2iC NODE (Deployed use) for MOD open standard Lean Services Architecture (LSA) - Services Definition

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1 2iC NODE for Lean Services Architecture

2iC NODE is deployed on each node within a network and provides the digital backbone and open information exchange mechanism required to enable true interoperability within the modern battlespace. Within NODE are three components:

1.1 Lean Services Node

This low-footprint software is available for Windows, Linux and Android operating systems and provides the required Service Registry for a Lean Services Architecture implementation and manages local Lean Services availability. It also has an Event Handler for distributing events and Log Manager to simplify logging.

1.2 Lean Services Gateway

Gateway extends local Lean Services operations to battlespace-wide interoperability between distributed nodes. A Lean Services call or event on any connected platform can be consumed from anywhere in the battlespace over any available communications bearer.

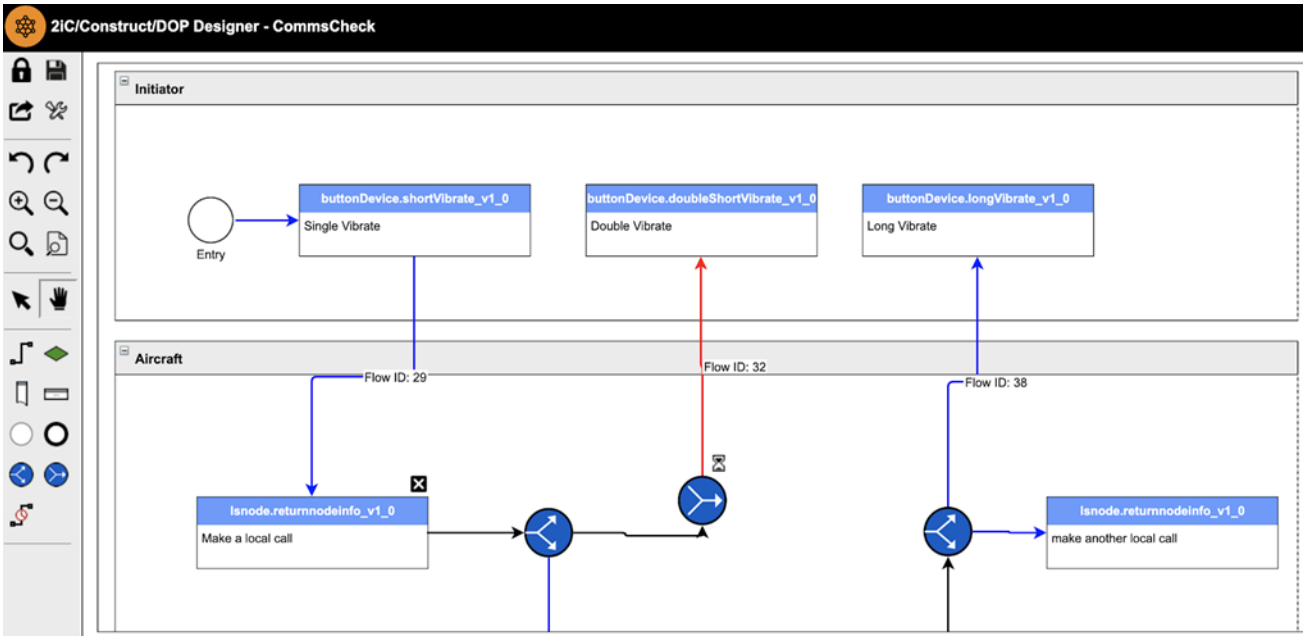
Gateway ensures that platforms automatically discover one another as it delivers automatic node-discovery and communication between numerous nodes. It is installed at every important network node where it extends the locally-connected systems and the connections to and from other networked nodes.

Gateway uses the Lean Services node-to-node (N2N) protocol and has an open pluggable transport architecture to allow custom protocols (including serial) to be developed and executed with ease. It supports multiple bearers and is not fixed to any given set of battle management applications, information systems, sensors or bearer networks as its open protocol works over tactical bearers such as ANW2, TSM, Wide band HF, BOWMAN, Iridium etc.

