



THE UNIQUE 2iC SOFTWARE PRODUCT SUITE

GLOBAL LEADERS
IN DIGITAL
INTEROPERABILITY
IN THE BATTLESPACE

2iC

COMPANY OVERVIEW

2iC's unique software layer liberates human capability in the battlespace. It achieves this by digitally automating the exchange of mission-critical and actionable information between commanders, operators and equipment across land, sea and air.

Designed for the very leanest of digital conditions in the battlespace, 2iC's solution delivers two-way information exchange in environments typified by low-power computing, low-bandwidth connections, physical landscape challenges and/or interrupted communications. It effectively delivers the benefits of IoT (the Internet of Things) to the warfighter, using existing military digital networks.

Discreet and operationally agile

The 2iC interoperability software layer sits discreetly on virtually any number of military platforms, systems or devices (trusted and untrusted).

It delivers on-the-fly user-reconfigurable operating procedures and workflows. It includes the configuration and runtime discovery of systems, services and assets between new and legacy systems and has optimised connectivity over degraded, denied, interrupted and limited (DDIL) communications.

Modular Open Systems Approach (MOSA)

The off the shelf 2iC software delivers a scalable implementation of MOSA, the technical and business strategy for defence organisations wanting to rapidly deliver vendor-independent, affordable and adaptable systems as "plug-and-play" open systems.

Cost savings on manpower and accelerated time-to-market

The need for integration is ever-growing and a major challenge in defence is the lack of available skilled engineers, especially with digital skills. The benefit of using the 2iC off the shelf software suite is that it embodies decades of digital skills and its low-code / no-code approach accelerates the time-to-market of any solution.

Open and agnostic

Based on open standards and agnostic of original equipment manufacturer (OEM) or prime contractor, the 2iC software delivers flexible interoperability across different systems, networks and trust domains.

Lean Services Architecture

2iC is the inventor of the Lean Services Architecture (LSA), an open schema-based architecture that provides a modular services-based architecture for the tactical environment. The UK Ministry of Defence thoroughly tested and then published the Lean Services Architecture as an open standard using the Open Government Licence.

Customers and credentials

2iC clients include the UK Ministry of Defence, the United States Department of Defense, the Australian Department of Defence and the New Zealand Defence Force. The software has been applied in situations ranging from integrated soldier systems to air platforms, along with maritime cross-domain security and wide area tactical communications.

The 2iC CORE Software product suite has been designed to deliver digital interoperability in the battlespace with Five Eyes and NATO systems.

THE 2iC SOLUTION IN ACTION

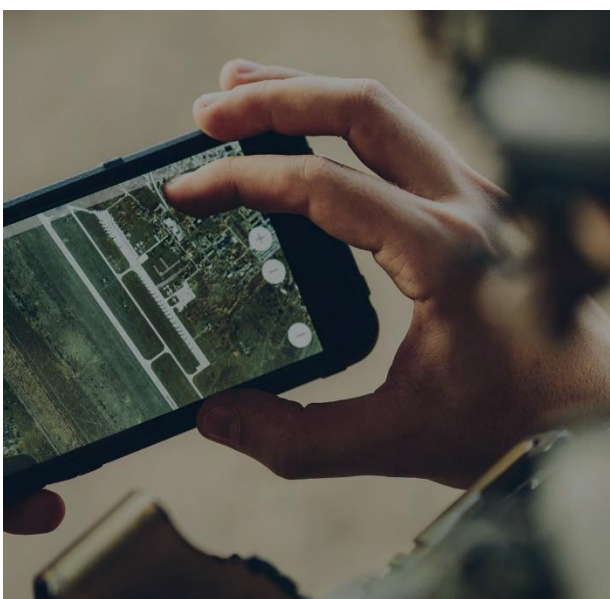
Soldier-wearable, Bluetooth-enabled personal area network for major defence organisation

Challenge

Dismounted operators have a chest-mounted ATAK device for situational awareness (SA) and sending text messages, but this means they are “heads down” not “eyes up”.

