



# Simulation Support to the Ukrainian Armed Forces

Tom Lasch, CAPE Technology Solutions

# Summary



- From December 2022 through May 2023, Simulation support was provided to the Ukrainian Armed Forces on four different occasions at two distinct locations
- Support was provided by Ulf Krahn and Tom Lasch, acting as private citizens
- Diplomatic clearance was provided by the Swedish Embassy in Kyiv; the U.S. Embassy was notified of the U.S. citizen presence in Ukraine, however no support was requested.



Armed Forces of Ukraine



Land Forces of Ukraine



# Background

2015-2020 – Joint Multinational Simulation Center (JMSC), 7<sup>th</sup> Army Training Command (7ATC) provided dedicated support and mentorship to the simulation program at the International Peacekeeping and Security Center (IPSC) in Yavoriv, UKR. The result was the establishment of a Simulation Center and program at the IPSC.

JMSC also provided general support to the simulation programs at the Land Forces Academy, Lviv, the National Defense University Ukraine (NDUU), Kyiv and the General Staff J7

October 2022 – Ulf Krahn proposes the use of Steel Beasts Personal Edition for collective staff training to the IPSC; IPSC contacts me to ask if this is a feasible course of action. Reply: Yes!

October 2022 – I ask Ulf to join his Team. He accepts me and tells me the Team now has two members.

Nov-Dec 2022 – Preparation of permissions and diplomatic clearance

- Meet Ulf at I/ITSEC to plan
- Introduce my wife to Ulf during I/ITSEC (very important!!)



# The Challenge

- Ukraine is at war with Russia. No single entity can provide the force generation training required to produce the eight additional combat brigades needed for the counter-offensive operation to re-take Ukrainian territory
  - When Russia invaded in February 2022, Ukraine's military had about 196,000 active personnel and 900,000 in reserve, according to the International Institute of Strategic Studies' 2022 Military Balance report.
  - According to the 2023 Military Balance report, Ukraine now has an active-duty force of 688,000 with 400,000 in reserve and 250,000 in its police and paramilitary forces.
- How to train so many newly formed (from nothing), activated (from Reserves) or reconstituted (from the front) brigades in the art of warfighting?
- The time required to provide a quality computer-driven Command Post Mission Rehearsal Exercise is too great. USAREUR/AF typically requires one year of planning for a multinational exercise. Time is not on Ukraine's side

# Users and Potential Users

## Current Users

- International Peacekeeping & Security Center
  - Training & Exercises
- National Defense University Ukraine
  - Training & Exercises
- Lutsch Technical University
  - Cadet Training
- Boryviter Military Academy
  - Military Decision Making Process (MDMP)
  - Troop Leading Procedures (TLP)
  - NCO Training

## Potential Users

- Land Forces Academy
  - Cadet Training & Exercises
- National Guard of Ukraine
  - Training & Exercises
- National Border Service
  - Training & Exercises



# Steel Beasts Professional An Overview

# Problem Statement

- Ukraine Armed Forces (UAF) and National Guard of Ukraine (NGU) continue to generate new forces to counter Russian aggression
- The end result of creating new formations or reconstituting formations returning from battle requires Commanders and Staffs trained in the Operational Art of Warfare
- A realistic culminating training event is needed at the end of training in the Operational Art of Warfare.
- Current UAF and NGU simulation training capabilities are either nonexistent or overwhelmed by the training requirements.
- UAF and NGU require a cheap and easy to implement simulation capability to keep up with the force generation process

# What is SBPro (PE)?

- Steel Beasts Pro (Personal Edition) is a commercially available, virtual simulation of contemporary armored and mechanized combat using combined arms and focusing on small unit tactics.
- SBPro(PE) models individual weapon systems in detail, yet is able to keep track of several company teams in a single scenario (aggregation)
- Easy-to-use Graphical User Interface
- Operator Training 4-6 hours
- 8-12 workstations to support an ideal battalion CPX
- Rapid scenario generation (1-2 hours)
- Embedded After Action Review capability
- Ukrainian, Allied and Enemy (Russian) weapons systems implemented in simulation
- Can also be used as a familiarization tool by Ukrainian Soldiers for LEO 2, Marder, Bradley, Challenger, CV9040 and many other weapons systems.





