

## Rocket Artillery in Future Scenarios, First Answer

GMLRS-SMArt

**42<sup>nd</sup> Annual Armament Systems: Gun and Missile Systems Conference**

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# Outline

- ◆ Who we Are
- ◆ The Past
- ◆ The Future
- ◆ Options
- ◆ A Solution
  - Concept
  - Benefits
  - Performance
  - Programme Timeline
- ◆ Summary/Conclusions



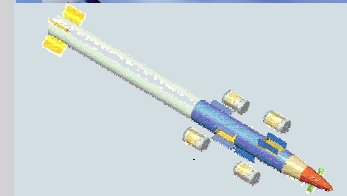
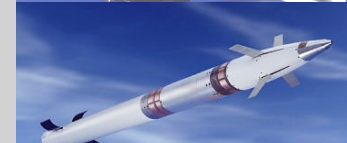
# Who we Are in a nutshell

**DIEHL**  
BGT Defence

- ◆ Diehl BGT Defence is a System House and Technology Company in the Areas of Defence and Security  
1630 Employees  
\$550 m Sales

Member of the privately owned Diehl Group

- ◆ Historically a direct Fire Company started “Indirect Fire” Activities
  - 1982 Development Sensor Fuzed Munitions → SMARt® 155 developed and manufactured under GIWS JV with Rheinmetall
  - 1983 Demonstration of First guided Mortar Round “Bussard”
  - 1983 MLRS Final Integrator for Rockets and RPC’s
  - 1985 Studies and Demonstrators on Guided 155 mm
  - 1997 First guided MLRS Flight “NAW”
  - 2005 Development of GMLRS-SMARt





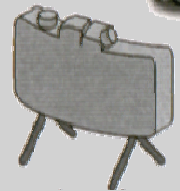
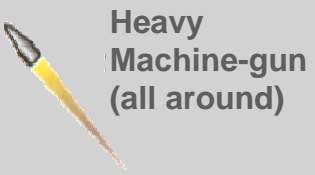
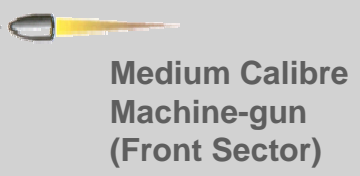
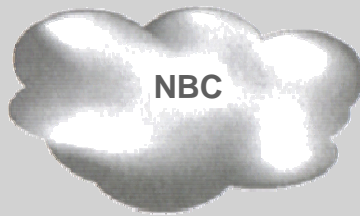
# The Past





# The Future

**DIEHL**



**Directed Anti Personnel Mine**



**Anti Tank Mine Under Wheel and under Hull**



# Options

- ◆ DPICM, (**D**ual **P**urpose **I**mproved **C**onventional **M**unition)
  - small Fragments  
shaped Charge

*Is it still as good as we believe?*

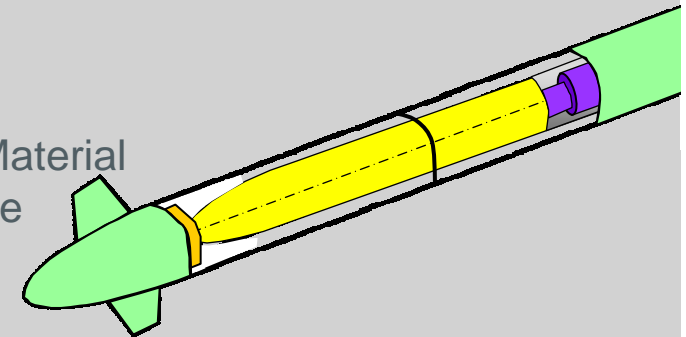
Anti Personnel/(Material)  
Anti Armor/Material



- ◆ Unitary, (a single HE filled Effector in a carrier)
  - Fragments  
Penetrator