Solution

In under six months, 2iC delivered software to allow user-configured messages to be sent and received from a wirelessly-connected watch which also showed locations of friendly forces and points of interest significantly increasing SA. 2iC provided an extendable digital backbone that is being taken forward.



Secure connection of a navy warship’s combat system with high-speed, un-crewed, autonomous vessels

Challenge

Warships and un-crewed vessels need to share information and commands, but they can’t because they operate in separate security domains.

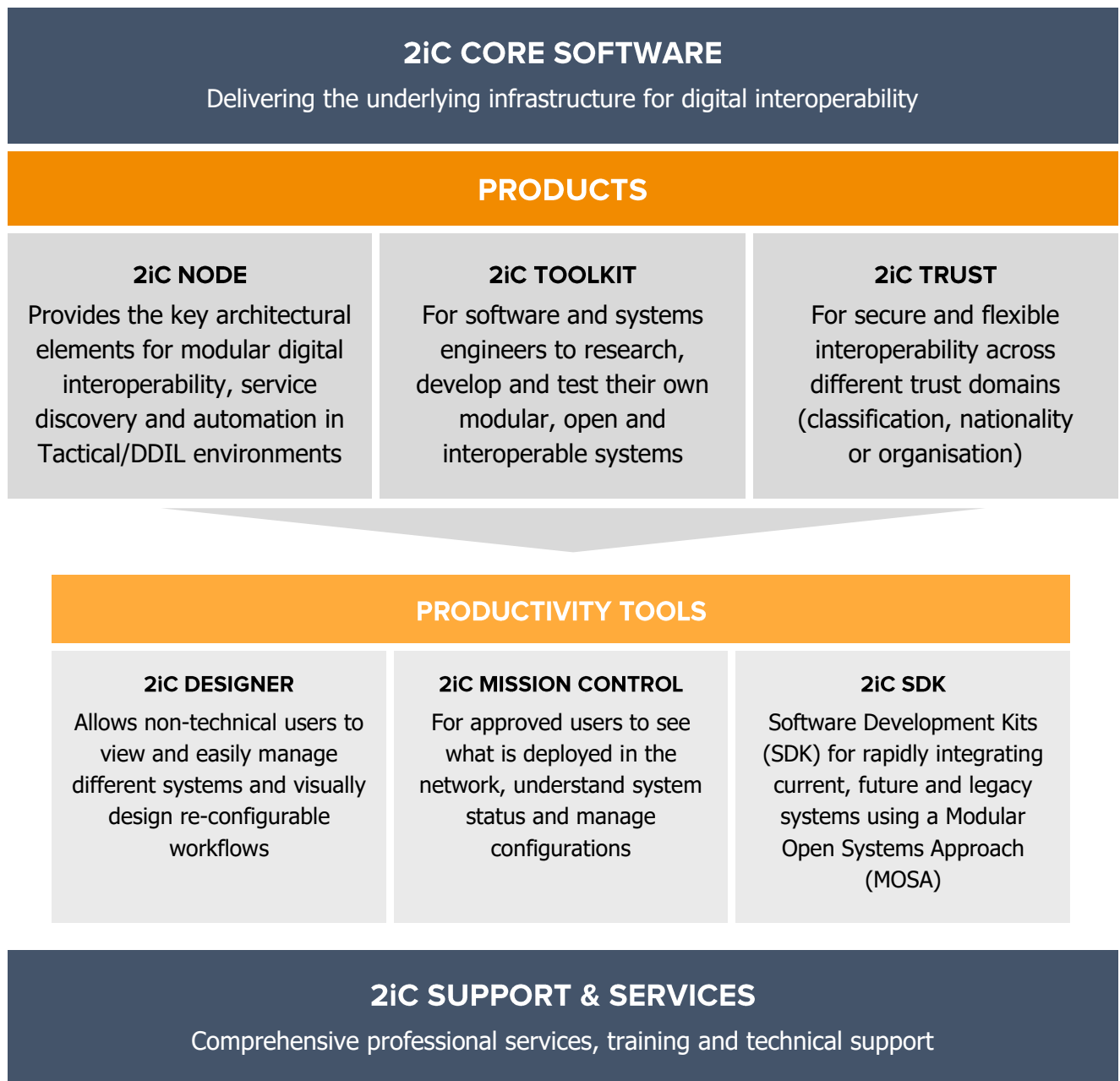
Solution

In one month, 2iC worked with a secure hardware provider to integrate the warship and an un-crewed boat to allow tasking and two-way sharing of data across the security boundary. The solution was approved and used on a full naval exercise.



