

SINOVIA

An open approach for heterogeneous ISR systems inter-operability

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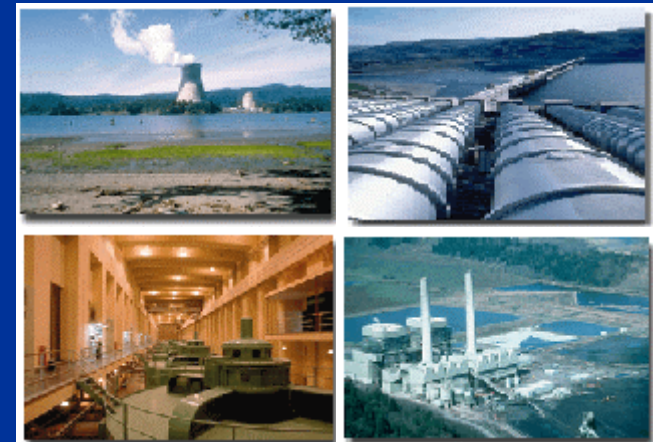
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SINOVIA

- ▶ An innovative company
 - ▶ a great R&D experience around the intelligent control
- ▶ Our business
 - ▶ Inter-operability and control of heterogeneous infrastructures
- ▶ Our technology « Plug & Net »
 - ▶ a hardware and software modular approach
 - ▶ a validated technology in hard environments



*Off-shore, nuclear,
Fire security, avionics,
Industrial process,
embedded systems*



Inter-operability and intelligent control

«As we look at the trends in hardware, software, communications and other base technologies in control systems, a clear picture of an Open Control System (OCS) begins to emerge. Users will choose best-of-breed application modules, again vendor-independent but interoperable, to build world-class control systems for competitive advantage.»



Dan Miklovic, Gartner Group

«When the landscape of data sources changes constantly — or sources are not precisely definable — no extract-and-load procedure can help. In this environment, extracting meaningful business information from raw business or technical data is a very inflexible and complex procedure.»



Elmar Husmann, PricewaterhouseCoopers

«The real impact of all this networking and smart [sensing and control] devices is that the amount of information coming up from the floor [into the enterprise] will increase by between 10 and 100 times.»



Eric Byres, British Columbia Institute of Technology



Interoperability

- ▶ Why
 - ▶ multiple heterogeneous systems
 - ▶ the need of interactions between these systems
- ▶ At a language level
 - ▶ A common syntax
 - ▶ A common semantic
 - ▼ it supposes minimum level of common functionalities
- ▶ At a functional level
 - ▶ multiple distributed services
 - ▶ services act together in order to reach a common goal

Interoperability & Components

- ▶ A component is
 - ▶ an autonomous entity
 - ▶ with an interface
 - ▶ able to interact each others
 - ▶ reusable and configurable
- ▶ An application is
 - ▶ a composition of components
 - ▶ a combination of capacities (fonctional modules)
 - ▼ the whole is more than the addition of the parts
 - ▼ leads to complex behaviors
- ▶ Evolving toward new applications
 - ▶ replacing components
 - ▶ adding new components
 - ▶ testing incrementally

Our Technology : Plug & Net[®]

A complete solution
for a fully
distributed control & Inter-operability



Plug & Net®

- ▶ Intelligent control solution for the new generation of inter-operable infrastructures:
 - ▶ Diversity of equipment
 - ▶ proximited intelligence
 - ▶ distributed control systems
 - ▶ intensive use of new network protocols

«The core technology of the future is the data communications network.»

