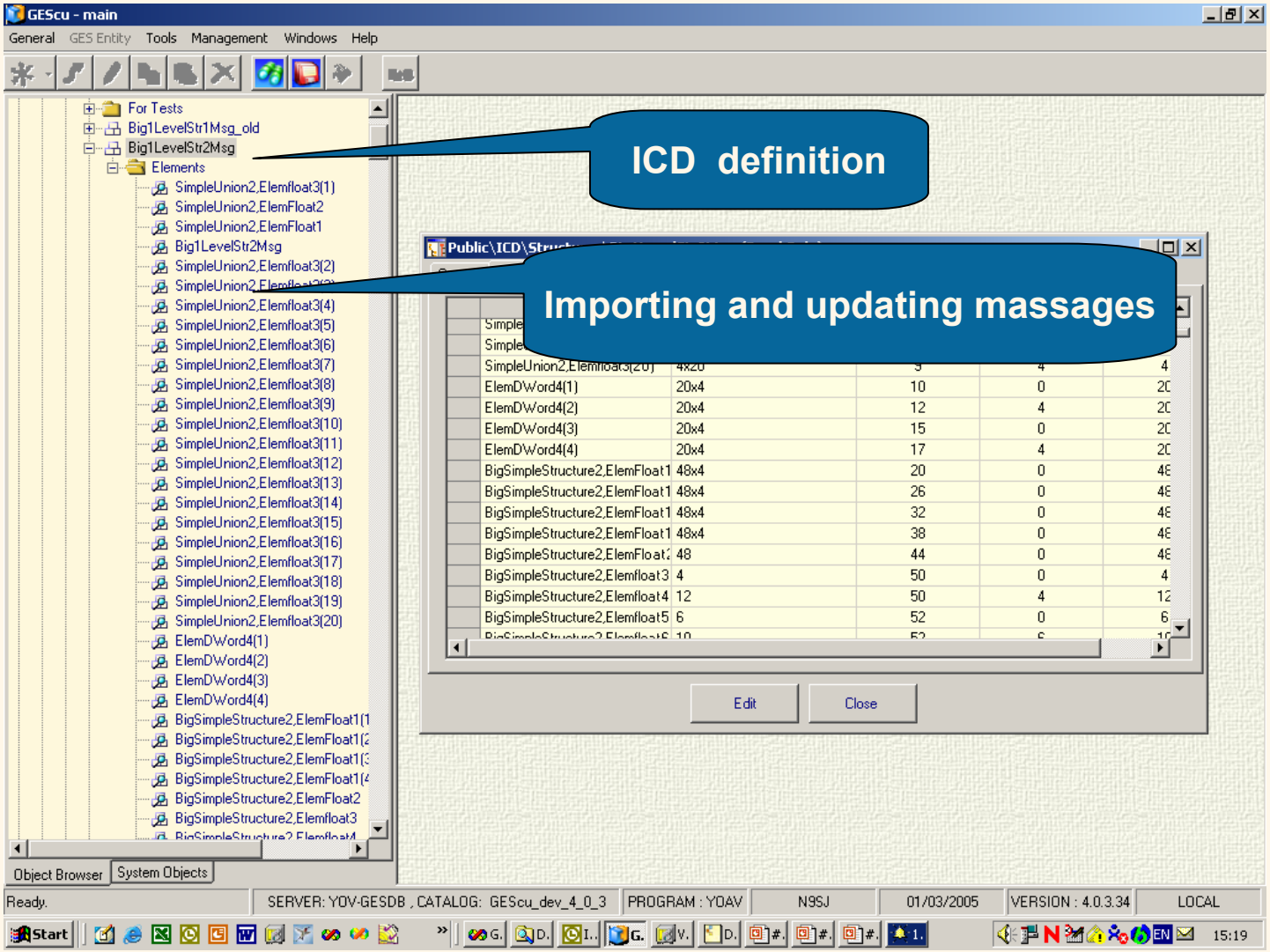
ICD Massages definition



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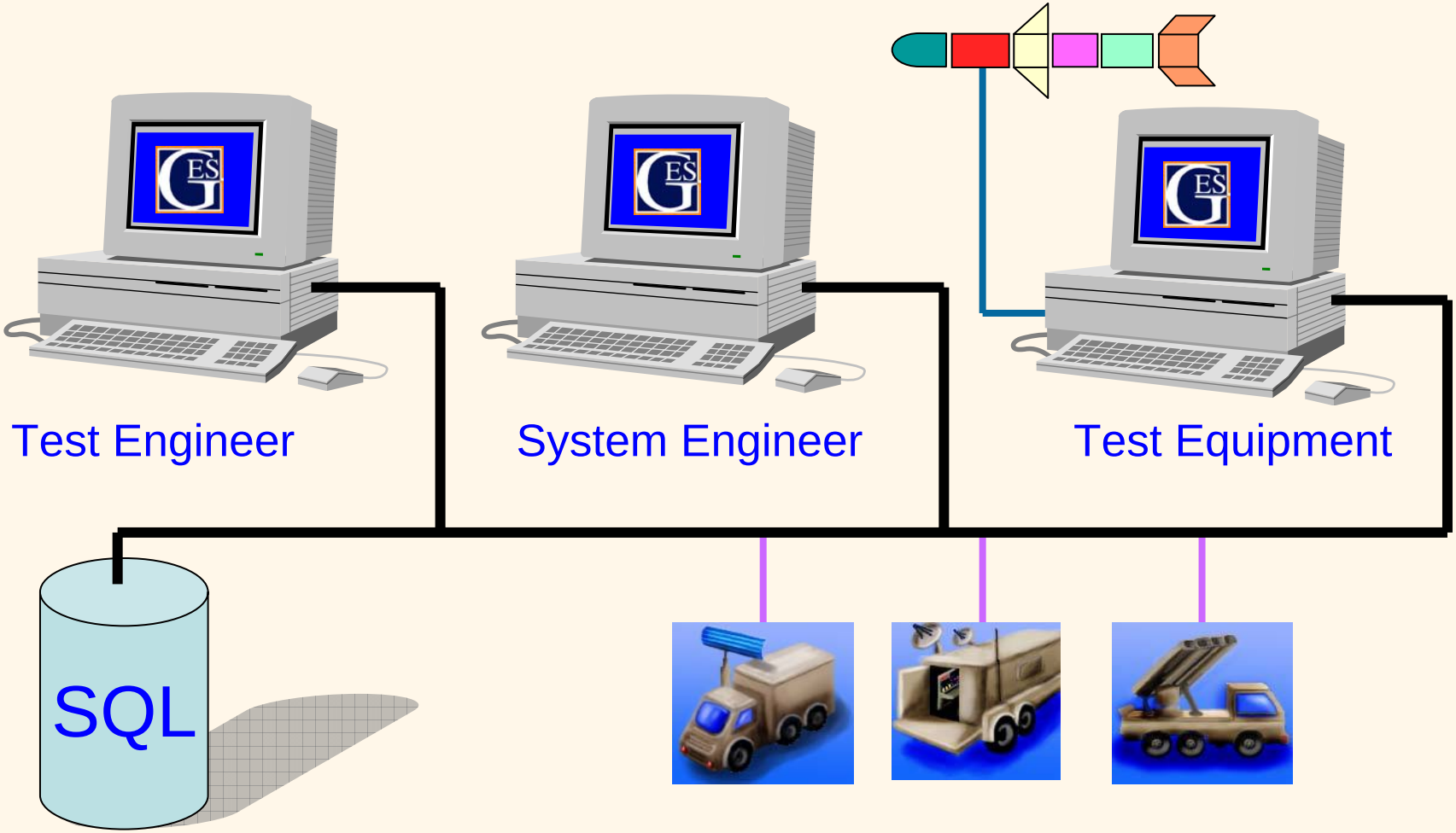
Many users



Innovative Capability for T&E&V of SoS

The need: SoS test

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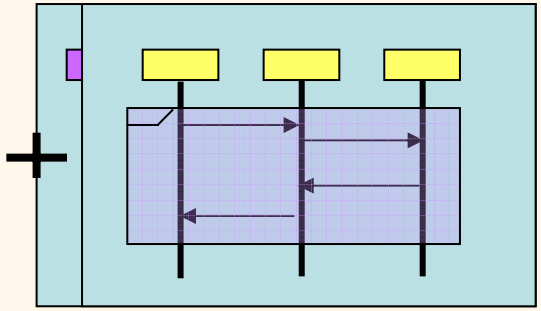

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Concept

Language

UML2

Integrations Tree

Tool

GES4

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GES4 Generic Environment Simulator for SoS

Summary

Combination of concept, Language and GES4 tool, gives the developer wide capabilities of simulation, evaluation and verification of SoS processes, configurations and states close to real world environments.

Increases Long-time Quality & Reliability

Shortens time-to-market

Saves Resources

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