RAFAEL
ADVANCED DEFENSE SYSTEMS LTD.

# Automation for Operational Simulations

## How we improved the quality of our simulations

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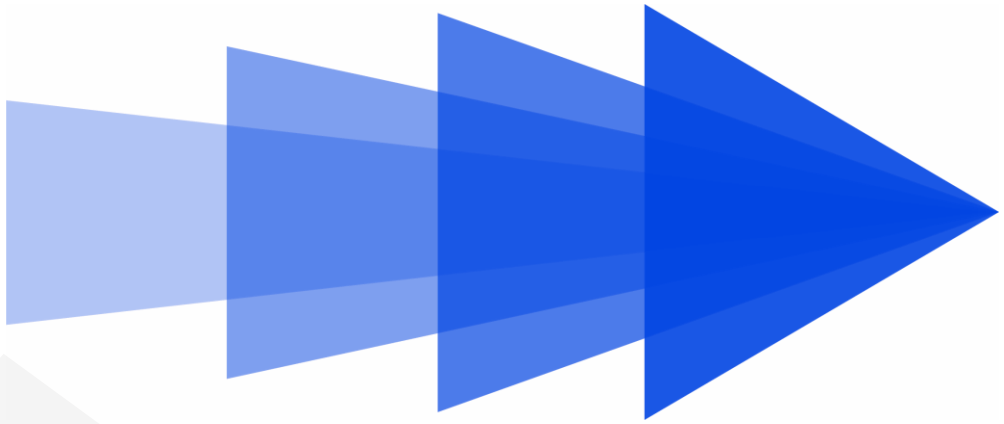
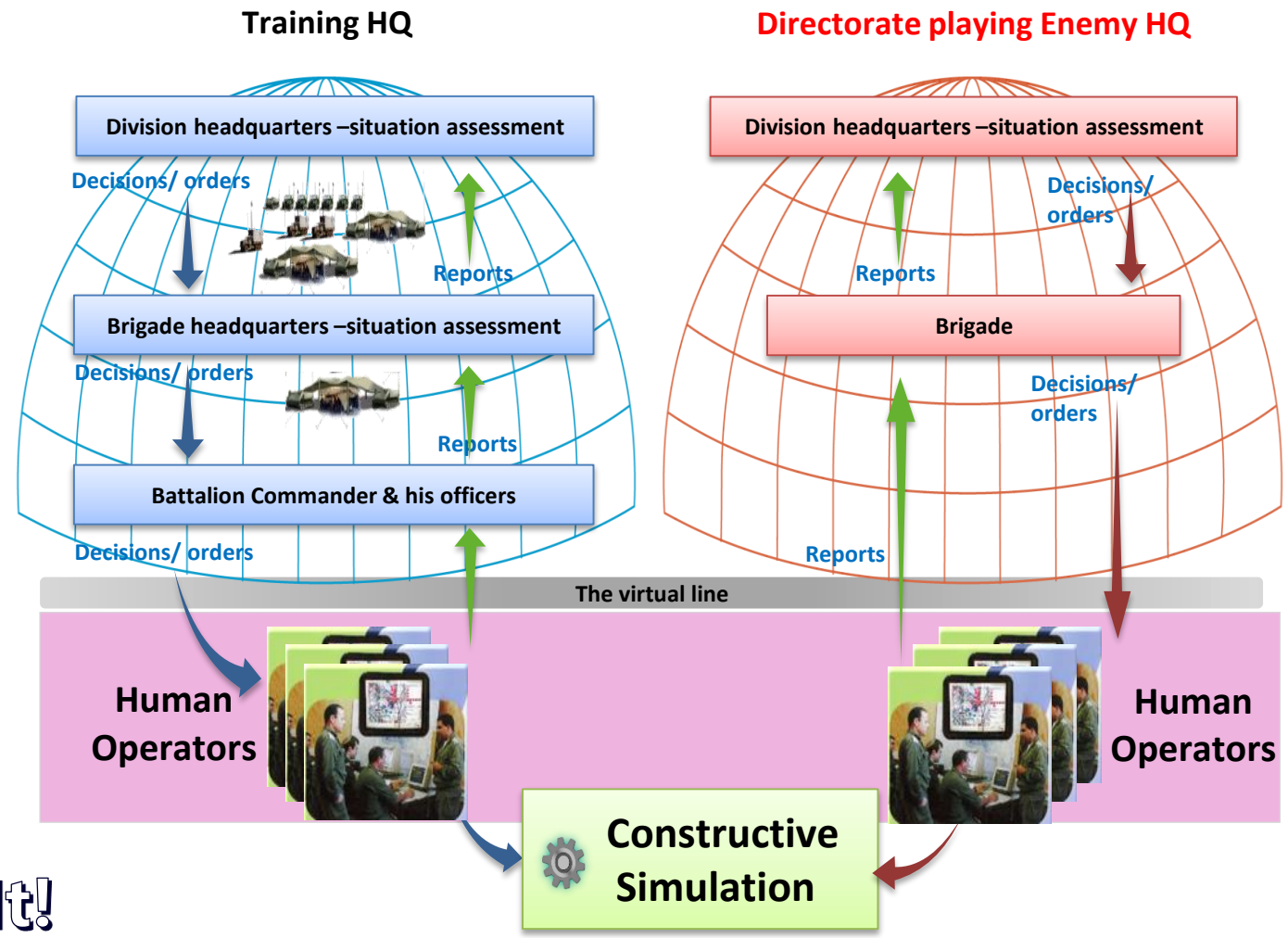
# We will talk about…



