



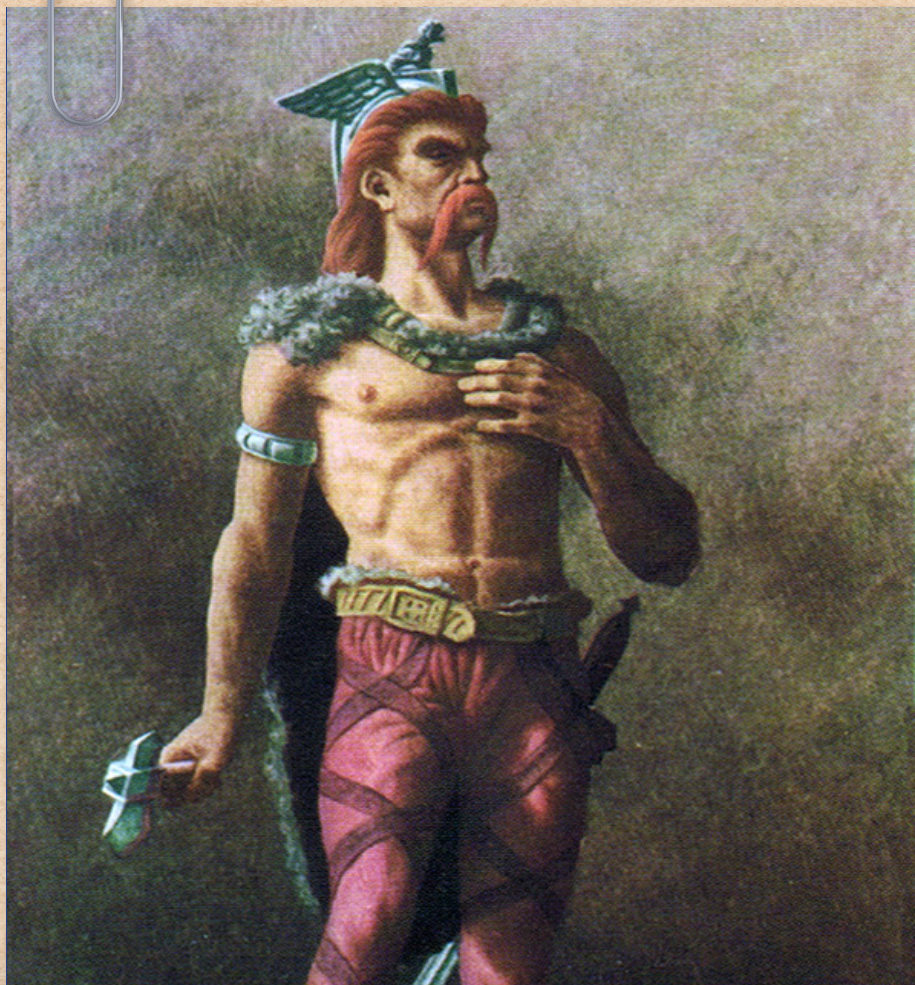
**URGENT**

# **OPERATION CONCRETE FOREST**

**THE URBAN BATTLE  
OF LYONESSE**

**A CONCEPT DEVELOPMENT &  
EXPERIMENTATION  
CASE STUDY**





"Just as Alexander's exploits only reached the Middle Ages as a dim, fantastic tale, so in the future people will probably look back upon the twentieth century as a period of mighty empires, vast armies and incredible fighting machines that have crumbled into dust . . ."

Martin van Creveld, 'The Transformation of War'.

# PREFACE

In the Concept Development & Experimentation course you will learn the NATO way for developing concepts and plan experimentations in a practical manner. This method might be similar to or very different from your national approach. In this course, we want you to focus on the method explained in the handbook and therefore we work around a case study on a military topic. Real life topics were too broad to be really useful or led to turf wars between experts. That is why we came up with the imaginary operation 'CONCRETE FOREST' as the case study.

The case study is about problems with logistics, organized in a very different way than in NATO, encountered in a made-up operation fought by a non-existing army. As nothing is known besides the information told in the story, your knowledge on the way things could be is as good as ours or as of your colleagues'.


Enjoy the story, and the course.