# SBPro Different Versions

**Steel Beasts Professional** Used by Armies – **Export Controlled<sup>1</sup>**

Price per license: \$2600.00 + 15% annual support

- Unlimited number of workstations networked
- Advanced Gunnery Training Tools
- Exhaustive list of weapons represented
- Can connect to other simulations
- Can link CNR and SBPro AAR
- Large Terrain Box

**Export Controlled<sup>1</sup> requires authorization from the US Department of State (ITAR) for sales to foreign nations or the German equivalent (BAFA)**

## **Steel Beasts Professional Personal Edition**

- Used by Online Gamers

- Commercially Available

- Price per license: \$115.00

- Less capable than the Professional version

- Capable enough to support Staff Training

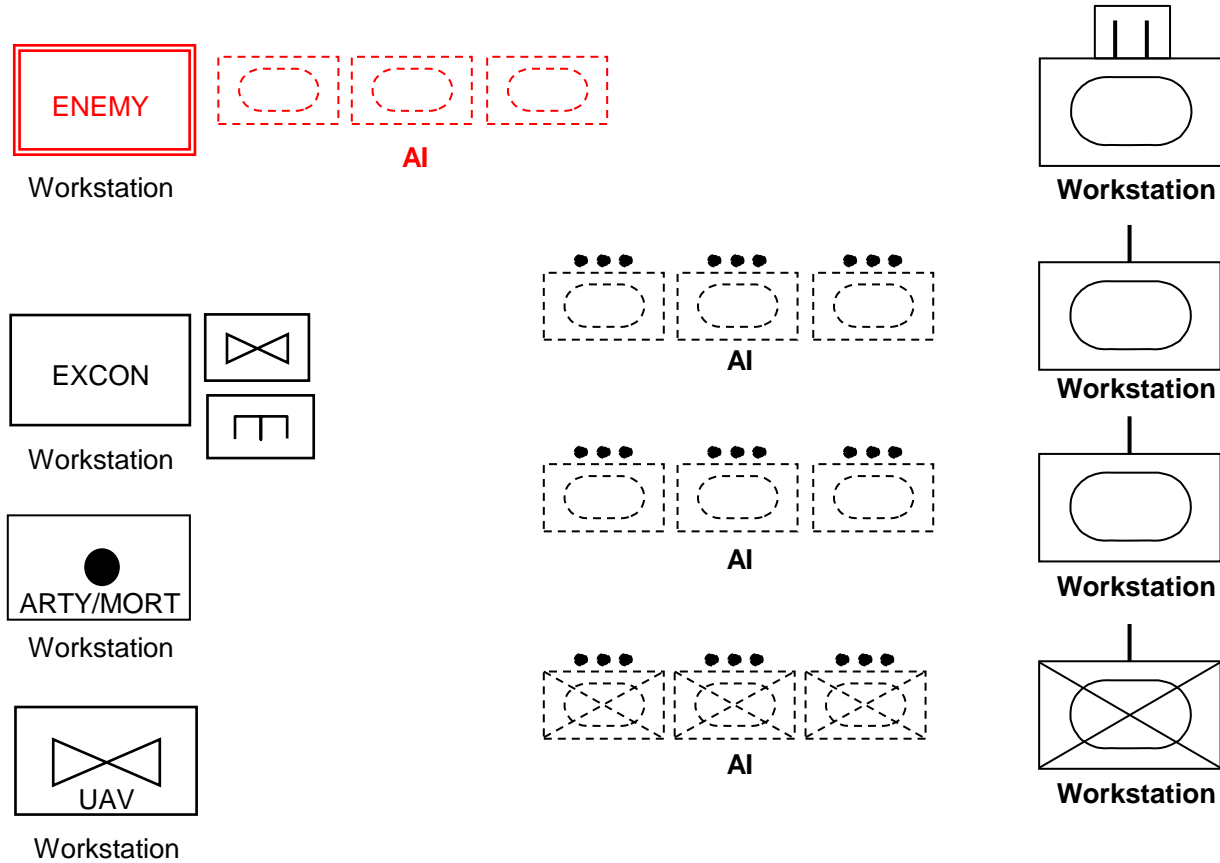
**Good Enough for Training Ukrainian Formations**

# SBPro (PE) Main Shortfalls

- PE is not intended for military training (intended for online gaming)
- + True, but PE is good enough to drive a Command Post Exercise and drive the staff processes
  
- PE Limits the number of networked computers to 8.
- + Eight workstations is the absolute minimum required to drive a CPX
  
- Not all weapons systems are represented as in the Professional version.
- + Sufficient weapons systems are represented in PE
  
- PE has no capability to connect to other simulations (through DIS/HLA)
- + There is no current requirement for this capability
  
- PE is missing the advanced gunnery training tools
- + Advanced gunnery tools are not needed for staff training
  
- PE can not link the CNR radio AAR to SBPro
- + CNR can still be used to communicate between PE workstations
  