- **Why** is automation important
- **How** can we do it
- **What** are the benefits
- **Where** are we heading

# Typical Headquarters Training

- **Expensive**
- **Inefficient**
- **Quality is Essential**
- **Military Behavior is suited for automation**




**We Need to Automate It!**

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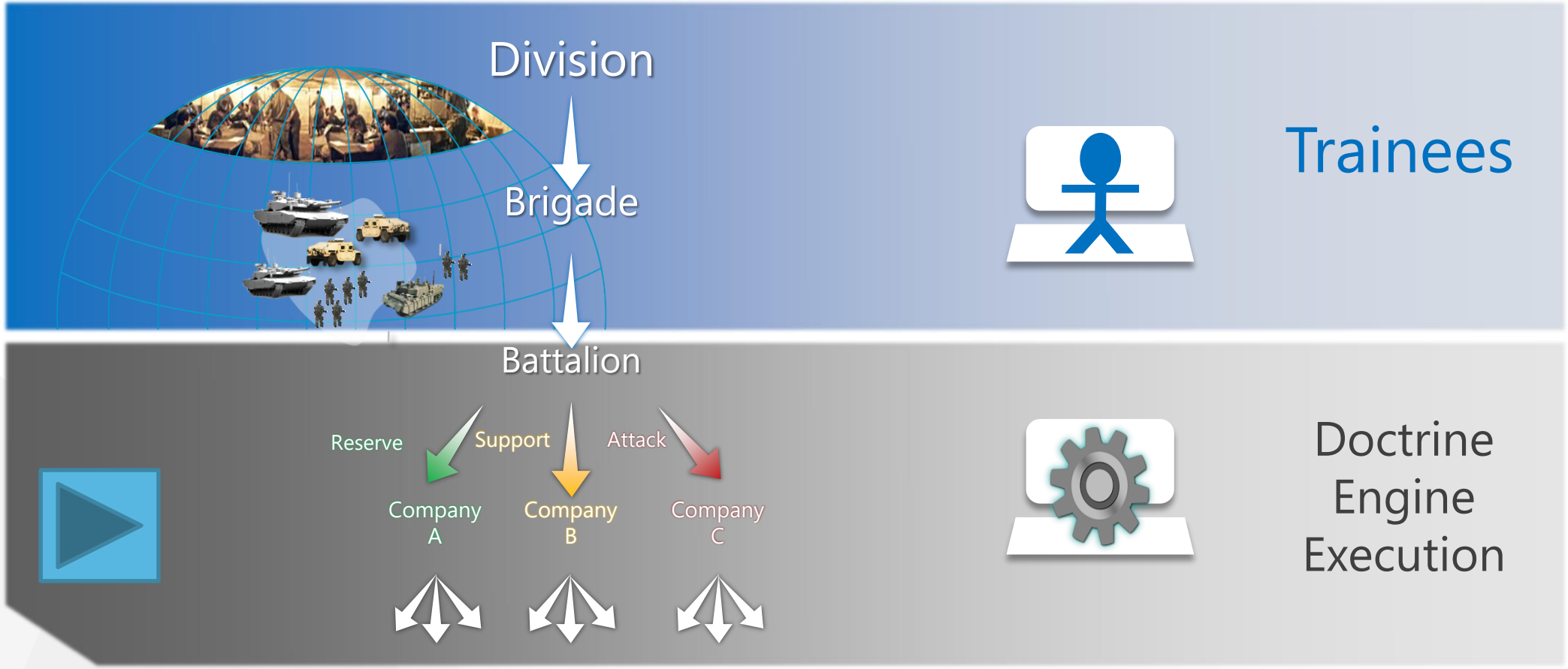
# Doctrine Engine in Action



