

EXONAUT

POWERED BY 4C

THE WORLD'S LEADING
MILITARY TRAINING
AND EXERCISE
MANAGEMENT SOFTWARE



4C STRATEGIES

Contents

- 03 A global supplier of military software
- 04 Exonaut – The de facto standard for military training management
- 07 Why 4C strategies?
- 08 Meet Some of 4C’s Experts
- 09 Supporting the world’s leading Armed Forces
- 10 Planning and programming training
- 11 Case study: Supporting NATO’s exercise planning and programming
- 12 Simple training design
- 13 Case study: Supporting training design at unit level through US TMT
- 14 Agile execution
- 15 Case study: Supporting exercise Joint Horizon 21
- 16 Observation and data capture
- 17 Case study: Engaging and motivating individual soldiers in the British Army with MyMIMIR
- 19 Exploitation and decision support
- 20 Other Exonaut military solutions
- 21 4C Military services
- 22 The US Army’s Warfighter 21 Exercise – the role of a 4C embedded Consultant
- 24 Exonaut Next Generation
- 26 We are ready to support you – contact us (info@4cstrategies.com)

A global supplier of military software

4C Strategies was founded by ex-Military personnel over two decades ago to bring digital innovation to military training and exercises. The company has grown from a supplier of innovative military software in its native country of Sweden to a global, multi-industry supplier of software and consultancy services in more than 70 countries.

Today, 4C is the leading provider of mission-critical military training, exercise management and data exploitation solutions. The Exonaut® platform is used by NATO and the world’s leading armed forces, with accreditation for both Secret and Unclassified systems. Our international team of experts support the direction, planning, execution, evaluation and exploitation of military exercises across the live, constructive and virtual spectrum.



Exonaut

The de facto standard for military training management

The requirement for data driven training and exercise management systems.

In the absence of sustained combat operations, training is the substitute driver for change. Modern Armed Forces conduct multi-domain and multi-echelon training to drive adaptation, capability and doctrine development, and provide the assured evidence to ensure their forces are at the required readiness to deploy on operations.

Such evidence requires objective data. Many Armed Forces are now moving from simply collecting data to becoming data-driven to support evidence-based decision-making. This trend will accelerate as artificial intelligence (AI) and machine learning (ML) systems become more prevalent.

Training is no longer the preserve of specialist training providers at centralized training establishments. Commanders need to plan, design, execute and exploit training

from wherever they are – at the ‘point of need’. This provides efficiency and supports preparedness for more centralized training and a wider pool of assured training data.

This requires an integrated, user-friendly, end-to-end training management system that enables a distributed and automated approach. One that provides dedicated workflows, supports access to a single version of the data with user-based permissions, and links seamlessly to other authoritative data sources. This is Exonaut.