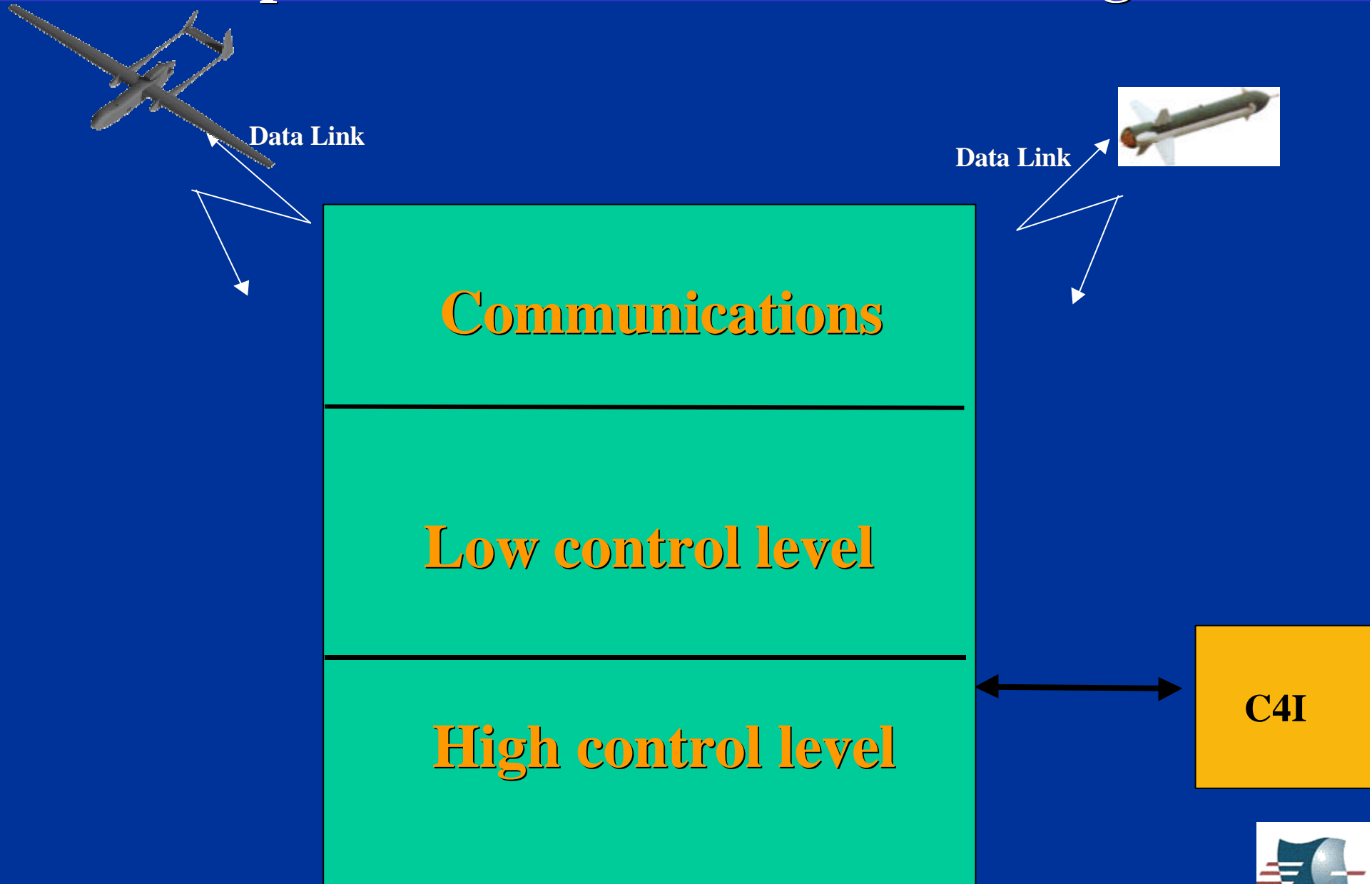
ARC Roadmaps the Future of Factory Automation, May 2001



Plug & Net

- ▶ Hardware and Software components
 - ▶ Modular
 - ▶ Distributed
 - ▶ Configurable
 - ▶ Adaptive
 - ▶ Reusability
- ▶ Hardware
 - ▶ Components for heterogeneous network interconnection
 - ▼ multi-protocols
 - ▼ real time
- ▶ Software
 - ▶ an open framework for components integration based on a « plugging » technology

Interoperable UAV SYSTEM with Plug & Net



UAV

Distributed Control & Interoperability

Communicating

From Anywhere to Everywhere with Anything

High control level

- Data representation
- Action planning
- Man-machine interactions



Low control level

- Data stream filtering
- Local processing loops
- Real time control



Plug & Net Concept

- **Adaptability**
Modular agents
- **Scalability**
Distributed agents
- **Simplicity**
Plugging concept



Plug & Net Concept

Component Model

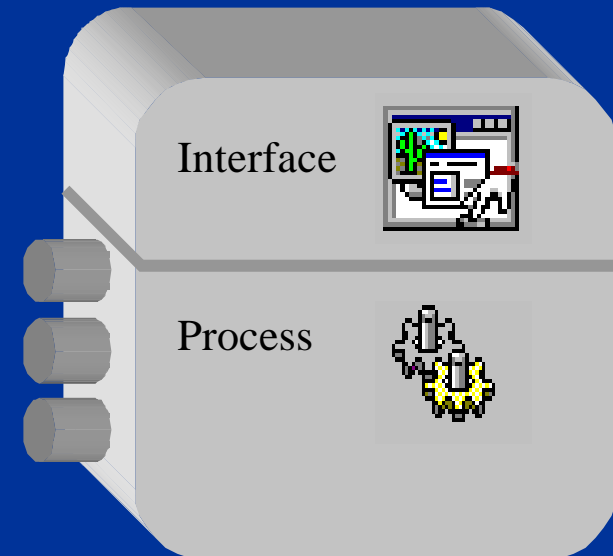
A Component is a Software Autonomie Entity

