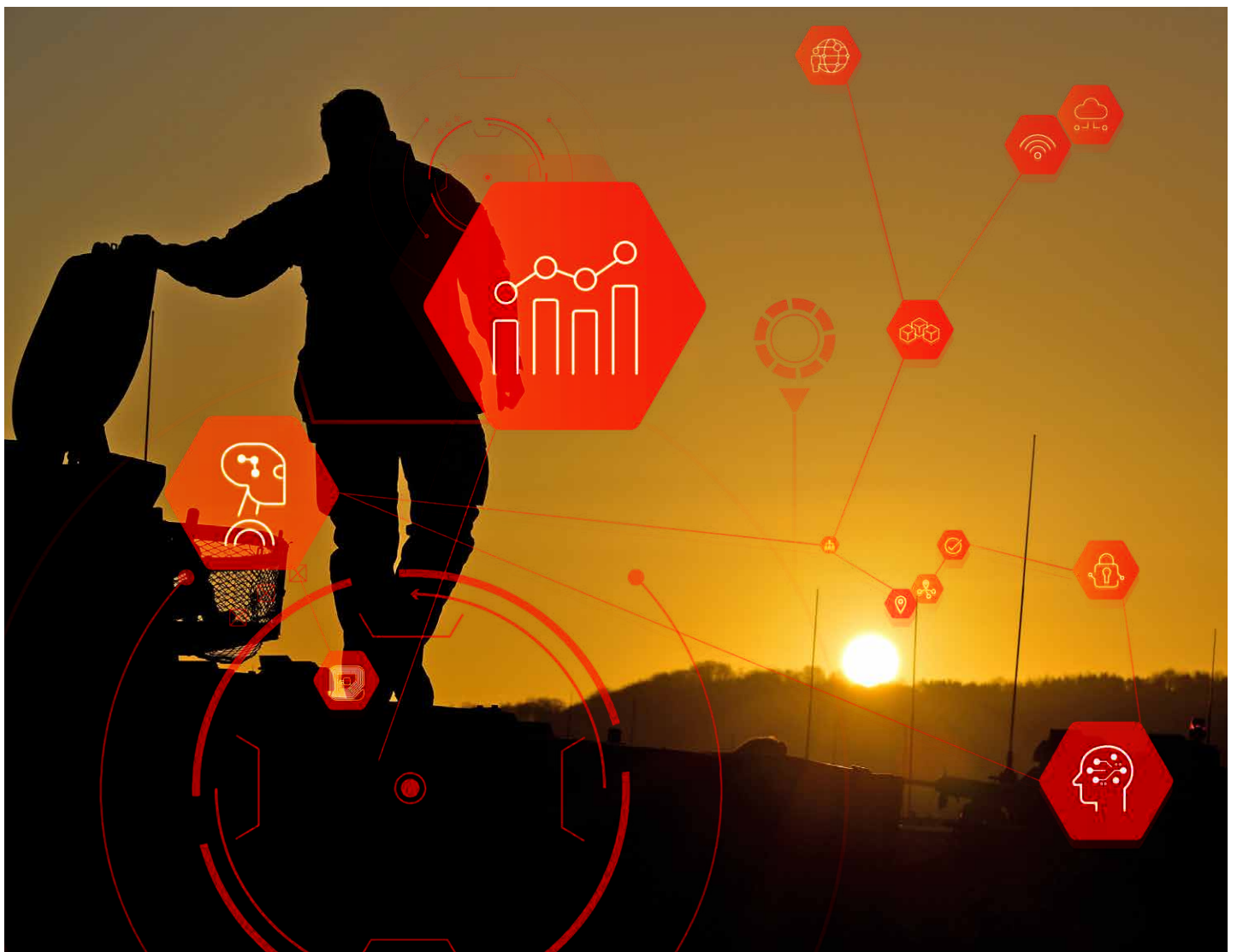FUJITSU

Fujitsu Tactical IoT
Connecting Command and Control with the Battlespace

Integrating Tactical Information to Enrich Situational Awareness.

Gathering sufficient relevant, quality data to build a situational picture that enables timely decision-making is an enduring challenge for the military. Constraints such as intermittent links, low bandwidth, different security domains, and low power of mobile devices makes connecting the tactical space and disadvantaged user with operational intelligence and information particularly difficult. By seamlessly integrating Command and Control systems and information with battlespace management tools and the tactical users could provide complete situational awareness, enabling enhanced decision making capabilities.