Exonaut in brief

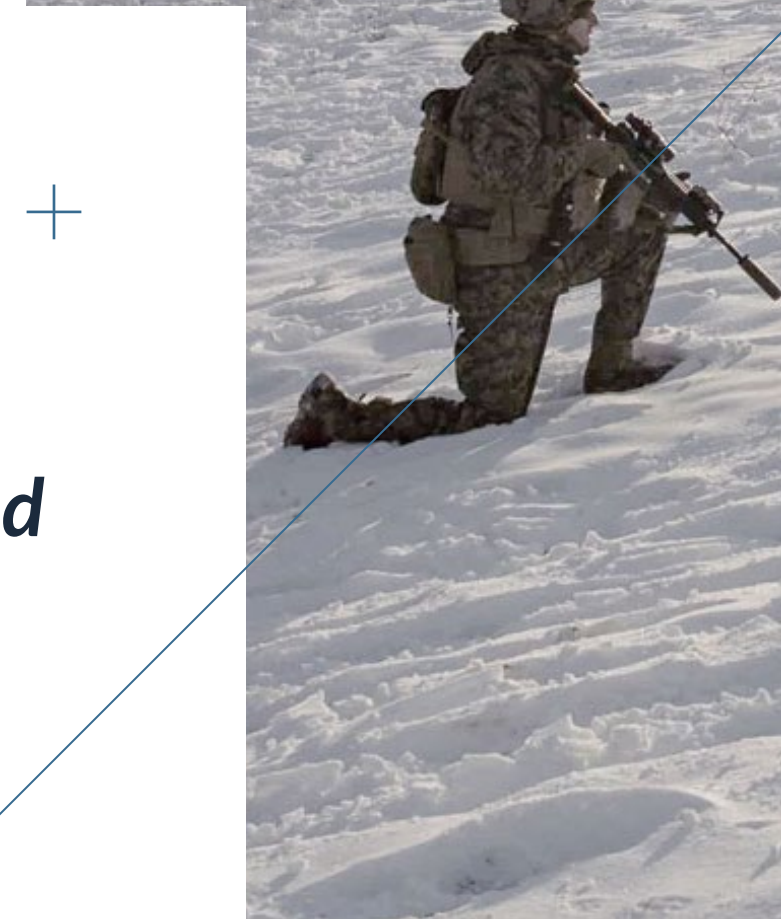
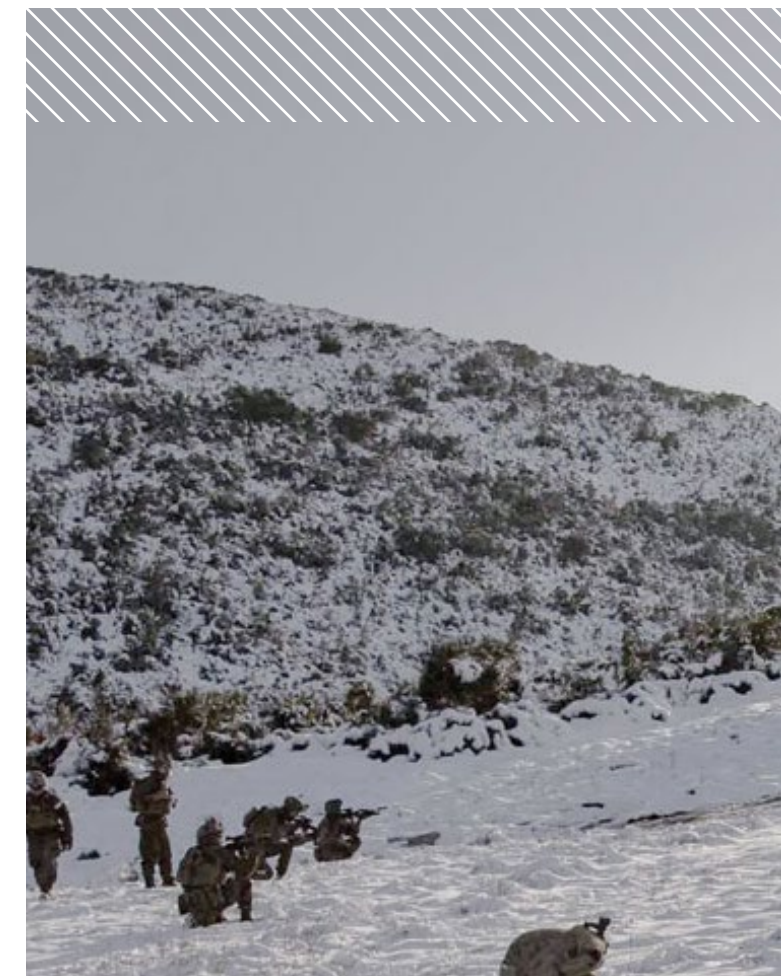
Exonaut is a highly scalable and configurable platform for effective planning, managing, mapping, and evaluating training and exercises. It has been developed together with military forces to provide the optimal tool-set for improving military capability and readiness in the most effective manner. The software allows users to direct, plan,

execute, assess, visualize and exploit training data and promotes evidence-based decision-making from a single version of the truth, regardless of the complexity or size of an exercise.

Exonaut is ‘battle-proven’ in the most demanding of environments. Thanks to the primary / secondary server configuration, a subset of data from a secure primary server can be exported to an offline server for use in remote exercise locations and be imported back with newly logged information before being aggregated.

Exonaut is available as a standalone solution or with a team of dedicated support staff to manage exercises and administration.

A highly scalable and configurable platform for effective planning, managing, mapping, and evaluating training and exercises.



“It’s essential for armed forces to constantly build and improve capabilities through effective training and exercises. Exonaut is the perfect tool for use in the planning, management and evaluation of exercises.”

General Micael Bydén
Supreme Commander, Swedish Armed Forces



Why 4C Strategies?

We have over 20 years’ experience in the planning, design, execution and exploitation of training and exercise management. Our consultants have extensive military experience on operations and in supporting training – their close relationship with our software developers ensures Exonaut is specifically tailored and configured to support the military process and its users.

Innovation is at the heart of all we do. We combine the power of digital innovation with industry expertise to build military capability

and readiness. We are constantly seeking to improve our tools through extensive R&D, through feedback from our consultants who use the software on a daily basis, through collaborations with our global network of military clients, and, where appropriate, in our support to the corporate sector.

Our consultants support armed forces with training around the world – contributing to a successful outcome no matter if the exercise is held in a jungle, an Arctic plain, or closer to home.



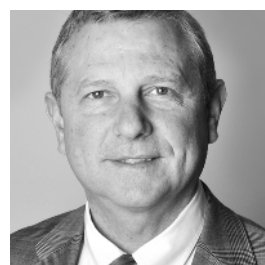
Meet some of 4C's experts



Military is in our DNA



Gareth Bennett
Former Sergeant Instructor
British Army



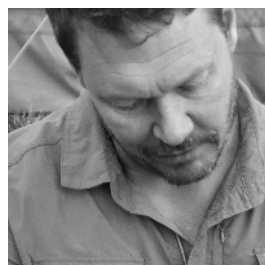
Michael (Chief) Coss
Former Colonel
US Army



Geir Fonstad
Former Colonel
Norwegian Army



Louise Ask Holmberg
Former Liaison Officer
Swedish Army



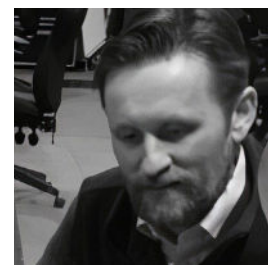
Pete Goddard
Former Training Standards
Evaluation Officer
British Army



