



# **Future Tactical Truck Systems Concepts and Analysis (M&S) Activities for the**

## **FTTS ACTD**

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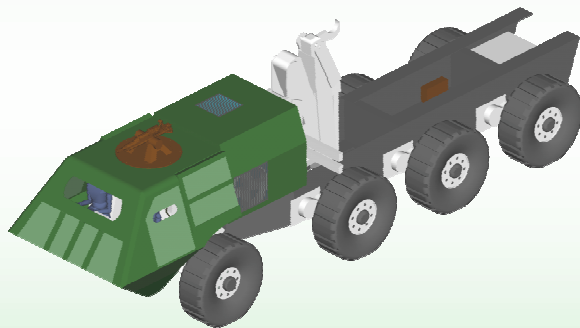
## Briefing Outline

- STO IV. GC.2000.01, Concepts for 21st Century Truck-based Tactical Vehicles
- FTTS Virtual Prototyping (Concept Level)
  - Objective Flatrack based Unit of Action Modules
  - FTTS Utility Vehicle (UV) Concepts
  - FTTS (Robotic Technology) Combat Engineer Variants
  - Technology Integration Studies
- FTTS use of Pit Stop Design Philosophy
- FTTS ACTD Concepts and Analysis



# STO IV. GC.2000.01

## Concepts for 21st Century Truck-based Tactical Veh.



FTTS MS



FTTS UV

### Purpose:

- Demonstrate, through virtual prototyping, modeling, and simulation the feasibility and operational potential of advanced commercial and military technologies with application to new and existing tactical vehicles and describe the capabilities of sustainment platforms necessary for Objective Force

### Product:

- Combat and commercial technologies survey
- Numerous solid models of all weight classes of tactical vehicle configurations
- Performance, operational, and cost analyses of variants DADS, NRMM, VCam
- QFD with Boeing Phantom Works developing FTTS EDC

### Impact:

- Reduce logistics footprint through greater fuel efficiency, mobility, survivability, reduced maintenance
- Specific Transitions plans: Transitions to PEO-CS/CSS

***Sustainment platform for Objective Force***

**FTTS MS Objective Flatrack based  
Unit of Action Modules**

# FTTS MS

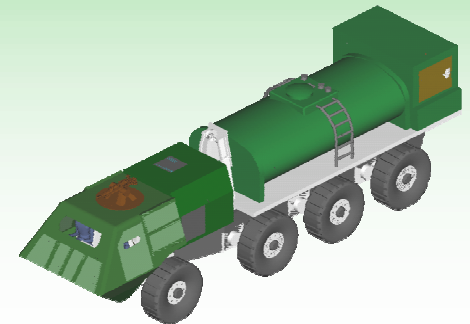
## Objective Flatrack based Unit of Action Modules