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# INTRODUCTION

*"Horum omnium fortissimi sunt Belgae."  
Gaius Iulius Caesar in 'Commentarii de Bello Gallico'.*

In contrast to what Ceasar wrote in 57 BC, the Eburones were not completely defeated by the Romans in the Battle of the Sabis. They did get pretty hard beating, but survived the battle for millennia in some far away land. After their clash with the Roman legions, they have learned from them. They have copied the Roman military structure and continuously adapted their warfighting to the evolving circumstances. Worldwide the Eburons are now recognized as a formidable adversary in open terrain. And they are still as brave as ever .

Not long ago, they have experienced a setback in an operation and, lacking a method to develop a concept as a solution to the encountered problems, a small delegation attended HQ SACT's yearly CD&E conference. Inspired by the method and lacking the expertise, their high comm  asked NATO to help them. NATO HQ agreed to send your team to develop a concept and design the necessary experimentations to solve the issue at hand.

You have travelled to Tungri, the land of the Eburons, and after a good night's sleep you're ready to start. Today, you will be briefed by the Commander of the 9th Eburon Logistics 'Ambiorix' Legion.


He will explain your task.



# WELCOME TO THE LEGION

Not recovered completely from the long travel, some of your team members are still struggling with a jetlag, you and the rest of the team, after some security measures, are guided into a small meeting room. Your guide tells you that Legatus Legionis [equal to the rank of a one star general] Bellovaci, the Commander of the Legion, would be there soon.

After waiting a few minutes your guide starts a short video presenting the logistics legion. It shows motivated warriors with lots of modern equipment, most of it mobile. This unit is certainly comparable with those of NATO nations that you have visited in your career.

The video ends with  Unit's hymn. At that moment, the Commander enters the room. As good military visitors, you all stand up.

The Legatus Legionis starts speaking.

"Please sit down.

Dear NATO CD&E team, welcome to our HQ. As my aide certainly has told you, I'm Legatus Legionis Bellovaci, Commander of the 9th Eburon Logistics Legion, also known as the 'Ambiorix' legion.

We appreciate the help of your Alliance in solving a military problem of ours. Unlike you, we do not have a formal method to solve problems because, to be honest, we never felt the need for such a method. However, things have changed and we are curious if your approach could help us.

As you know, we're not member of your Alliance. So we do not follow your standards, but as the art of war is based on a universal set of principles, you will see that we have much in common. After a short introduction on how we operate and what the problem is, you will be free to ask questions, to look around and to experiment. My soldiers and officers will cooperate fully.

Notwithstanding your freedom to do whatever you deem necessary, we have prepared an introduction to enhance your understanding on how we operate.

Praefectus Castrorum [a Colonel] Paemani, my Chief Of Staff, will explain you our approach to operations.

Questions so far?

Praefectus Castrorum, they are yours."

## HOW DO WE OPERATE?

“Good morning. I will be your liaison with the legion for the coming weeks and will try to make your stay with us as comfortable and productive as possible. Do not hesitate to call me or drop by my office if you feel the need to do so.

As you certainly know, Tungri and its surroundings are characterized by huge open terrain with some densely populated areas. As a consequence of this geography and perfected through history, our warfighting is based on manoeuvre warfare in open field. That means that our infantry is highly mobile and our fast-paced fighting is aimed to take our adversaries by forced surprise. Our small air force and navy are supporting the land operations as our enemies are land centric. The rare ones that had an air force could not use their fighters because we overran their airfields before they could engage their air power. So, they learned the hard way that fighters were not the answer to our tactics.

Looking into the future, we find no reason to change our approach to warfare. We will invest further into the same kind of - how do you call it? - capabilities, that gives us the edge of strong mobility. Our land force will remain our principal effort.

Sometimes, after they lose a battle, our adversaries try to curtail our advantages in mobility by retreating into a big city. We are well-prepared for such cowardly tactics, and counter it by encircling the city as to cut it completely off from the world. A combination of what you call PSYOPS with sending in Eques Legionis [i.e. Special Operatives] and patience always ends in the elimination of the threat without much civilian casualties. We may be a nation of warriors, but in whatever we do, gaining and maintaining the support of the population is a priority.

Any question about our warfighting?

