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Photo: Forsvaret



KONGSBERG

INTEGRATED COMBAT SOLUTION

A Complete Digital Vehicle Backbone



Worldwide Operations

KONGSBERG is an international corporation with strong Norwegian roots. Collaboration with our global customers, partners and suppliers is essential in our success as is developing a clear understanding of our end users and the operational environment where they use our technologies. These factors are driving forces behind the corporation's international success.

Support in the Extreme

KONGSBERG contributes to improved safety, security and performance in demanding and complex missions. We achieve this through an in-depth knowledge of our customer's objectives and the needs of the operator, and by meeting their challenges with the right systems, services and technological solutions.

Extreme
Performance
for extreme
conditions



Photo: Torbjørn Kjosvold/Norwegian Armed Forces

Integrated Combat Solution – Networking the modern combat vehicle

The System

The Integrated Combat Solution (ICS) is a complete system- and digital integration platform, necessary to provide a fully digitized platform for both new and existing vehicles and platforms.

Flexibility

Flexibility is at the core of ICS and it is built to be completely platform agnostic and easily adaptable and scalable. The solution inherently supports complex platforms where crew members work tightly together to execute their mission across a range of subsystems, as well as simpler single user setups.

Integration

On all the vehicles, ICS integrates all subsystems into a holistic, total system, significantly increasing crew efficiency and reducing reaction times. The vehicle itself is integrated as a subsystem, as well as allowing all other subsystems access to vehicle information (and vice versa where applicable).

ICS supports any kind of platform, not just vehicles. Other tactical platforms such as command posts, vessels, UAVs, UGVs and boats can also utilize ICS.

Conformity

ICS software is the same across all vehicle variants. All subsystems are integrated through ICS to provide interoperability across all the different subsystems and with C3I solutions.



MAIN FEATURES

- highly flexible digitization and integration solution
- lethality enhancement
- C5I systems integration
- MUM-T ready
- Prepared for AI/AR



Photo: **BAE SYSTEMS**

Value of ICS

KONGSBERG proposes a fielded and proven ICS configuration which significantly improves the operational capabilities of any vehicle/platform. This lies at the heart of ICS. For the crew operating ICS equipped vehicles this means increased situational awareness and combat capability, achieved through lethality enhancements, C5I systems integration and inter-vehicle communication.

ICS Weapon System Integration

The ICS weapon system integration features draw its capabilities from three key integration features

Fire control system data access: ICS achieves a high degree of lethality enhancements by accessing specific weapon system and corresponding sight system data

Control grip event access: To ensure accurate and timely calculation of target information ICS samples specific Control Grip (CG) events

Platform attitude data access: To achieved the level of accuracy and flexibility required by ICS platform attitude data is an integral part of the calculations performed

Slew-to-Cue and Hunter-Killer

The ICS “Slew-to-Cue” and “Hunter-Killer” function utilizes any and all on-board sensors and effectors. In Hunter-Killer the latest observation provided to ICS from any subsystem is automatically localized and available to any other subsystem. When a subsystem is aligned to this target, ICS automatically transforms the localized target into the requesting subsystems preferred coordinate system, compensating for any platform motion that has occurred since the observation was made. This significantly improves alignment accuracy.

Advanced collective engagements

The capability to rapidly combine weapons effect against direct fire targets opens the possibility for other types of combined weapons employment. Including anti-defile capabilities, utilizing the combined effects of several weapon systems, based on ballistics calculations performed by ICS. Such capabilities can reduce the need to employ expensive advanced airburst munitions, or in other scenarios, improve the effects of such munitions

Lethality Capabilities

ICS increases both platform and unit lethality. Units operating ICS equipped vehicles are able to collectively employ their weapons faster and more effectively than legacy platforms.

When the fully digital target exchange capabilities from the individual platforms to indirect fire assets are added, the concept of combined arms battle is given a new dimension.

Situational Awareness

ICS can handle video management, allowing multiple video feeds for all users on the network.

This can include vehicle cameras, weapon camera/sights, UAV camera, etc.