- PE can only use a 20x20km map
- + A 20x20km terrain box is sufficient for a battalion CPX to drive staff processes

# SBPro (PE) Sample Battalion CPX

## Example Workstation Distribution<sup>1</sup>



Notes

<sup>1</sup> SBPro(PE) 8 workstation limitation



# Primary Warfighter Functions Trained

## **Command & Control**

- Command Forces
- Control Operations
- Drive The Operations Process
- Establish the Command & Control System

## **Movement & Maneuver**

- Move
- Maneuver
- Employ direct fires
- Occupy an area
- Conduct mobility and counter mobility
- Conduct reconnaissance and surveillance
- Employ battlefield obscuration

## **Intel**

- Provide intelligence support to force generation
- Provide support to situational understanding
- Conduct information collection
- Provide intelligence support to targeting and information capabilities

## **Fires**

- Surface-to-surface fires
- Targeting
- Operations Process
- Fire Support Planning
- EMS Management
- Rehearsals

# Strong Europe Tank Challenge

## A Testament

### SBPro Users are Winners

2016 Results

1st	DEU 	LEO 2A6
2nd	DNK 	LEO 2A5 DK
3rd	POL 	LEO 2A5
4th	ITA 	C1 Ariete
5th	USA 	M1A2 SEP v2
6th	USA 	M1A2 SEP v2
7th	SVN 	M-84

2017 Results

1st	AUT 	LEO 2A4
2nd	DEU 	LEO 2A6
3rd	USA 	M1A2 SEP v2
4th	FRA 	Leclerc
5th	UKR 	T-64 BV
6th	POL 	LEO 2a5

2018 Results

1st	DEU 	LEO 2A6
2nd	SWE 	Strv 122
3rd	AUT 	LEO 2A4
4th	FRA 	Leclerc
5th	POL 	LEO 2A5
6th	GBR 	Challenger 2
7th	USA 	M1A1 SEP v2
8th	UKR 	T-84 Oplot

### SBPro Users

- Australia
- Austria
- Brazil
- Canada
- Chile
- Denmark
- Finland
- Germany
- Norway
- Netherlands
- New Zealand
- Spain
- Sweden



# Sample Vehicles in SBPro (PE)

## MBT Challenger 2

LEO 1A5  
LEO 1A5-DK-1  
**LEO 2A4**  
LEO 2A5  
LEO 2A5-DK  
LEO 2A5A1-DK  
LEO 2A6  
LEO 2A6MA2  
LEO AS1  
LEOPARDO 2E  
M1  
M1 (IP)  
**M1A1**  
M1A1(HA)  
M1A2(SEP)  
M60A3  
M60A3(TTS)  
Sho't Kal  
Strv 122  
T55A  
T62  
T72A/M1  
T72B1  
T72B3  
T72M

## IFV

BMP-2  
CV90/30 FI  
CV90/35 DK  
CV90/35 NL  
CV90/40-B  
**CV90/40-C**  
**M2A2(ODS)**  
**Marder 1A3**  
Pizarro F1  
Pizarro F2  
Ulan  
Warrior

## Personnel Carriers

AMV XA-360  
ASLAV-PC  
BTR-50PK  
BTR-60PB  
BTR-70  
BTR-82A  
GTK Boxer  
M113A1  
**M113A2**  
M113A2G  
M113A3  
M113G3\_DK  
M113G4-DK  
NZLAV-IMV  
Pandur 1  
Pandur 1 (RWS)  
Piranha FUS  
Piranha V  
Piranha-IIIC  
TPz Fuchs 1A6  
TPz Fuchs 1A7

## Anti-Tank

BRDM-2 AT /9P148 Konkurs  
Fennek MRAT  
M113A1 RCL  
M113A2 ATGM  
M113G3-DK TOW  
M150  
M901 ITV  
M966 HMMWV



# Ukraine Terrain Databases

(Built by Terranis Ltd)

SBPro Terrains Completed  
And Tested as of 01-23-2023



## Additional Benefits Derived

- Ukrainian Language was implemented into both versions of SBPro; translation was crowd sourced through the Boryviter Academy
- Ukrainian Coordinate System (UCS 2000) based on Krassowsky 1940 Projection was implemented in the Professional version