*Precision is Mission critical!  
Includes TLE!*

Anti Personnel/Material  
Anti Infrastructure



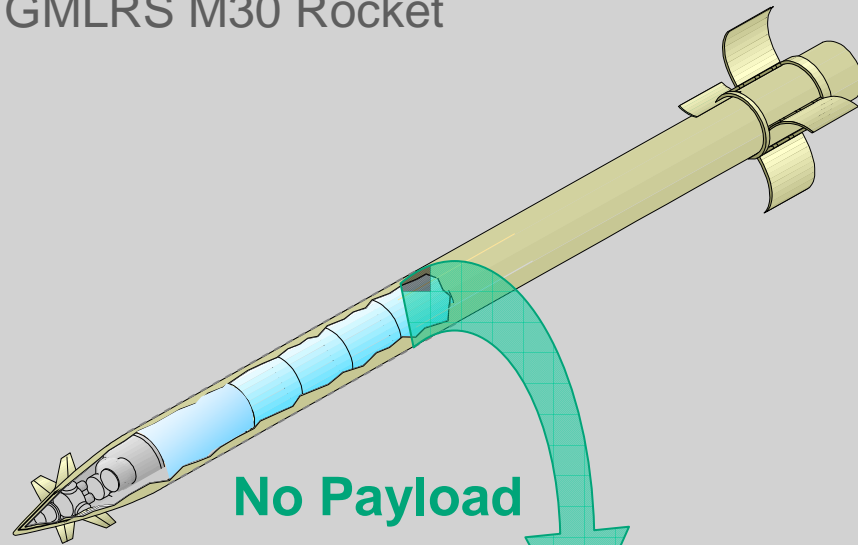
- ◆ SFM, (**S**ensor **F**uzed **M**unition)
  - Designed to fight hard and semi-hard Targets



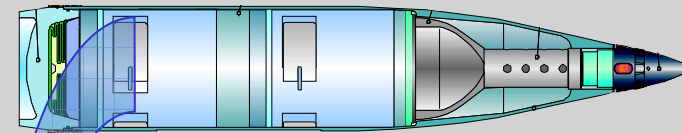
*SFM's are perfect to fight all protected Targets !*

# A Solution

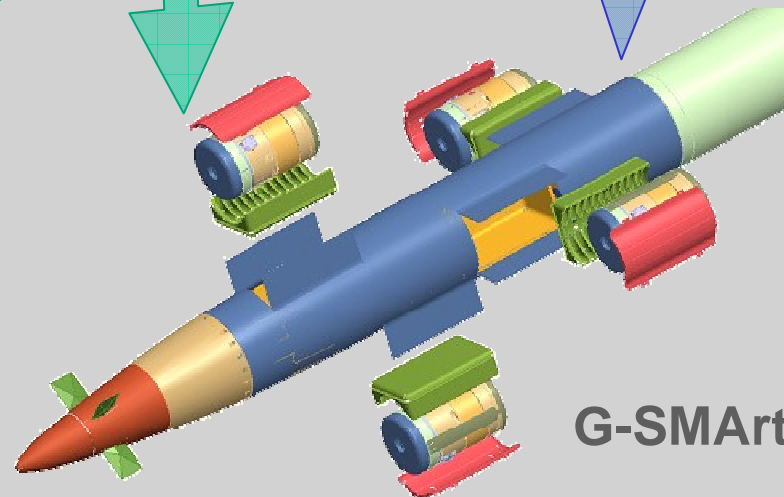
GMLRS M30 Rocket



SMArt® DM 702



4 SMarT® Sub-Munitions



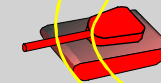
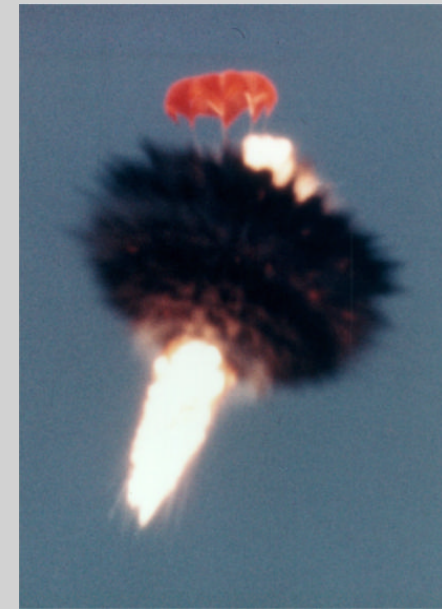
G-SMArt Rocket