If there are none, I want present you Primus Pilus [similar to a Lieutenant-Colonel] Condruś. She's our most experienced logistician and will go over to our organization of the logistics support.

Primus Pilus, you have the floor.”

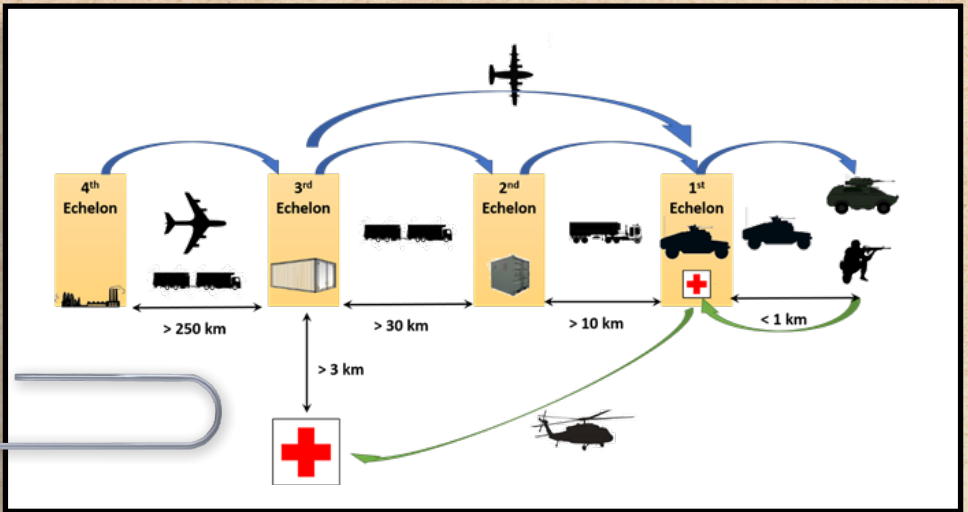


# HOW DO WE ORGANIZE OUR LOGISTIC SUPPORT?

“Good morning. I was looking forward to meeting you because I'm very curious in how you can help us.

I've been reading some of the NATO unclassified documents on how you organize logistics and, although there are some similarities, we approach it in a different way. Let me explain the basics.’

On the screen, she projects the picture below.



The Eburon Approach to Logistics

“As you can imagine, our kind of warfighting is successful and it is more than normal that our logistic support matches it. As this slide shows, we, not unlike you, consider 4 echelons where we store our supplies. The distances on this slides are a rough indication of what normally happens, but you understand in reality they depend on the speed of the fight and the terrain.

The 1st echelon is situated at the century [platoon] level close by the munifex [the soldiers] and has two protected vehicles with self-defense means. They operate in pairs: while one is being resupplied by the

2nd echelon, breaking the containerized goods into packets fit for the contubernii [sections], the other vehicle is supplying the contubernii and their fighting vehicles. If necessary, these supply vehicles will fight their way towards the munifex. They are logisticians and warriors. In case the munifex are not present at the predefined RV point, the vehicle crew will drive forward till they meet them because they know they will have advanced.

The 2nd echelon is further in the rear and resupplies the 1st echelon with heavy, semi-armoured trucks. At that second echelon we break the big containers from 3rd echelon into smaller ones fit for transport to the 1st echelon.

Our 3rd echelon is provisioned with bulk from the 4th echelon, our industrial base. Goods are flown in with heavy airlifters or transported by heavy, soft skin trucks with trailers. After the bulk is nicely put into containers of specific goods, you would call that a single class, these containers are driven in with truck and trailer combinations to the next echelon.

There is an exception to this highly mobile logistics chain and that is when there is an urgent resupply of a contubernius or even a century. In that case, we use a medium size cargo aircraft to transport the goods. For that reason our legion has a small fleet of aircraft specialized in precision air drop, parachute or gravity extraction. Sometimes we use this way of provision an isolated unit.

Although medical supplies are taken care of by our normal logistics chain, the treatment of wounded is done through a separate chain. All munifex are highly trained in medical care, so they can help themselves and their buddies. On top of that, every contubernius has at least two immunes [a kind of highly specialized medic] who can treat most battle wounds and if necessary stabilize a wounded munifex in preparation for evacuation.

