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**About Systematic**

Systematic is an internationally renowned software company providing scalable software products, services and projects for defence forces, security organisations and systems integrators.

Systematic is redefining defence and security IT procurement with its off-the-shelf product range for command and control, situational awareness, crisis management, intelligence and information exploitation. In addition, the company provides training, consultancy and integration services in these highly specialised fields.

The company's products and services are proven operationally in combat, humanitarian missions, emergency response, public order events and internal security.

Working internationally with local partners, Systematic delivers cost-effective solutions to more than 100,000 users in over 40 countries.

**About IFAD**

IFAD is an international supplier of simulation products and networked team training solutions. IFAD has more than 20 years' experience in providing networked simulation solutions and support to our customers.

IFAD provides simulation-based training solutions for Defence and Homeland Security.

- Naval Training Solutions
- Close Air Support Training
- Radio Communications Training
- Incident Command Training
- Combat Medical Training

# C2 Sim GW

Bringing situational awareness to simulation systems

Solutions with Partners



**Training in simulated environments proves much more cost effective than live exercises requiring the transportation of troops, equipment and resources. There are many simulation systems on the market, but few offer a simple integration with Command and Control (C2) systems. This is where the C2 Simulator Gateway breaks new ground.**

The C2 Sim GW was built by IFAD and Systematic for the Danish Army, who is using it in their tactical trainer connected to the Joint Conflict and Tactical Simulation (JCATS) system, SteelBeasts and VBS2.

The gateway provides a direct interface to Systematic's SitaWare suite of C2 software for the vast majority of simulation systems, including JCATS, MASA SWORD, CAE GESI, JTLS, CATS TYR and VBS2. It can also provide an open interface to other JC3IEDM based systems using SitaWare C2 server as the MIP gateway.

The C2 Sim GW is usable at all levels – from forces equipped with SitaWare Frontline at platoon level to Joint commands using SitaWare Headquarters and SitaWare Headquarters WebCOP.



## SYSTEMATIC SITAWARE

The C2 Sim GW integrates the SitaWare C2 Suite seamlessly into military simulation exercises using the High Level Architecture (HLA) or Distributed Interactive Simulation (DIS) industrial standards for distributed simulation.



## Integrating C2 with simulation systems

The C2 Sim GW is designed for military training centres as well as integrated test beds and battle labs. It is an ideal solution for training systems from the tactical level up to staff and command team training as well as for Concept Development and Experimentation (CD&E).

### Simulation to C2 Information Mapping

The C2 Sim GW provides tracking and mapping of DIS/HLA entities to tracks in the SitaWare C2 system:

- Single entities (equipment and personnel) and groups of entities (units)
- Entity type and force id to MIL2525B symbol code
- Entity name, position (lat/long), elevation, speed, direction and status (operational level)

The C2 Sim GW provides mapping of additional DIS/HLA simulation data to the SitaWare C2 system, such as:

- Cultural features, such as bridges, buildings craters etc
- Areas, such as Mine fields
- Supplies

The C2 Sim GW supports large scale simulation exercises with up to 30,000 entities.

### GPS and Sensor Interfaces

For SitaWare Frontline, the C2 Sim GW provides real-time GPS and sensor feeds, such as laser range finder, gun and turret directions. The specific interfaces depend upon the SitaWare integration in the vehicle or mobile platform.

### Simulation to MIP Replication

MIP Replication of DIS/HLA simulation data is available out of the box with the C2 Sim GW and the SitaWare Headquarters MIP Replication software, which is pre-integrated in all SitaWare C2 solutions.

### Multiple SitaWare C2 systems

The C2 Sim GW supports multiple SitaWare C2 systems connected in the simulation environment. For example, a number of SitaWare Headquarters can be connected alongside several SitaWare Frontline products installed in individual, simulated vehicles.

While tracking forces, enemy reports and incidents are entered into SitaWare and the common operational picture is built and maintained through information exchange using the SitaWare Tactical Communications protocol.

### Simulation to C2 Management

The filtering of simulation data to the SitaWare C2 system is highly configurable using the C2 Sim GW, which also controls mapping rules and update rates.

Tracking and mapping of DIS/HLA entities to tracks in SitaWare is setup individually for each SitaWare C2 system connected to the simulation environment via a central management tool. The configuration includes:

- Paring each SitaWare C2 system with a simulated entity (own unit)
- Selected simulation entities or groups of entities (friendly, neutral and hostile) to track per SitaWare C2

Entity tracking can be arranged as individual entities or from any level in the organisation's hierarchy – upwards or downwards.

Entity filtering includes Force identity (friendly, hostile, neutral) and entity type (kind, domain, category etc.) as well as geographical filtering.

### Simulator Interoperability

The C2 Sim GW is based on IFAD's proven simulator networking platform supporting DIS and HLA with the Real-time Platform Reference Federation Object Model (RPR FOM).

- DIS version 6 (IEEE 1278.1a-1998), DIS version 5 (IEEE 1278.1-1995), version 4 (version 2.0 4th draft).
- HLA 1.3, HLA 1516, HLA Evolved and several RTI's
- HLA SISO RPR FOM 1.0, 2.0 (draft 17)

Additionally, Steel Beasts support is enabled through a Steel Beasts DIS/HLA gateway embedded into the C2 Sim GW management tool.

**The C2 Sim GW enables live, virtual and constructive (LVC) systems to actively participate in distributed simulation exercises. It is used to link live systems and simulators into integrated test beds, training environments and distributed simulation exercises.**

### Military Challenges

- Reduced defense budgets
- Increased stress on 'value for money' and the need for proven high quality
- Shorter timescales from procurement to deployment
- New capabilities are needed now – there is no time or long development projects
- Emphasis on international collaboration, and a strong requirement for interoperability

### Military Benefits

- Short integration time
- Platform and protocol independent interface
- Multiple protocols (DIS and HLA and various FOM's)
- Multiple platforms (Windows and Linux)

### Key Features

- Meets all core requirements straight out of the box
- Proven Reliability that's tried and tested
- Open and extendable architecture
- Complies with MIP, NFF, and other interoperability standards (BML, MSDL)