## Characteristics

- **Tri mode**
  - passive Infrared (IR)
  - passive 94 GHz Millimetre Wave (Radiometer)
  - active 94 GHz Millimetre Wave (Radar)
- High sophisticated Sensor Fusion
- High Performance **Tantalum Liner Warhead**
- IR/mmW Sensor, bore sighted with Warhead (apart from small lead angle)
- Single **(first) pass Detection** and Warhead Initiation
- **Redundant** built-in **Self-Destruct** Function
  - Altitude (Slant Range) commanded through Radar Channel
  - Battery burn-out initiates Self-Destruct



More than 20,000 SMArt® Sub-Munitions produced up to now !

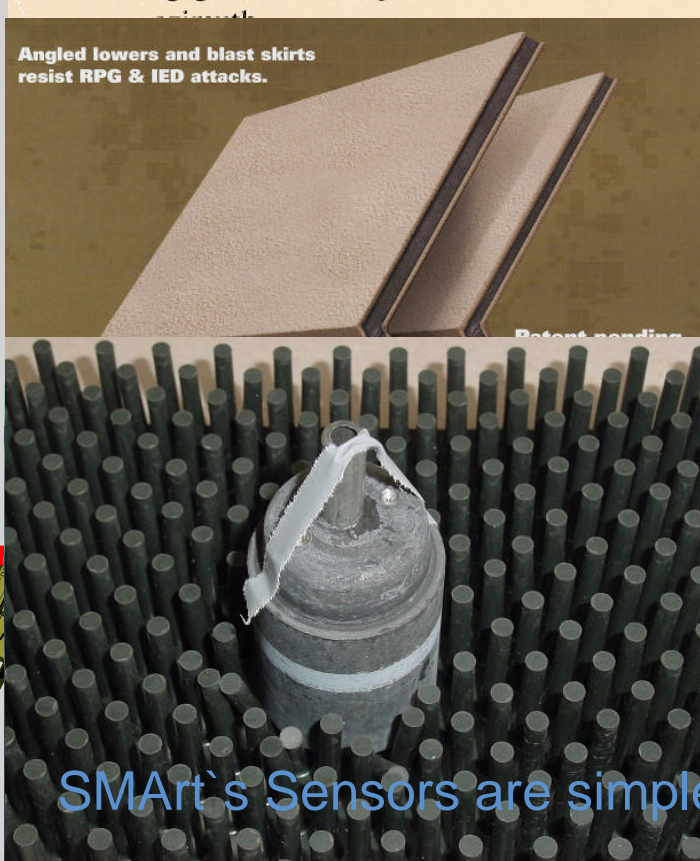


# SMARt Principle of Function

## MAIN PERFORMANCE DATA

Target detection and tracking \_\_\_\_\_ radar  
Operational mode \_\_\_\_\_ automatic  
Engagement envelope: \_\_\_\_\_ (SLR)