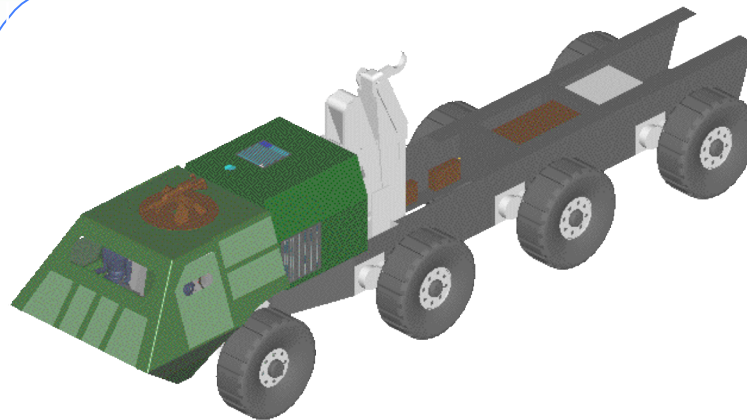
**FTTS MS TUAV Carrier**



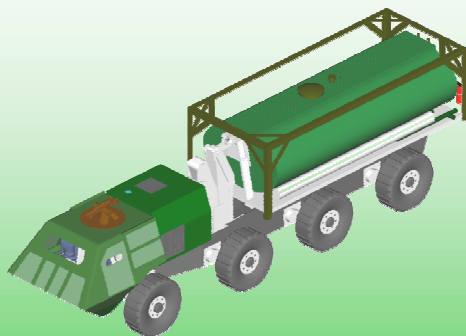
**FTTS MS FRMV/Wrecker**



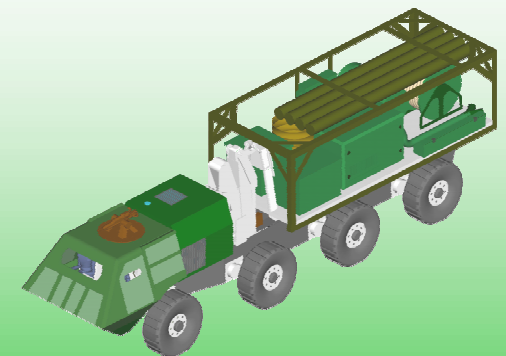
**FTTS MS Water Tanker**



**FTTS MS Common Chassis**

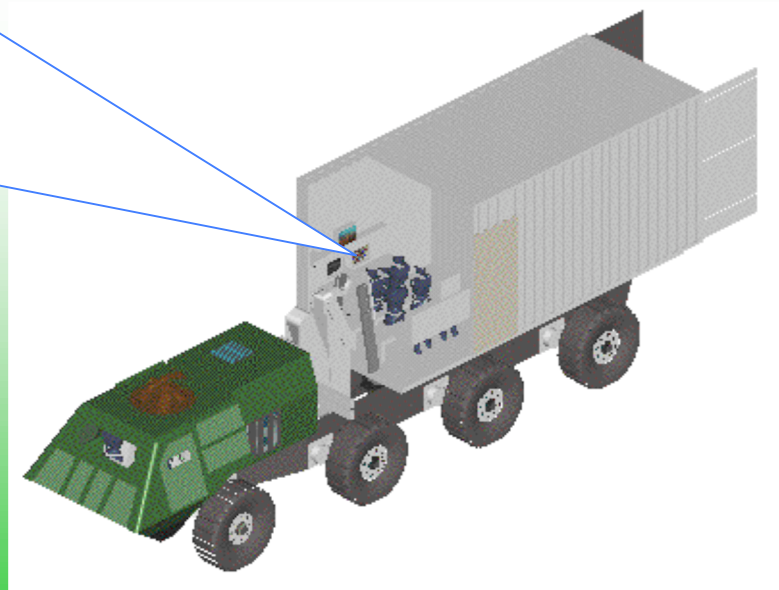


**FTTS MS Fuel Tanker**

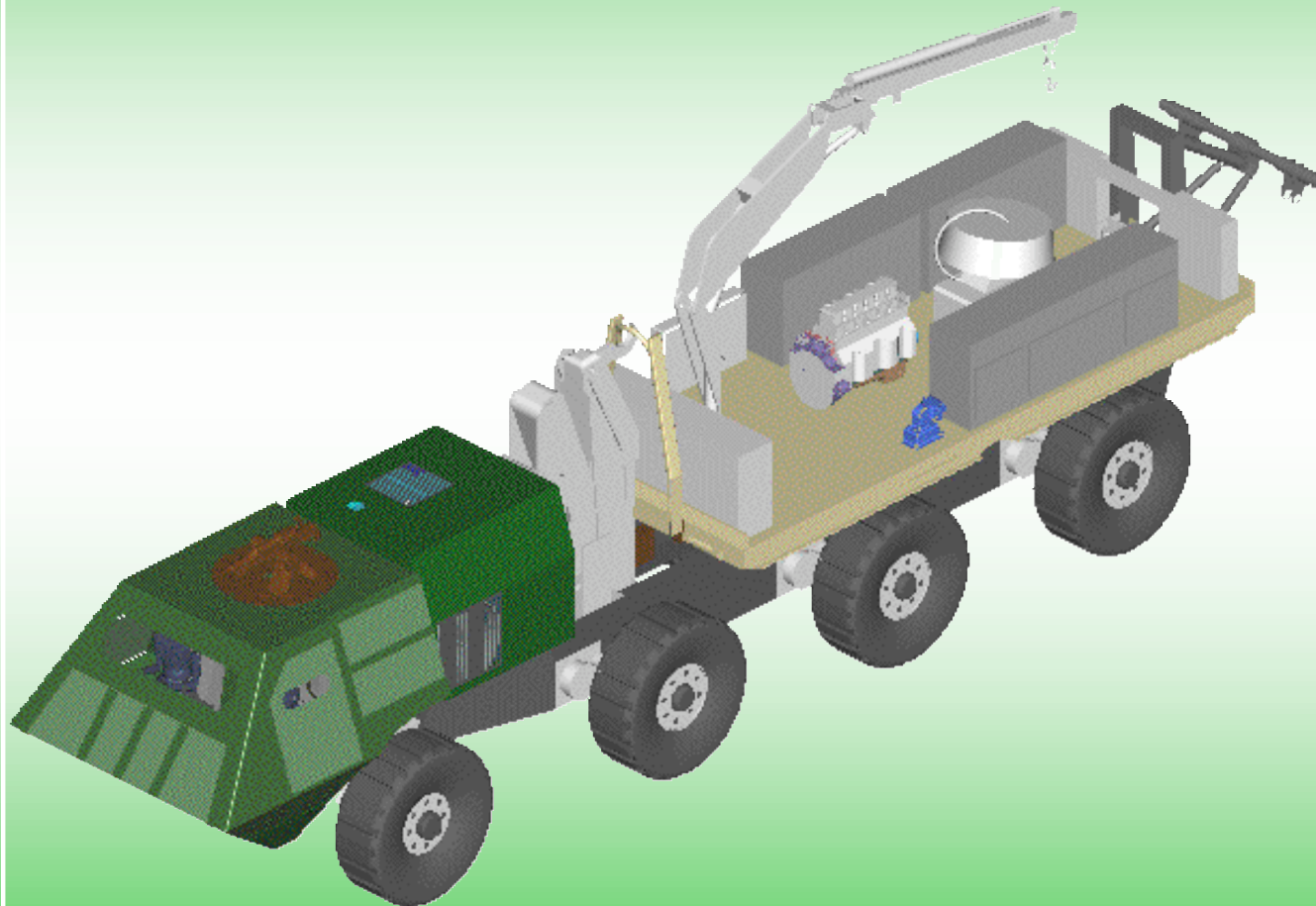


