



LANDWARD TECHNOLOGY IN AFRICA



**BATTLE SPACE OF
TODAY,
TOMORROW,
THE DAY AFTER TOMORROW**



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AIM

To brief the audience on the landward technology available in Africa and what technology can be expected on the future battlefield



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SCOPE

- Introduction
- Military technology today
- Military technology tomorrow
- Military technology, the day after tomorrow
- Conclusions
- Questions & remarks



INTRODUCTION

- Although the topic entails battle space, presentation mainly focuses on landward threat and technology.
- Africa has often in the past been seen as the military dumping ground of major military powers - this scenario is changing.
- Socio-economic conditions dictate pace and extent of military modernisation or upgrade.
- Conflicts in Africa where military is involved have changed from interstate conflicts to intrastate conflicts - often assisted by allies or proxy forces.
- Development of military technology worldwide is on the increase in terms of tempo and extent of development . However, COTS systems becoming popular - quicker available and cheaper than development







AFRICAN MILITARY EQUIPMENT TODAY



INFANTRY THREAT



PG7-VR in Libya



AK-74M



**AK-47/
AKM**



PKM



Mortars



GALIL Sniper



INFANTRY THREAT (2)



DRAGUNOV Sniper



M93 Black Arrow Anti-material



Type 69



Type 85 HMG



ARMOUR THREAT



BMP-2



SALADIN



EE-9 CASCAVEL



RPG



T-34



T-54



AT-4



ARMOUR THREAT (2)



T-55AM2



T-72 S



T-80 U



Type-72AV



T-90S



Type 85IIM
Al Bashir



Type-59



ARTILLERY THREAT



M46 in Uganda



D30 in Sudan



Atmos 2000 in Uganda



2S3 SPG in Angola



Type 63 107mm



BM-21/RM-70



AAA THREAT



DSHK



ZPU-2



Type 56/65 37mm



GENERAL THREAT TO MOBILITY - MINES



Type 72 Blast



TM-46 Blast



TMA-5 Blast



**TM-89
Shaped charge**



**TMRP 6
Shaped charge**



**Type 84A
Shaped charge**



**PRB-M3A1
Blast**



**TMK-2
Shaped charge**



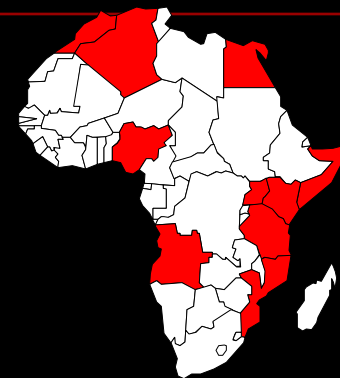
GENERAL THREAT TO MOBILITY (2) - IEDs

■ Various formats

- VBIEDs
- PBIEDs (suicide bombers)
- Roadside bombs
- Packaged IEDs
- Culvert IEDs
- Enhanced blast IEDs



Truck bomb



Roadside bomb



Suicide vest



GENERAL THREAT TO MOBILITY (3) - IEDs



Package bomb + enhanced (gas bottle + art projectile)



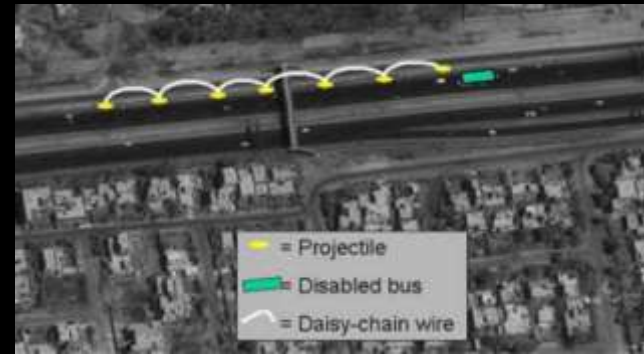
Roadside IED



Improved rocket launcher



Effect of culvert IED on IDF Merkava MBT



Enhanced blast (Daisy chain)



WHAT CAN BE EXPECTED ?