# Mission #1 – IPSC Yavoriv

## Objective: Basic Training on Steel Beasts (PE)

### Time Line

25 Dec 2022 – I depart Bavaria to meet Ulf in Rzeszów, PL

26 Dec 2022 – Meet Ulf at Rzeszów-Jasionka Airport (RZE); continue to border and Lviv

27 Dec 2022 – Meet team of three personnel from IPSC SimCen; begin Intro to Steel Beasts

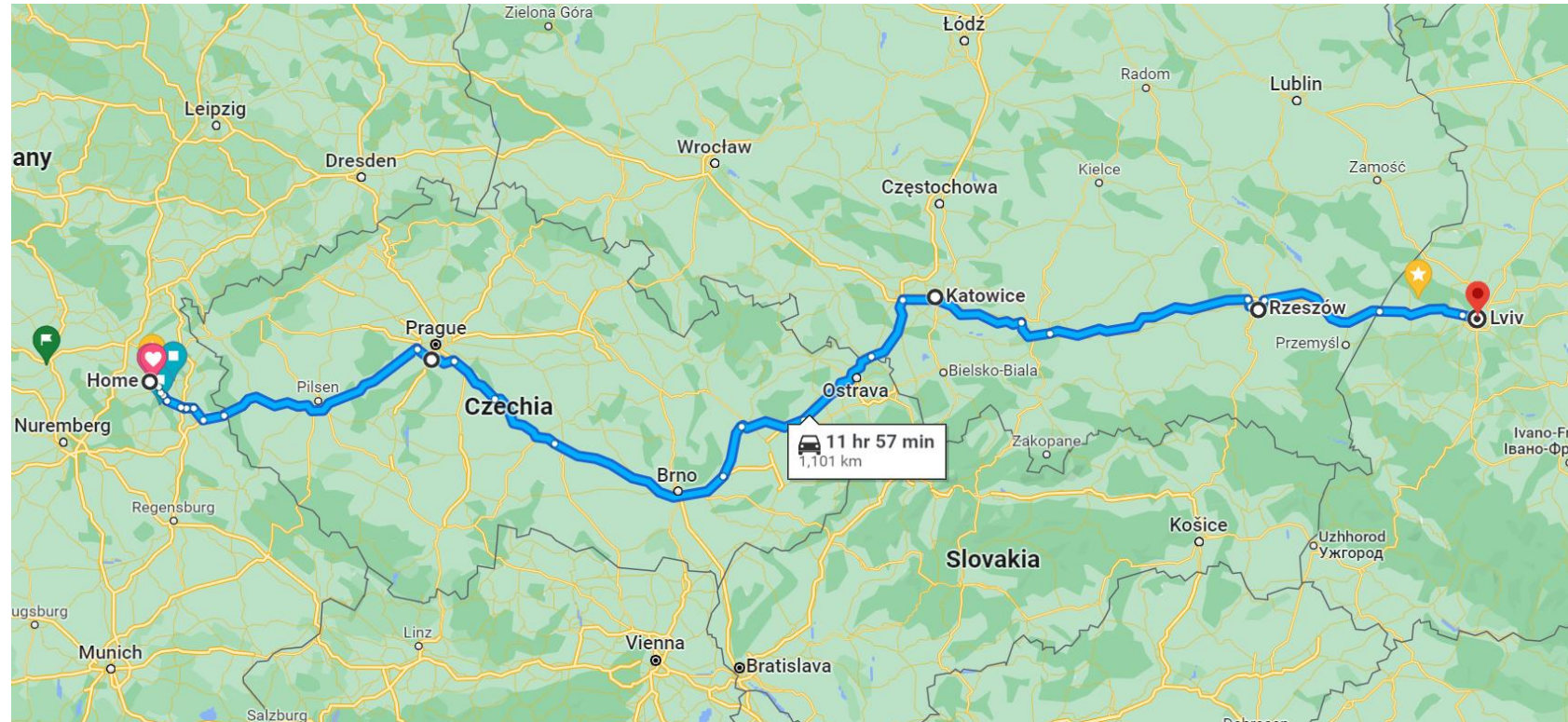
28 - 29 Dec 2022 – Continue with Steele Beast basic training; scenario generation; training was truncated due to missile attacks. Power no restored after air raid; had to revert to laptop battery power, rotating laptops. Charges all batteries at hotel

