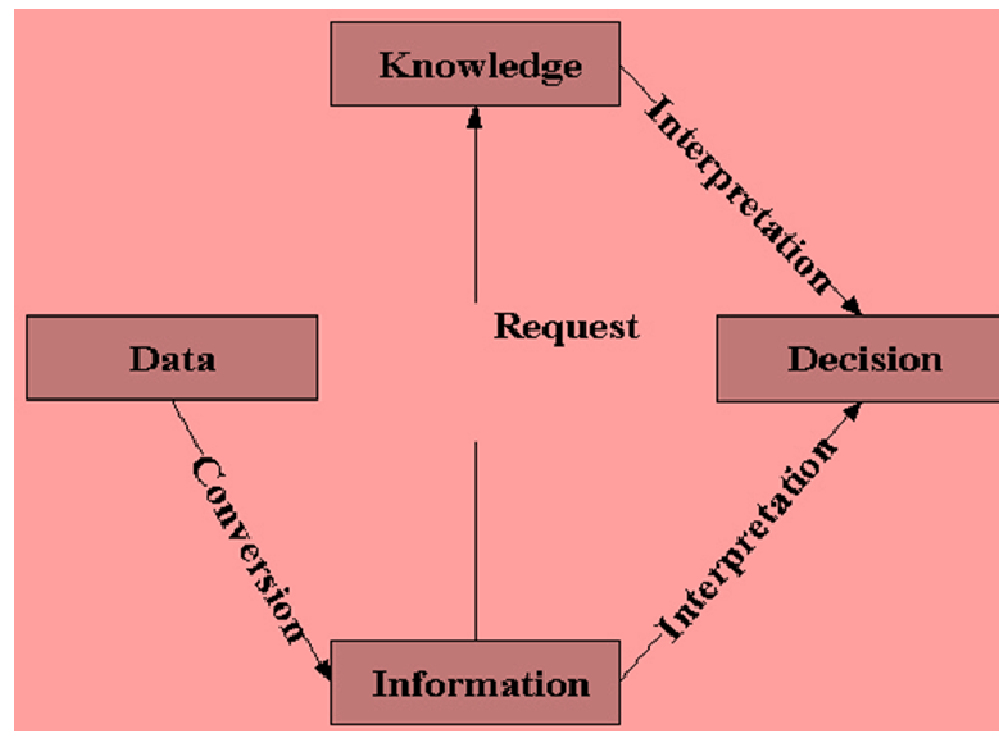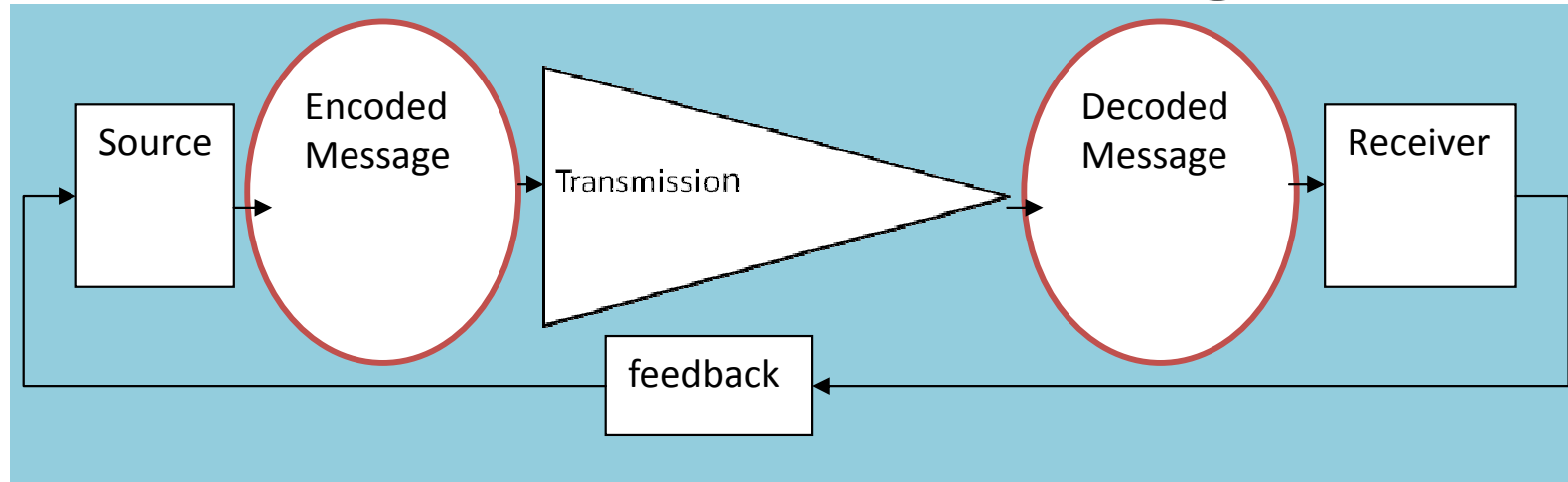# An Operators View on Information Communication technology on Trains