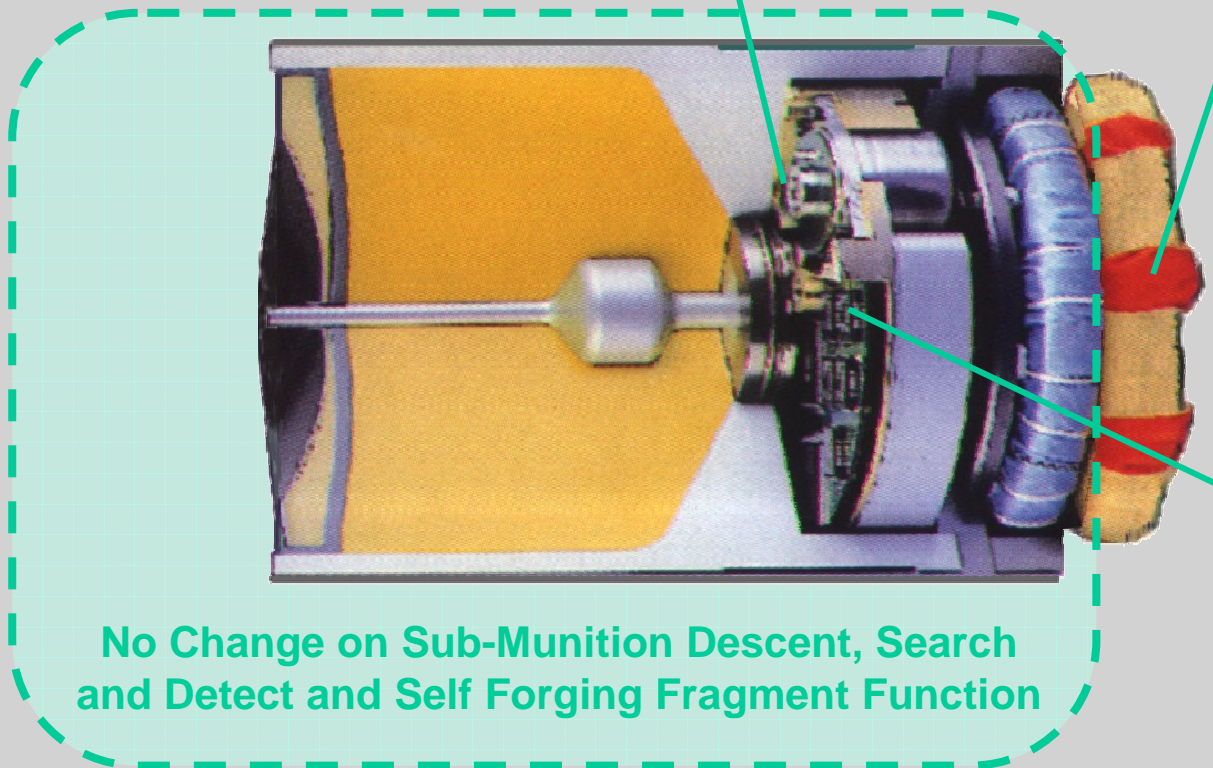
Angled lowers and blast skirts  
resist RPG & IED attacks.



SMARt's Sensors are simple and the kill Mechanism is very robust !

