

# 4C | FORESEE

*verb* fore·see \fôr-'sē\

TO SEE OR BECOME AWARE OF SOMETHING THAT HAS NOT YET HAPPENED



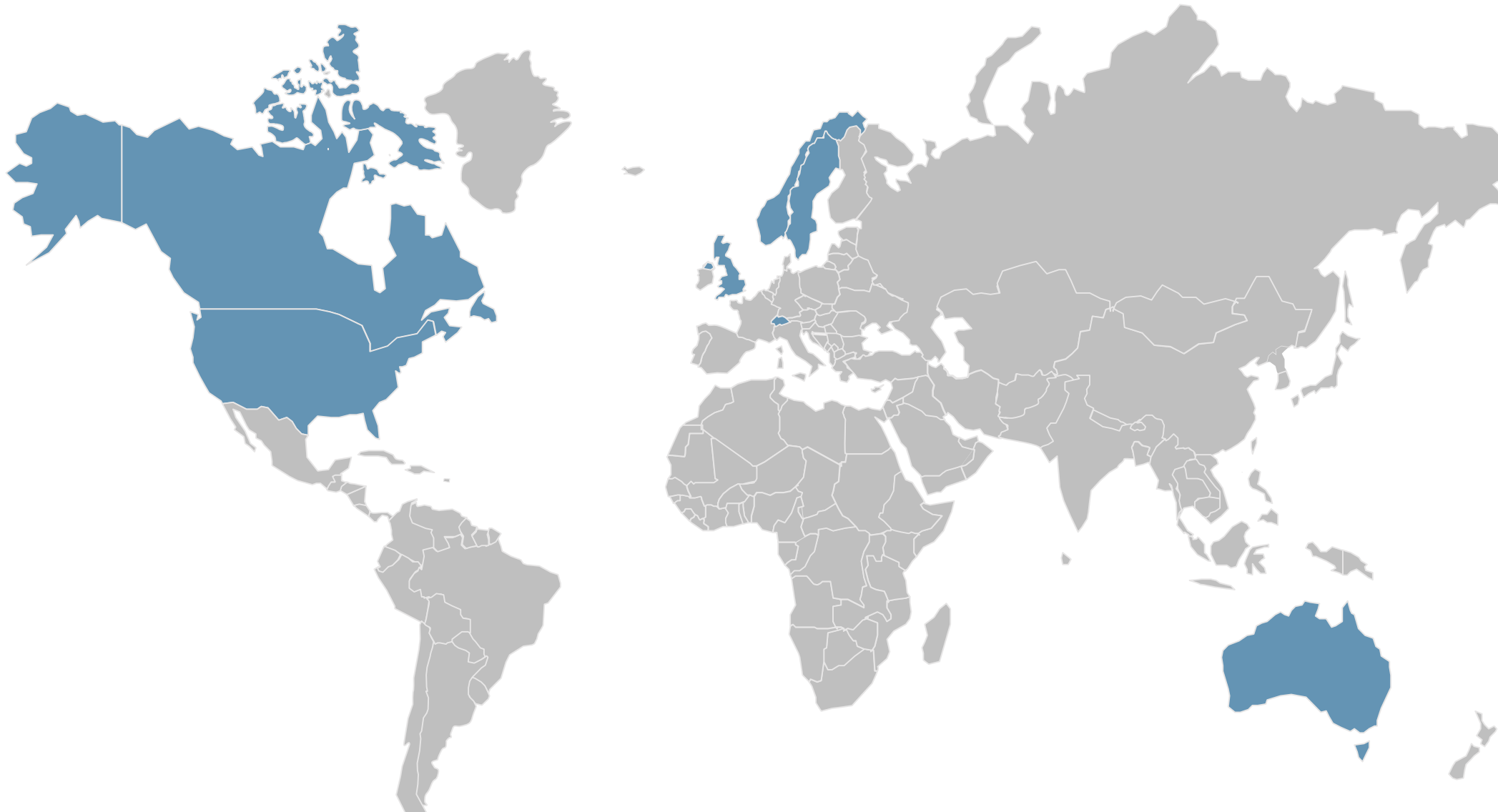
4C STRATEGIES

# USING SOFTWARE TO INTEGRATE AND SUPPORT COMPLEX AND DYNAMIC EXERCISES

ITEC 2019 – STOCKHOLM  
David Paterson – 4C Strategies

# 4C STRATEGIES

Supporting the training of NATO, US, British, Australian, Canadian, Swedish, Swiss and Norwegian Armed Forces