- More modern weapon systems
- High levels of force protection
- Increase in robotics
- Precision weapons
- High mobility operations
- Improved battlefield awareness
- Integrated systems approach
- Increase in use of UAVs

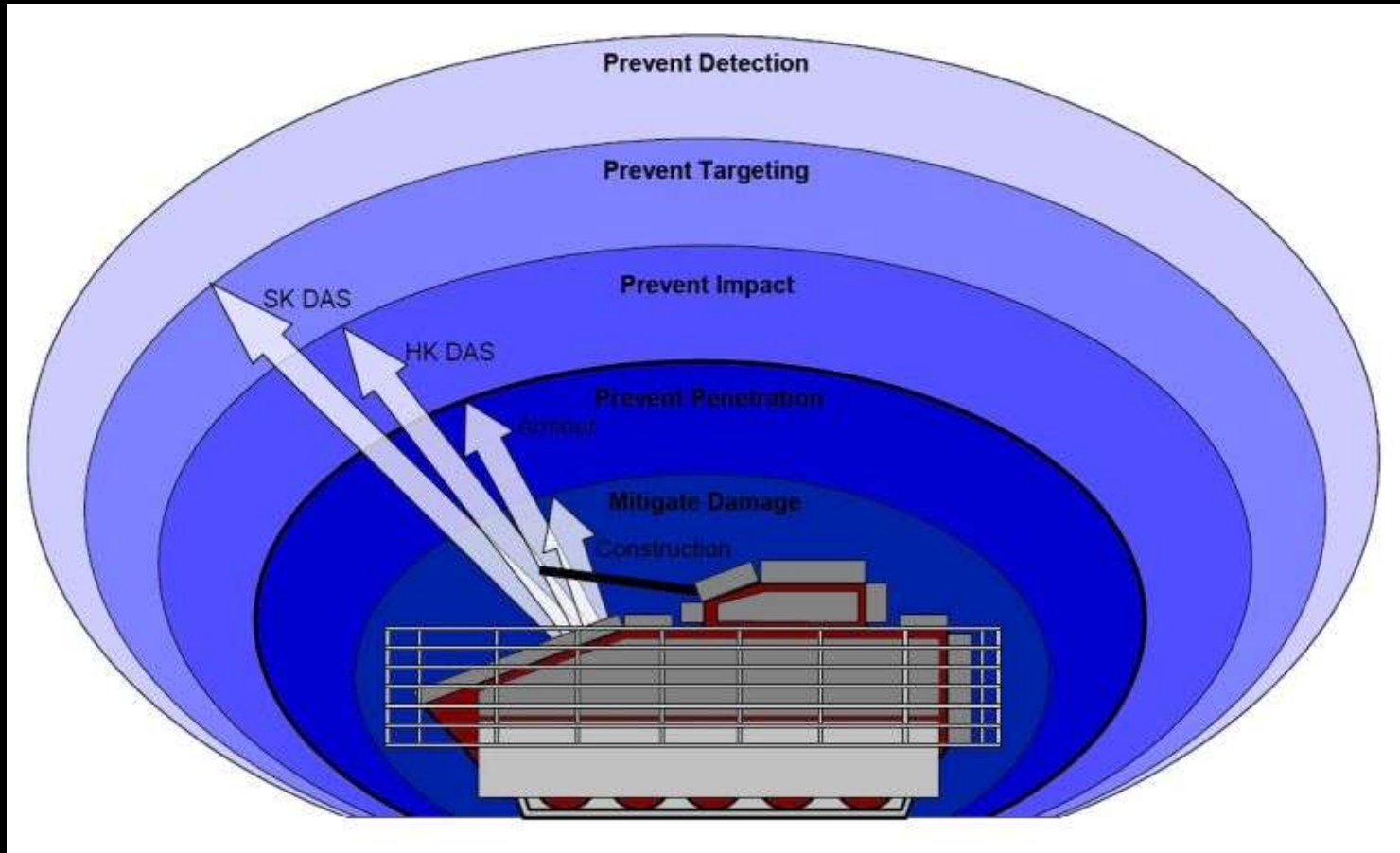


INTERNATIONAL TRENDS IN MODERNISATION

- Higher protection level without compromising mobility (mines, IEDs, etc)
- Modular design for mission-specific utilisation
- Standardisation on basic platform
- Integrated systems approach