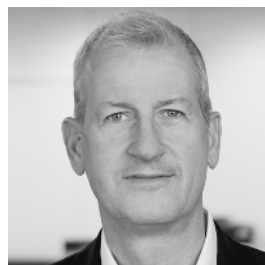
Fannie Grondon
Former Platoon
Commander
French Army Reserve



Nina Larsson
Former Lieutenant
Swedish Army



Graeme Mackay
Former Major
and Senior Instructor
British Army



David Paterson
Former Brigadier
British Army



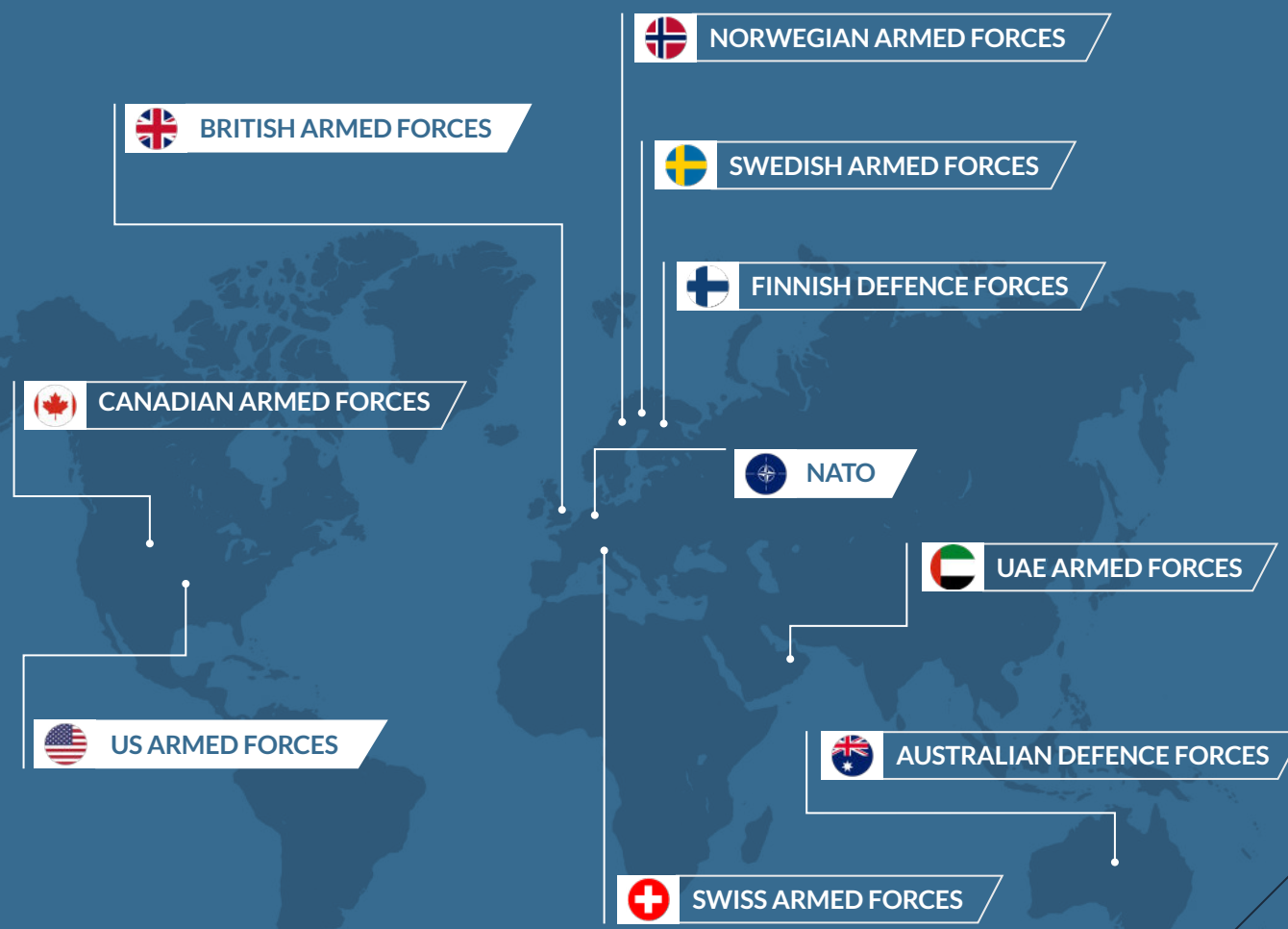
Josh Rice
Former Captain and
Forward Air Controller
British Army



Michael Tucker
Former Lieutenant General
US Army



Supporting the world's leading Armed Forces



We operate with agile, cross-functional teams in Sweden, the UK and US, bringing together the best tech and consulting talent.

Planning and programming training


The requirement

Modern Armed Forces are required to make the best use of scarce resources, exploiting training synergies where possible, to audit, track, and visualize levels of readiness and the training risk they carry. There is a requirement for a cohesive, integrated tool that facilitates a high degree of data assurance, supports distributed working, and delivers a common interface with multiple views.

The solution

Exonaut provides advanced Planning and Scheduling capabilities for collaborative planning of activities and campaigns. It enables users to visualize multi-level activities and sub-activities in timelines and map views. Advanced filter functions give the user the ability to configure individual views based on what is relevant and to de-conflict key resources. Easy to configure visualizations and dashboards support command level briefing and decision making. Both national and partner nation force elements can be securely connected. Efficiencies can be easily gained through simple import and export tools that ensure re-use of planning data.