If the wounds are too severe to continue fighting, a stabilized munifex is brought to the 1st echelon till evacuation by helicopter is possible. For this reason, our hospital has a small fleet of armed, medical equipped helicopters. These helicopters do not carry a red cross, because they may need to fight their way in. Experience learned that unarmed ambulance helis with a red cross sign were a too easy a target leading to unacceptable losses of crews and rotary assets.

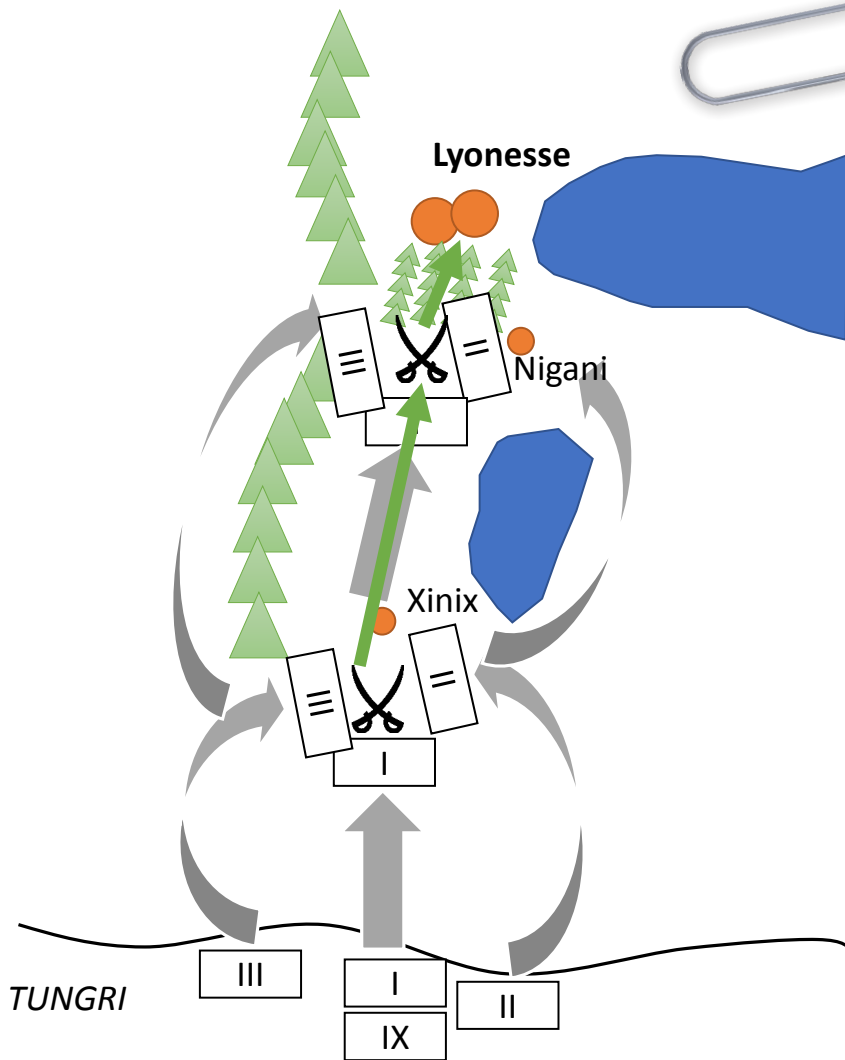
Our hospital, what you would call a medical treatment facility 2

advanced, is located outside the 3rd echelon base, and normally a little more than 3 kilometres away so that it is clear that it is treating wounded troops. Additionally, our hospital is well marked with red crosses and there are lots of flags too as a clear indication of its purpose. The 'neutrality' of a hospital is well respected by all parties because we treat all the wounded and sick alike.

Any questions? No? Thank you and welcome. You have my telephone number in you hand-outs. Please contact me if you would have questions during your stay here."

She steps to the back of the room switching place with her commander.





- ▲ Mountains
- Lake
- City/Village
- ☐ Legion
- Troop movements
- Escape route
- ✂ Battle

# OPERATION 'CONCRETE FOREST'

"Thank you for your explanation primus pilus.