**FTTS MS Fuel Station**

# Tactical Unmanned Aerial Vehicle (TUAV) FTTS MS Carrier

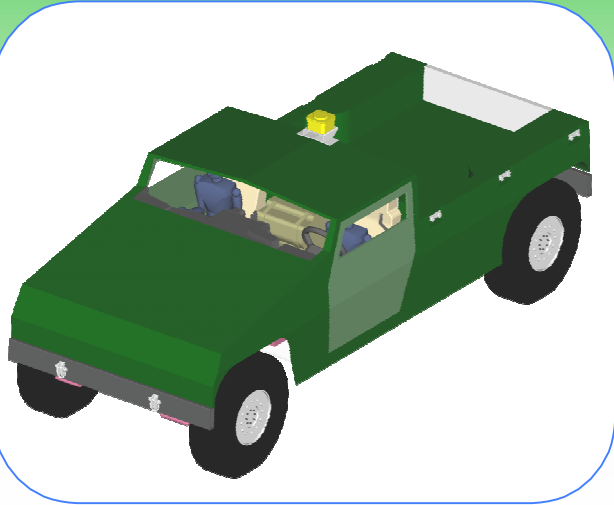


# FTTS Recovery and Maintenance Vehicle MS Alternative



## **FTTS Utility Vehicle (UV) Variants**

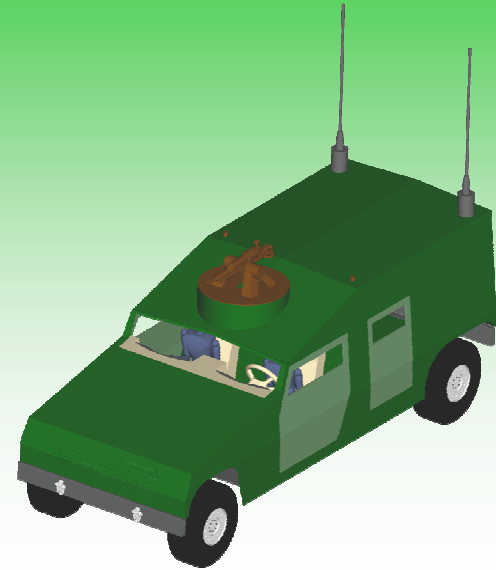
# FTTS Utility Vehicle (UV)