PROTECTION



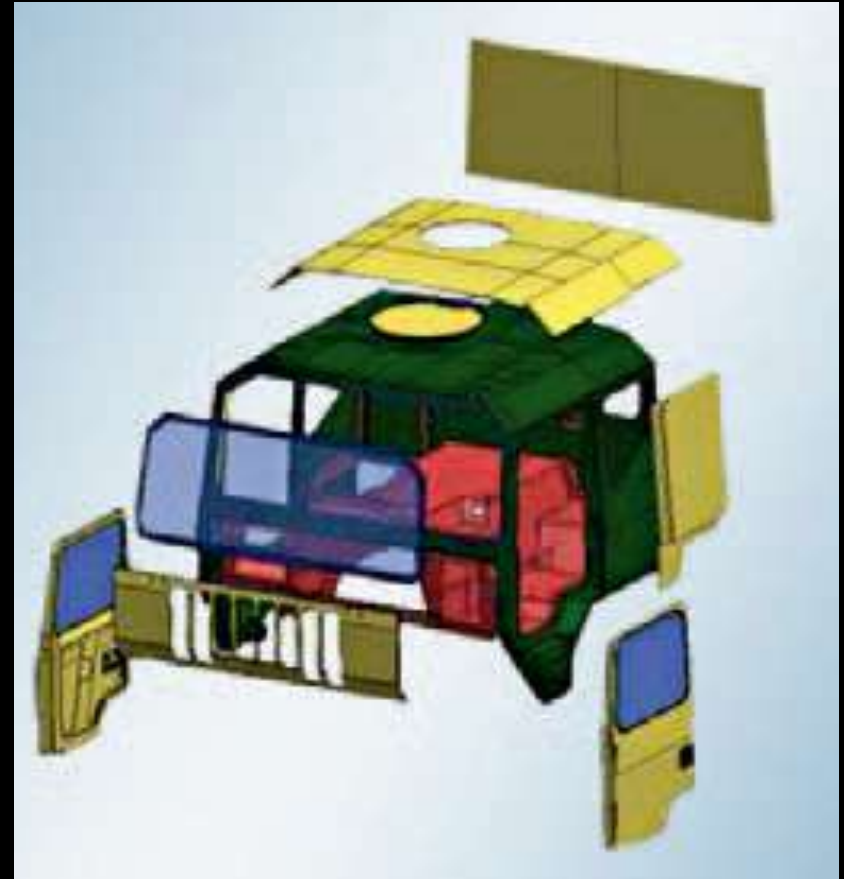
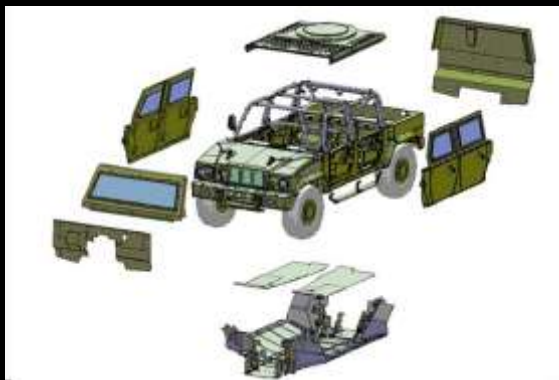
MOBILITY

- Lighter vehicles - smaller targets
- “Swarming” of battlefield
- “Hit and run” tactics
- More vulnerable
- Increased usage of technicals