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| zeniyn | ueaiy | Phase A - Assault preparation | Phase B - To target site | Phase C - On target | Phase D - Prepare to continue |
|---|---|---|---|---|---|
| Assault | Company : A<br>M1A1 : 1<br>M1A1 : 2<br>M1A1 : 3<br>A.P.C M-113<br>A.P.C M-113 | Move to assembly area | Move on the hidden path to the preparation point before the assault. Checking forces relation with the enemy forces before the assault and if needed using the reserve to reinforce or stop the assault (given permission). | Move and fire (assault) on the target site to the other side and return to scan the target firing. | Move and assembly at the target site |
| Fire Base | Company : B<br>M1A1 : 1<br>M1A1 : 3 | Movement to assembly area | Movement in hidden path to fire base position. When positioned open fire on the targets at site. | Fire on targets at destination site, keeping security range from assault forces. | movement and assembly at target site |
| Decoy | Company : C<br>M1A1 : 1<br>M1A1 : 2<br>M1A1 : 3<br>A.P.C M-113 | Movement to assembly area | Movement in exposed path towards the objectives up to position line. On arrival - fire launching on targets at the objectives. | Fire on targets at the objective while keeping safety range from the assault force. | Movement and deployment at the objective |
| Reserve | M1A1 : 2 | Movement to assembly area | Movement on a hidden path towards waiting position of the reserve force. If activated, movement on the shortest path towards the assault force. | If activated to assist the assault force, storming the targets till the edge of the objective and than scan backwords. | Movement and deployment at the objective |
| Fire Support | Battery : ART<br>Self-propelle | | Fire on targets at the objectives | Fire on targets at the objectives | Cease fire |

Sector boundaries

11:726162/3:705018
11:726056/3:702656
11:731775/3:702231

Objective

11:729506/3:703406
11:730681/3:703906

Assembly area

11:726362/3:704225
11:727031/3:704687

Assault route (precisely)