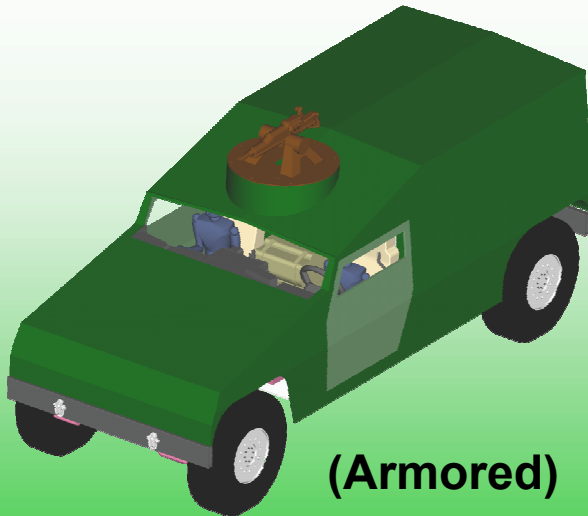
**FTTS-UV**



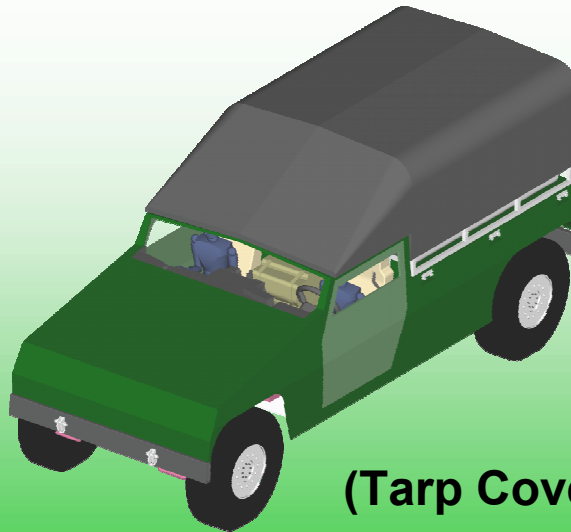
**FTTS-UV-AMB**



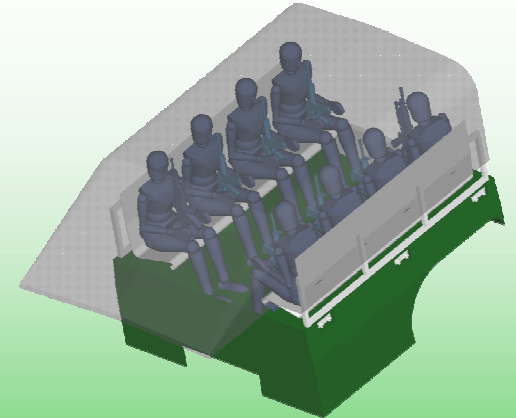
**FTTS-UV-C2/UAV Carrier**