4C STRATEGIES

# CONTEXT – WHY EXERCISE?



- Increased Threats
- Uncertain Political Landscape
- Budget constraints
- Need to demonstrate VFM

- Audit and Assurance
- Training Risk
- Training Readiness
- Capability Development





# TRAINING PROGRESSION

## Exercise 1 - Virtual

Blended



## Exercise 2 - Constructive

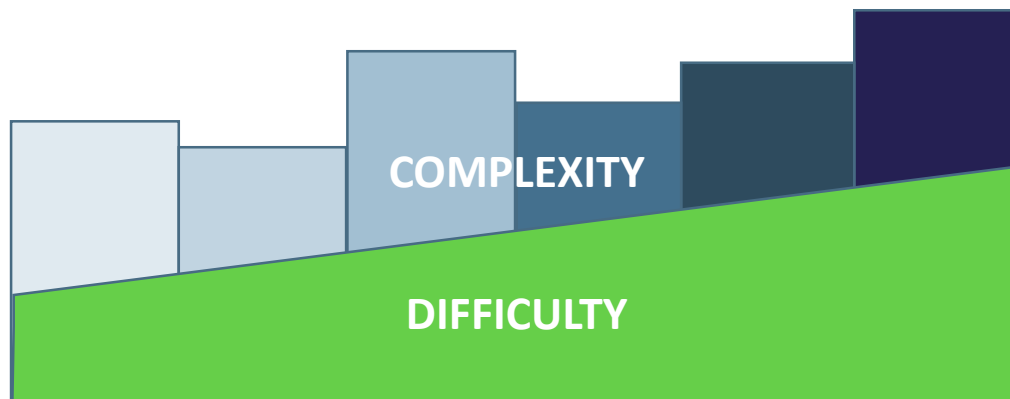


## Exercise 3 - Live

Blended

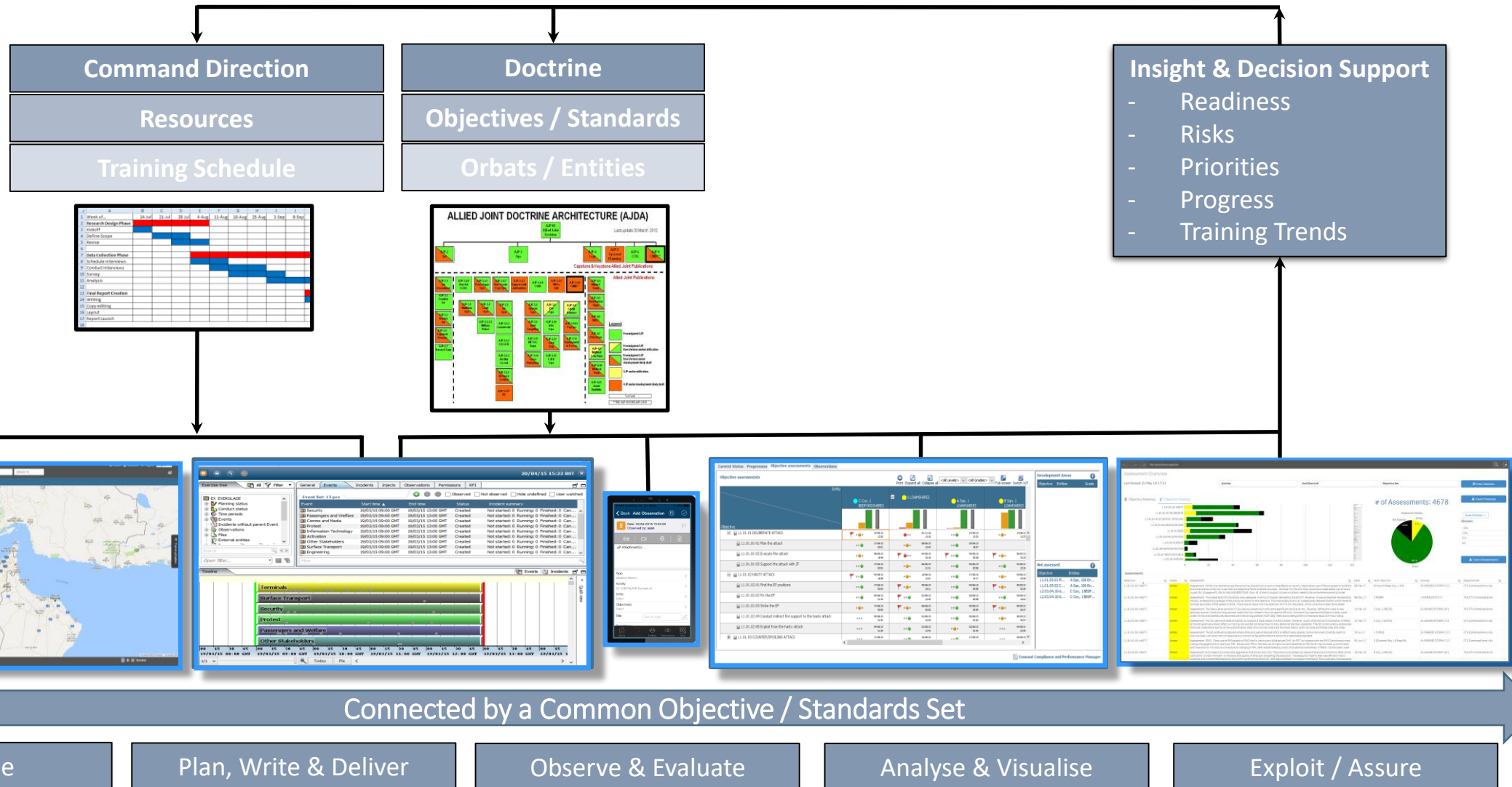


Progression - Connected by a Common Objective / Standards Set



Train – Fail – Reflect – Re-Train - Learn

# EXONAUT® – TRAINING AND READINESS MANAGEMENT SYSTEM





# CASE

TRAINING & EXERCISE MANAGEMENT  
CAPABILITY DEVELOPMENT

ALL BRANCHES

READINESS

CAPABILITY  
MANAGEMENT

PLANNING, DELIVERY AND  
EVALUATION OF  
EXERCISES

INFORMED DECISION  
MAKING



AURORA 17



8 Countries



+20 000 Soldiers  
+15 4C Consultants  
+40 National agencies



Offline distribution  
*Secret (H/S)*  
Master/slave setup



# CASE

EXERCISE UNIFIED RESPONSE

LARGEST EMERGENCY  
EXERCISE IN EUROPE

DISTRIBUTED SIMEX  
POWERED BY EXONAUT

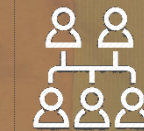
READINESS

EXERCISE DESIGN, DELIVERY  
AND EVALUATION

1768 INJECTS AND 1678  
OBSERVATIONS MANAGED IN  
EXONAUT



4 Participating  
Countries



70 Partner Agencies



6 Exercise Locations

 Evaluator



4C STRATEGIES



# EXONAUT® SIMULATION INTEGRATION BENEFITS

- Fully integrate with simulation and C2 systems to achieve efficiencies and cost savings:
  - Reduces EXCON manpower
  - Reduces requirement for CAX operator specialists
  - Improves exercise situational awareness across multiple simulations
  - Increases options for training audience stimulation
  - Increases automation whilst maintaining appropriate 'man in the loop' control



# EXERCISE DESIGN – EXAMPLE USER INTERFACE

Planning

Dashboard

Create Exercise

Scenario Preview

Resources

Scenario Templates

Edit Orbat

Dashboard

Welcome to the Army Synthetic Training Environment

On this portal you are able to plan, prepare, execute and assess your units STE related training activities.

Scheduled STE events can be found in the timeline at the bottom. Below you can view the STE introduction video.