What you would call our logistics doctrine is based on years of experience and 'trial by fire'. We still believe that it is the right approach for our campaigns in the defence of our nation. So, that is not why you are here.

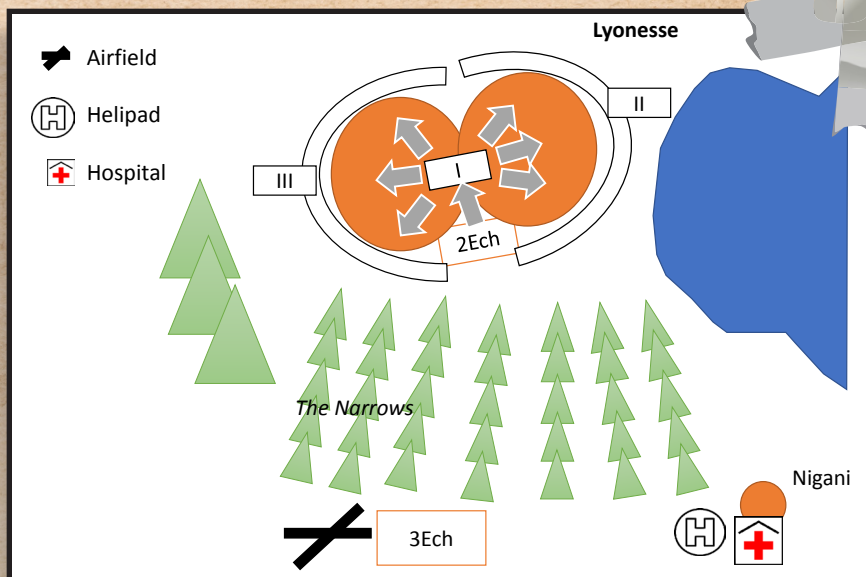
To better understand your task, I have to tell you about our last operation 'SWIFT SURPRISE' and especially about the smaller operation 'CONCRETE FOREST'.

In our youngest campaign, we were in pursuit of a strong enemy but we were beating him in every encounter. With his forces heavily reduced, his troops retreated into the city of Lyonesse. Although not a capital, it was and is a multi-million megacity with all the characteristics of an urban environment. I've read the NATO capstone concept on urbanization and I think you will find that study applicable to what I am going to tell you.

After weeks of drawing the enemy to the fight and beating him, he was forced to flee. In full pursuit, our advanced forces arrived at the city Lyonesse seeing their opponent's leftovers fleeing into the streets. In line with our doctrine, we started the encirclement and the planning for the infiltration of the Eques Legionis. Based on previous experience, we knew it was a matter of time and keeping the encirclement tight. We would eventually get them.

Unfortunately, retiring into the city was not enough for these bandit-like enemies. Soon we learned that they were using lethal coercion to influence the citizens towards cooperation with them. They willingly destroyed property and executed citizen at will. This was unheard of. They were even able to let people in and outside Lyonesse believe that we were the ones to blame for all the suffering and deaths.

After a few days, our leaders could not stand this any longer. Our first priority is to protect civilians and in the case of Lyonesse this was even more a matter of honour. The majority of the city are descendants of our people. The spreading of the fake news that we were to blame for these acts of cowardice was just too much. It went against all we believe in. Something had to be done. So, our politicians ordered us to take the city by force.



Without experience in fighting in an urban environment, we drew up the plans for operation 'CONCRETE FOREST' based on our expertise on high mobility in open, sometimes wooded terrain. Quickly after finalizing the plans, our cohorts poured into the streets and started engaging the enemy wherever they could find them. Close quarter fights and heavy fire exchanges at short distances soon followed. As expected we were advancing, but at a very slow and uneven pace.

We would have done a good, not a great job, if our logistic supply chain was up to it. We thought we would do an excellent job, but things turned out otherwise.

While our munifex were fighting for every meter, our legion was setting up the logistic chain needed to support the fighting. Our 3rd echelon found a safe, open spot far from the city while our hospital was set up next to a small village. In the meantime, the commander of our 2nd echelon assessed that a position in the outskirts of the city was the best option. Unfortunately, this meant that his base was more spread out than normal. The 1st echelon was barely able to keep up with the fighters, but they managed to do so for a while.