The Software Product Suite

A commercial-off-the-shelf digital interoperability software suite comprising of:



2iC CORE PRODUCT SUITE

PRODUCTS

2iC NODE

Provides the key architectural elements for modular digital interoperability, service discovery and automation in Tactical/DDIL environments.

2iC NODE is the key product within the 2iC software product suite. It provides the digital backbone and information exchange mechanism to enable digital interoperability in the battlespace on a highly scalable basis because it is not fixed to any given set of battle management applications, information systems, sensors or bearer networks. It provides a fully-tested implementation of the Lean Services Architecture.

2iC NODE is commercial off-the-shelf software that sits discreetly on virtually any number of military platforms, systems or devices (trusted and untrusted). It is installed at every important network node where it manages the locally-connected Lean Services systems and manages the connections to and from other networked nodes. It provides reliable communication over bearers with as little useable bandwidth as 2 Kilobits per second and network delays measured in minutes or hours.

It dramatically improves human performance in the battlespace through its flexible, automated, disruption-tolerant behaviour and its seamless integration with current, future and legacy systems.

2iC TOOLKIT

For software and systems engineers to research, develop and test their own modular, open and interoperable systems.

2iC TOOLKIT provides the software needed to enable software and systems engineers to research, develop and test their own modular, open and digitally-interoperable systems.

It includes all the basic, core features and benefits of 2iC NODE and is a rapid enabler to build and trial their own open and Lean Services Architecture-compliant systems in just a matter of hours. Its open architecture eliminates the high cost of inventing and then supporting proprietary data interfaces because it connects to systems and devices from different vendors using numerous interfaces and protocols. It also includes online training and documentation to support rapid progress.

2iC TOOLKIT includes Software Development Kits (SDK) for Java, C++ [Windows & Linux], Android & Microcontroller C, plus an ever-increasing library of software adaptors to integrate with existing devices, such as GPS and drones. Users of 2iC TOOLKIT protect their intellectual property (IP) while building open interoperability solutions. Users have unrestricted freedom to use software that was developed with 2iC TOOLKIT.

2iC CORE PRODUCT SUITE

PRODUCTS

2iC TRUST

For flexible interoperability across different trust domains.

This award-winning solution delivers assured digital interoperability between devices, systems and networks in different trust domains. These differing domains could be defined by different security classifications, departmental, national boundaries or even technical boundaries where there is a need to separate systems, information and equipment. When combined with appropriate accredited platform TRUST operates as a flexible digital cross domain device.

The 2iC TRUST software is a further enhancement of the Lean Services Architecture and Decentralised Operating Procedures (DOP) capability as it controls the flow of information and, along with fine-grained content-checking, delivers two-way security with the necessary protocol breaks.

2iC TRUST is rapidly adaptable to meet new or evolving operational requirements and can run on vehicle-borne, wearable and unattended platforms through to enterprise network devices.



2iC was proud to be involved in a project that securely connects the Royal Navy's Type 23 frigate HMS Argyll and its combat system with a high-speed, uncrewed, autonomous Pacific 24 support RIB (Rigid Inflatable Boat) owned by the Royal Navy and designed by BAE systems.



2iC CORE PRODUCT SUITE

PRODUCTIVITY TOOLS

2iC DESIGNER

To manage complex environments visually and allow non-technical users to create workflows.

2iC DESIGNER allows TTPs to be simply and easily automated. Visual Designer provides a graphical 'if this, then that' (IFTTT) functionality, making it easy for non-technical users to view, design and manage different systems graphically across the battlespace. Users can visualise their whole system-of-systems (SoS) to identify patterns, digitally automate manual tasks, and deploy IFTTT rules to the network at the click of a button.

