

VSI/GVA Data Model

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Contents

- The need for communication between subsystems
- Publish & Subscribe communication
- Middleware simplifies the communication between subsystems
- The Land Data Model
- Model Structure
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Subsystem Communication



Data Producer



Data Consumer

Subsystem

- Need for subsystems to communicate with one another
 - GPS & Inertial Navigation System
 - Inertial Navigation System to Weapon System
 - Crewstation to Automotive
- The complete Vetronic system is greater than the sum of the subsystems!



Data Consumer



Data Producer

Subsystem

Multiple Subsystem Communication



Data Producers need to know where Consumers live

Data Producer



Data Consumer



Data Consumer



Data Consumer

Disadvantage

Tight coupling between producers & consumers



Data Producer



Data Producer

Data Producer



Data Consumer



Publish & Subscribe Communication



Data Producers do not need to know where Consumers live

Data Producer



Data Consumer

- Efficient Communication
- Loosely Coupled
- Asynchronous



Data Producer



Middleware



Data Consumer



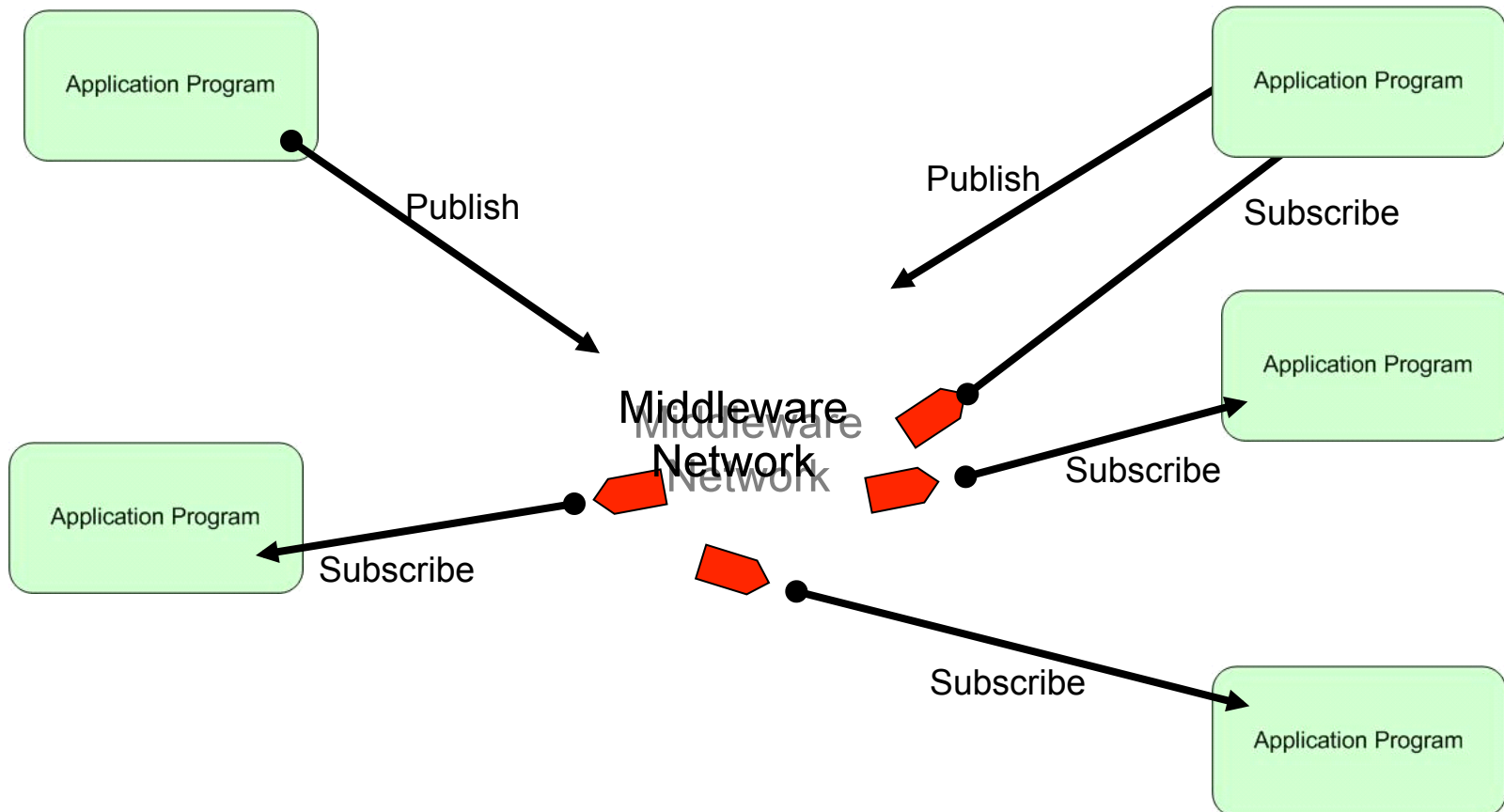
Data Producer

Data Consumers do not need to know where Producers live

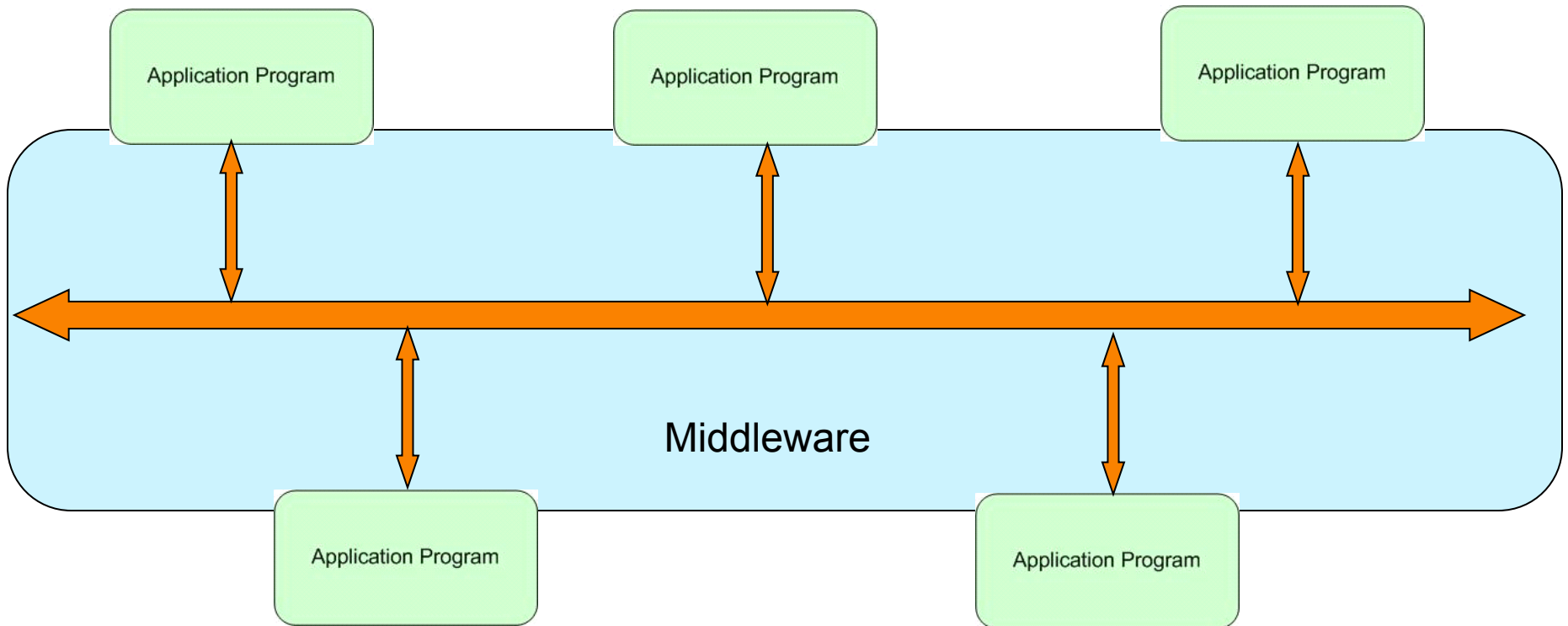


Data Consumer

Publish & Subscribe Communication



Abstracted Subsystem Communication



- Middleware abstracts the applications from the communication mechanism
- Application program need only provide an interface to the middleware