THE BENEFITS 

Exonaut provides an integrated planning tool with a complete overview enabling distributed and collaborative working based on a single version of the truth and efficient workflow tasking.

Case study: supporting NATO's exercise planning and programming

Planning large-scale, multi-agency military training exercises is complex, involving military forces from around the world. Bringing them together to plan in the same room is costly and time-consuming. Planning remotely means data must be transparent but also protected with a needs-based approach to who can access what and why.

Today Exonaut is used as part of NATO's electronic Military Training and Exercise Programme (eMTEP) to support real-time remote exercise planning from distributed sites based on the same common version of the truth.

“4C Strategies’ Exonaut eMTEP solution has modernised NATO’s exercise programming capability. We are able to build a coherent exercise programme from a common set of data and assumptions, in a distributed fashion, including visualising Allied nation activity. Working in a simple user interface, the core team in Allied Command Operations (ACO) are able to assign and manage workflow and increase the efficiency of our physical meetings.”

Stuart Furness

Joint Force Development Programme Manager in Allied Command Transformation (ACT) and electronic Military Training and Exercising Program (eMTEP) sponsor



Simple training design

The requirement

Simpler training ‘at point of need’ helps keep soldiers on the ‘edge’ and prepare them for large-scale collective unit exercises. Delivered at individual, team, squad, company and battalion level, training is planned, designed executed and evaluated by unit level staff rather than specialist trainers. A scalable, user-friendly training tool is required to smoothly facilitate this process and deliver an effective progression of soldiers as they transition to more formal collective training and operational readiness.

The solution



Exonaut enables users to plan, design, execute and evaluate their own training without Subject Matter Experts (SME) support through a simple role-specific user interface. High levels of automation, allow users to focus on training and use the data populated in dashboards, from common data sets to fine-tune training and plot faster, more effective ways to certification.

Additionally, soldiers can generate training on their own and share scenarios and exercises with others within their organization. Since all user interfaces for the exercise control staff are web applications, users can execute and control complex simulations from their personal devices from anywhere in the world. Designing simple training utilizes evidence and lessons learned from previous training exercises.

THE BENEFITS

Exonaut simplifies and enhances simple training, empowering users to independently execute training, mission rehearsal and Course of Action (COA) analysis, while allowing structured, measurable and progressive training at specialist training sites.



Case study: supporting training design at unit level through US TMT



Exonaut has been selected for use in a \$192M contract awarded to Cole Engineering Services, Inc (CESI) by the US Army, Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI). It will form the foundation of the US Army’s training management as part of a larger, fully integrated Training Simulation Software / Training Management Tool (TSS / TMT) that will be rolled out by 2023.

The fully integrated, cloud-enabled training system will enable the US Army Warfighter to manage training in the Synthetic Training

Environment (STE) and provide a foundation for future US Army Programs such as the new Live and Constructive environments under development by the US Army.

Once Exonaut is deployed, it will bring new levels of automation into training and exercises that promote faster development of soldiers and increased combat capabilities of units and divisions. The solution, which meets the needs and doctrine of the US Army, will save Warfighters time and effort through automation and integration using the latest technology available.

Agile execution

The requirement

Multi-domain and multi-echelon training frequently require complex training events that bring together multiple training audiences, often with discrete objectives, and many training resources. The ability to dynamically manage an exercise during execution is of paramount importance. Through an Exercise Control – Common Operating Picture (EXCON COP), the Exercise Director must be able to fine-tune the delivery of the exercise to match the training audience's performance and ability. Leaving it to the After Action Review (AAR) is too late.

The solution

Exonaut provides a dynamic platform in which the Exercise Control Team or Trainers can deliver the scenario injects to participants from a comprehensive data library of new and previously created events, incidents and injects. Each element of the Main Events List / Main Inject List (MEL / MIL) can be simply adjusted in real-time in response to events in the exercise. As each element of the exercise is specifically linked to both an objective and an activity, it is simple to visualize and audit performance and progress towards training outcomes, and to adjust accordingly.

Integrations with simulations and C2 Systems provide an exercise control common operating picture that can be maintained with unit / entity positions viewed alongside a geographical representation of the planned events and incidents. Additionally, the simulation can be stimulated with specific orders (magic move to location, fire & detonation) through either manual injection or automated geofence-based triggers that are dependent on a variety of rules relating to the location of simulation entities.

As each element of the exercise is specifically linked to both an objective and an activity, it is simple to visualize and audit performance and progress towards training outcomes, and to adjust accordingly.

THE BENEFITS

Exonaut enables auditable, dynamic and agile exercise management of complex exercises across multiple delivery sites. All users have a common view based on shared data and the Exercise Director is able to fine-tune the delivery of the exercise.

Case study: supporting exercise Joint Horizon 21

The exercise

Exercise Joint Horizon 21 was a two week-long operational level Command Post Exercise (CPX) to test the British Military's Joint Task Force Headquarters' Extremely High Readiness contingent capability during a complex noncombatant evacuation.