**(Armored)**



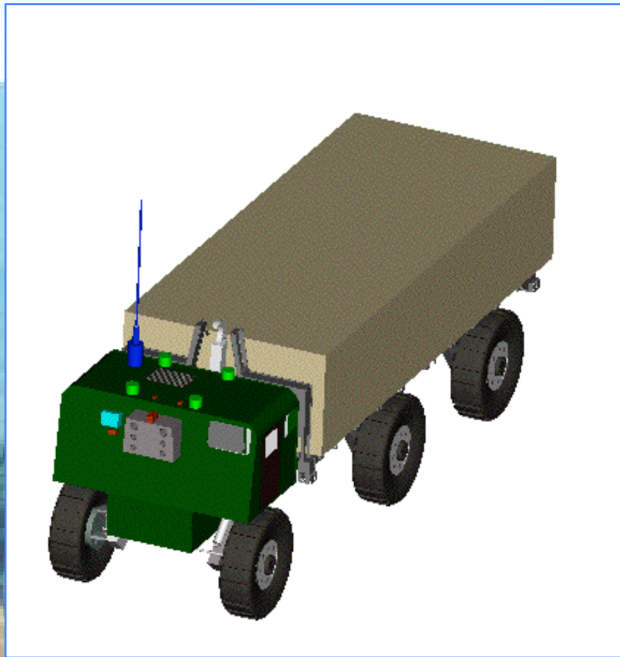
**(Tarp Covered)**



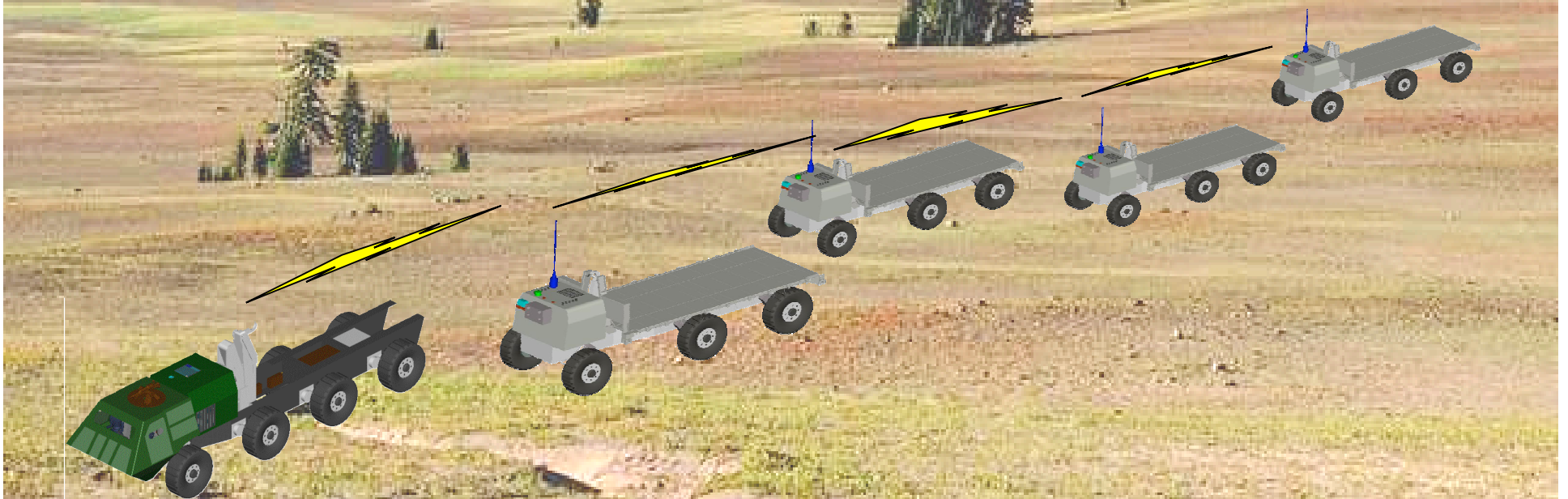
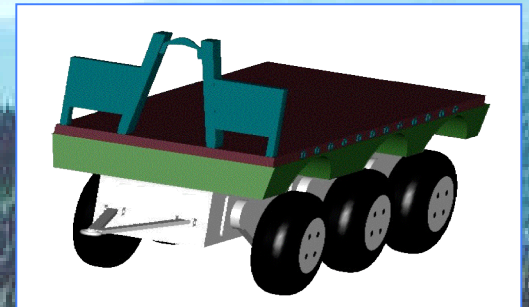
**FTTS-UV (Troop Carrier)**