The Synthetic Training Environment

Scheduled STE Training Events

AVCATT	AH-64 Sweden Exercise																		
Raydon RVCT	Northern Fire																		
CCTT	Rolling Thunder 2019	Lightning Saber 2019																	
VBS STE	Bohemian Rhapsody 2019-1	Bohemian Rhapsody 2019-2						Bohemian Rhapsody 2019-3											

1ID Readiness Outlook

Current rating

T-

Suggested STE Scenarios

LrgDemo\_Sms

Id: 002

State: Ready  
Creator: Kurt  
Created: 02/15/2019 3:23 PM

CyberDemo

Id: 017

State: Ready  
Creator: Kurt  
Created: 02/17/2019 9:55 AM

MORE...


Plan new STE Training Event

Create new scenario

Simulation Type

CREATE

or

 4C STRATEGIES



# EXERCISE DESIGN – EXAMPLE USER INTERFACE

Planning

Dashboard

Create Exercise

Scenario Preview

Resources

Scenario Templates

Edit Orbat

Scenario Preview

Exercise Status Checklist

☒ TSP Complete

☒ MCIS Scenario file uploaded

☒ MSEL list from Exonaut

☐ VBS STE Scenario editor

☒ TADDs selected and available

Exercise Status

☒ A Co, 1st Bn (16th Inf)

☒ 07-CO-1092 Conduct an Attack - Rifle Company (IBCT)

☒ 07-CO-1092.01 Gain and Maintain Situational Awareness

☒ 07-CO-1092.02 Company Leadership Procedures

Map

MSELs from Exonaut

COY ATTACK

PLANNING

AVIATION RECCE

SUPPORTING TASKS

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

February 2019

◀

▶

▶▶

EXECUTE

# EXERCISE DELIVERY – EXAMPLE USER INTERFACE

Exercise - [1 LOAMSHIRES CSTTX]

File Tools Administration View Help

Last saved by: testbamill - 2017-11-09 15:35 CET

2019-05-02 10:28 CEST

Exercise tree

- 1 LOAMSHIRES CSTTX
  - Planning status
  - Conduct status
  - Time periods
  - Events
  - Incidents without parent Event
  - Observations
  - Files
  - External entities
  - Resources (Common filtering)
    - Exercise control
    - Locations
    - Objectives
    - Other
    - Tasks
    - Units
  - TDE Objectives
  - TDE Entities

Search

Open filter...

General Events Incidents Injects Observations Permissions Map RFI

Event list: 18 pcs

Event	Start time	End time	Status	Incident summary
DEFENSIVE ACTION (C Coy)	2017-03-04 01:01 CET	2017-03-06 02:31 CET	Created	Not started: 0 Running: 0 Finished: 1 Cancelled: 0
ENABLING ACTION (A Coy)	2017-03-04 04:30 CET	2017-03-06 00:30 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 1
OFFENSIVE ACTION (B Coy)	2017-03-04 08:01 CET	2017-03-06 07:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
DEFENSIVE ACTION (A Coy)	2017-03-06 01:01 CET	2017-03-08 02:31 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
OFFENSIVE ACTION (C Coy)	2017-03-06 08:01 CET	2017-03-08 07:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
ENABLING ACTION (B Coy)	2017-03-06 08:01 CET	2017-03-08 04:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
DEFENSIVE ACTION (B Coy)	2017-03-08 01:01 CET	2017-03-10 02:31 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
OFFENSIVE ACTION (A Coy)	2017-03-08 08:01 CET	2017-03-10 07:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
ENABLING ACTION (C Coy)	2017-03-08 08:01 CET	2017-03-10 04:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
000 - HICON COORD	2017-03-11 22:01 CET	2017-03-21 08:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
001 - BG Planning and Orders	2017-03-12 23:01 CET	2017-03-15 06:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
002 - BG Deploy	2017-03-13 23:31 CET	2017-03-15 15:02 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
003 - BG FIND and UNDERSTAND	2017-03-15 06:01 CET	2017-03-16 01:01 CET	Created	Not started: 0 Running: 0 Finished: 1 Cancelled: 0
004 - BG CLEAR and SECURE to PL VI...	2017-03-15 15:01 CET	2017-03-17 05:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
005 - BG Transition to Defence	2017-03-17 05:01 CET	2017-03-18 06:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
006 - BG Area Defence	2017-03-17 08:31 CET	2017-03-20 12:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
007 - BG Transition to Deliberate Ops ...	2017-03-20 08:01 CET	2017-03-22 08:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0
008 - BG Deliberate Attack	2017-03-21 05:01 CET	2017-03-22 08:01 CET	Created	Not started: 0 Running: 0 Finished: 0 Cancelled: 0