Tactical Architecture

Working closely with a number of SMEs (Small / Medium Enterprises), Fujitsu has developed an innovative architecture that enables the seamless integration of hard-to-reach tactical information with existing operational information and intelligence. Fujitsu's solution provides the secure interface between the tactical architecture and more strategic, (fixed or deployed) HQ-based communications.

The architecture exploits the open lean services architecture developed by 2iC and published by MOD, to provide a Service Oriented Architecture (SOA) within the tactical environment. By providing SOAs in both the operational and tactical military domains, it creates opportunities to exploit the Internet of Things (IoT) and integrate other legacy systems / devices generating holistic and live situational awareness. As an example Fujitsu's solution has linked to the mounted or dismounted tactical User via the Ultra Electronics COMBATCONNECT soldier vest.

The nature of the platforms and devices used in the tactical space means they must operate under considerable constraints. Low bandwidth or devices designed to run on low power make communications and information exchange with this equipment difficult. Differing levels of security classifications and differing network owners further compound the issue. Fujitsu's tactical IoT solution uses a lean, low bandwidth protocol, pulling previously dispersed information domains together utilising 2iC's DSEI innovation award winning tactical cross domain architecture and a Deep Secure IX guard to protect the boundary between the low and high security classifications. The result is the delivery of critical data and intelligence from the hard-to-reach battlespace environment, to the Command and Control environment.

Connecting Command and Control with the Battlespace

Establishing this communications link, and enabling the access to and sharing of this data, there is the potential to dramatically enrich a holistic operational picture for Command and Control. It delivers critical information and intelligence on assets, people and equipment, for new and existing tactical systems alike:

- People – evaluating the health and wellbeing of soldiers in the battlespace, including temperature and motion sensor data through the Ultra Electronics COMBATCONNECT vest, compliant with the Generic Soldier Architecture (GSA) Defence Standard 23-12
- Vehicles – collecting health and usage monitoring (HUMS) data on fleets of vehicles across the battlespace
- Equipment – collating and analysing RFID-tagged equipment and munitions to report on usage and consumption, monitor environmental storage conditions, assess condition and provide alerts of potential damage or malfunction captured through Fujitsu's Edgeware technology
- Tracking – collecting and analysing positional data (personnel, equipment and material in transit) using GPS
- Bowman COMBAT supporting COP consolidation within the Command and Control application suite
- Tactical intelligence reports
- Collection of 'street view' style imagery taken from soldiers and vehicles.
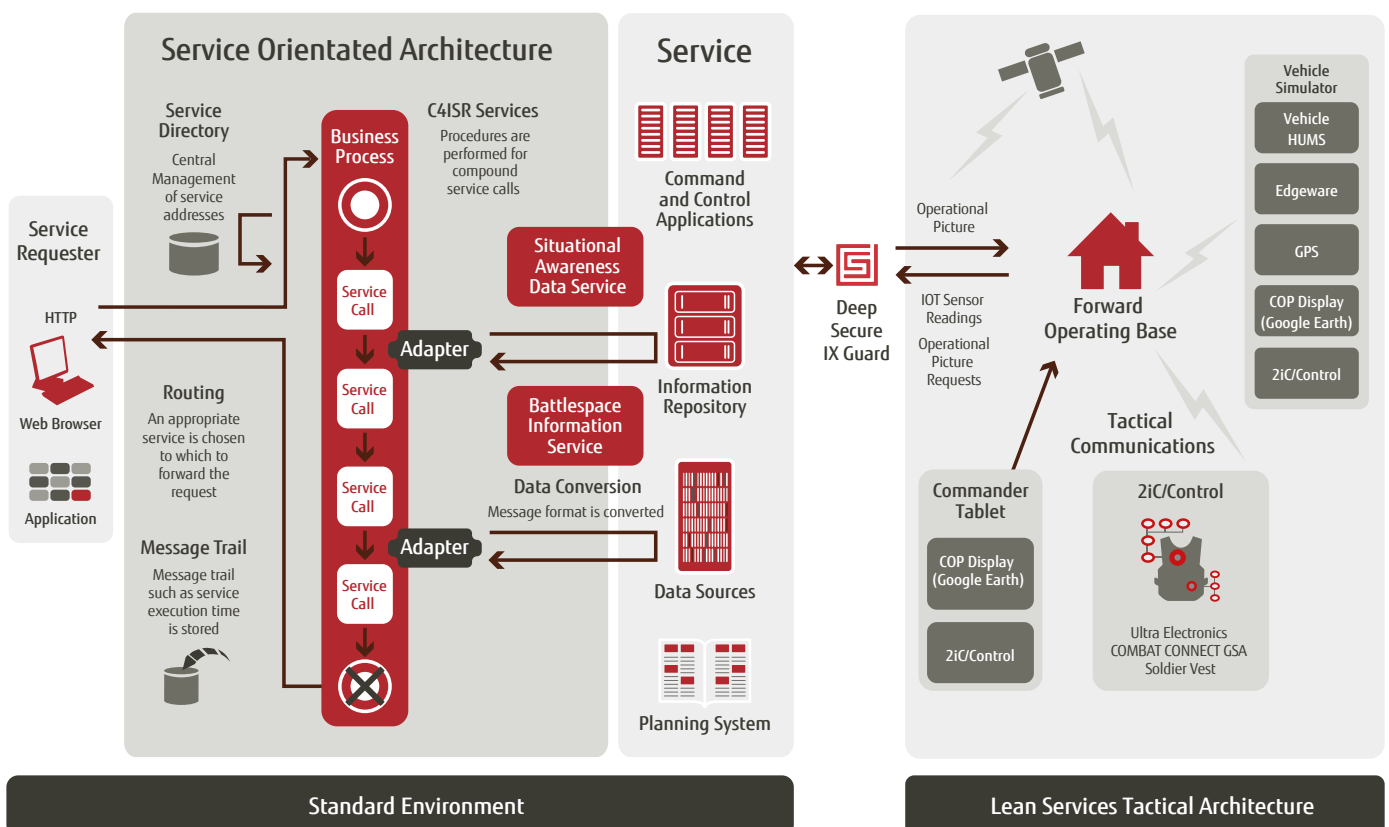
Dynamic, Real-time Intelligence