Using Exonaut

The Joint Warfare staff supported by the MASS Joint warfare Support Team (JWST) designed and visualised the exercise Main Event and Inject Lists against specific training objectives and mapped them to the required resources involved in Exonaut. Incidents, such as an unexpected assault on a key asset, were injected to dial-up or down the complexity of the event. Exonaut was also used to actively manage and keep the exercise on track to reflect the needs of the training audience in response to their performance.

Putting training into practice in the Kabul evacuation

During the exercise, land, maritime and air forces, medical staff, and others potentially involved in an evacuation were trained. The testing and validation of Strategic Command proved invaluable as months later these skills were utilized during the Kabul evacuation Op PITTING.

Exonaut was used to actively manage and keep the exercise on track to reflect the needs of the training audience in response to their performance.



Observation and data capture

The requirement

Observations must be contextualised against training objectives, entities, audience, and activities / tasks, and be based on conditions and agreed standards. They must be evidence based, even though subjectivity is unavoidable as certain value will be placed on the judgement and experience of the observer(s). Utilizing data-driven observations that support automated data feeds from simulations, and remote monitoring systems streamlines this process.

Additionally, observers must be able to operate remotely from EXCON and should be informed of changes in the pace and direction of the exercise so they are best placed to observe any training activity in a safe manner. Similarly, their observations and assessments should be transmitted in an appropriate timeframe.

The solution

Exonaut's Observer tool allows both on and off-line observations. Networked observers are able to monitor Exercise Control (EXCON) feeds, filter for assigned objectives, entities and activities. Automated data collect is possible through integrations with simulation data and other remote monitoring systems. Immediate access to data analytic

tools and data visualisations ensures feedback to the Training audience is contextualised easily assimilated and provides evidence for decision support. In addition, other exercise information such as exercise details, operational yardsticks, doctrine etc is available for reference as required.

The tool can also be provided to individuals within the training activity to monitor their own training performance. This involves and incentivizes individuals within a wider collective training event and ensures maximum participation in the activity at all levels. Commanders can be provided with feedback and performance data on their immediate team.

Safety is improved through the ability to monitor observer and training audience locations and to geofence danger and no-go areas.

THE BENEFITS

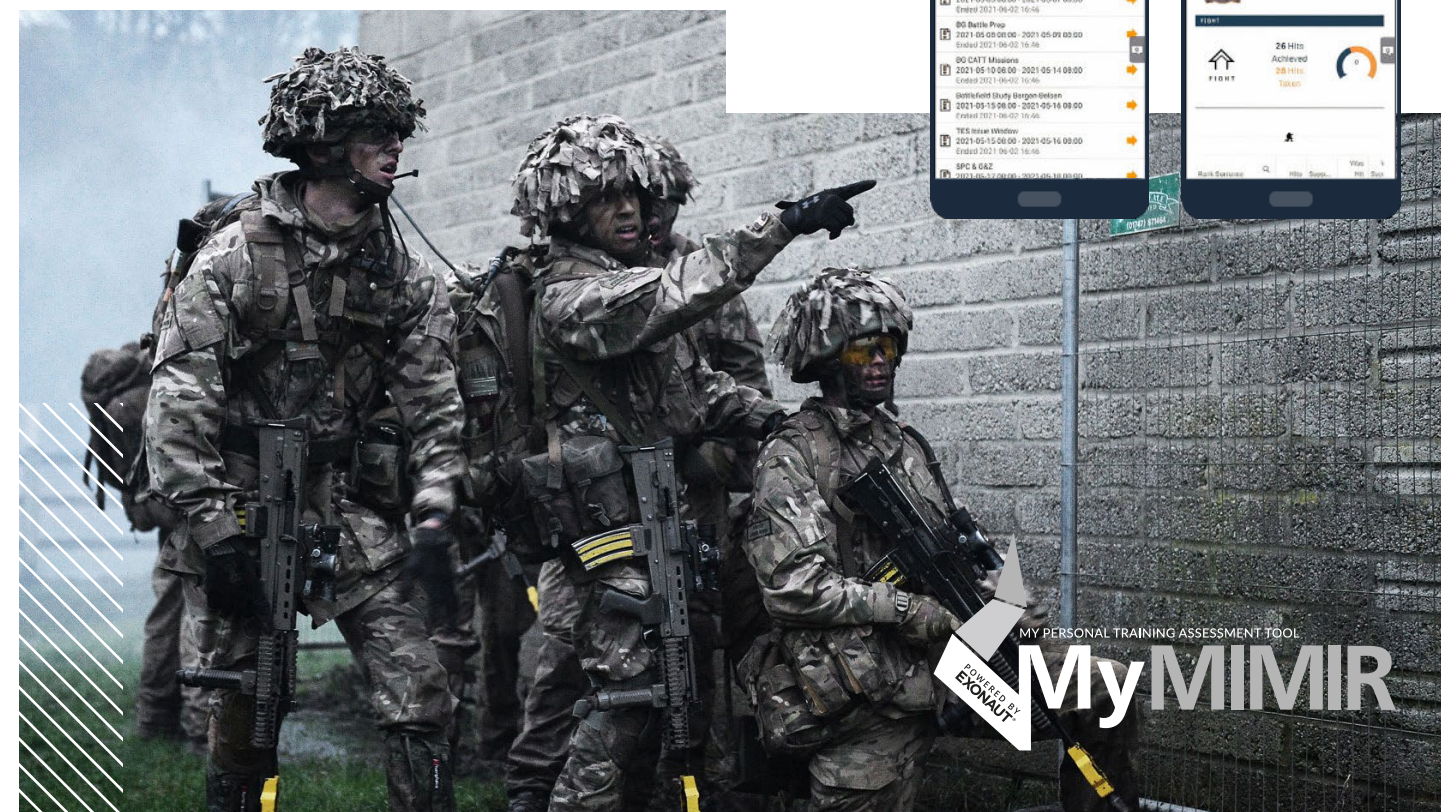
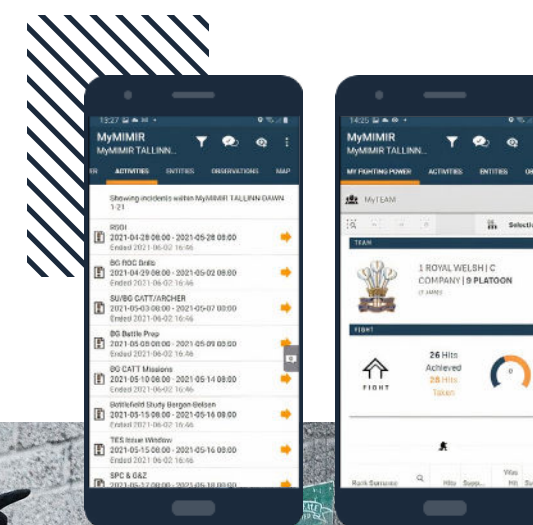
Exonaut Observer ensures observers are provided with real-time exercise information, can target their observations at the appropriate training objectives and entities within an exercise activity, and are safe when performing their duties.