It is designed and proven to enable digital interoperability in Denied, Degraded, Intermittent, or Limited bandwidth (DDIL) environments as well as enterprise environments. It also includes Service Boards to access controlled dynamic service advertising and discovery between platforms.

1.3 DOP Runner

A Decentralised Operating Procedure (DOP) is a graphically drawn process that is easy for an operator to understand. Once it is run it can implement lean services functions on distributed nodes across the battlespace. The DOP Runner makes lean services calls at whichever nodes are defined in the DOP, allowing complex interactions between nodes and systems to occur and battlespace wide effects to be defined and implemented.



An example Decentralised Operating Procedure (DOP).

1.4 Online documentation, training materials and support

2iC provides the necessary documentation, training, self-help videos and technical support to ensure engineers derive the maximum value from using the 2iC software.

The online material covers how to: install 2iC NODE; use the Lean Service Code Generator to create Lean Service System skeleton code; build and run a Lean Service System; test a Lean Service System and join a Lean Service to the Lean Service Network; configure 2iC NODE for your network.

2iC provides the following support:

- Online Self-Help and Knowledge Base
- Online ticket creation for incident support (with agreed Service Levels) covering:
- Identifying and troubleshooting problems in the software
- Assistance with issues during installation and upgrades
- Identifying and creating required bug reports
- In addition to the 2iC Standard Support Service, 2iC includes product updates and new releases as part of the overall support offering.

2 Optional Additional COTS Software - TAK Module

TAK Module is offered as an extension to a TOOLKIT subscription under the same terms as 2iC NODE for use in Research, Demonstration, trials and testing environments.

ATAK and the wider TAK ecosystem have become the dominant battle management system within deployed tactical military networks across the 5EYES and related civilian agencies. TAK offers great capability and was designed for small teams primarily operating on relatively stable and reliable MANET TCP/IP networks. It was not designed for, or optimised for, use over low bandwidth bearers (such as satcom) or fractured networks (such as distributed teams on tactical radios).

To address this, 2iC has developed the COTS TAK Module software which adds reliable sending/receive of chat messages, data optimisation and throttling of Situational Awareness (SA) traffic between TAK environments. Operating in tandem with the 2iC Gateway component of NODE, TAK Module works with ATAK, WinTAK and TAK Server and sits as a local proxy between the TAK product and the network. TAK Module will process an in-scope TAK CoT message and turn it into an optimised Lean Service, while

through configuration out of scope CoT can pass through as-is raw CoT without any change or can be blocked to protect network bandwidth.

3 Optional Additional COTS Software - MAVLink Module

MAVLink Module is offered as an extension to a TOOLKIT subscription under the same terms as 2iC NODE for use in Research, Demonstration, trials and testing environments.

MAVLink is the industry-standard protocol for drone control. It is typically used for communication between a Ground Control Station (GCS) and uncrewed vehicles and also for the intra-drone communication between the subsystems on the vehicle. It primarily carries telemetry data which can have significant data volumes.

2iC MAVLink Module works with MAVLink drones to throttle and manage MAVLink data. It enables out-of-the-box integration of MAVLink platforms at the tactical edge. This includes integration with ATAK when used in combination with 2iC's TAK Module.

4 Optional Additional COTS Software - Video Dissemination software

Video Dissemination is offered as an extension to a TOOLKIT subscription under the same terms as 2iC NODE for use in Research, Demonstration, trials and testing environments.

2iC video dissemination software improves video discovery and sharing around the battlespace, by automating the complex settings. The video dissemination software has two parts, a user interface that allows a user to enter details of existing video streams (for example from a UAS) on the network and an ATAK plugin that auto discovers these streams and auto-populates the video player in ATAK, removing operator error. This can be extended with lightweight software adaptors to extend the user interface and automate end-to-end Video.

