Ministry of Defence

PEGA®

The Value of Automated C2 Tasking to MDI

Orchestrating action at the speed of relevance

"

An Army with the ability to anticipate, to assert, and to act – and at a speed of relevance to decision-makers and observers alike. This is how we win in the 21st century.

General Sir Mark Carleton-Smith, KCB, CBE, ADC Gen
Chief of the General Staff,

When John Boyd defined the OODA loop, he once stated:

" *Time is the dominant parameter. The pilot who goes through the OODA cycle in the shortest time prevails, because his opponent is caught responding to situations that have already changed.*

Sun Tzu stated more simply:

" *Speed is the essence of war.*

These realities are timeless and apply even more so in our digital age, where the speed of light, not the jet or the horse defines time horizons.

General Sir Mark calls for:

" *Action at the speed of relevance.*

All recognising that it is not only the insight generated from a multi-domain source of data and information, but the execution of effective and efficient timely action that delivers conflict-winning superiority to the warfighter.

The focus in most current MDI initiatives, like the Land ISTAR programme, has rightly been initially on resolving the connectivity and communications issues to optimise the data and information flow from and to all domains through the Digital Backbone.

In the end, optimised information flows from ISR platforms, intelligence, and other systems and domains, do rely on an uninhibited connectivity of the Digital Backbone to disseminate the data generated to the relevant data consumer within the Single Synthetic Environment.

Defence has also realised that data is a key strategic asset. However, the large amount of data and information harvested needs to be fully exploited to generate insight in the Digital Foundry. Army's HYDRA and RN's NELSON project seek to utilise modern analytics capabilities, including Machine Learning and Artificial Intelligence, to help make better and faster decisions. The provision of a range of suitable responses and actions by this federated Digital Foundry capability will be of immeasurable value to the decision maker.

However

These informed decisions still need to be turned into **"action at the speed of relevance"** and deliver an effect.

Sense
Tap into streaming data

Decide
Intelligently decide in real time on best actions

Act
Turn decisions into actions

Command & Control tasking orders disseminated to effectors like personnel, drones or weapons systems should be automated wherever possible, employing automation to facilitate Human-Machine teaming. This will decrease the time taken for the optimum conflict-winning action to be executed and therefore the effect to be delivered – faster than the situation changes or the enemy is able to respond.

Only this 'algorithmic' approach to warfare, combining improved insight generation with human augmentation for automated tasking and process orchestration, will generate the battle-winning speed advantage through decisive action at the speed of relevance.

"

Future wars will be won, not by those with the most advanced technology, but by those who can most effectively integrate the unique capabilities of both people and machines.

Human Augmentation – The dawn of a new paradigm, 2021

The MOD's various Multi Domain Integration programmes have an opportunity to benefit from well-proven intelligent Business Process Management (iBPMS) and Case Management solutions to automate operational tasking processes. Following the decision on a course of action, the process orchestration for all predictable, 'automatable' tasking can be effectively choreographed. This may include tasking autonomous vehicles with their mission profile, the supporting process to enable the tasking of the vehicle, or the deployment of other non-lethal activities. Today these are traditionally complex, human driven activities that take time to compile and act upon which in turn minimised or loses the advantages being sought. Clearly, the employment of lethal force should always have a man-in-the-middle decision step, but even this system-human interaction could be orchestrated and simplified with full auditability of the reasoning, decisions and actions taken.
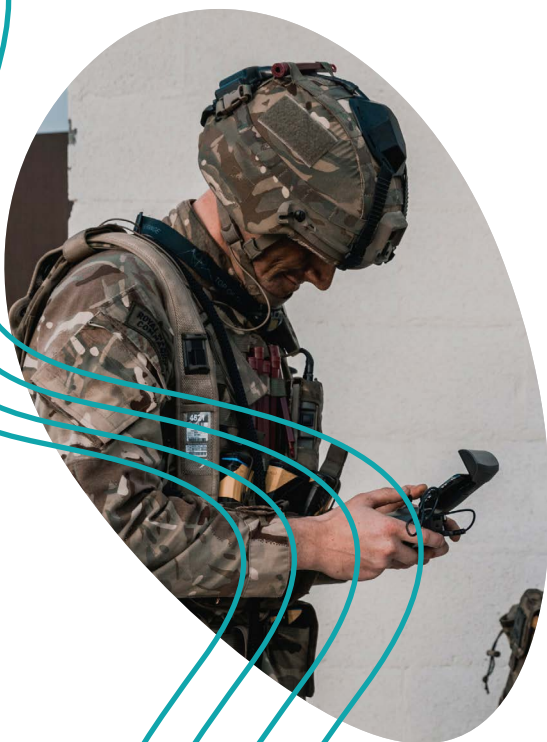
Prime Minister Johnson outlined the need to forge "our military assets into a single network designed to overcome the enemy. A soldier in hostile territory will be alerted to a distant ambush by sensors on satellites or drones, instantly transmitting a warning, using AI-derived optimal response, and offering an array of options, from summoning an air strike to ordering a swarm attack, by drones or paralysing the enemy with cyber weapons."