Movement corridor  Ex

11:729075/3:703650
11:731118/3:703675

Fire base route

Decoy route

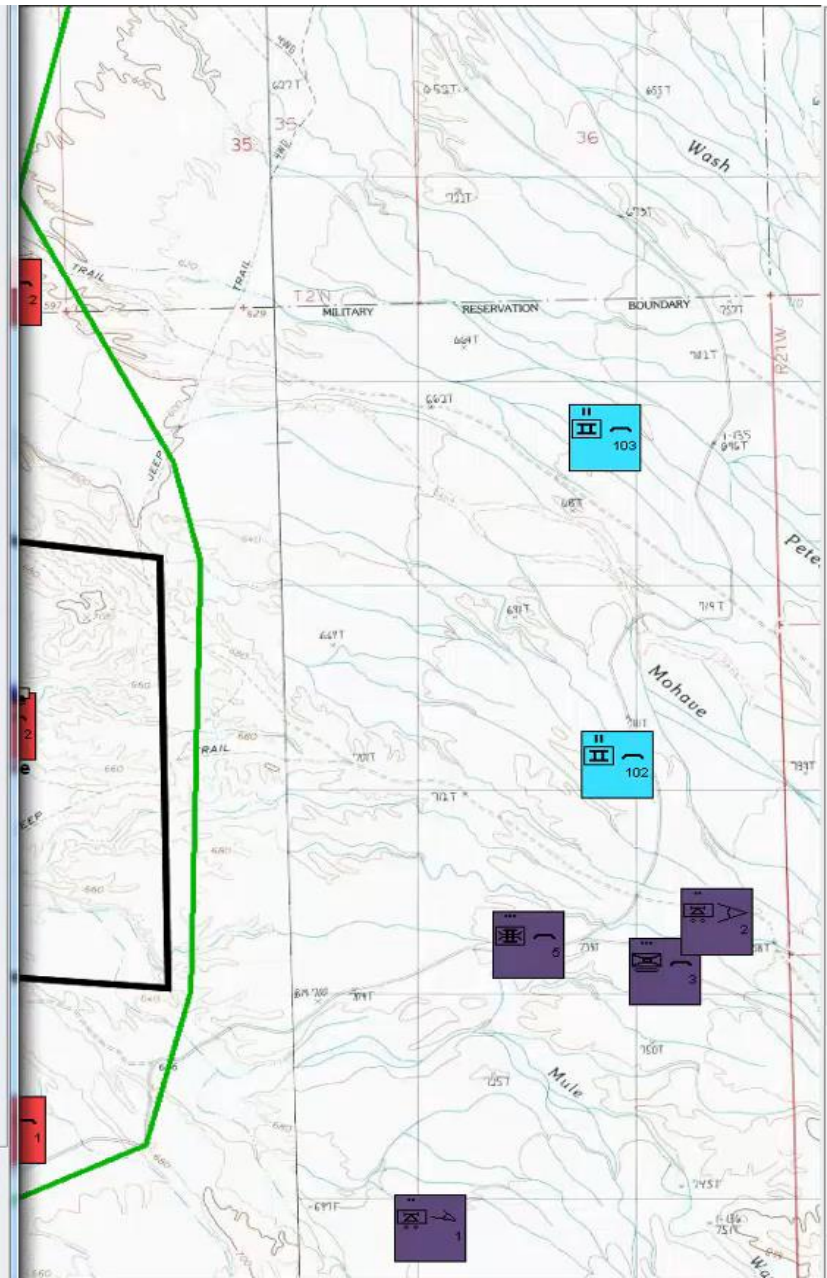
<<Hide plan

Command execution time

In the future  Right now

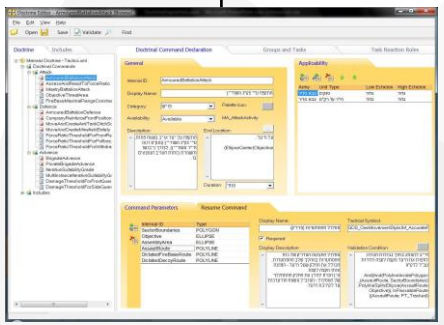
22:02  15.11.15

Apply  Cancel

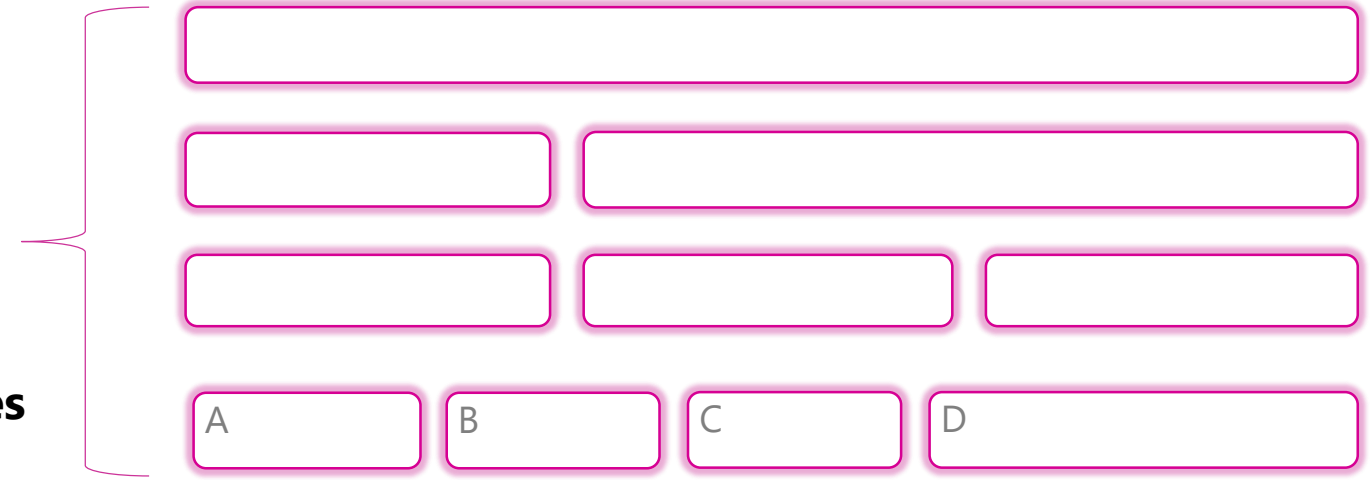


# How it Works

**External Model Files**
(Not Software Code)



**Doctrine Editor**

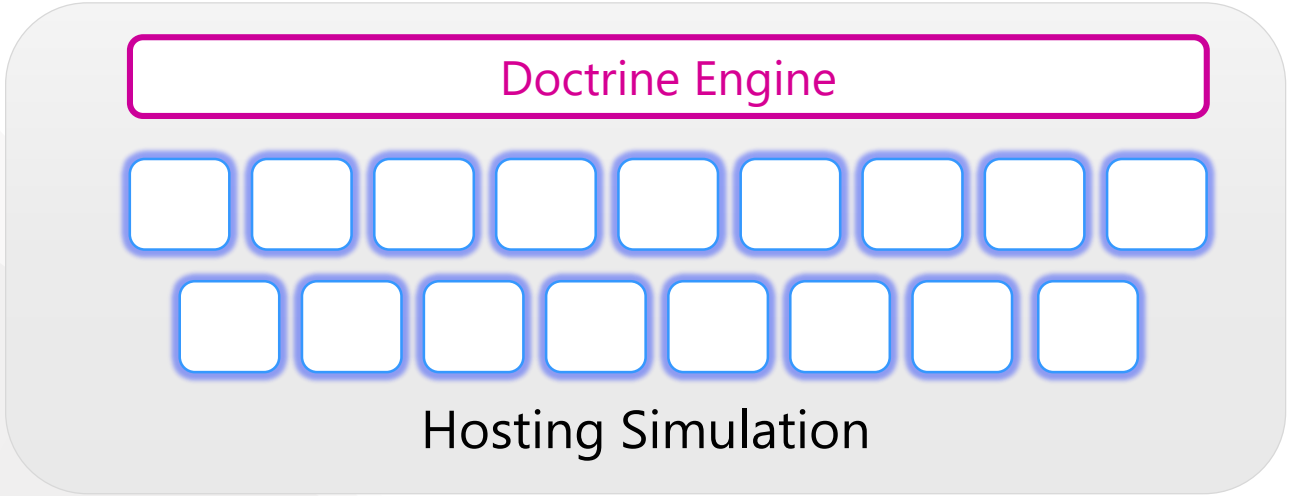



Brigade Doctrines

Battalion Doctrines

Company Doctrines

Platoon Doctrines




Atomic Capabilities