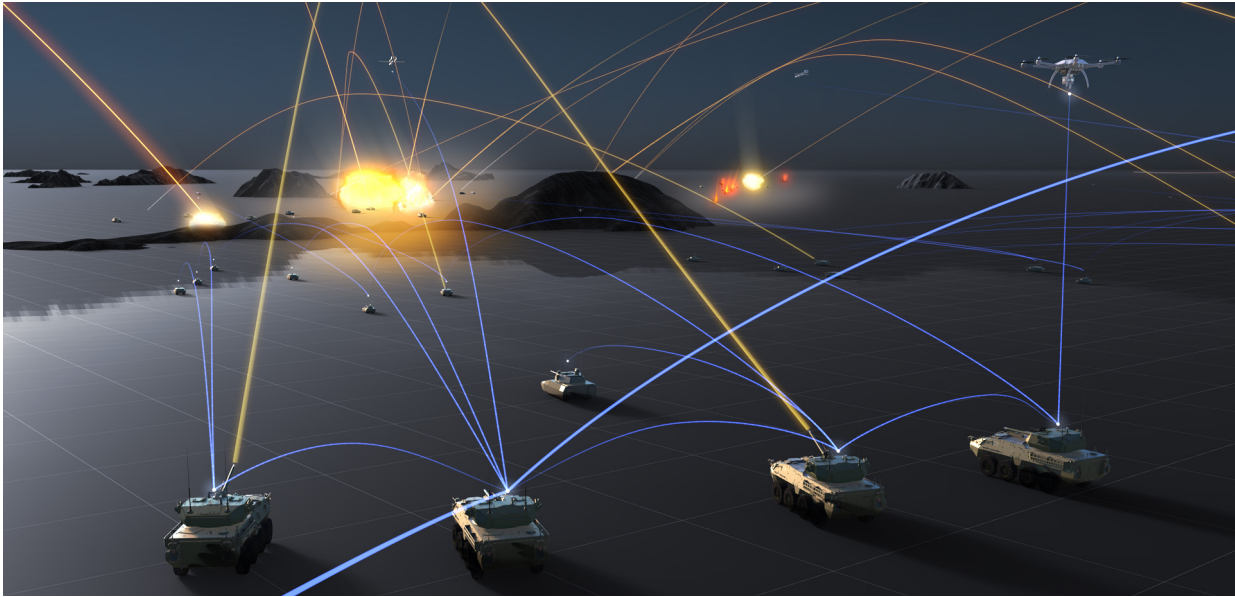
Augmented Reality

Augmented Reality overlays can be presented on all available camera feeds, provided INU-information from the platform hosting the camera.

MUM-T

Manned Unmanned Teaming...





Integrated Combat Solution Architecture

The main elements of ICS are the DDS Bus, ICS Information Model, ICS Adapters and ICS Services.



ICS has an Interoperable Open Architecture (IOA) based on DEF STAN 23-09 and its DDS middleware and the associated Land Data Model (LDM). ICS is in line with the Modular Open Systems Approach (MOSA) and is built based on open standards for avionics and software such as DEF STAN 23-09 GVA, DEF STAN 00-82 VIVOE and STANAG 4754 (NATO GVA). Due to the modular and flexible architecture interoperability and integration with other standards such as VICTORY is straightforward.

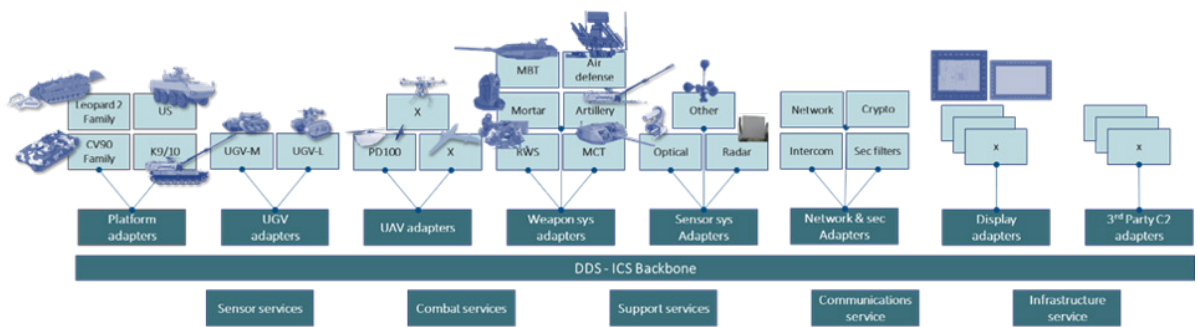
The ICS system consists of many single-purpose programs communicating on a common Data Distribution Service (DDS) bus. DDS is an open standard maintained by Object Management Group (OMG), and the information model used by ICS is fully documented and based on GVA designs.

Any program that runs on the vehicle platform and communicates over DDS with the ICS information model is a first class member of the system as a whole. There are no proprietary back-channels, and an ICS module may be written entirely from open standards with no KONGSBERG software in the technology stack.

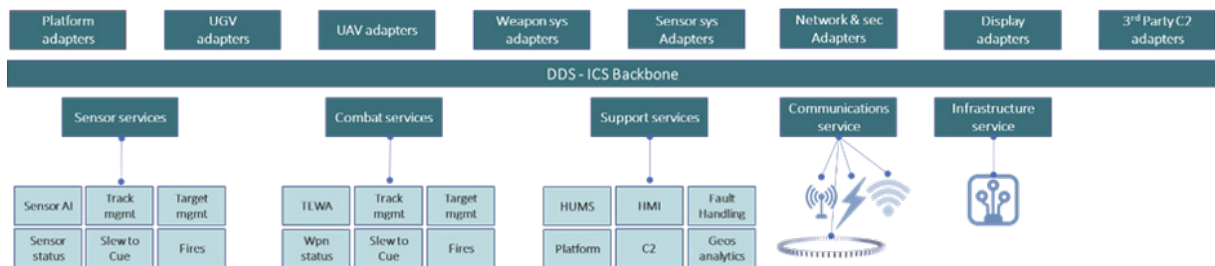


Photo: Nils Bjuggstam/Norwegian Armed Forces

INTEGRATED COMBAT SOLUTION CAPABILITIES



ICS Adaptors



ICS Services

WORLDWIDE OPERATIONS

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