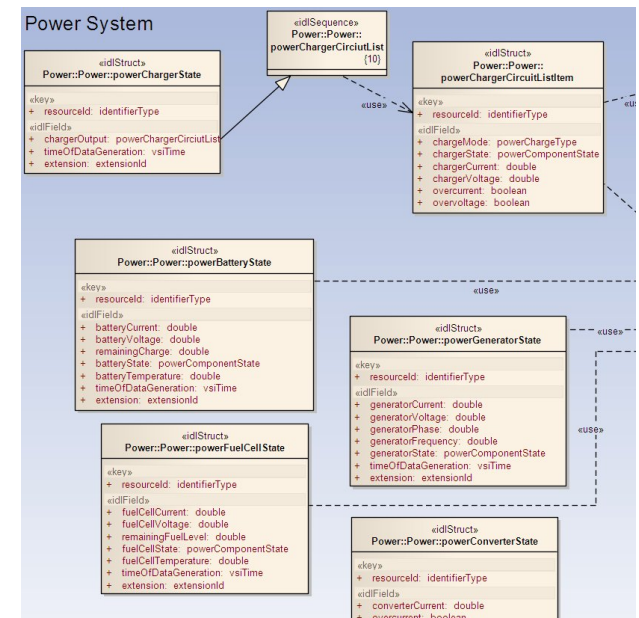
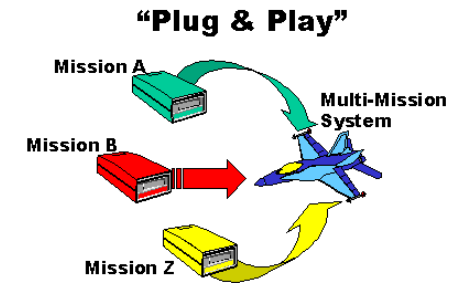
Communication



- Requires a common language understood by all participants
- A minimum vocabulary recognised by all participants

Data Model – common subsystem vocabulary

- DDS Middleware will establish an Information backbone
 - Basis for ‘plug & play’ subsystems.
- A ‘comprehensive’ Data Model must be defined for all subsystems
- A vehicle profile is applied to the Data Model to extract only interfaces required for that vehicle.
- The Data Model then generates the interface code for each subsystem



Land Data Model

- Land Data Model development is funded as part of the current VSI research package
 - QinetiQ led with contributions from: BAE Systems, Thales, General Dynamics (UK), Ultra Electronics, Selex Galileo, Lockheed Martin (Insys), VRC (University of Sussex).
- VSI & GVA Data Models are the same!
 - GVA model is a baselined version of the VSI Data Model
 - GVA implements a subset of the full VSI functionality