Connecting tactical IoT sensor-based devices and bringing the data into the Command and Control space unifies information management across the SOA and by automating data transmission without human intervention, enhances Master Data Management. The outcome is the provision of accurate, dynamic, real-time information and intelligence that will allow users at every level in the Command chain to plot, visualise and share a consistent and accurate operating picture. The enriched situational awareness enables improved decision-making.

The enablement of communications also widens the potential for tactical users to share or send information across the battlespace or back up the command chain. By interacting with IoT devices (e.g. a pair of smart gloves) or other sensor-based devices that recognises the actions a user makes can further enrich the situational awareness. For instance, a soldier could signal the presence and approximate direction of the enemy using recognised hand or finger gestures.

Unified Information Management

Fujitsu's tactical IoT solution has been designed to extend the capabilities of our existing COAST (Comprehensive Operational Application and Services Toolset) solution, providing unified information management that can be deployed rapidly with low risk. The Lean Services Architecture supports a single information environment, whilst ensuring maximum reuse of existing assets and investments. Fujitsu's COAST solution provides an integrated C2 application set and SOA environment that allows Defence and National Security users to get the very best out of the information to which they have access.

Unified information management is enabled by the Enterprise Service Bus (ESB) that links the applications that users are accessing on a day-to-day basis with the information sources that contain the data and associated contextual analysis, seamlessly applying any required protocol translation. This also provides the mechanism for exploiting micro-services into the future (e.g. common geo-services) that will enhance Master Data Management by ensuring that multiple applications draw on the same information sources. This all takes place within a highly secure environment that enables the different components to coherently and seamlessly talk to each other, delivering a fusion of near real-time information to sufficiently authorised end users.

Given the nature of the information being exchanged, the security of the system is of paramount importance. Full cybersecurity capabilities are built in to the core of all of Fujitsu's ICT solutions for the Defence and National Security sector. Unlike many other application hosting solutions, Fujitsu's COAST solution has been designed and built with security at its heart. Fujitsu consults extensively with CESG, the Information Security arm of GCHQ, and the definitive voice on the technical aspects of information security in Government. The result is that the COAST solution is an inherently secure system that is CESG Tailored Assurance Service (CTAS) certified.