Going back to basics (Decision Making)

Communication error

- **The Charge of the Light Brigade**
  - It was a miscommunication that caused the British cavalry to charge into the valley.
  - The original order had been to capture the enemy guns on one side of the valley, but instead they were given the instruction to charge through the valley and to capture the main bank of enemy guns.
  - The British Cavalrymen, led by Lord Cardigan, must have known this to be suicide but dutifully followed their orders. Lord Cardigan led the charge.
  - This foolish action led the Russian officers to believe that the British were drunk.
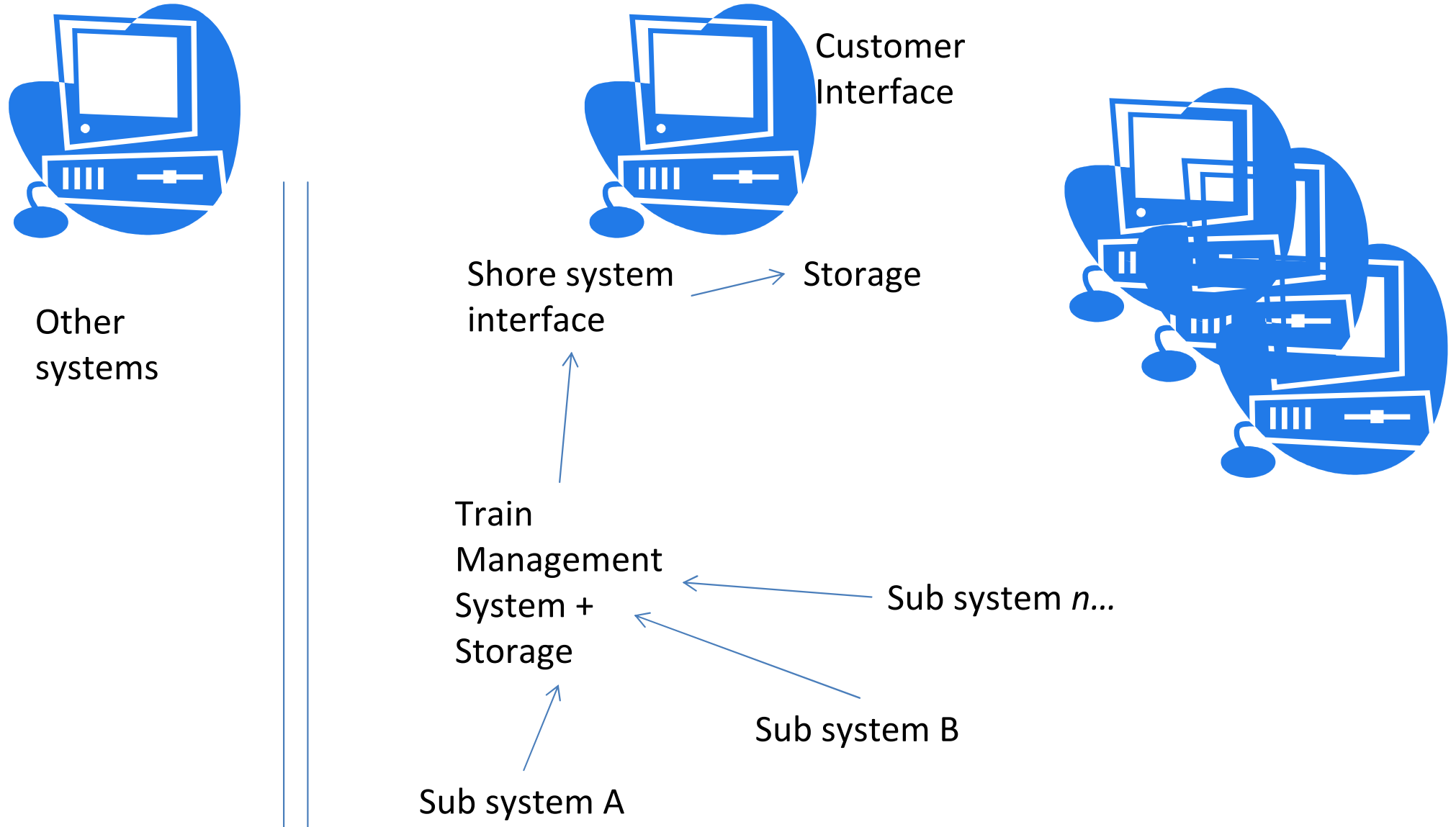
ICT In UK Fleet