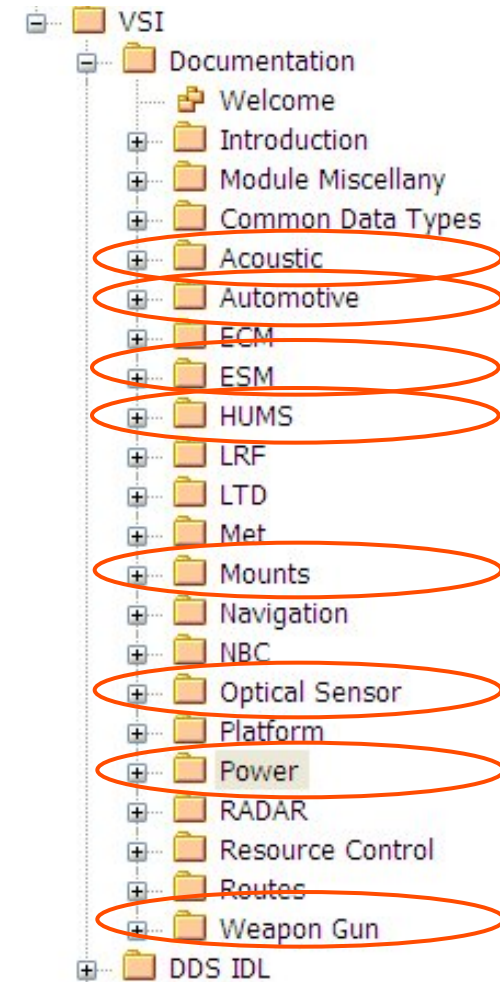
Model Structure

- Model segmented into functional areas
- Behaviour independent
- Documentation included
 - UML diagrams e.g. class & sequence diagrams
- Interface Design Language
 - generating the interface code



LPPV Data Model Instantiation

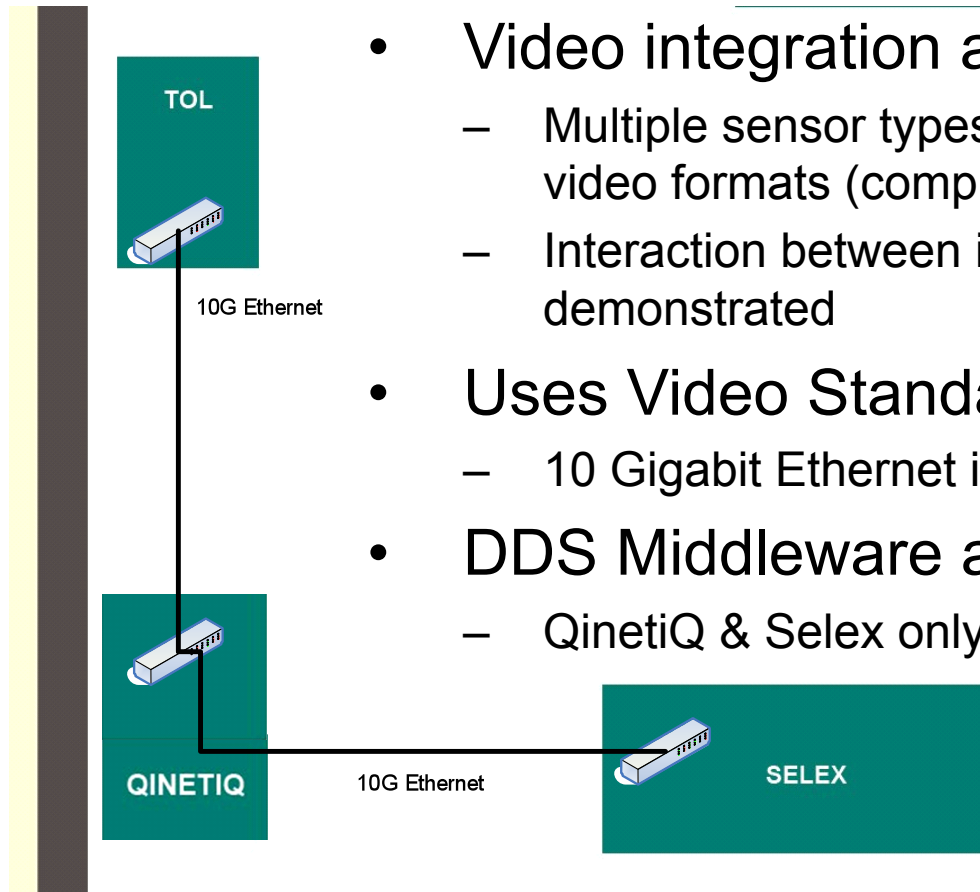
- Subset of the full VSI Data Model
- Implement only the interfaces required for the subsystems fitted