Non-technical users can visually define and rapidly reconfigure the digital coordination between systems to meet changing needs, allowing them to eradicate manual processes and confusion to exploit performance opportunities quickly. The 2iC TRUST software enables multiple users to manage a catalogue of Lean Services visually by viewing, adding and editing Lean Service Definitions. They can manage multiple versions and share them with selected other users.

Also included is the Decentralised Operating Procedures (DOP) designer that allows non-technical users to create, view and edit their own reconfigurable business workflows graphically before pushing them to trial or live environments.

2iC MISSION CONTROL

For users to see what is deployed in the network, status and configuration.

2iC MISSION CONTROL software is installed at one or more nodes in the network for approved users to have management control of the deployed configurations within the network.

The configuration profiles allow each node, and its attached systems, to have standard sets of configurations so that the user can quickly and easily adjust configurations to respond to an urgent need in the battlespace. Approved users can pull logs from nodes across the network to resolve connection, routing and service problems.

This software also incorporates Decentralised Operating Procedures (DOP) deployment, which is the software that takes the designs from 2iC VISUAL DESIGNER and pushes them into the 2iC CORE NODE to be run in a live environment.

2iC CORE PRODUCT SUITE

PRODUCTIVITY TOOLS

2iC SDK

For rapidly integrating current, future and legacy systems using an Open Modular Systems Approach.

2iC SDK provide a simple way for developers to build open interfaces and adaptors for almost any system, platform or device—legacy, modern and future—so they can work seamlessly together within an open architecture environment.

The SDKs have been created specifically to make a new or existing system compatible and fully interoperable within a Lean Services Architecture.

The SDKs are supplied with all the necessary binary code, source files and online documentation needed to develop Lean Services systems. SDKs are available for Java, Android, C++ (Windows and Linux), and embedded-C (8-bit & 32-bit microcontrollers).



[The 2iC software]...had to operate in a battlespace context characterised by potential difficulties such as multiple radio networks, little or no communications infrastructure, intermittent loss of signal, and enemy jamming.