30 Dec 2022 – Battalion scenario executed by Students; mission Complete

31 Dec 2022 – Travel from Lviv to Rzeszów, and on to Bavaria



# Mission #1 – IPSC Yavoriv





# Patriots at RZE 26 Dec 2022





# 12 Mar 22 - Simulation Center in Shirokiy Lan, near Mykolaiv



**13 Mar 22 – IPSC Guardian City Dining Facility (DFAC)**



# IPSC, Yavoriv



# IPSC Simulation Center, September 2017

## Rapid Trident 17



# 13 March 2022 – IPSC Simulation Center





# The Aftermath



# The Aftermath





# Mission 1 Complete



# Mission #2 – NDU-U, Kyiv

## Objective: Basic Training on Steel Beasts (PE)

### Time Line

3 Feb – I depart Bavaria to meet Ulf in Rzeszów, PL

4 Feb – Meet Ulf at Rzeszów-Jasionka Airport (RZE); continue to border and RON Lviv

5 Feb – Travel from Lviv to Kyiv

6 Feb – Meet team from NDU-U SimCen; begin Intro to Steel Beasts

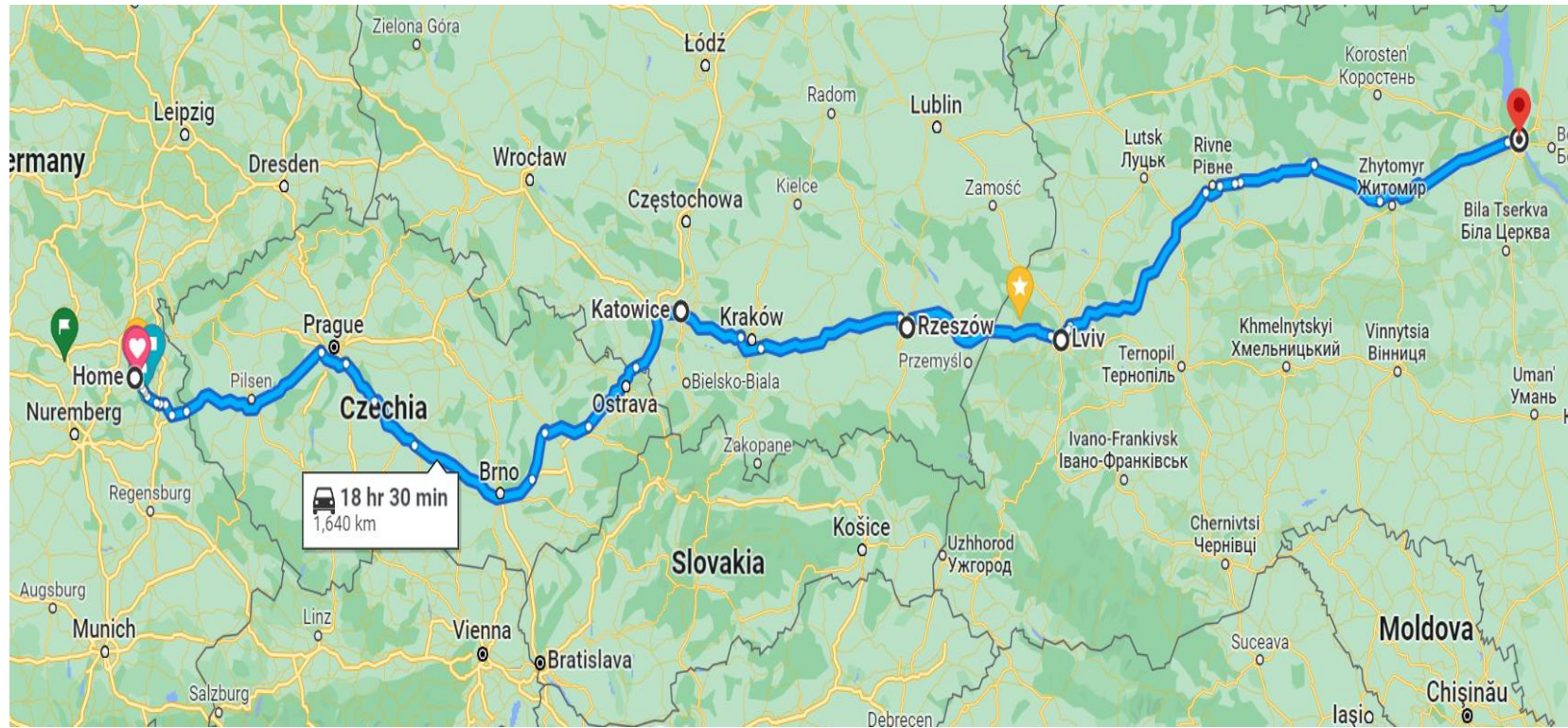
7 – 9 Feb – Steel Beasts training; Occasional air raids that disrupt training