A Component is composed by

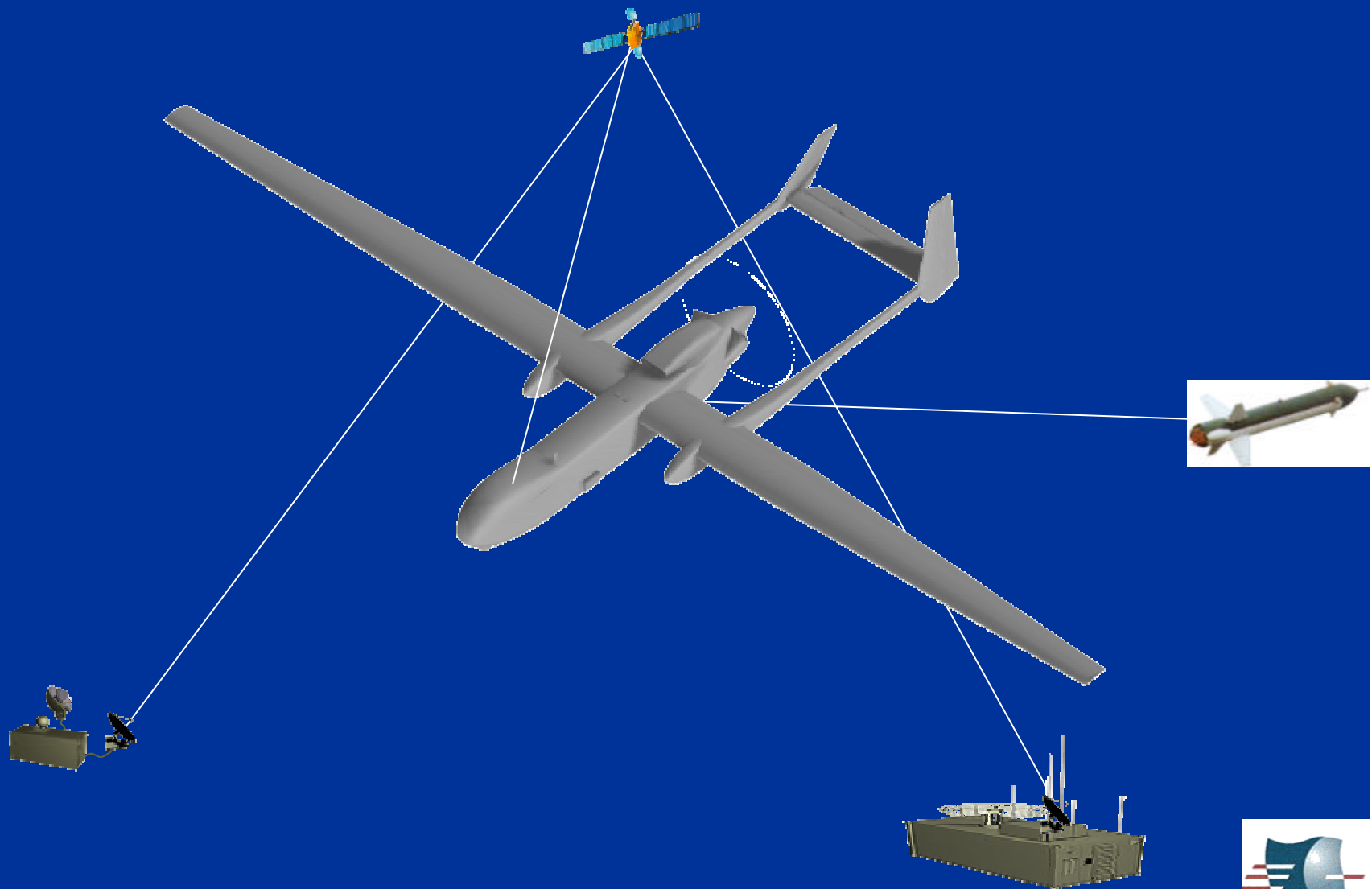
An integration part (communications)