Imagine the full automation of the AI-derived optimal response with a tracked and audited 'man-in-the-middle' authorisation; the orchestration of the warning to the impacted soldier with all relevant information; the tasking of the air strike or swarm attack and associated support processes, or the execution of the cyber-attack.
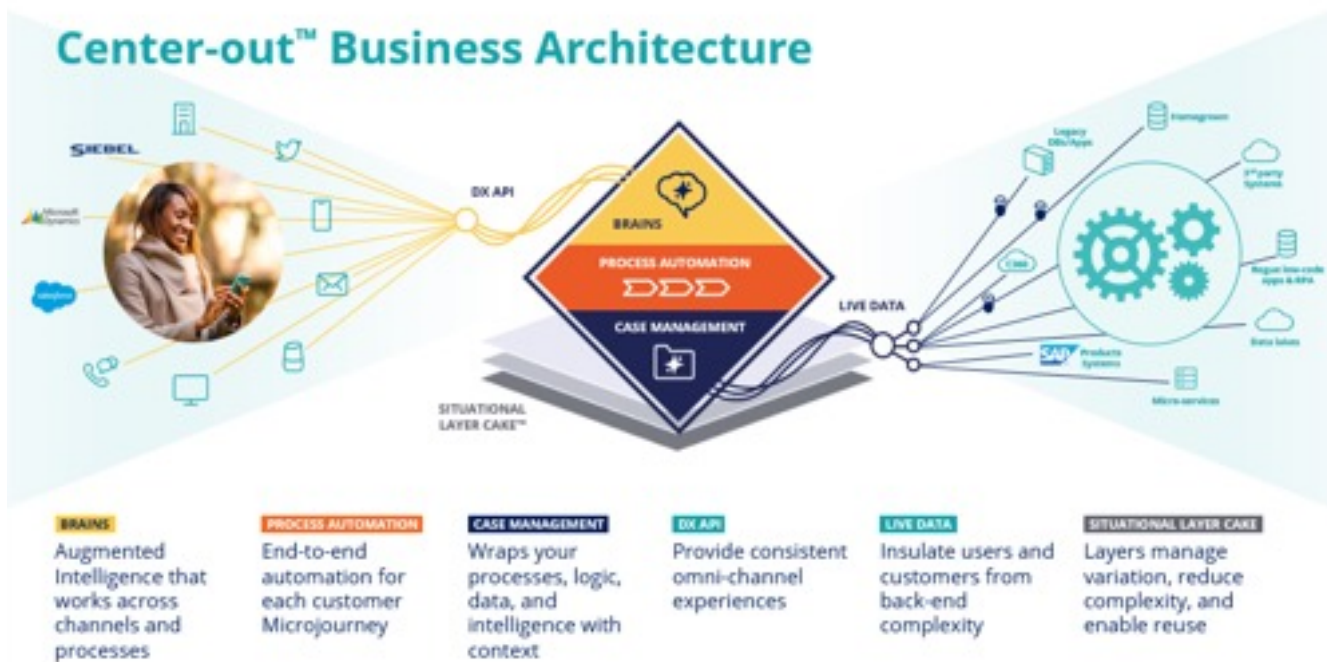
The digital strategy calls for an architectural approach to the MDI challenge. Employing both proven general Enterprise Architecture patterns and software defined capability for the process orchestration seems a logical step to follow. Open standards enable integration with both the IX capabilities, as well as the downstream effector systems.

Modern iBPMS systems are easily accessible to defence users with a low-code/no-code based visual platform approach. This reduces the training overhead and empowers the defence user to rapidly create and maintain this C2 orchestration capability. Due to the nature of the enterprise-class iBPM platform implementation in Pega, this approach will also generate a common library of components that enable reuse and reduce future development time.

Agile development methodologies, combined with this low-code/no-code platform approach and DevSecOps processes allows for a much more rapid delivery of new software capability, compared to traditional software development approaches. This will enable defence to respond to ever-changing demands for the development, test, and integration of these automated ISTAR tasks – allowing **capabilities to be developed at the speed of relevance.**

This approach should be worthy of consideration for the experimentation phase of MDI projects to investigate and evidence the utility and resulting benefits to the warfighter.

Center-out™ Business Architecture

BRAINS
Augmented Intelligence that works across channels and processes

PROCESS AUTOMATION
End-to-end automation for each customer Microjourney

CASE MANAGEMENT
Wraps your processes, logic, data, and intelligence with context

DX API
Provide consistent omni-channel experiences

LIVE DATA
Insulate users and customers from back-end complexity

SITUATIONAL LAYER CAKE
Layers manage variation, reduce complexity, and enable reuse

About Pegasystems

Pegasystems (NASDAQ: PEGA) develops strategic applications for sales, marketing, service, and operations.

Pega applications streamline critical business operations, connect enterprises to their customers seamlessly in real-time across channels, and adapt to meet rapidly changing requirements. Our Global 500 customers include the world's largest and most sophisticated enterprises.

Pega applications, available on-premises or in the cloud, are built on the unified Pega Infinity © platform, which uses visual tools to easily extend and change applications to meet clients' strategic business needs.

Our clients report that Pega gives them the fastest time to value, extremely rapid deployment, efficient re-use, and global scale.

For more information, please visit:

www.pega.com