# SMARt Adaptation to GMLRS

Change Spin released Battery  
Activation to Rocket Control



Change Spin opened  
Ballute to high Speed  
Drag Chute

Change Acceleration  
Environmental Criteria  
of S&A to Rocket  
ESAD Control

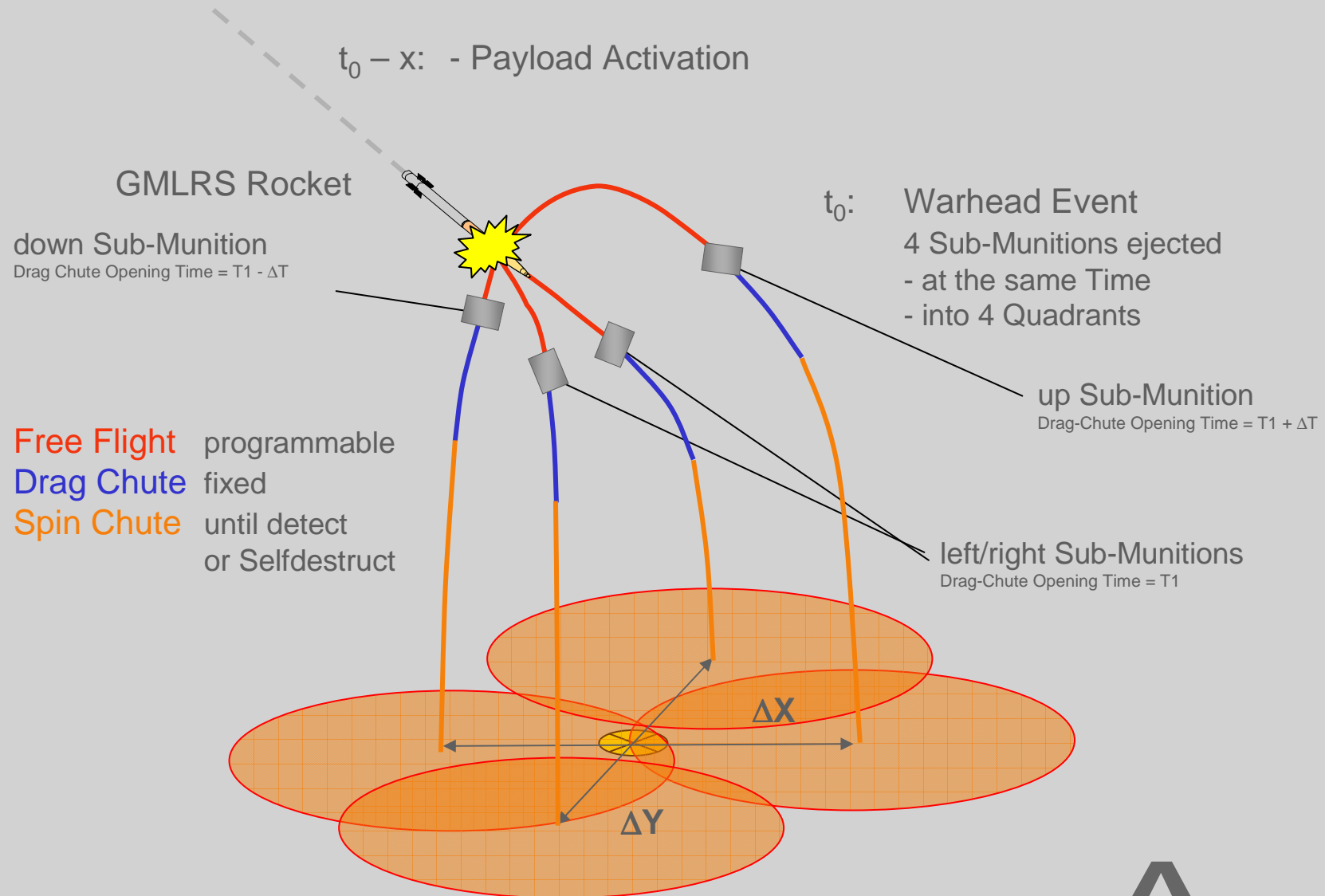
**No Change on Sub-Munition Descent, Search  
and Detect and Self Forging Fragment Function**