Timeline

Events Incidents

Quick view

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 01

March 2017 CET

1/1

Today Fix



# TRAINING MEASUREMENT AND EVALUATION – INTEGRATION OF DATA SOURCES

Observations from O/Cs = **Context**

## Evidence:

- Tactical Engagement Systems
- Weapon Effect Systems
- Target Systems / OPFOR
- Vehicle Data Systems
- Comms Systems
- L, V + C Simulations

## Evidence:

- Wearable Technology
- Eye movement monitors
- Biometrics
- Environmental measurements
- FMV

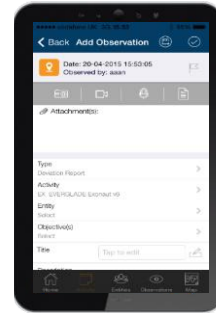
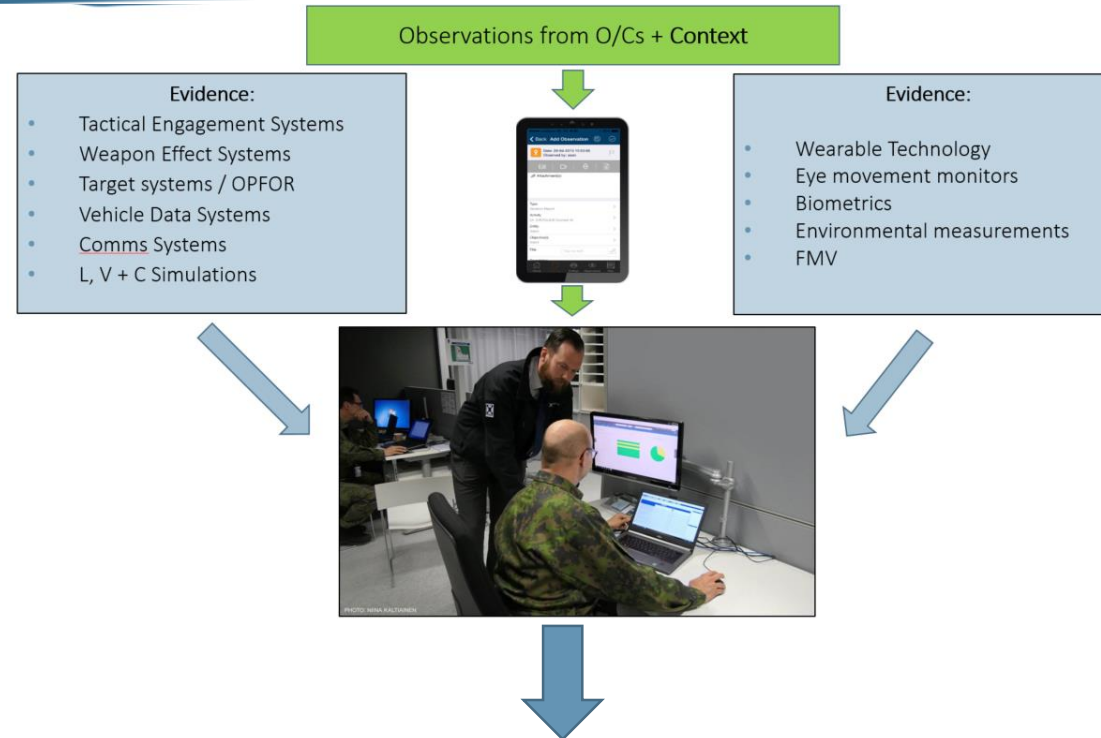


PHOTO: NIINA KALTIAINEN

# TRAINING MEASUREMENT AND EVALUATION - OUTPUTS



## Outputs

Bundled, Contextualised, Exploitable output evaluated and assessed against data feeds – Evidence based decision making

- AAR
- Evaluation and Certification
- Post Training Report
- Lessons
- Trg Progression / Sys performance
- Trg Risk