A GUI (interface)

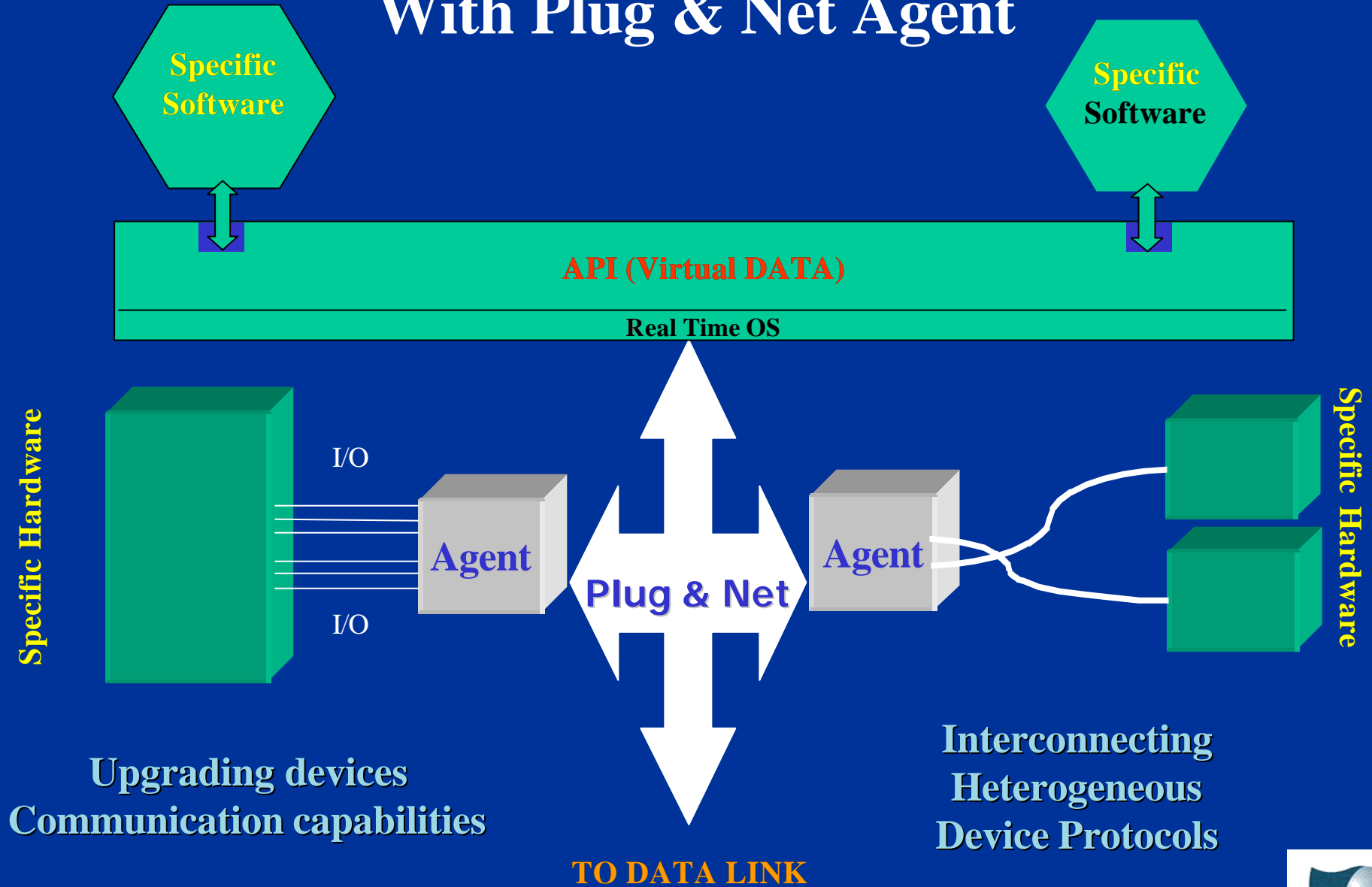
A fonctionality (process part)