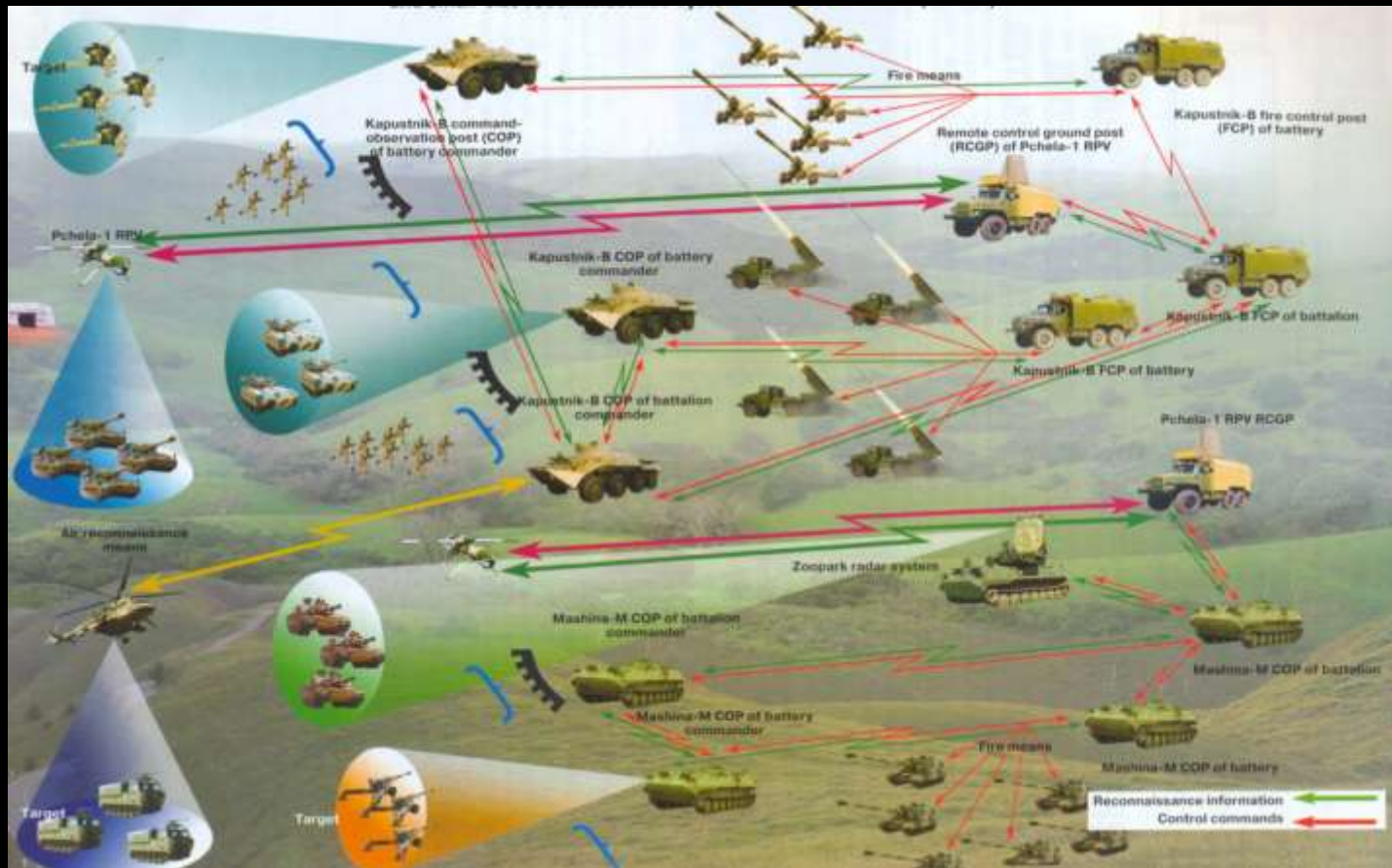


MODULARITY

- Prepare vehicle for specific mission
- Mine protection, IED protection etc
- Provides flexibility
- Quick to change level of protection (level 4)



INTEGRATED SYSTEMS APPROACH



SUPPORT TO ADVERSARIES

- **Support from allies / proxies when required**
 - Physical support
 - Logistic support
 - “Systems for hire”
 - Advisors and operators
- **Tactical “surprise”**
- **Innovativeness**







AFRICAN BATTLEFIELD: DAY AFTER TOMORROW ? (2030)



WHAT CAN BE EXPECTED ?