Case study: engaging and motivating individual soldiers in the British Army with MyMIMIR

The mobile app

The MyMIMIR mobile app was developed for the British Army as a tool for visually tracking, analysing and understanding individual training progression within a Collective Training event. The app provides soldiers with overviews and detailed visualisations of their performance to motivate them to improve on their results.

Activity lists show what exercises they are involved in, including where they need to be and when. Questions sets, films and studies can also be uploaded for viewing and completion during training downtime.



Three focus areas of the MyMIMIR app



01 Move

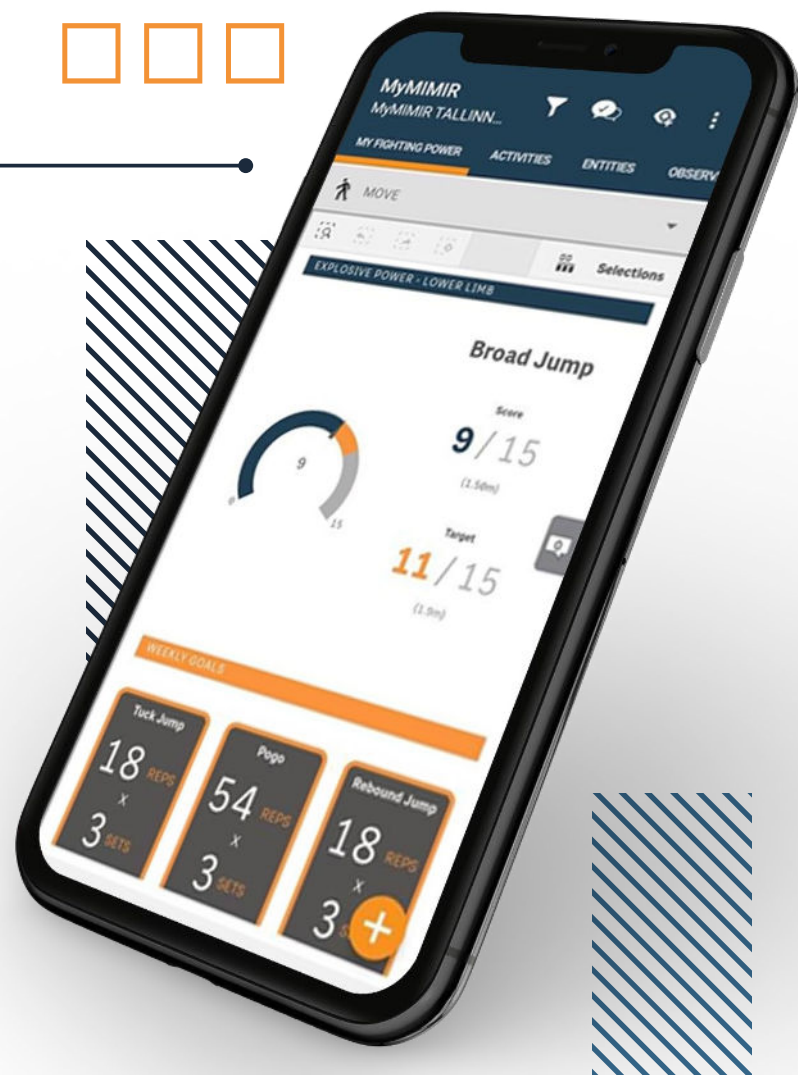
Fitness levels, distance travelled throughout the exercise

02 Think

Military annual training tests and battlefield studies

03 Fight

Lethality; shooting accuracy and number of sustained hits. Survivability; avoidance of being targeted by the enemy through good personal skills and protection



The collective angle

Commanders get aggregated views of their soldiers' performance, with leadership boards and highlighted areas for attention. They can create serials and tag soldiers while noting observations on a soldier's performance during an exercise. When overlaid in MyMIMIR, the British Army's version of Exonaut and the performance indicators within it at the collective level, Commanders can see the true status of training readiness or at the very least performance on an exercise.