10 Feb - Battalion scenario executed by Students; Mission Complete

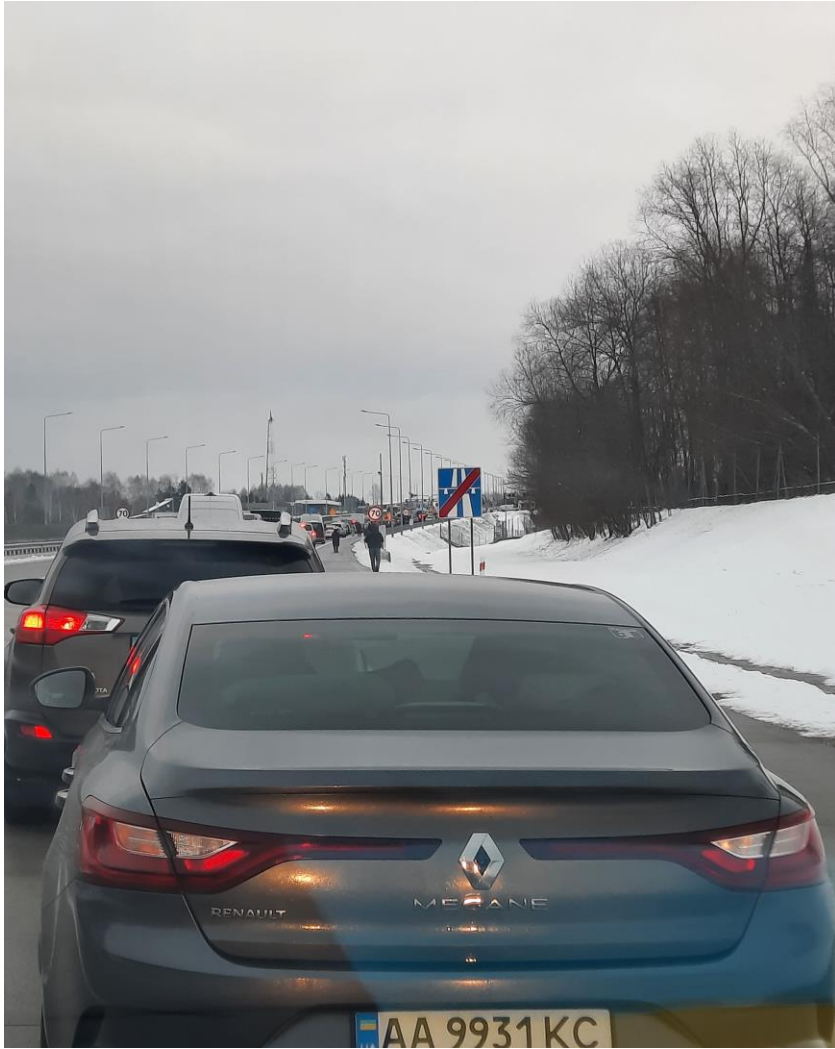
11 Feb – Travel from Kyiv to Lviv, RON Lviv