# **FTTS (Robotic Technology) Combat Engineer Variants**

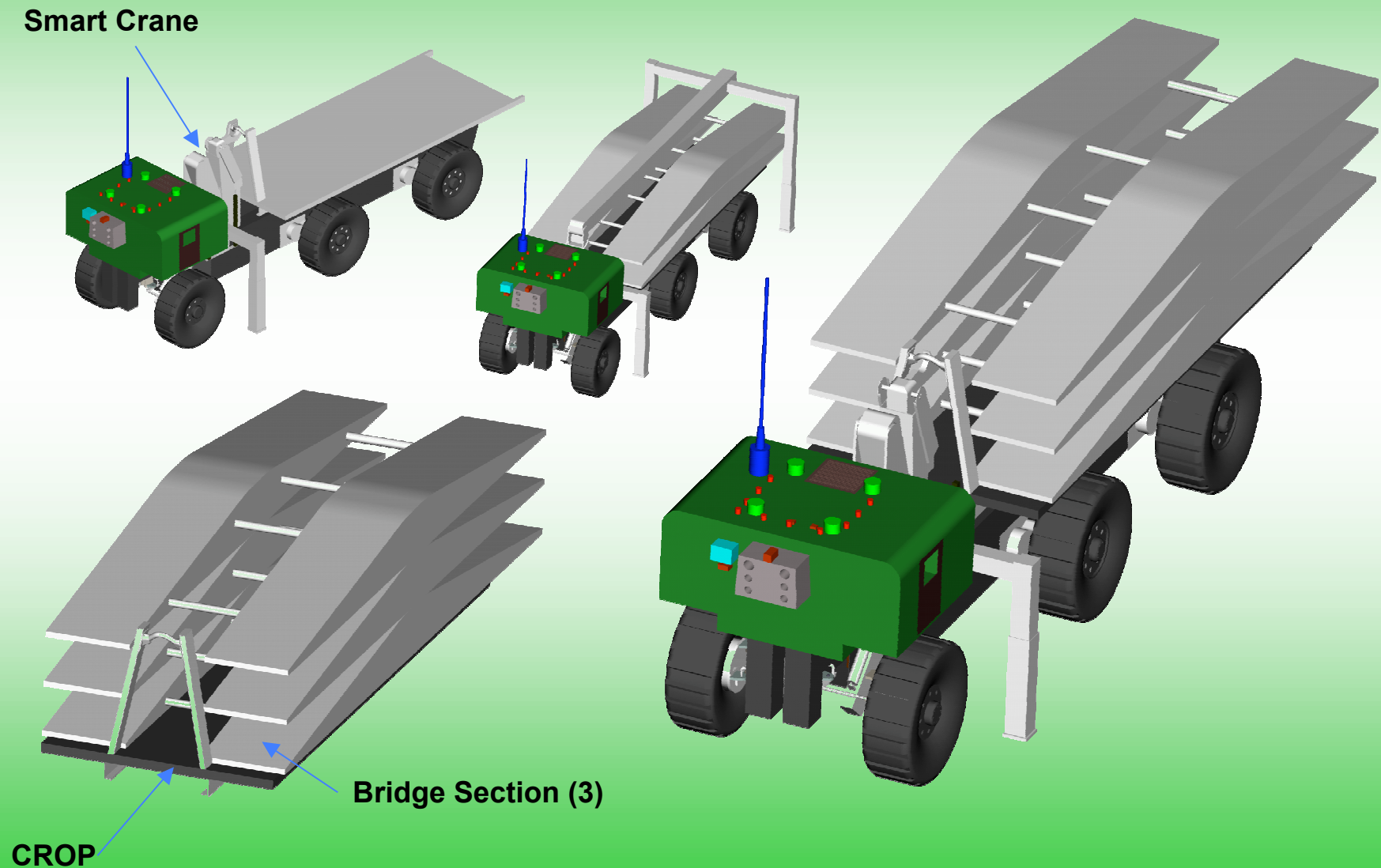