Render of auto-discovered streams on ATAK device.

5 Optional Additional COTS Software - TRUST Software

The 2iC TRUST Software is offered as an extension to a TOOLKIT subscription under the same terms as 2iC NODE for use in Research, Demonstration, trials and testing environments.

2iC TRUST is commercial-off-the-shelf (COTS) cross-domain software that delivers assured digital interoperability between devices, systems and networks across different trust domains. These differing trust domains can be defined by different security classifications or different boundaries where there is a need to separate systems, information and equipment.

TRUST 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. It 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. See the TRUST product brochure for more details.

TRUST Software is typically installed on hardware at the boundary between trust domains, with a 2iC NODE and Content Checker deployed on each side.

6 Deployed Use of COTS

For Deployed Use Licences of 2iC COTS Software, NODE and add-ons (such as TAK Module), 2iC offers a range of commercial models to best fit customer's needs. All models require an on-going TOOLKIT subscription for at least 1 user to provide access to updates, documentation and standard support for 2iC COTS Software.

All 2iC software uses the open Lean Services Architecture for all interfaces meaning that any, or all, components can be swapped or extended over time. While 2iC would like customers to continue using 2iC software, using an open approach leaves that choice with the customer and prevents vendor lock-in.

7 LSA Integration

LSA integration is a core part of the 2iC service offering and enables customers to connect platforms, sensors, and systems into an interoperable digital ecosystem.

To integrate any platform, digital system, sensor, or device ("system") into a Lean Services Architecture (LSA) environment, the system must expose an **open-standard LSA interface**. This can be achieved in multiple ways, depending on the customer's technical capability, delivery timelines, and desired level of in-house control.

2iC provides **three integration pathways**, allowing organisations to select the approach that best fits their engineering maturity and programme constraints.

7.1 Option 1: Build Your Own Using the LSA Open Standard

LSA is a **published, open standard**. Organisations are free to develop their own LSA interfaces or adaptors using the specification, enabling their systems to participate fully in an LSA environment.

This option is best suited to organisations with experienced software or systems integration teams who wish to retain full technical control and develop LSA capability internally.

- **Cost:** No licence fee; development is undertaken using the organisation's own engineering resources.
- **Next Step:** Download the LSA specification and begin development.

7.2 Option 2: Build Your Own Using the 2iC TOOLKIT

For teams seeking to accelerate development and reduce integration risk, 2iC offers the **TOOLKIT**, a subscription-based service designed for software and systems engineers building modular, open, and interoperable systems.

TOOLKIT includes:

- Access to 2iC CORE software
- LSA Software Development Kits (SDKs) and code libraries
- Technical support
- Online documentation and training resources

This option enables rapid prototyping, testing, and deployment while still allowing the customer to develop and own their own LSA-enabled components.

- Cost: TOOLKIT is priced per user, per quarter.
- Next Step: Subscribe to TOOLKIT and begin integration immediately.

7.3 Option 3: Have 2iC Build the LSA Integration for You

Where internal development capacity is limited, timelines are constrained, or risk must be minimised, 2iC can deliver LSA adaptors as a managed engineering service.

2iC engineers develop the adaptor as a standalone component, preserving system separation while ensuring full LSA compliance. This approach allows customers to rapidly integrate systems into an LSA environment without modifying the underlying platform.

Foreground intellectual property generated as part of the adaptor development is owned by the customer, while 2iC background IP is protected.

- Cost: Determined by adaptor complexity and integration scope.
- Next Step: Engage with 2iC to assess system complexity using the adaptor complexity guide and define delivery scope.

7.4 How This Supports Deployed COTS Use

These integration options directly support the deployed use of 2iC COTS software described in Section 6. Because all integrations rely on open LSA interfaces, customers can mix COTS products, third-party systems, and bespoke integrations without being locked into a single supplier or commercial model. Capability can evolve incrementally as systems, missions, and budgets change.