12 Feb - Travel from Lviv to Rzeszów, and on to Bavaria

# Mission #2 – NDU-U, Kyiv



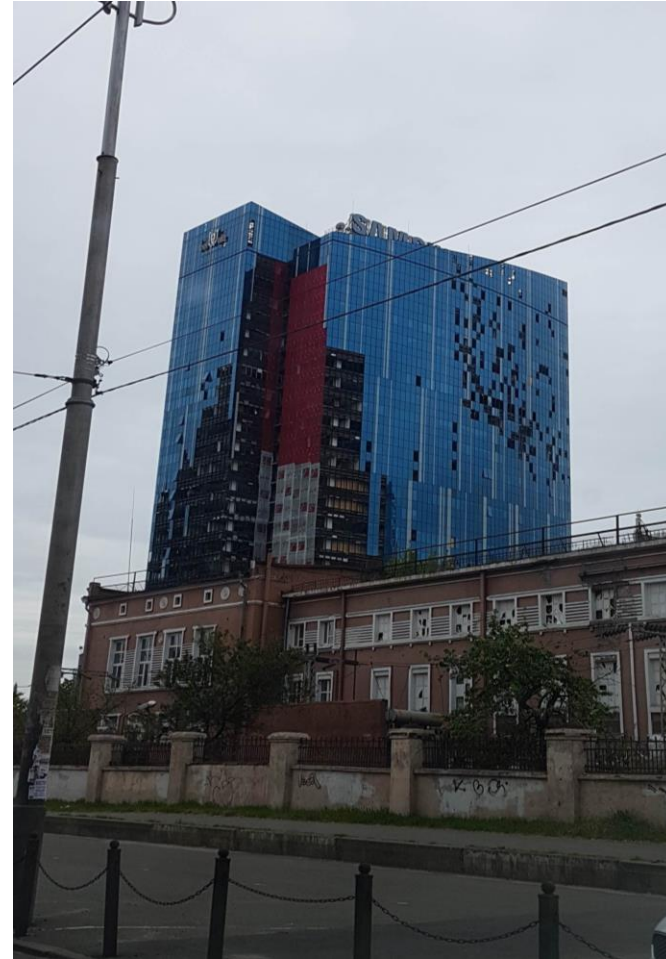
# Border Crossing



Line at Poland-Ukraine Border

MRE donation to the Polish Legion

Kyiv





# Training at the NDUU





# Mission #3 – IPSC, Yavoriv

## Objective: DIS Integration, Part I

### Time Line

15 Apr 2023 – I depart Bavaria to meet Ulf in Rzeszów, PL

16 Apr 2023 – Meet Ulf at Rzeszów-Jasionka Airport (RZE); continue to border and Lviv

17 -19 Apr 2023 – Meet IPSC SimCen Team; conduct DIS integration of JCATS v13, SBPro, VBS3 v3.9.2

20 Apr 2023 – Travel from Lviv to Rzeszów, and on to Bavaria

Note: The real purpose of this integration was to prepare for the Dog and Pony show to be conducted At the NDU-U the following month during the Simulation Symposium.

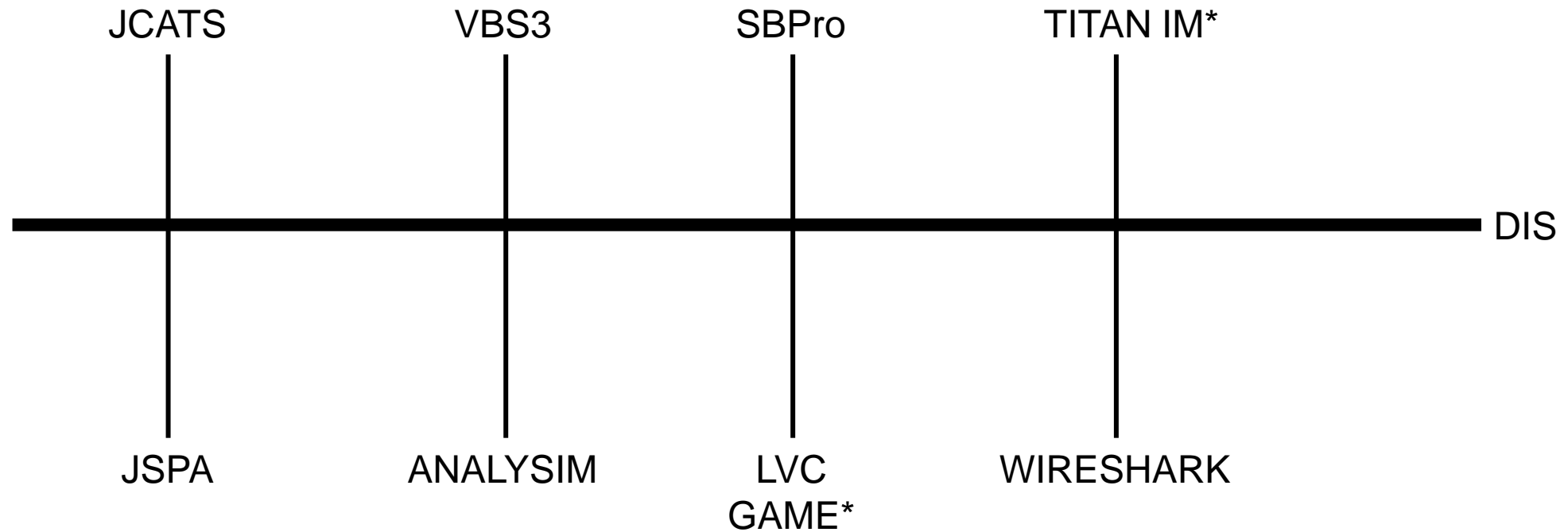
The “Use Case” used for the integration was an exercise design that included VBS3 Drones to provide Battlefield Visualization to Commanders in JCATS

- It did not include combat between JCATS and VBS3 or SBPro forces, although some ground to air and air to ground engagements were tested.