Interoperable UAV SYSTEM Embedded Architecture

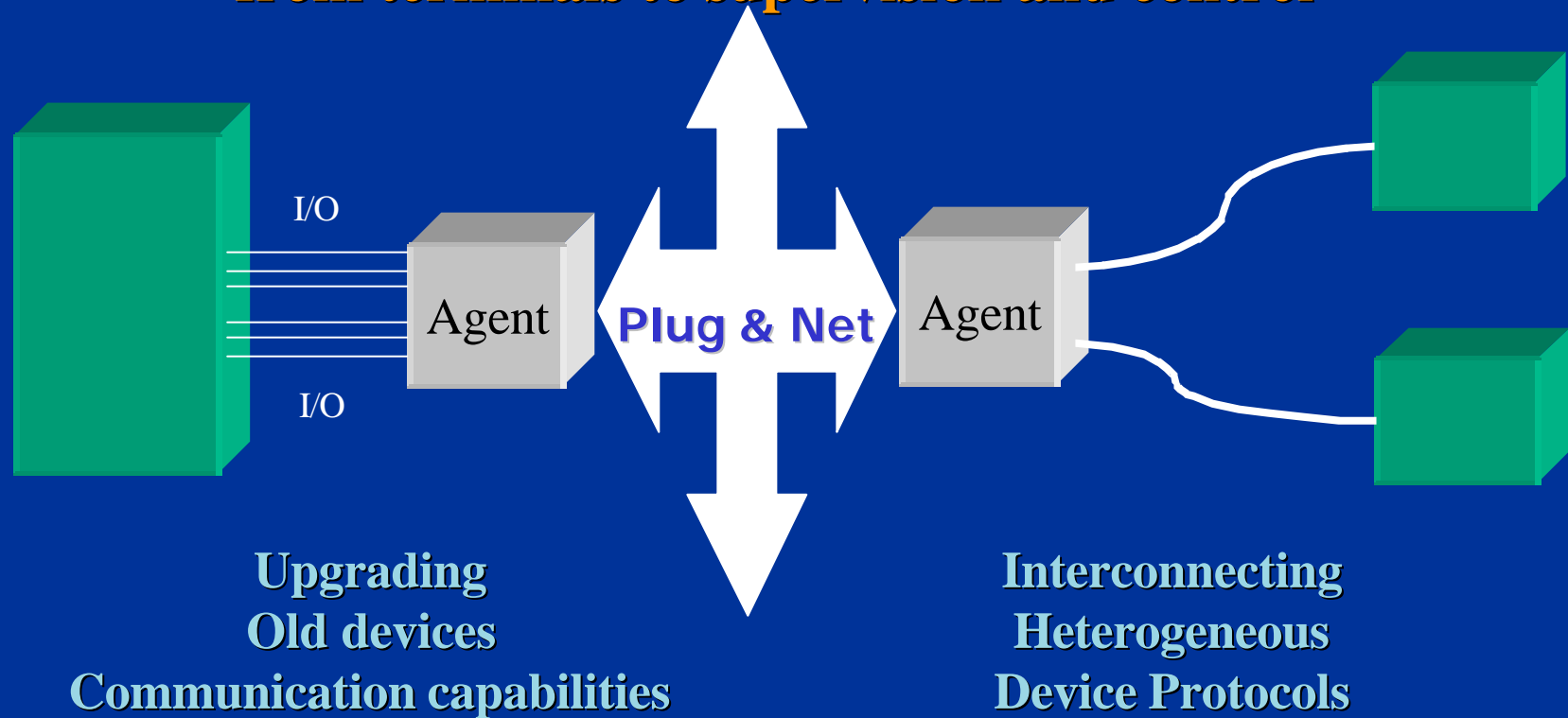


Interoperable UAV SYSTEM With Plug & Net Agent



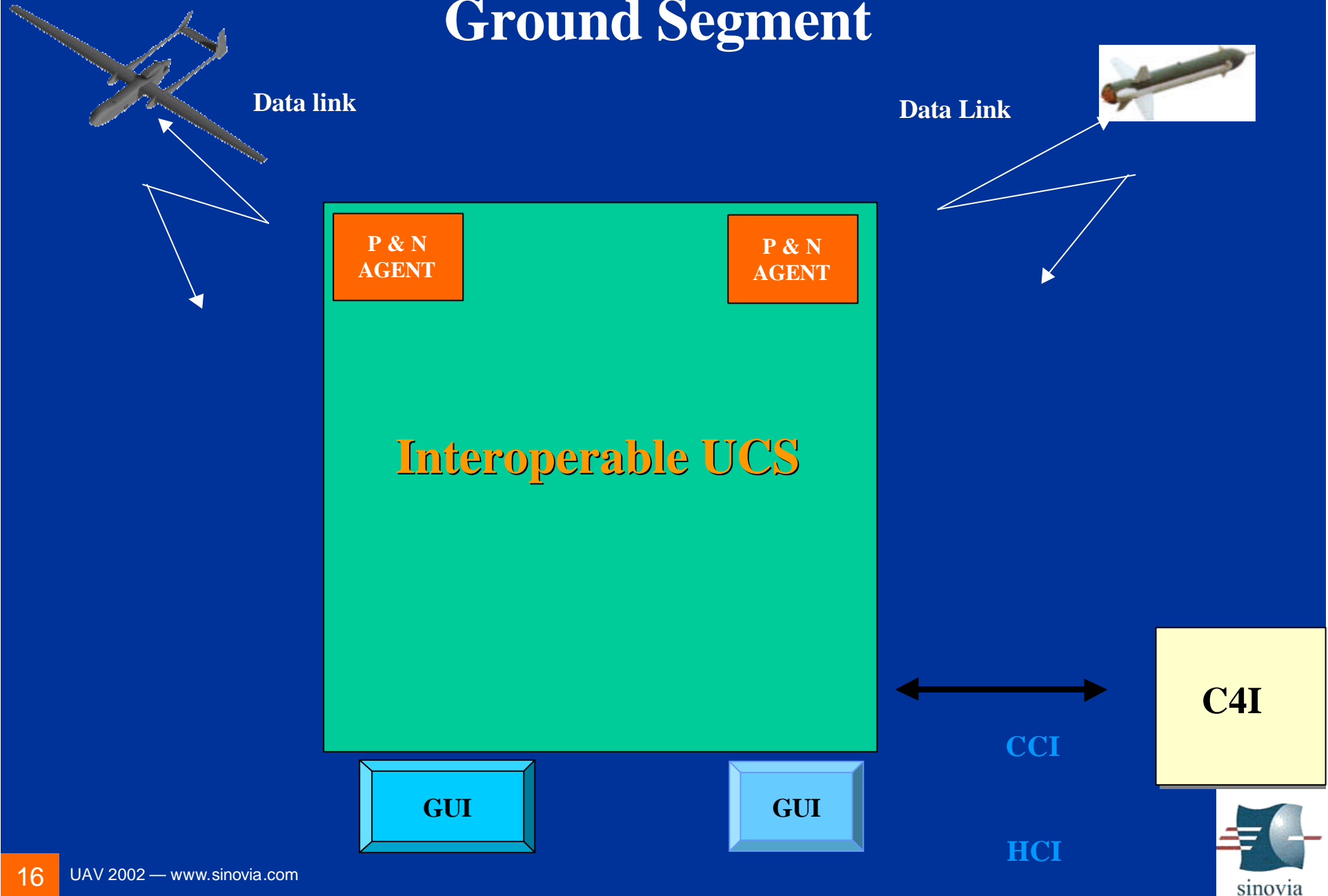
Interoperable UAV SYSTEM with Plug & Net Agent

Distributed hardware agents to transport your data over networks (field-bus, Ethernet, 1553, etc.) from terminals to supervision and control