Ownership of the Data Model

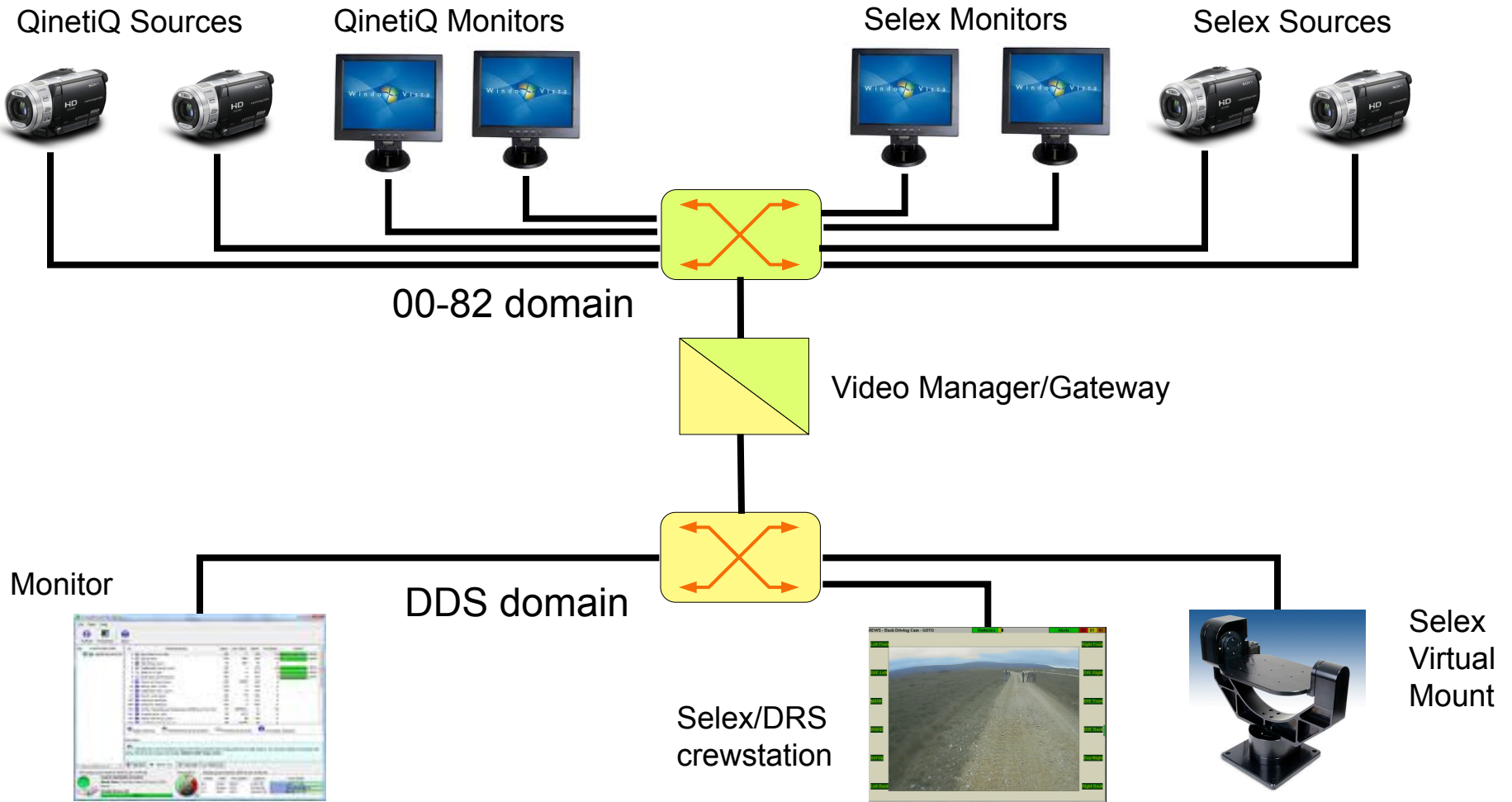
- Essential that it is owned by MOD!
- Essential for MOD to be able to give the model to whomever it wants.
- Essential for MOD to stop suppliers changing things in a way that is only in the supplier's interest
- International Research Collaboration – potential for MOD to standardise with France, Germany etc.