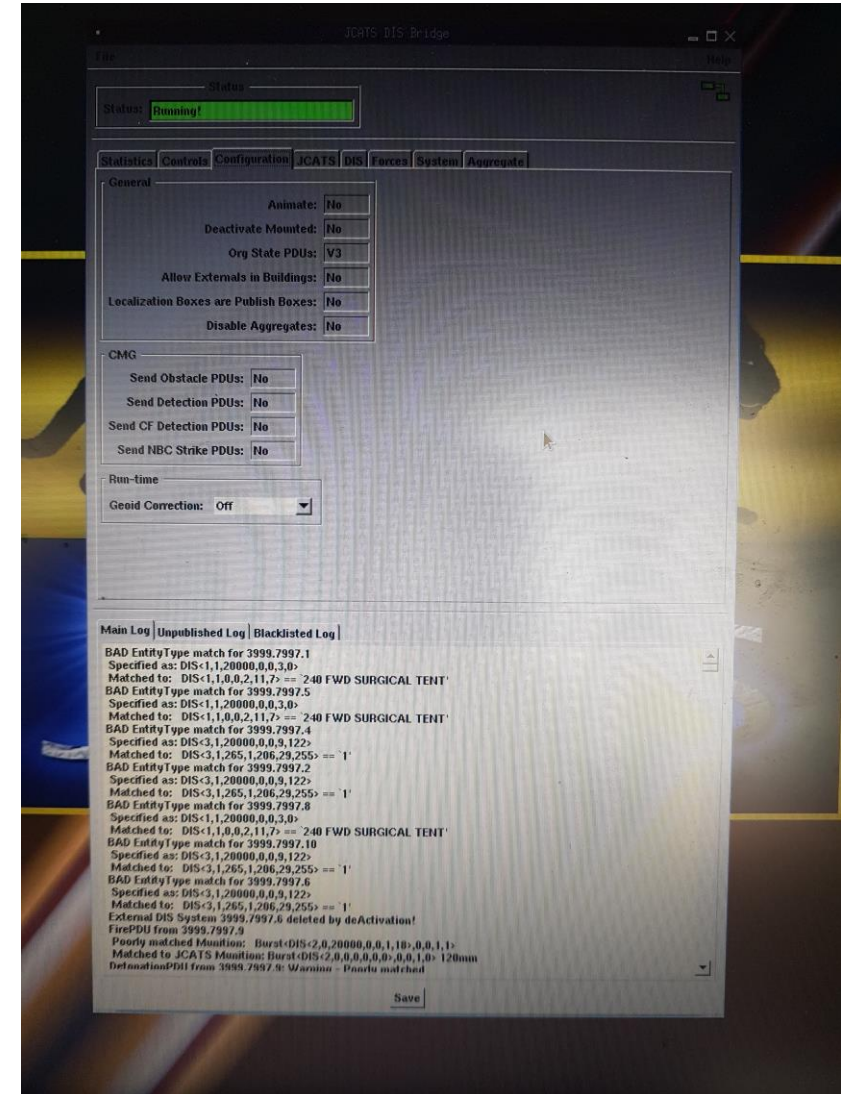
# Mission #3 – IPSC, Yavoriv

Objective: DIS Integration, Part I



\* Calytrix

# Integration





# UKR-POL Border Crossing A 5.5 Hour Wait





# Mission #4 – NDU-U, Kyiv

Objective: DIS Integration Part II

NDU-U Spsored Simulation Symposium

## **Time Line**

5 May – I depart Bavaria to meet Ulf in Rzeszów, PL

6 May – Meet Ulf at Rzeszów-Jasionka Airport (RZE); continue to border and Lviv

8-9 May – Meet team NDUU; Continue integration from IPSC

10 May– Simulation Symposium hosted by NDUU

11-12 May – Continue with Steel Beasts training; Power no restored after air raid; had to revert to laptop battery power, rotating laptops. Charges all batteries at hotel

13 May – Travel from Kyiv to Lviv

14 May – Travel from Lviv to Rzeszów, and on to Vyskov, Czech Republic (CZE SimCen Visit)

15 May – Travel from Czech Republic to Bavaria

# Street Signs Altered to Confuse the Enemy



?





# Simulation Symposium at NDUU



# Kyiv - 8-9 May





# Mission 4 Complete

# The Border Crossing



Exiting Ukraine



Entering Poland

# Conclusion

- Constructive simulations provide a highly relevant training tool for training staffs and commanders.
- SBPro is a versatile capable simulation for high resolution exercises up to Battalion level.
- SBPro is sufficient to meet the demands of a Battalion for a maneuver exercise environment to drive staff processes.

## Way Ahead

- Sweden's donation of 100 excess computers to Ukraine is likely to increase demand for SBPro (PE) training
- (Desired) IPSC and NDUU refinement of the JCATS VBS3 integrated environment in order to achieve Use Case
- We are formulating a nomination of 100+ Ukrainian systems to the DIS SISO Standard (and 50+ Czech systems to the SISO Standard)

# Slava Ukrainie

(Glory to Ukraine)

# Heroyam Slava

(Glory to the Heroes)