**Minor Modifications only to SMARt Sub-Munition !**



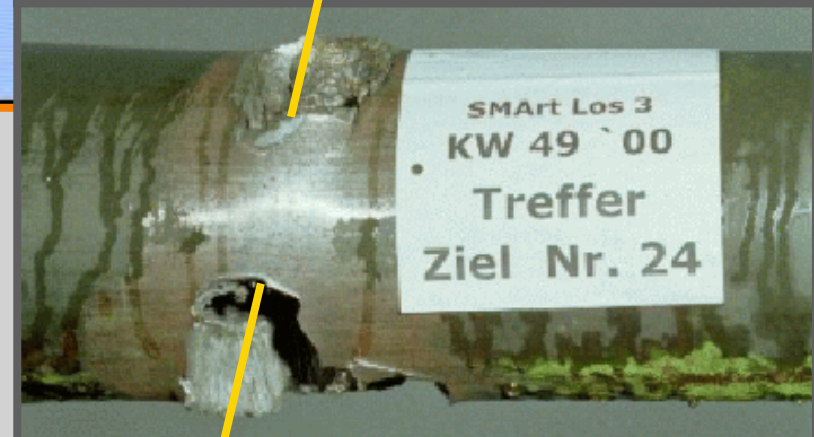
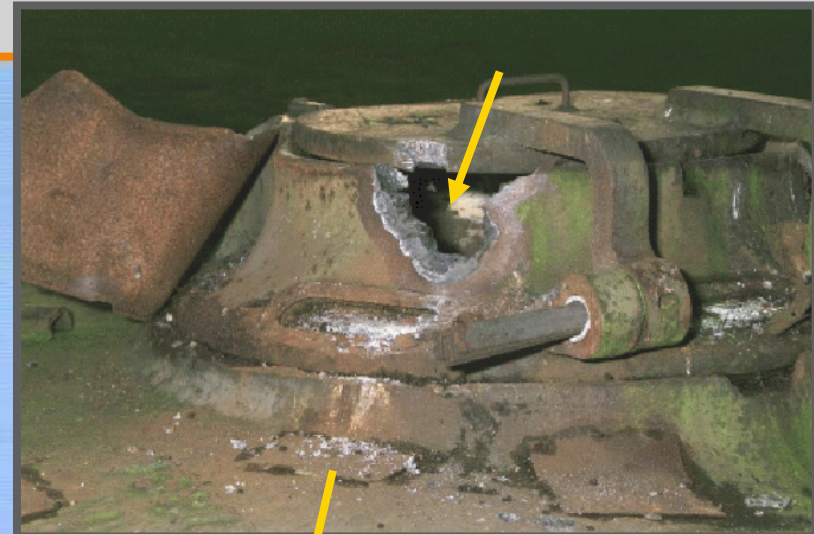
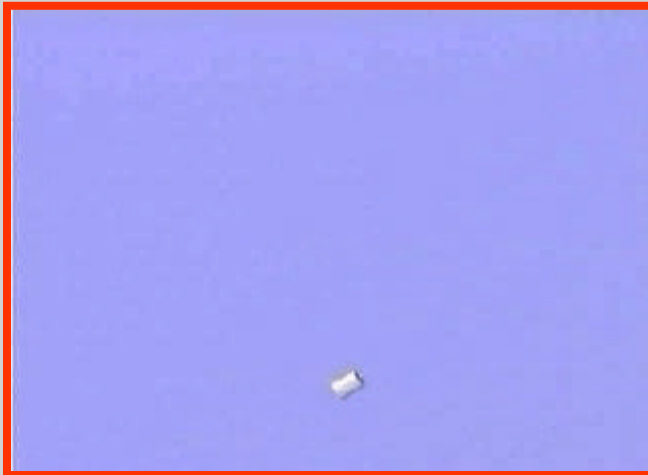