VSI Briefing Day QinetiQ demonstration

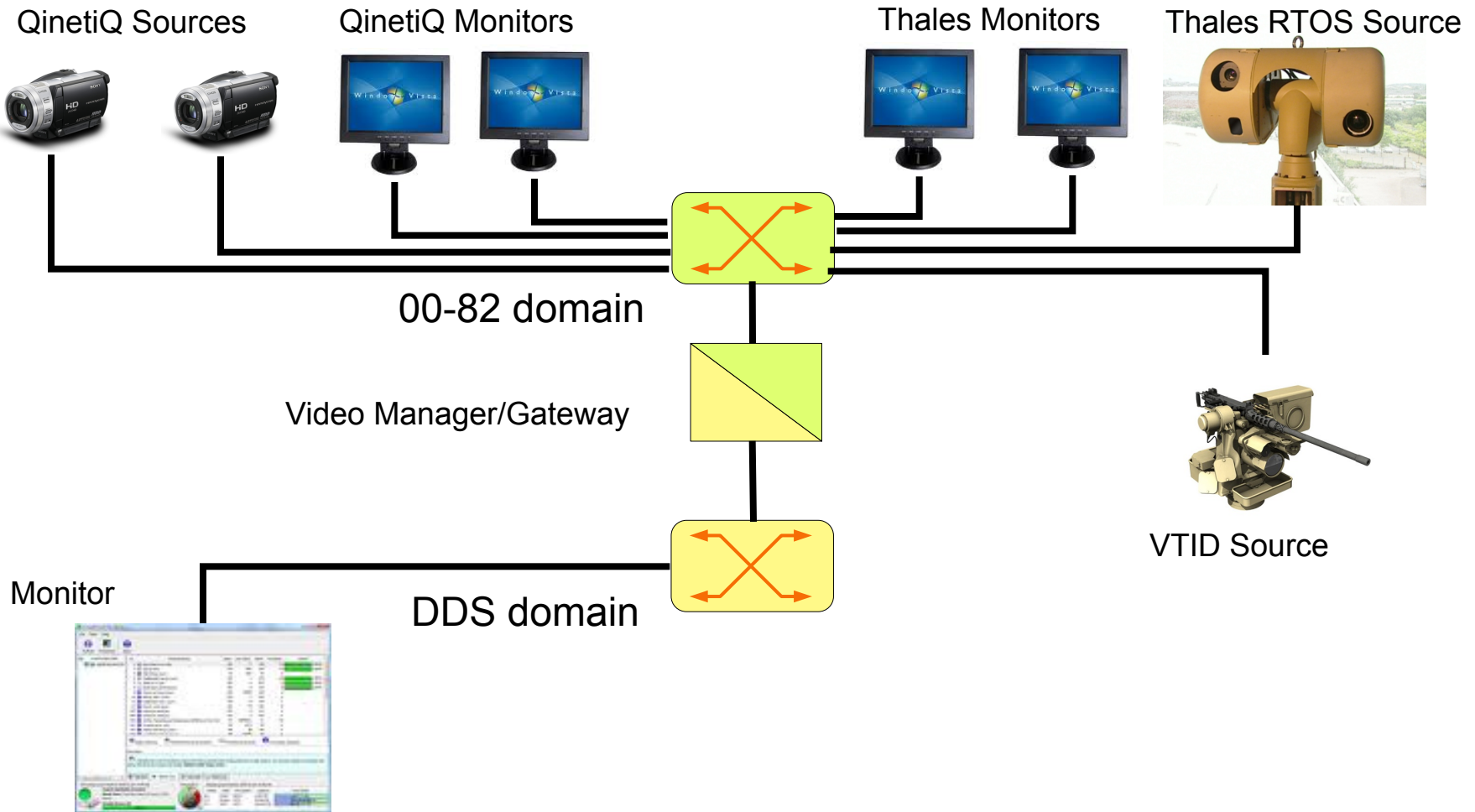


- Video integration and interoperability
 - Multiple sensor types (SD, HD, steerable etc) displays and video formats (compression etc)
 - Interaction between individual company elements demonstrated
- Uses Video Standard Def Stan 00-82
 - 10 Gigabit Ethernet infrastructure
- DDS Middleware and VSI data
 - QinetiQ & Selex only

VSI Briefing Day QinetiQ demonstration



VSI Briefing Day QinetiQ demonstration





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