# DATA VISUALISATION – OBJECTIVES AND PERFORMANCE

No selections applied

## Observation Overview

Last Reload: 24 May 18 14:40

Activity

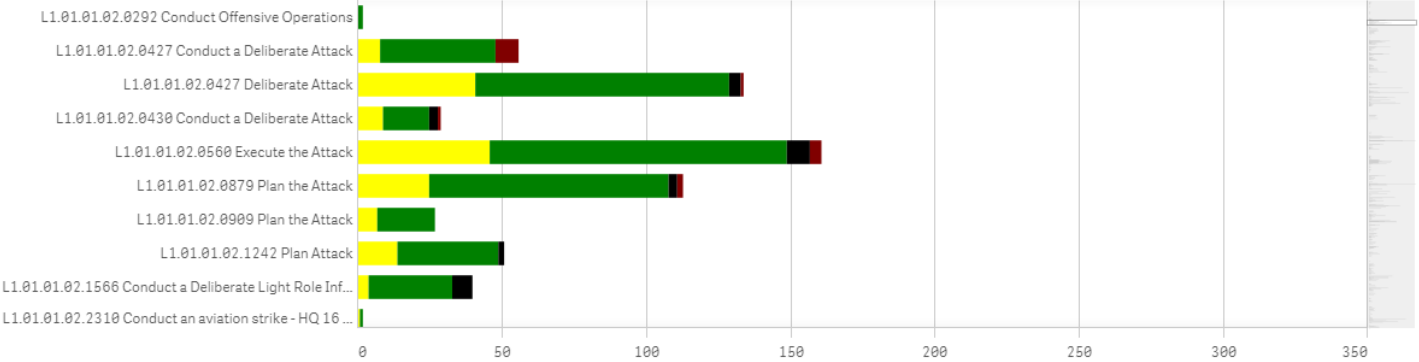
Unit/Sub Unit

Objective Set

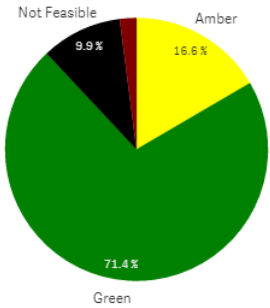
Clear Selections

Objective Heatmap

Objective Grading



No. of Observations: 21816



Export Heatmap

Select Division

Division

1 Div

3 Div

FTC

HC

Export Observations

## Observations

Objective	Grade	Observation	Date	Unit / Sub Unit	Activity	ObjectiveSetName
L1.01.01.01.0592 Find the EF positions	Green	Title: CENTURION - Enabling - SO2 Engr - Hasty Attack Observation: Good Recce feed provided to OC on En locations and Obstacles	16 Mar 18	B Coy, 1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0592 Find the EF positions	Green	Title: CENTURION - Enabling - SO2 Engr - Hasty Attack Observation: Enemy positions on the Objective located by ISTAR. Enemy positions on high ground overlooking the objective not located. Good use of CLU to scan high ground for Enemy positions prior to	15 Mar 18	C Coy, 1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0592 Find the EF positions	Green	Title: C Coy CALFEX Observation: PI and Sect Comds were able to identify En positions, utilising all means at their disposal. Use of IR lasers to ID targets was effective.	11 Mar 18	C Coy, 1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0592 Find the EF positions	Not Feasible	Title: Msn 3 - Find EF Observation: The company mission did not encompass the FIND of EN however successful ID of pockets on EN forces and the resulting destruction of them completed the BG FIND function.	25 Mar 18	B Coy, 1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0592 Find the EF positions	Not Feasible	Title: MISSION 3 - A COY - FIND EF POSNS Observation: The find of en positions was not applicable to A Coy on the final mission	27 Mar 18	A Coy, 1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0592 Find the EF positions	Red	Title: Msn 1 deliberate attack - ATK dismounted section Observation: The ATK OPs had not produced GALDs to add to the BG STAP. As a result, BG Main were not aware of ground that was being observed by the OPs. As a result, the OPs were not employed	21 Mar 18	1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0593 Fix the EF positions	Amber	Title: Msn 3 deliberate attack - fix EF - mounted FSG Observation: Good suppression from FSG throughout the attack. They jockeyed regularly and provided good rates of fire. Recommendation: More dispersion between the vehicles and going hull down to protect	27 Mar 18	1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms
L1.01.01.01.0593 Fix the EF positions	Amber	Title: Msn 1 deliberate attack - mounted FSG Observation: The mounted FSG were in a	21 Mar 18	1 RGR	Ex ASKARI STORM 18/2	TX4 CT3 Combined Arms