- Current Use of Communications Capability
  - GSM-R - *UK roll out*
  - Passenger WiFi - *Eastcoast*
  - CCTV – *Southern Trains*
  - ERTMS – *ATW followed by future UK Roll out*
  - Diagnostics – *All modern rolling stock (Desiro, Electrostar/Turbostar, Juniper, Plus retrofitment to existing vehicles*
  - Energy Consumption (Westcoast Mainline, London Midland)
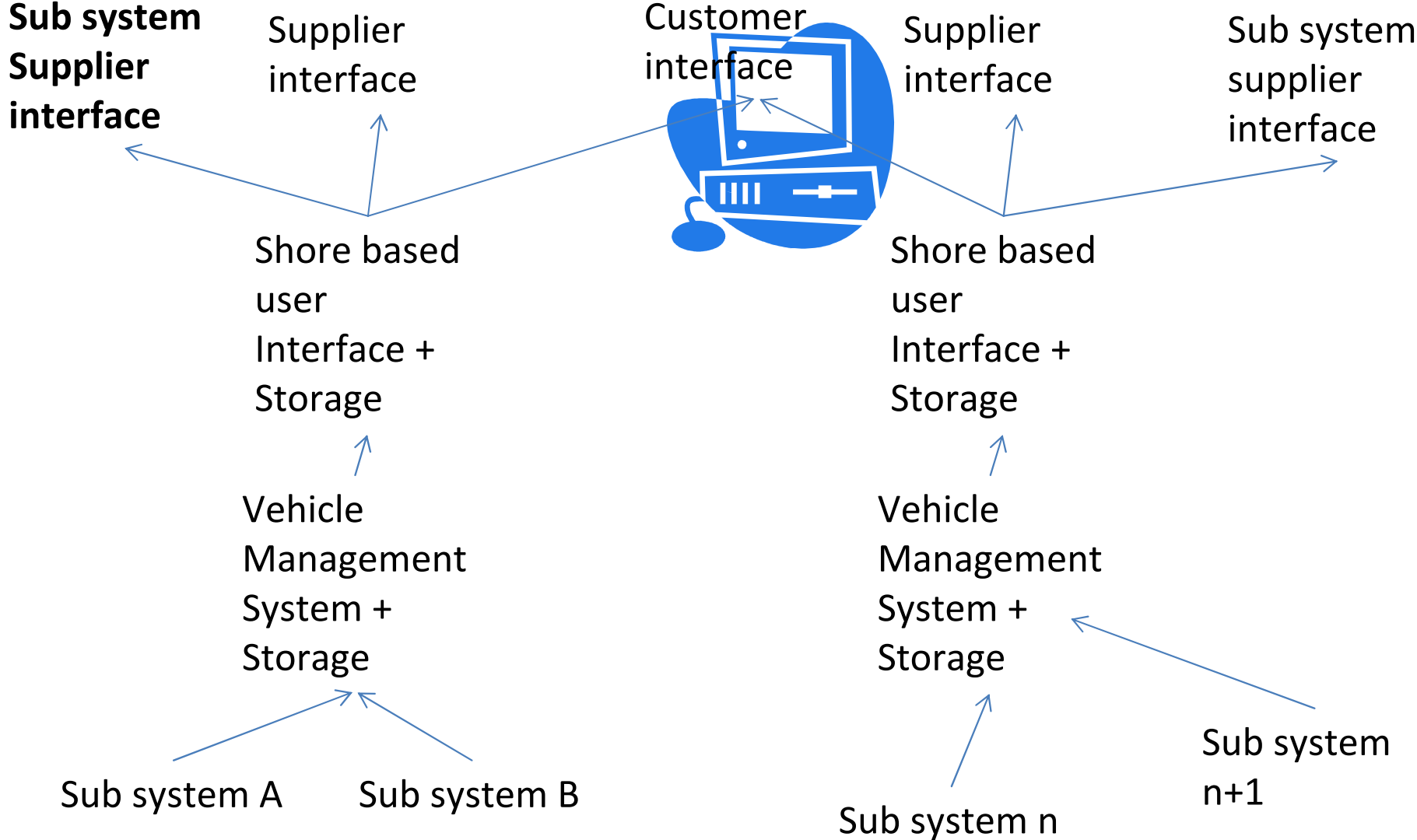 - Train control - *Scotrail and future Thameslink (Desiro City)*