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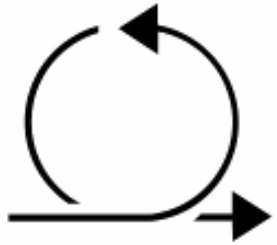
# Benefits of Using the Doctrine Engine

Lower Costs

Improved Quality



Agility

Scalability

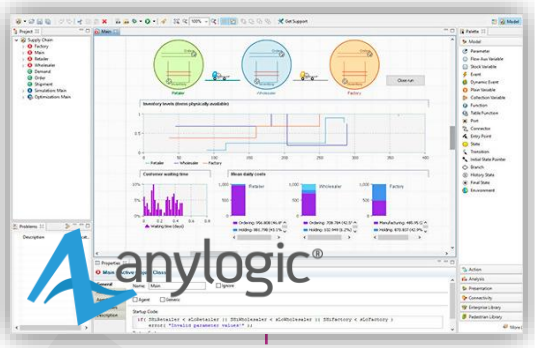
Confidentiality

Minimize Vendor Lock

# From Lab to Battlefield

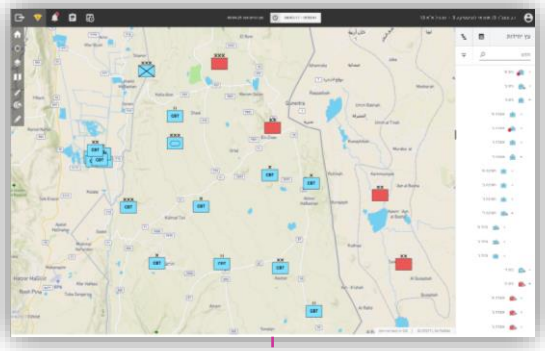
**Lab** → **Simulation Pipeline** → **Battlefield**

Operational Research




ConOps Center


Trainers



C2 Systems


## Unified Behavioral Model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