Exploitation and decision support

The requirement

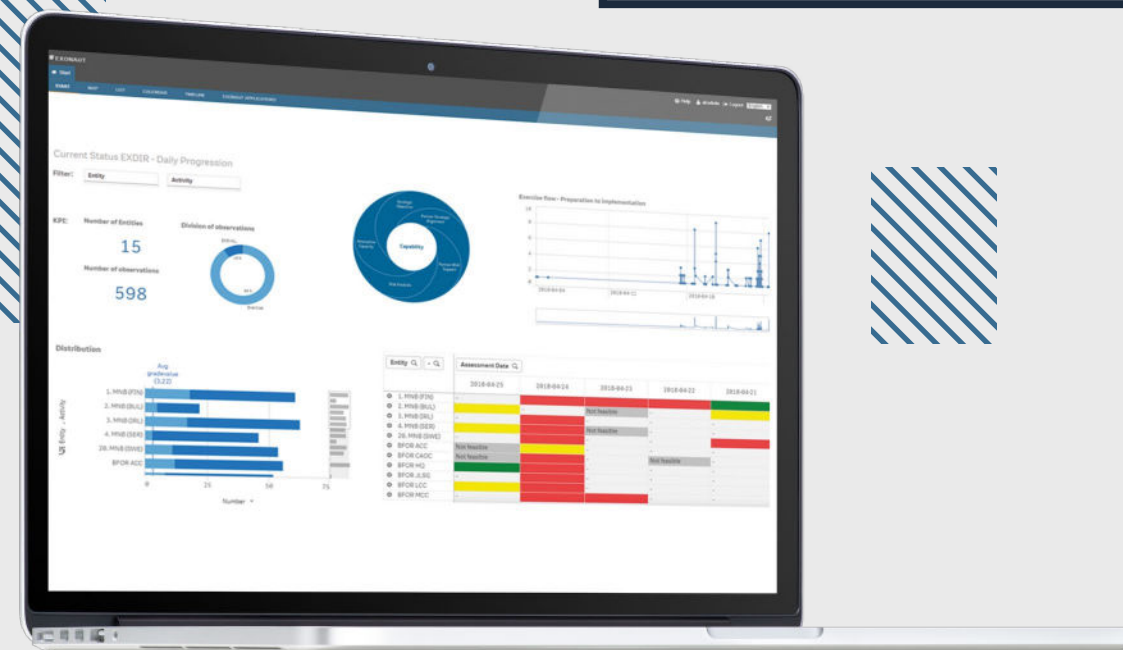
A fundamental requirement of a training and exercise management system is that users are able to rapidly assimilate complex training data to manage the exercise, provide relevant and objective feedback to the training audience and to support evidence-based decision making regarding future training. This will enable better preparation by the training audience and / or support the allocation of objectives and resources by the chain of command. Data-driven analytic tools, user defined data visualisations and automated reporting are key requirements.

The solution

The Exonaut training and exercise management system includes state of the art business analytic tools. Defined from the outset, metrics, measures of performance etc, are captured and displayed in configurable visualisations that enable rapid access to training data.

THE BENEFITS

Exonaut enabled data can be displayed to the right individuals, with the right permissions, at the right time, at the right level of detail. This facilitates agile exercise and progression management and evidence-based decision making.



Other Exonaut Military solutions

Individual training

The Exonaut Individual Training Solution allows users to plan, program, design, visualize and manage training courses, lessons and activities in a distributed and auditable platform increasing the efficiency in the planning and scheduling process. Users can record, track, report and visualize trainee performance both as individuals and trainee cohorts. In addition, trainer performance can be monitored and assured. The solution also allows the coherent management of the INVAL and EXVAL processes.

Experimentation

Exonaut supports users in the planning, design and delivery of trial and experimentation activities in an integrated end-to-end solution in a web-based distributed working environment. The solution facilitates dynamic activity management, including resource deconfliction, near real-time objective and subjective data capture in standardized formats for user friendly data entry and the visualization of experimental outputs, report generation and trend analysis.

Lessons learned

The Exonaut Lessons Capture and Management Solution allows users to identify lessons at point-of-capture in the NATO Observation, Discussion, Conclusion, Recommendation (ODCR) format. Lessons can be reviewed, tagged or endorsed for further follow-up by designated action bodies. Progress can be tracked through configurable dashboards and action bodies tasked through notifications and workflow. Pre-configured outputs are available to disseminate lessons learned for subsequent exploitation.

Interoperability

Exonaut's Multinational Interoperability Assessment Tool (MIAT) allows users to plan, design and execute multi-entity interoperability studies. Users can observe and assess against multi-level interoperability objectives in near-real-time. The solution enables users to visualize, manage and exploit interoperability data in live dashboards and to manage and track the development of progressive interoperability over multiple exercises.