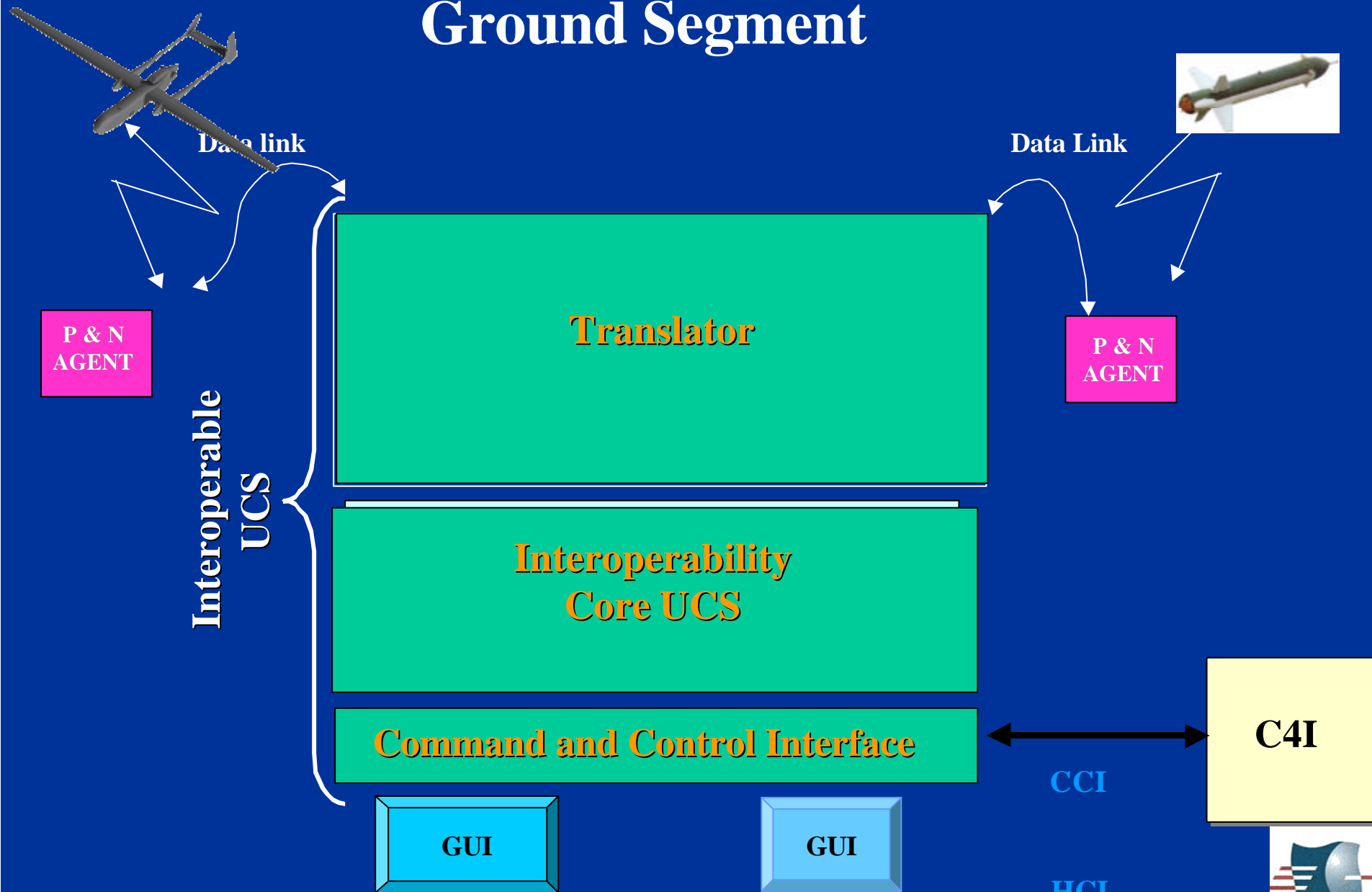


Interoperable UAV SYSTEM

Ground Segment

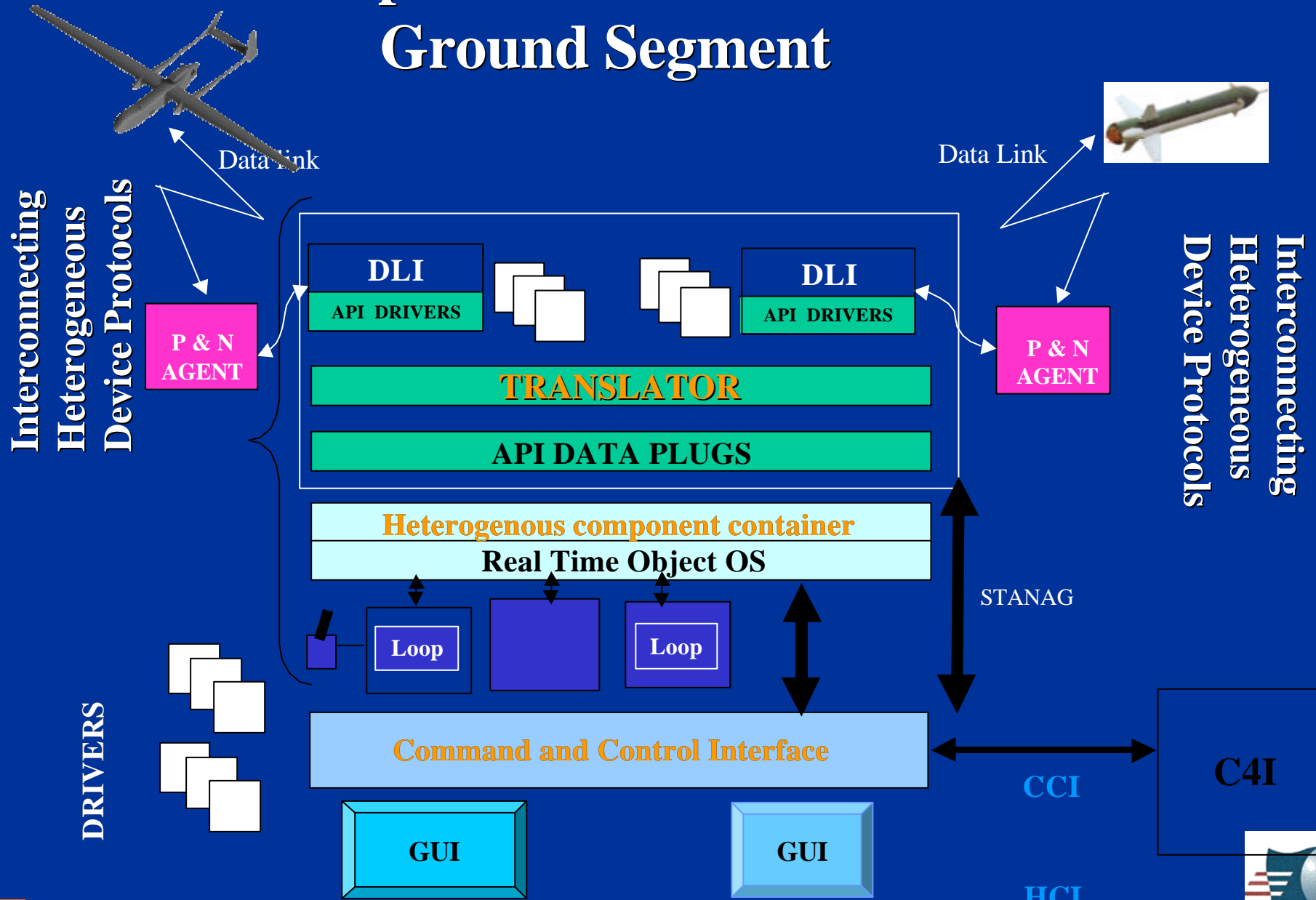


Interoperable UAV SYSTEM Ground Segment

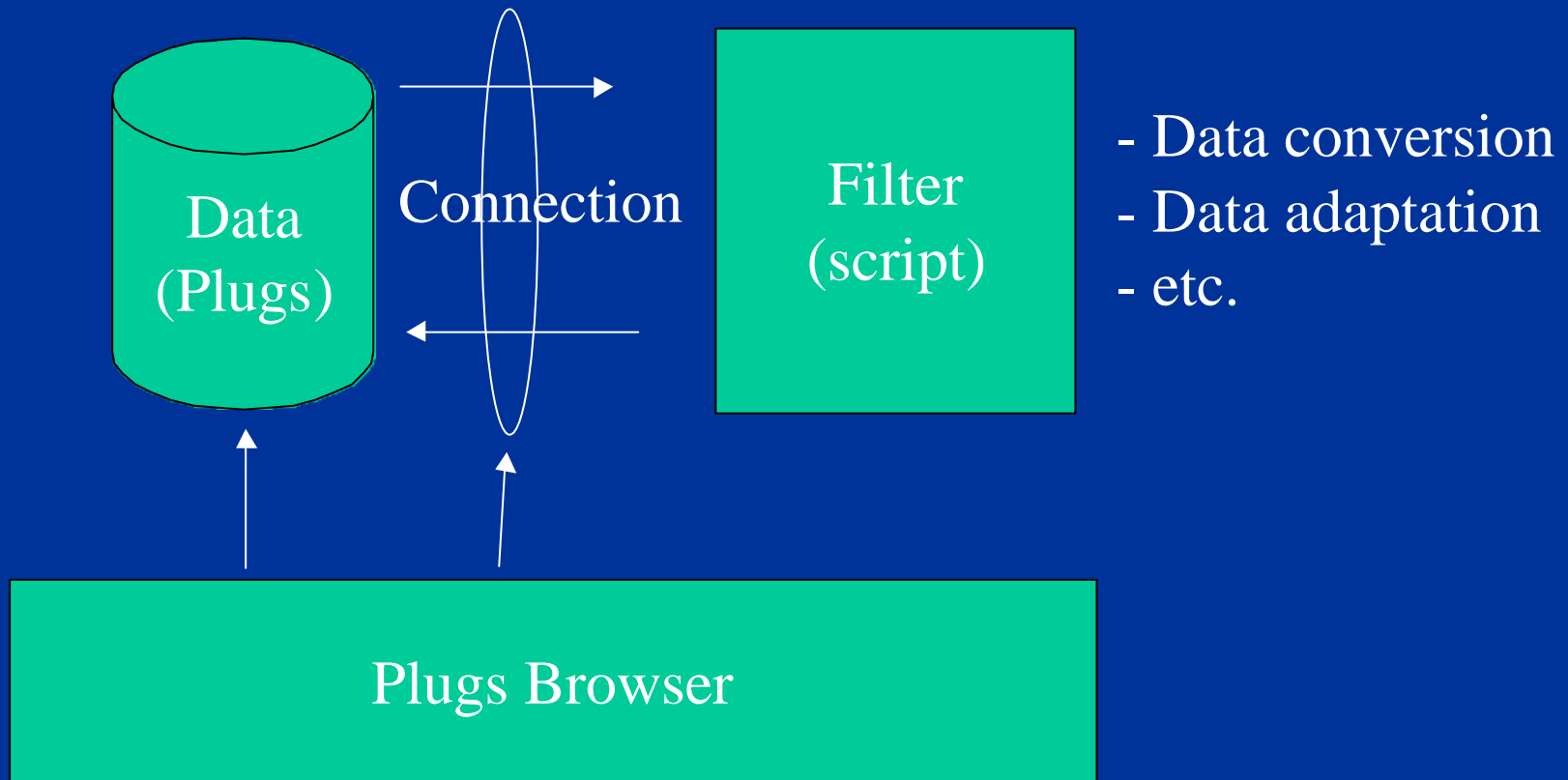


Interoperable UAV SYSTEM

Ground Segment



Translator & Data Plugs



Heterogeneous components container

Components Plugging

Browsing and plugging

Machines
Applications
Components
and Plugs

Plugging

Active
Connections

The screenshot displays a software interface for managing components and their connections. It is divided into three main sections:

- Top Section:** A tree view on the left shows a 'Controller' component with sub-components: Lissajous, Parameters, Readback, Treatment, Tube, Wait, and Zoom. A right-hand pane displays system information for the selected component: Host: vision, IP: 10.0.0.10, OS: Windows NT, Version: 4.0, Description, and Processor: Intel Pentium.
- Middle Section:** A central area contains three icons representing different types of connections or plugs.
- Bottom Section:** A tree view on the left shows a 'vision' application containing an 'ECAna_79' component. This component has sub-components: Controller, Lissajous, Parameters, and Readback. The 'Lissajous' and 'Parameters' sub-components have 'InOutCommands' connections. A right-hand pane displays system information for the selected component: Host: vision, IP: 10.0.0.10, OS: Windows NT, Version: 4.0, Description, and Processor: Intel Pentium.