# G-SMArt Sub-Munition Dispense

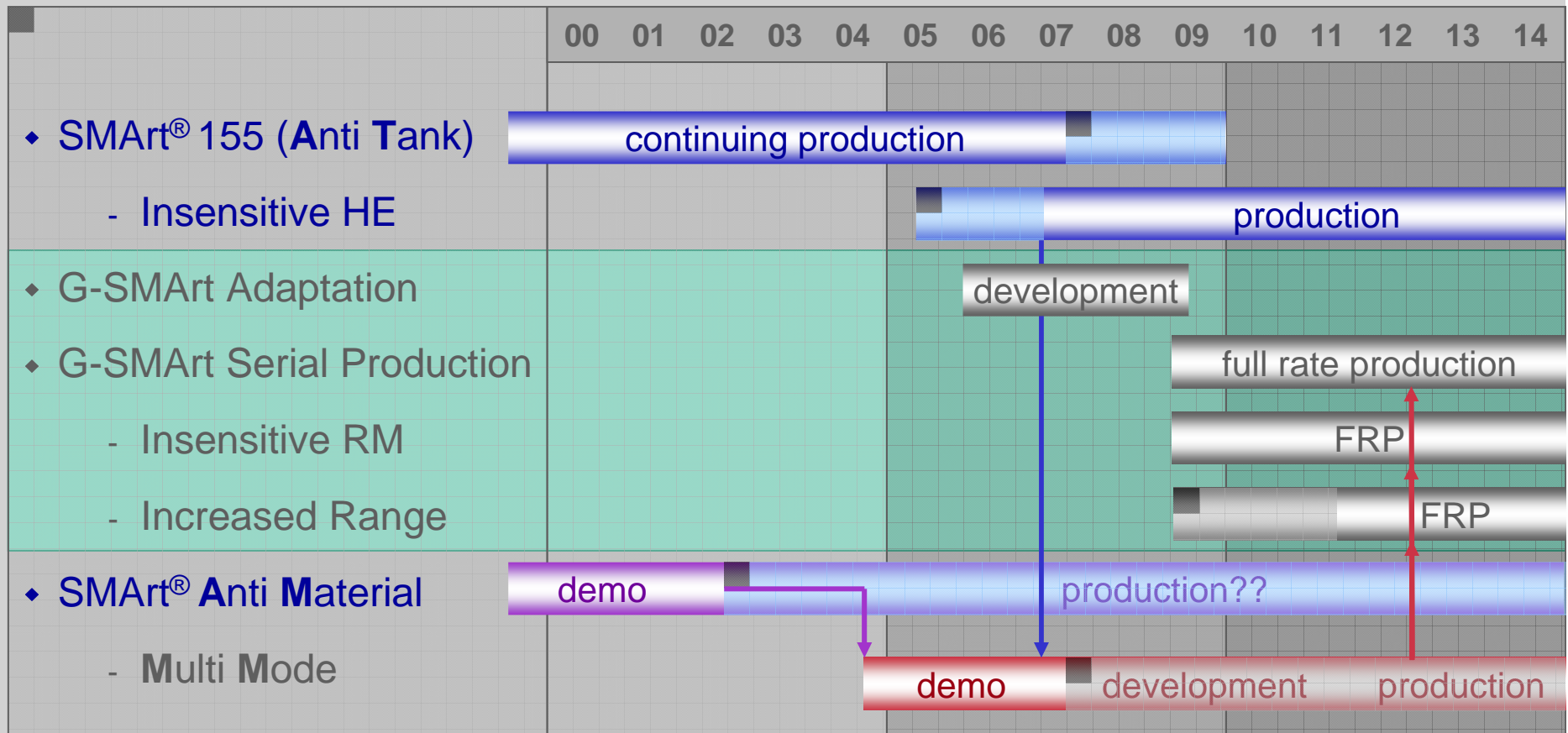


# G-SMArt Sub-Munition Function

Free Flight, Drag Chute Flight and Spin Chute Flight, some Hit Examples



# Programme Timeline and Growth Potential

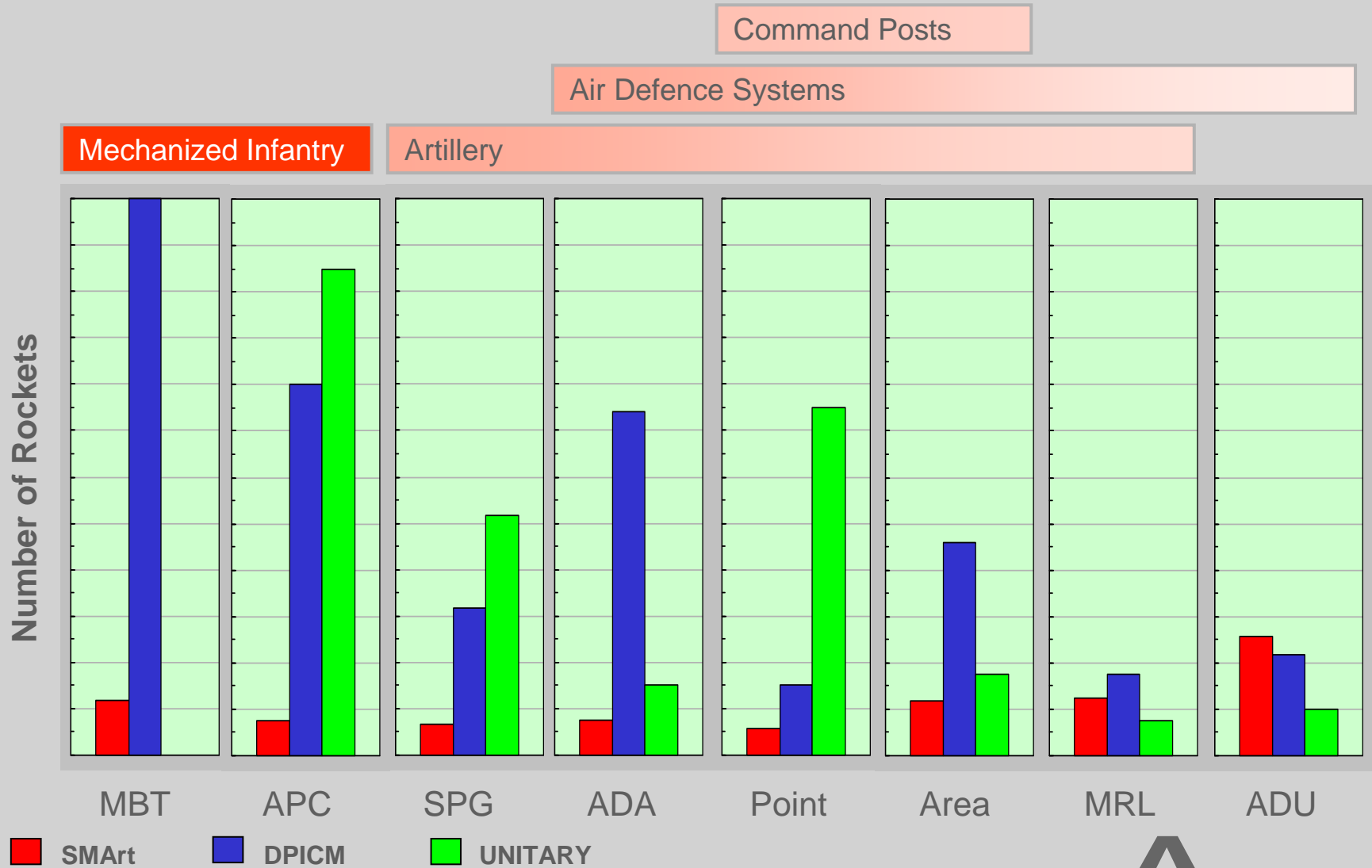


Leveraging form both GMLRS and SMARt® Improvements  
G-SMARt will always be up-to-date



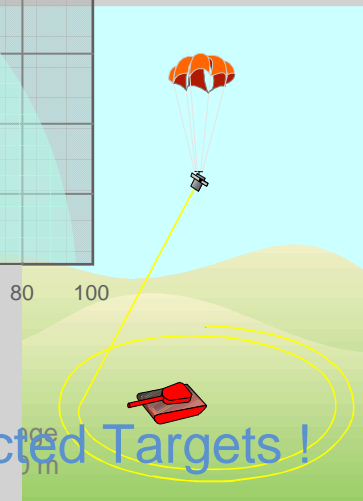
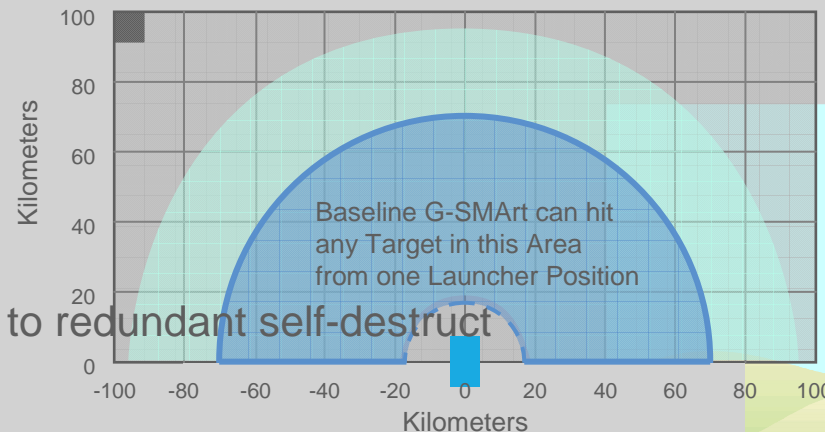


# Performance Prediction



# G-SMArt Summary

- ◆ Quick Solution based on “In Production” SMArt® and GMLRS
  - low Cost/low Risk
- ◆ Effective against **hard, semi-hard** and **protected** Targets
  - robust to passive Protection and reactive Armor
  - robust to DAS Countermeasures
- ◆ Wide Attack Footprint
- ◆ Close Combat Capability
- ◆ Minimal Collateral Damage
- ◆ Clean battlefield operation due to redundant self-destruct



G-SMArt will take care of all future needs attacking protected Targets !

**Thank you for your Attention!**

Lance Corporal Klöbke  
is currently our  
only operational  
Rocket Launcher  
Colonel !

**Any Questions?**