4C Military services



4C Strategies offer a range of expertly managed services to support clients to get the very best from the software. Our Military consultants are all ex-Military and have experience of training at various levels – we match the expertise to the client's requirement. From initial scoping consultancy to ensuring software solutions are appropriately scoped pre-purchase through to implementation and configuration support during the deployment, test and acceptance phases and beyond.

Onsite support during the planning, writing and execution of exercises ensures that Exonaut is used to its maximum potential and provides a level of continuity as military staff turnover through routine postings.

Embedded and exercise support staff assist in the capture of change requests which feed into our software development cycle. Clients may also fund their own development through development projects.

Our Military consultants are all ex-Military and have experience of training at various levels – we match the expertise to the client's requirement.



The US Army's Warfighter 21 Exercise

The role of a 4C embedded Consultant

The scale

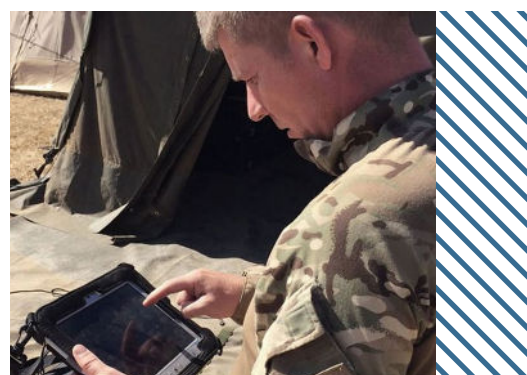
Over 1,000 British and 4,000 American troops train collaboratively in a Warfighter scenario over 14 days.

Smooth training operations

As the sole representative from 4C at Warfighter, 4C Military Consultant Gareth Bennet was responsible for making sure everything to do with Exonaut worked and that the British Army got the most from the system. That included everything from charging tablets, uploading publications, generating training reports, and holding daily briefings.

Effective training

Once observation data from the Observer Mentors was collected, the Exonaut dashboards automatically populated and data was exploited. Based on this, 4C daily briefing sessions were held, presenting findings such as where performance had been good and which areas could be improved upon. The briefings were also a forum for discussing any training issues, best practices, and lessons learned. During the exercise, it was possible to decide to rerun or recalibrate an exercise mid-action to improve performance.



“We provide the continuity and consistency of expertise, enabling the Army to get the most out of the software and their training in general. Of course, it helps when you are ex-Military. I’ve lived and breathed the culture, gone through many of the same experiences and understand military terminology.”

Gareth Bennett

4C Strategies Military Consultant



Exonaut Next Generation

Exonaut

4C Strategies' Exonaut is an integrated COTS exercise planning and management product suite comprising a series of functional modules that in combination provide end-to-end Training Management, Readiness and Capability Development solutions. Over two decades its development has been in direct response to the needs of our military users, backed up by an ever-expanding global user community, from the British to the US Army. As training needs evolve, Exonaut evolves along with them.

Exonaut Next Generation

Over two decades Exonaut's development has been in direct response to the needs of our military users, backed up by an ever-expanding global user community, from the British to the US Armed forces. As training has evolved, so too has Exonaut evolved to match new requirements. Exonaut is transitioning from a product suite to a platform that will provide a new user-centric approach to Training Management. AI, machine learning, and advanced business intelligence tools will bring new levels of automation that streamline operations, delivering more training insights to users that support even better evidence-based



decision making. Easy to construct dashboards and analytics displays will improve the user experience and speed up the onboarding process for new users.

Exonaut Next Generation will be intuitive by design. It will retain and enhance the powerful capabilities of the current product suite – available on-premise, cloud and hybrid – but also enable role-based functionality through user-centric workflows that provide different user groups with the specific processes and data they require at their point of need. It will be highly customizable and extendable to

negate conflicts of interest between customer requirements while providing greater interaction and automation with external systems such as simulations, C2 systems, sensors and authoritative data sources. If specific functionality is missing, it will be easier to develop custom extensions or new modules, sub-modules or components to meet the ever-changing needs of the military. Meeting the strict security requirements of our military customers will remain a top priority.



Find out more about our Military Training Platform [here](#)

THE BENEFITS

Exonaut Next Generation will offer a single configurable approach to military training management to deliver a seamless user experience. Intelligent workflows, powerful data analytics tools and superior automation will empower users, minimizing the need for training specialists.

We are ready to support you

To find out how Exonaut can meet your needs and improve the capabilities of your soldiers, visit our website or get in touch with us.

Together, we can improve combat readiness, develop fast tracks to certification and reduce the costs of effective training planning, management and assessment across the live, virtual and constructive spectrum.



Get in touch at
info@4cstrategies.com



Find out more about our solutions and services at
www.4cstrategies.com



Join the conversation
www.linkedin.com/company/4c-strategies/

“We have dedicated a lot of time and resources to developing a solution that meets the needs and doctrine of the US Army. Once Exonaut is deployed, it will bring new levels of automation into training and exercises that promote the faster development of soldiers and increased combat capabilities of units and divisions.”

Michael Coss

President of 4C North America

Train for the future

Find out more about our Military Training Platform

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