- Increase in the use of robotics - less value than human life
- Strong focus on neutralisation of command and control system, incl BMS bmo EMP, etc
- High levels of mobility with high levels of protection - modularity
- Fully integrated battlefield systems
- Rapid reaction from allies when required
- Improved firepower & ammunition



COMMUNICATION ACROSS THE ENTIRE THEATRE OF OPERATIONS



INTEGRATED BATTLEFIELD MANAGEMENT SYSTEM



MAXIMUM PROTECTION OF OWN FORCES



HIGH MOBILITY OPERATIONS



HIGH MOBILITY OPERATIONS (2)

TECHNICALS



Nothing new on the battlefield



Already in use during WW I and WW II



HIGH MOBILITY OPERATIONS MODERN TECHNICALS (3)



MODIFICATIONS AND UPGRADES

- Some of these systems have unique capabilities
- Can pose new threat



**Algerian T-72 upgrade
(Thermal imagers)**



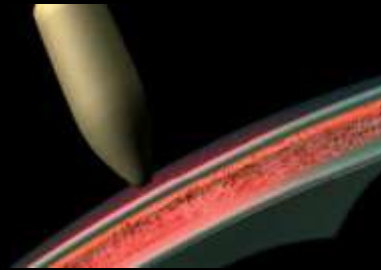
Fahd with BMP-2 turret & AT-5



**Algerian BMP-1 upgrade
(Gyro stab sights, 40mm GL,
Ingwe missile)**



NANOTECHNOLOGY



Future liquid Nano-armour with magnetic Rheo fluid



Wireless soldier



FIREPOWER AND AMMUNITION



- Improved range
- Improved effect
- Specific munitions for specific targets



- May include NBC weapons
- Standardisation may ease logistic burden



SITUATIONAL AWARENESS

- Provides 360 awareness
- Assists with crew and vehicle survivability
- Improves rapid decision making
- Avoids surprise



DECOY SYSTEMS AND SIGNATURE MANAGEMENT

- Force multiplier
- Delay mechanism
- Detecting sensors
- IR emissions
- Lack of thermal imaging
negative impact on recognition



T-72



Thermal cloaking



BMP-1



CONCEALMENT



CONCLUSION

- With technological development around the world, projects within the SA Army will have to keep track of new developments to remain competitive in the African military arena.
- International developments focus on mobility, firepower, protection and modularity. The latter ensures that a force can be made mission ready within a relatively short period of time, as well as making sustainment easier.
- Social, political and economic conditions will dictate the extent of acquisitions and/or modifications/upgrades. However, should the situation require urgent intervention, allies may step in, changing the face of the battlefield.



CONCLUSION (2)

- Nature of the conflict will determine what military equipment and technology is required
- In many cases time will determine which route will be followed - develop or COTS
- The bigger the emphasis is on protection, the smaller the risk for great losses. Battle space awareness will become more prominent, highlighting once again that the sensors on the battlefield may become the determining factor for military success.
- Environmental factors will influence military operations
- Nanotechnology will start playing an important role in any military activities in future (protection, self-healing, wireless, etc)



CONCLUSION (3)

- The scope of any force's battlefield observation and battle space awareness will continuously be tested by the adversary. If proper deception and signature management is being applied by the adversary, surprise can not be avoided. Modifications and upgrades on legacy systems can upset any battle plan if the existence thereof is not correctly appreciated. What you think you see on the battlefield, may eventually turn out to be something totally different.





**IS THE SA ARMY READY
TO FACE THE BATTLEFIELD
OF TOMORROW AND THE DAY
AFTER TOMORROW ?**



Questions

&

Remarks