After a few hours, the logistics chain started to break down. We do not have a chronological list of all the things that went bad, but to give you a flavour of what happened in the city, I want to mention the following incidents:

- The approaches to Lyonesse are limited to a few narrows. As we were masters of the terrain, our trucks with trailers would drive through them at high speed, like we always do. However, small groups of bandits exfiltrated the city and were able to gain access to the higher grounds. By attacking the front and the rear of our convoys, they were able to slow and even to stop the supply to the 2nd echelon. Our trucks with trailer had a hard time to turn and pass the stricken trucks. In itself they did not cause much damage, but it created shortages further up the chain.

- The second echelon and its trucks suffered similar attacks by small pockets of bandits operating from the rooftops. These hampered our supply operations and drew some manpower away to serve as organic force protection, further hampering the flow of goods.



- Adding to the shortages, was the difficulty of the trucks to find their way in the city. They needed the bigger streets to move around, but debris and car wrecks sometimes blocked easy passage. The transfer times were much longer than we ever experienced.

- While we had difficulties to supply our troops in the line of fire, our forward echelons were solicited by hungry and sick civilians. They

needed our help, but our stocks were diminishing. Our logisticians, not prepared for this combination of fighting and humanitarian aid, were torn between the urgency to supply our munifex and their duty to protect and help civilians.

- But these problems were minor compared to those experienced in the 'last mile'. The crews of the 1st echelon sometimes got disorientated leading to be in the wrong place at the wrong time. Very hazardous for those crews but lethal for the fighters as they did not get the supplies they urgently needed.

- There were incidences wherein the logisticians fought their way forward convinced that the troops that needed the supplies had advanced only to find out that they had retreated instead of advancing. In two known cases, this caused the complete 1st echelon to be isolated and surrounded.

- In another painful incident the 1st echelon was able, after some fierce fighting, to join an isolated contubernium only to find out that they didn't have the right kind of ammo with them. Luckily, the group was able to escape their ordeal.

- As more and more groups were losing contact and supplies at the front were getting depleted, we decided to send out our cargo planes. More than half of our air drops were unsuccessful due to smashing against buildings or obstacles. In some cases, we were providing our adversaries with our much needed ammo. We have even a video recording were an airdrop almost smashed half of a century seeking safety on a roof.

- In the beginning, our medical chain was working well. Helicopters were evacuating wounded troops to our hospital. These helicopters sometimes supported isolated groups with gunfire. But as supplies were dropping, the immunes could not treat the wounded any longer and were forced to evacuate them. This meant that the waiting time for MEDEVAC went up. The unexpected need for evacuation of wounded and sick civilians additionally increased the delay. Some immunes decided to evacuate their wounded by truck instead of waiting for an aerial evacuation, but that resulted in an increasing number of wounded munifex at the 2nd echelon. There, the organic immunes were too few to treat their fellow soldiers and, lacking means and access to the helicopters, were forced to send the truck directly to the hospital, further lengthening the supply delays.

Being at the brink of a total collapse of the logistics chain, a small miracle happened. The adversary decided to leave Lyonesse and surrender the city to us. If they would have resisted a little bit longer, we would have lost the battle because of logistics.

We can and will never accept that!"

He went quite for a moment. It seemed that he had relived the near disaster and was ashamed of what had happened.

There was not a sound in the briefing room. Even the projector seemed quite.

"OK. Now you understand why we asked your help. Thank you for coming to our aid."



## YOUR TASK

After answering some questions about the nearly failed operation and the discussion on the lessons identified, the Commander concluded the Q&A round and stood up.

"I've read some papers on your Autonomy Programme and the topic on Unmanned Ground Vehicles sounded very promising. My Primus Pilus did some study on the topic and she had written a report on it. I'm convinced that if we had integrated these robotic trucks into our logistics chain, we would not have so many problems in Lyonesse. More, I'm convinced that it would have been a quick victory for logistics and our infantry legions.