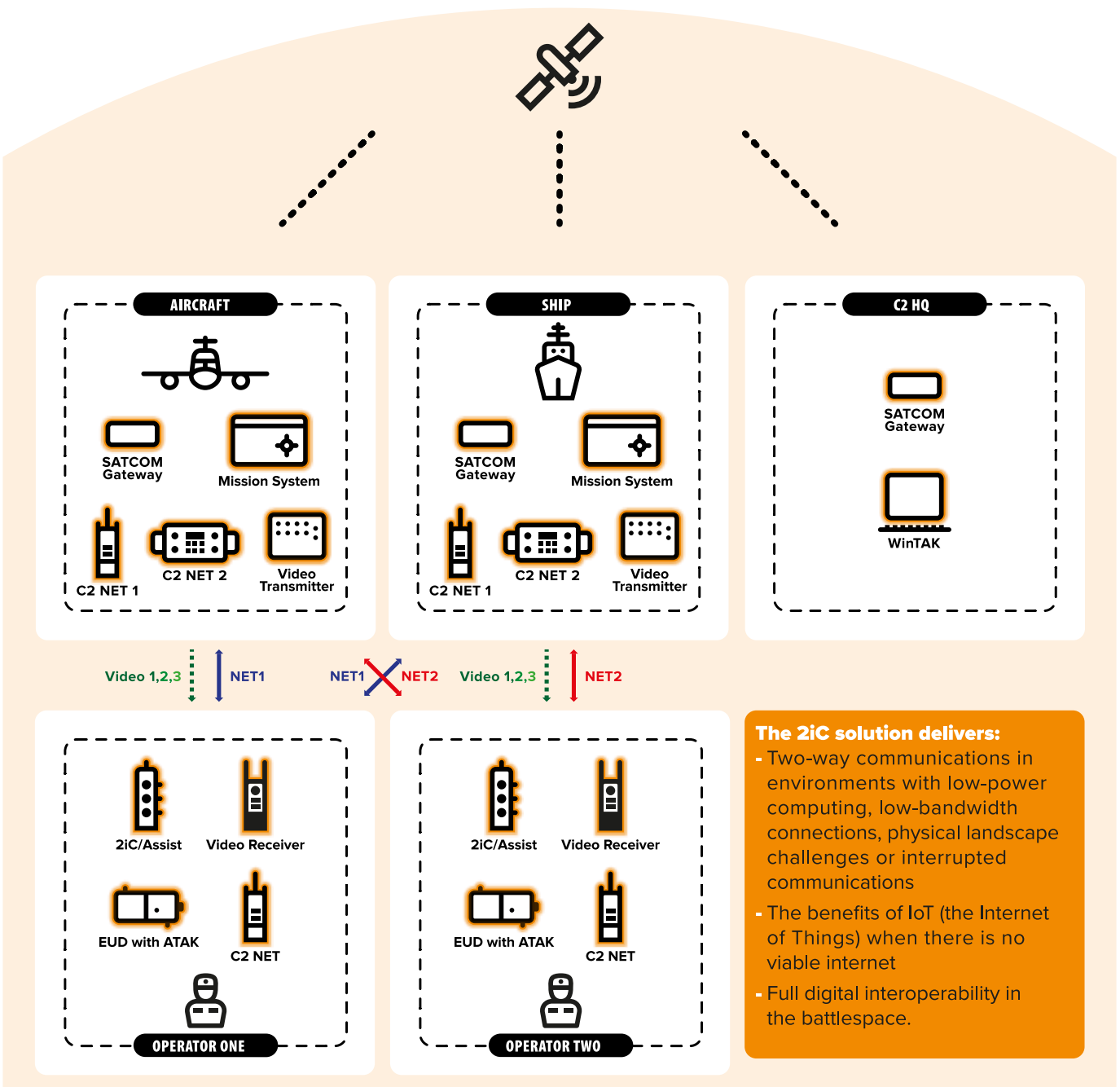
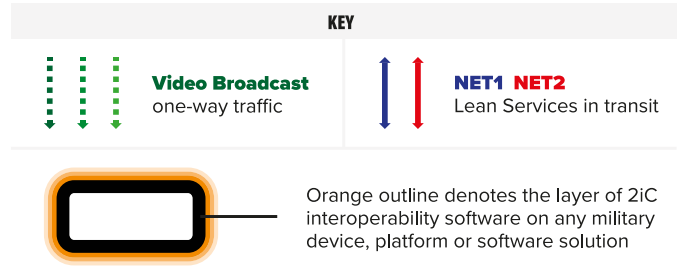


Dan Skinner
Managing Director, Spearpoint

2iC COMPANY OVERVIEW

THE 2iC SOLUTION AT A GLANCE

Below is one example scenario which demonstrates in brief how the 2iC solution delivers optimum digital interoperability between different platforms, systems and devices in the modern battlespace.



The 2iC solution delivers:

- Two-way communications in environments with low-power computing, low-bandwidth connections, physical landscape challenges or interrupted communications
- The benefits of IoT (the Internet of Things) when there is no viable internet
- Full digital interoperability in the battlespace.



2iC SUPPORT & SERVICES

Comprehensive professional services, training and technical support.

2iC information architecture blueprint

This is a stand-alone consultancy service from 2iC that delivers a blueprint for a client's digital interoperability needs.

Based on decades of experience, 2iC works with its clients to understand their information priorities, data sources and network considerations.

2iC will define the information architecture that is needed to meet customer integration and interoperability requirements now and in the future.

Ongoing training and support

2iC provides all the necessary professional services, training and technical support to ensure customers derive the maximum value from their investment in 2iC software.

This is irrespective of whether customers wish to develop their 2iC-enabled digital interoperability solutions in-house, or with 2iC working as part of their team, or if they outsource completely to 2iC. deployed in the network, status and configuration.

GET IN TOUCH

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