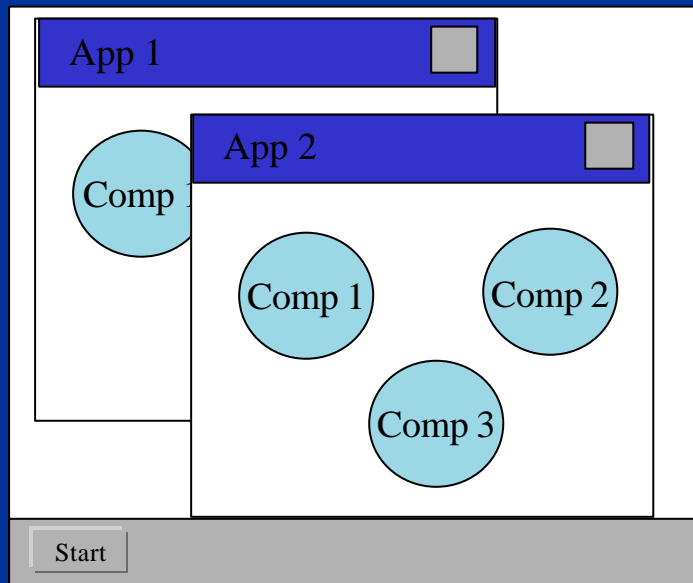
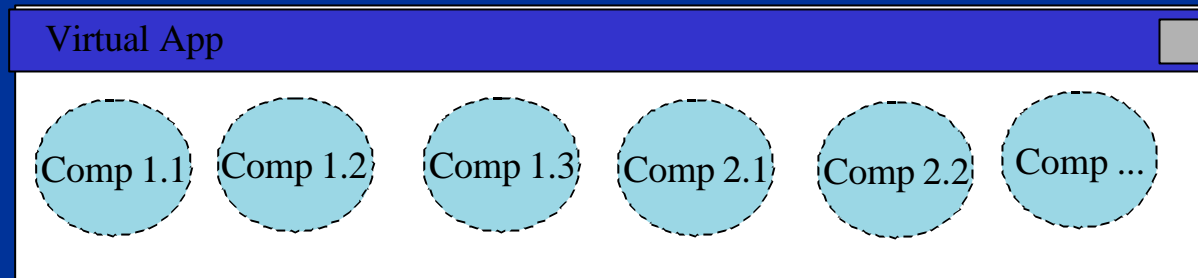
Below the interface is a table of active connections:

Attribute	Attribute
//vision/ECAna_79/Controller/Lissajous	//vision/ECAna_79/Lissajous/InOutCommands
//vision/ECAna_79/Controller/Parameters	//vision/ECAna_79/Parameters/InOutCommands
//vision/ECAna_79/Controller/Readback	//vision/ECAna_79/Readback/InOutCommands
//vision/ECAna_79/Controller/Treatment	//vision/ECAna_79/Treatment/InOutCommands
//vision/ECAna_79/Controller/Tube	//vision/ECAna_79/Tube/InOutCommands

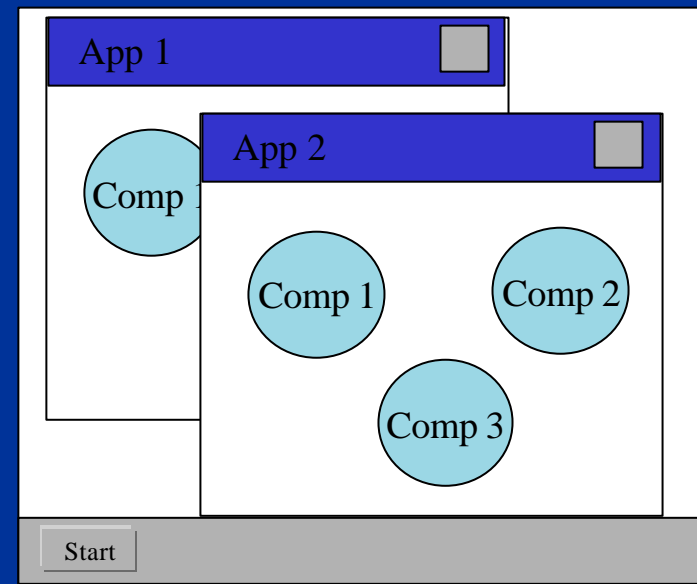
Command and Control Interface

- ▶ Supervision
 - ▶ distributed I/O and data : drivers & networks
 - ▶ static et dynamics synoptics
- ▶ Medium supervision
 - ▶ alarms manager
- ▶ Complex supervision
 - ▶ process control (real time)
 - ▶ specifics representations

The Meta-Component Level



Meta-component



Meta-component

Interoperable UAV SYSTEM

Ground Segment

With Plug & Net Open Components

- GUI Designer

Creating the GUIs and Virtualization

- Networks

*Viewing Hardware Agents as Components
Accessing data and I/O as plugs*

- Process Manager

Interoperability of process control

More informations

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