The integration of IoT feeds from the tactical environment introduces additional security challenges. Fujitsu has integrated the Deep Secure IX guard to protect the interconnect, assuring the integrity of the information exchanged.

Integration with GELS: Delivering enterprise class search services to military standards

Fujitsu's tactical IoT architecture also integrates with our Georeferenced and Encyclopaedic Lookup Service, or GELS, further enriching the overall situational awareness capability. GELS search and visualisation capability allows users to discover and gather situational awareness data from a wide range of source systems providing:

- Users with improved situational awareness and informed intelligence picture
- Third party C2I2 and military geospatial applications with aggregated information services and geospatial visualisation.

GELS provides users with the ability to fully exploit both real-time and historic information across the enterprise to inform military decisions, and increase the effectiveness of force resources. GELS is based entirely on open web standards having been developed using primarily open-source, enterprise class technologies. It has been designed to support a range of military standards as used by UK, US and NATO partners.

Adopting the Tactical IoT Lean Services Architecture across the Defence enterprise enables the collaboration and trusted sharing of applications and information that enrich the whole picture available to Command and Control operations, truly enabling information to be a real Force Multiplier.

About 2iC

2iC Limited is an agile UK-based company that makes innovative software to securely and flexibly connect and control disparate old and new digital systems where previously it was too difficult, too expensive or too slow. 2iC's products are optimised for lean environments such as industrial field operations, the battlefield or front-line emergency services. Using open standards, 2iC software tools connect distributed and diverse systems that are usually unattended, wearable or vehicle-borne.

2iC's business model is to continually innovate and package innovation and expertise into software that Systems Integrators and Equipment Manufacturers can quickly exploit.

About Deep Secure

Deep Secure is a UK based SME with a global reach, providing demonstrable, proven capability on deployments with defence, including primes and systems integrators.

The Deep-Secure technical team have a rich heritage going back over 25 years of working in secure information sharing with critical data and intelligence, they therefore fully understand the intricate challenges of protecting boundaries between different security classifications.

Deep-Secure have developed a range of products to meet these challenges including deep content inspection and innovative transformation gateways and data diodes meeting CESG Architectural Patterns 4 (Import) and 14 (Export) to deliver content threat removal.

The combination of Deep Secure's knowledge and product set has enabled Fujitsu to successfully meet the complex security requirements of a low bandwidth tactical environment.

About Ultra Electronics

Ultra Electronics is an internationally successful defence, security, transport and energy company with a long, consistent track record of development and growth.

The Group manages a portfolio of specialist capabilities generating innovative solutions to customer needs.

Ultra applies electronic and software technologies in demanding and critical environments ranging from secure communications, safety-critical devices in aircraft, nuclear controls and sensors through to electronic architectures for military vehicles and soldier systems.

These capabilities have seen the Group's highly differentiated products contributing to a large number of platforms and programmes.

Why Fujitsu?

For over 50 years we have innovated with the MOD, Government Departments and intelligence communities, co-creating new technologies and capabilities. As a result, Fujitsu has around 4,000 security cleared staff and the experience to deliver and manage both generic industry offerings and those tailored to specialist needs at OFFICIAL, SECRET and ABOVE SECRET classifications.

Enabling *Your* Information Advantage

In today's complex, digital operational environment, never before has information been such a key asset in securing operational advantage. Fujitsu's vision is to provide customers with the means to translate complex data into useful information upon which to base critical decisions and actions. Transforming this ever-increasing pool of data into meaningful, useful information through analytics, automation and genuine Artificial Intelligence is critical to achieving this goal.

Fujitsu is fully committed to working closely with our customers, and through the use of co-creation will seek to enhance capability both through the acceleration of existing processes, and also through the delivery of truly new capabilities and ways of working. Our approach is based upon maximising both existing investment and best-in-class innovation, delivering the full spectrum of capabilities needed to enable your information advantage.

Human Centric Innovation
Driving a Trusted Future

Contact

Telephone: +44 (0)870 242 7998
Email: askfujitsu@uk.fujitsu.com
Ref: 3908
uk.fujitsu.com