Emerging Environment

- Customer requirements driving complexity in systems
- Passenger communications requirements driving GSM connectivity and bandwidth
- Passenger security (CCTV)
- Capacity increases requiring high performance
- Lower maintenance and operational costs requiring Condition Based Maintenance and Lean Manufacturing

Typical Architecture experienced in the UK – One Operator

Customer Interface

Other systems

Shore system interface → Storage

Train Management System + Storage

Sub system n...

Sub system B

Sub system A

Integrated Example

Sub system Supplier interface

Supplier interface

Customer interface

Supplier interface

Sub system supplier interface

Shore based user Interface + Storage

Shore based user Interface + Storage

Vehicle Management System + Storage

Vehicle Management System + Storage

Sub system A

Sub system B
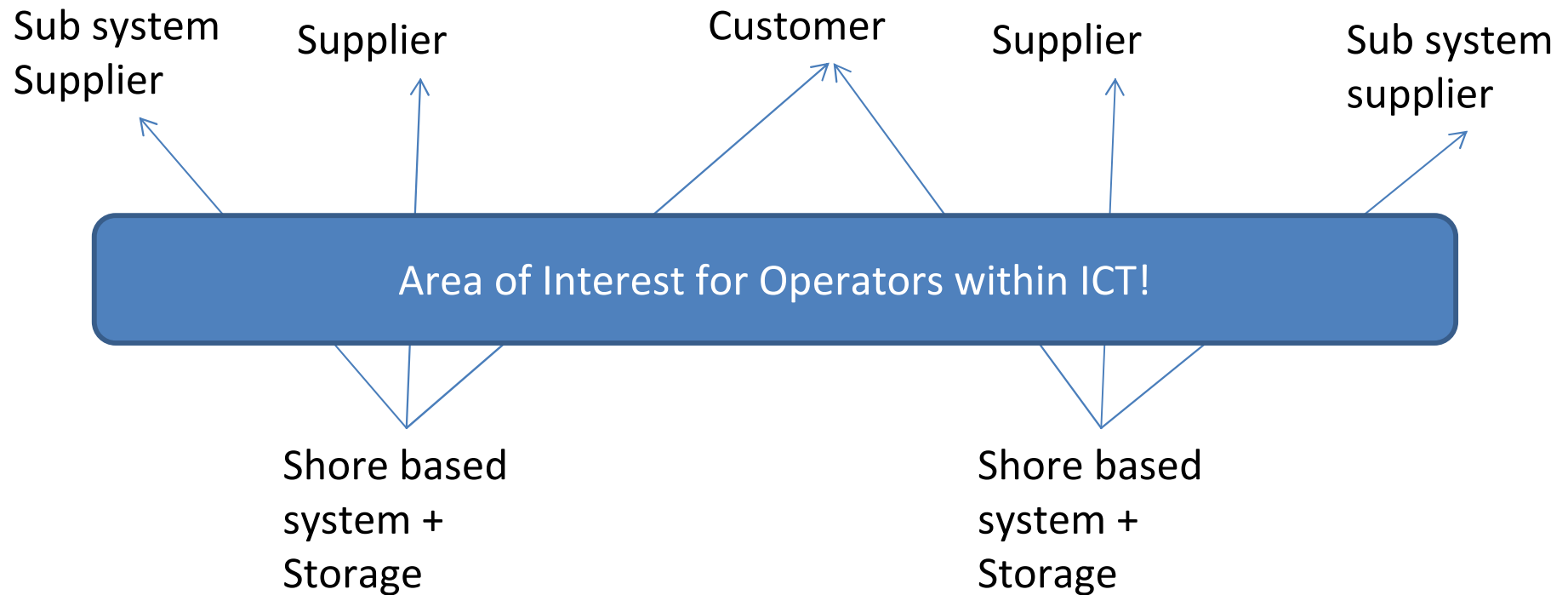
Sub system n

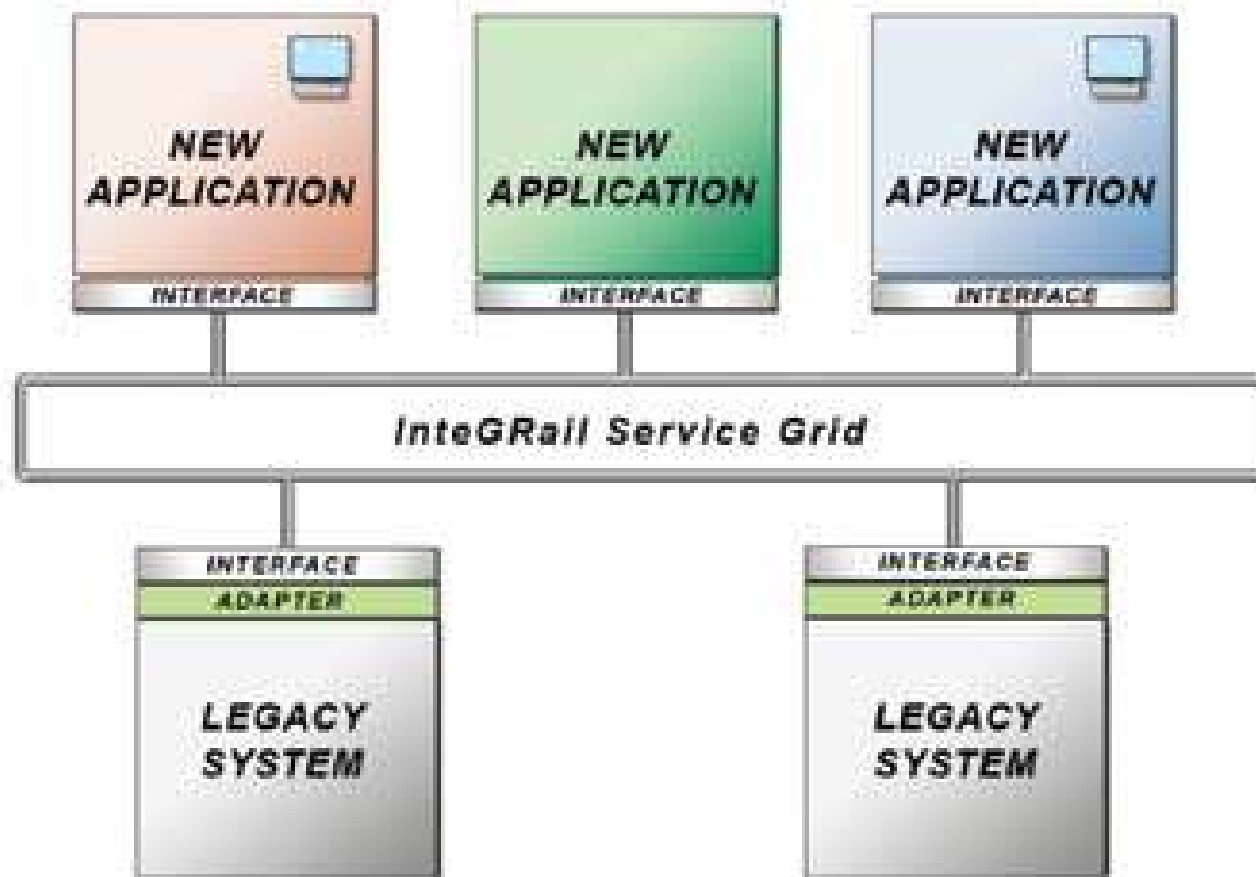Sub system n+1

Some Advantages

- Automates non value adding tasks
  - Minimises non core activity
  - Reduces testing of functionality
- Return of experience to sub system designers
- Enables Just in Time, Lean and CBM
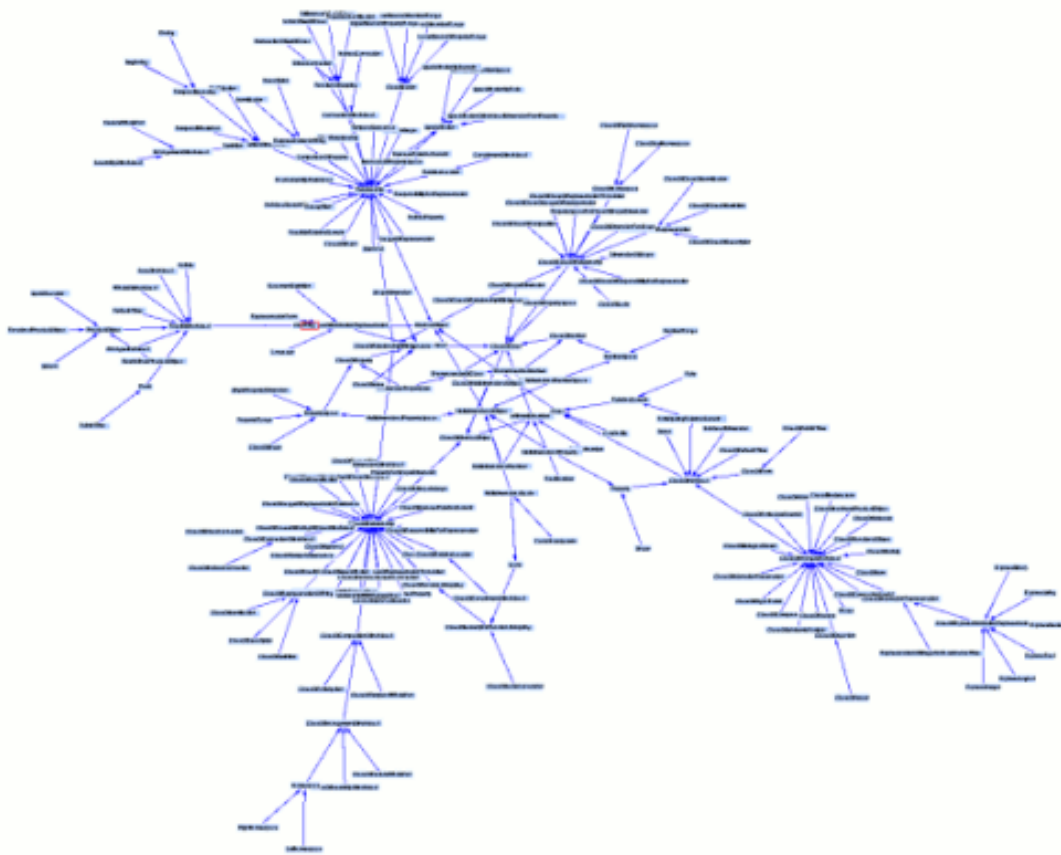- Prevents stock outs

Summary

Sub system
Supplier

Supplier

Customer

Supplier

Sub system
supplier

Area of Interest for Operators within ICT!

Shore based
system +
Storage

Shore based
system +
Storage

Enabler - Standard interfaces

Example in Practice

ISO 15926-2 in OWL as visualized by the GrOWL Protege plugin

- ISO 15926

  - Developed by the Petrotechnical Open Software Corporation (POSC)

  - https://www.posccaesar.org/wiki

- Another is **www.mimosa.org**

Some other examples of communication errors

- PepsiCo's slogan 'Pepsi brings you back to life' translated into Chinese as 'Pepsi brings your ancestors back from the grave'.

- Ford introducing a car named 'Pinto' in Brazil, which is slang for 'small genitals'.