# DATA CAPTURE - LESSONS & ACTION TRACKING

Create observation - Google Chrome  
localhost8105/ExonautWeb/win/index.html?observation

GENERAL MAP

Type \*  
G2 Proposed Lesson

Lesson Title \*  
My G2 Proposed Lesson

21 / 255

Observation  
My observation about what happened

Discussion  
My discussion on why it happened

Conclusion  
My initial conclusion as a summary

Proposed Remedial Action  
My recommendation and proposed remedial action

Issue Level  
1\*

Areas to Focus  
Project

Create Close

WHAT Happened? A short description of what happened or the observed effect. The observation can describe a success (good practice) or a failure (problem) and should be limited to a single problem or issue.

ARRC LESSONS TOOL

Start CPM

Showing All Lesson Groups All Lessons for Action Bodies between 01/01/2018 31/12/2018

INFO LIST TIMELINE LESSONS MANAGEMENT TOOL

Q Filter Clear filter

Current filter: 342 Lessons  
Include not active Show time

Type

Showing 50 Lessons

2018  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Lesson

- Fwd CP movt
- FWD CP manoeuvre to be integrated in the Corps planning and activity synchronization
- FWD CP ability to maintain its SA on the activities at MAIN
- Fwd CP
- FRAGO development with movement/TRN issues
- Fire Muster Point
- EXECUTION CHECKLIST
- DSO and BM development and briefing products
- Div Input to ATO
- Deployment procedures
- Corps (MN) Engr Bde
- Communication with HICON/LOCON Units
- Collaborative work
- Co-Location of Key Interactors
- CMI Info Exchange Requirements
- CHAT ROOM NAMES
- BST and CHARGER could be merged
- Branches Contribution to the COP

Free text filter  
Enter filter values

Lesson types  
Enter filter values

Issue Level  
Enter filter values

Areas to Focus  
Enter filter values

Other - Detail  
Enter filter values

Exercise  
Enter filter values

Branch / Unit  
Enter filter values

Originator  
Enter filter values

Observation  
Enter filter values

Discussion  
Enter filter values

Conclusion  
Enter filter values

GENERAL

My G2 Lesson  
30/07/2018 - 01/08/2018

Type  
Lesson

Status  
Active

Lesson Status  
In Progress (Amber)

Observation  
My observation about what happened

Discussion  
My discussion on why it happened

Conclusion  
My initial conclusion as a summary

Proposed Remedial Action  
My recommendation and proposed remedial action

Issue Level  
1\*

Areas to Focus  
Project

Exercise  
Ex ARRCAD CHARGER 17

Branch / Unit  
1 Sig Bde

Originator  
Me

Action Body  
1 Sig Bde

Communication

# DATA VISUALISATION - LESSONS





# EXONAUT® – A TRAINING MANAGEMENT SYSTEM THAT DELIVERS

## SAVINGS

- Time in planning, design, delivery and analysis
- More effective use of scarce resource in a managed progression
- Time in production of reports and exploitation of best practice and lessons learned



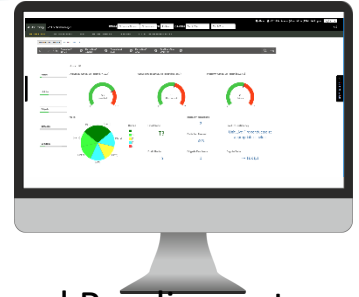
## COHERENCE

- Single set of objectives facilitating Command direction
- Common standard of objective performance measurement
- Single version of objectives, ex data and information sets
- Real time campaign / unit status overview
- Single repository of all training data



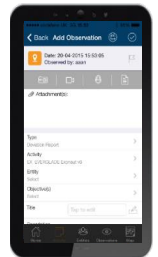
## EVIDENCE

- Real time, objective view of Training Risk and Readiness, to enable informed decisions
- Supports Evaluations standards such as US Objective T & NATO OCC
- Exploitable Data – For Lessons Learned and Capability Development



## MOBILITY

- An expeditionary solution
- Data readily available on mobile devices
- Offline functionality
- Master/Slave





4C STRATEGIES

## NAVIGATING UNCERTAINTY