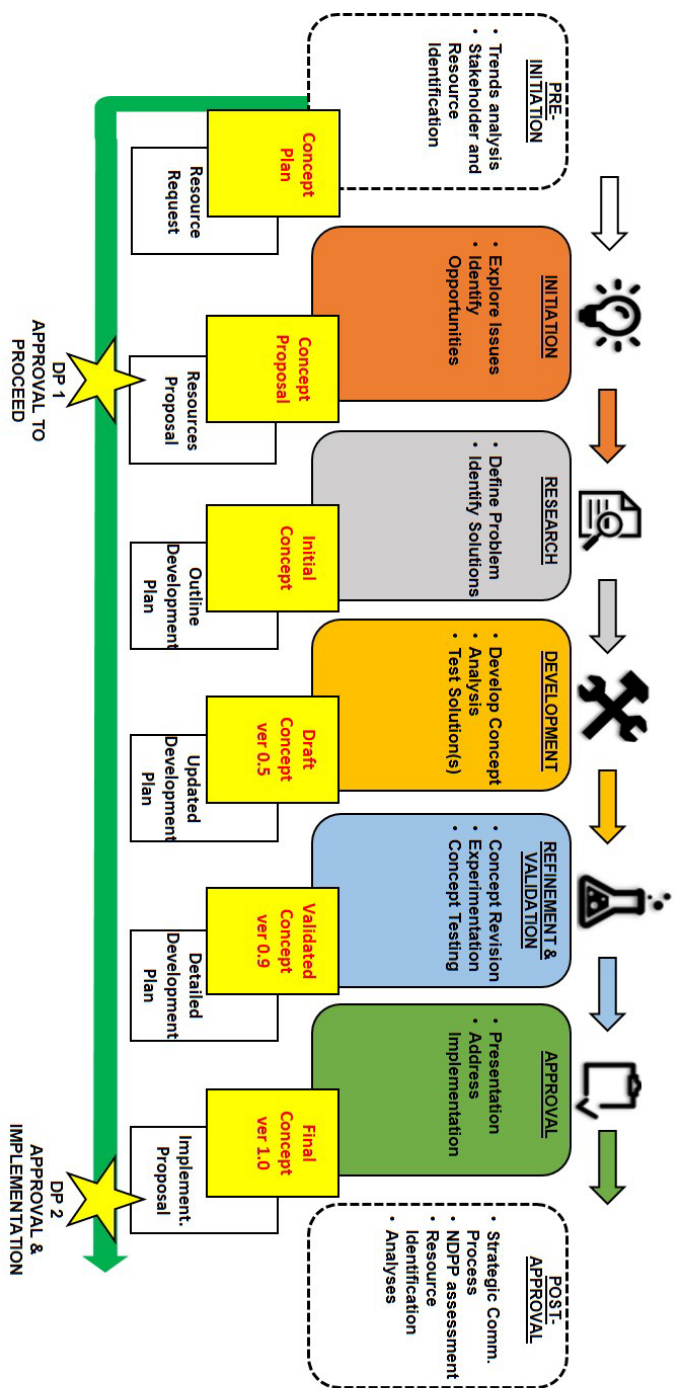
Although I understand that you want to study the problem first we have explained to you, I urge you to focus on the use of these UGVs. There is much promising work to do in that area. I expect you to come up with some ideas to demonstrate their use to our Praefectus Superior [their CHOD].

If there are no further questions. Good luck to you all and hope to see some results soon.

And don't forget to take time to enjoy our lovely nation."



IMPLEMENTATION



# YOU HAVE A **PROBLEM** AND NO **SOLUTION**?

We can help you to solve  
your problem and turn your  
solution into a capability. **How?**

You can find extra information on our **CD&E website** on  
<https://cde365.transnet.act.nato.int/>.

The ACT Transformation Network Portal (**TRANSNET**)  
is an open, unclassified network environment requiring  
additional permissions <https://portal.transnet.act.nato.int/>.

You can use our **handbook** as your guide. The handbook is  
available on <https://cdh.transnet.act.nato.int/>.

You can get an introduction on CD&E through our **online  
course**.

You can attend the in-house NATO **Concept Development  
and Experimentation Course** (ETE-ET-21371) at NATO  
School Oberammergau, or request a session by our  
**mobile training team**.

You can exchange views and ideas with other attendees  
during our annual **CD&E Conference**.

You can ask us for advice, an introduction or support via  
[ConceptDevelopment@act.nato.int](mailto:ConceptDevelopment@act.nato.int)

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