**FTTS MS Robotic Vehicle  
or  
FTTS MS Powered Trailer**

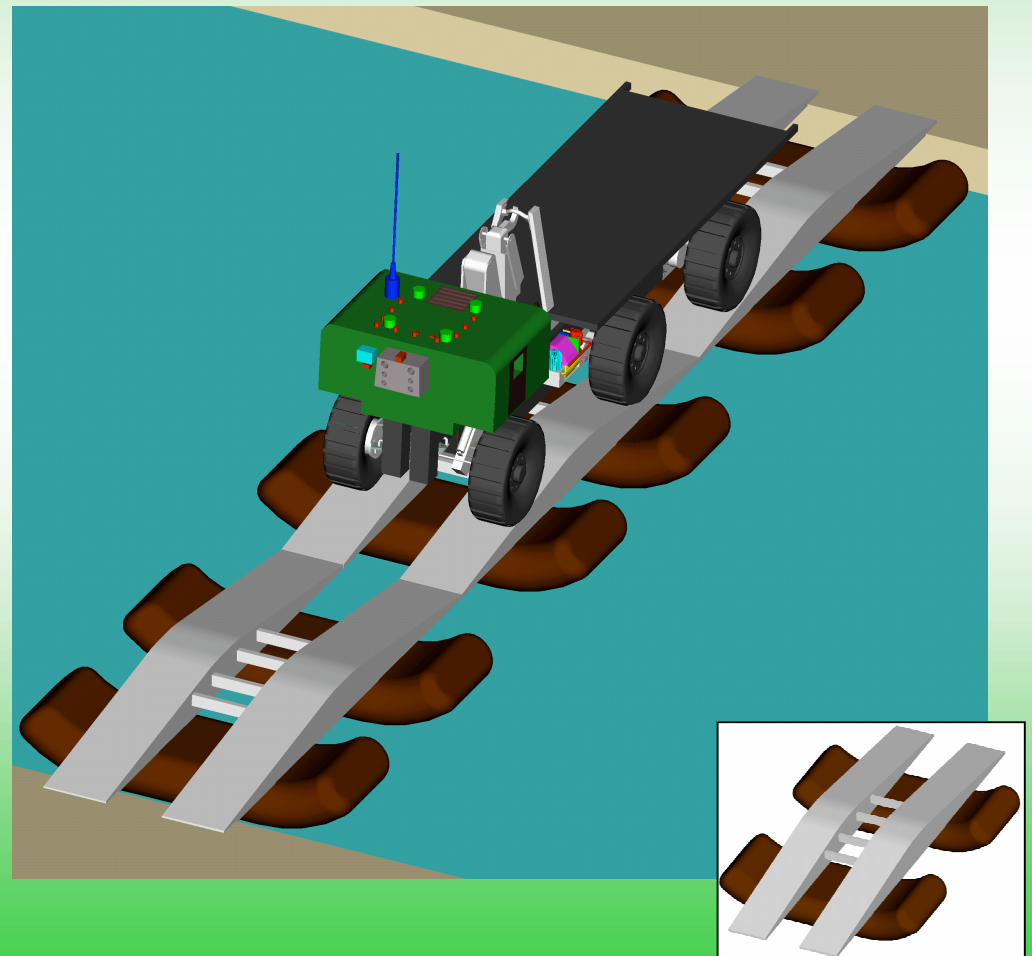
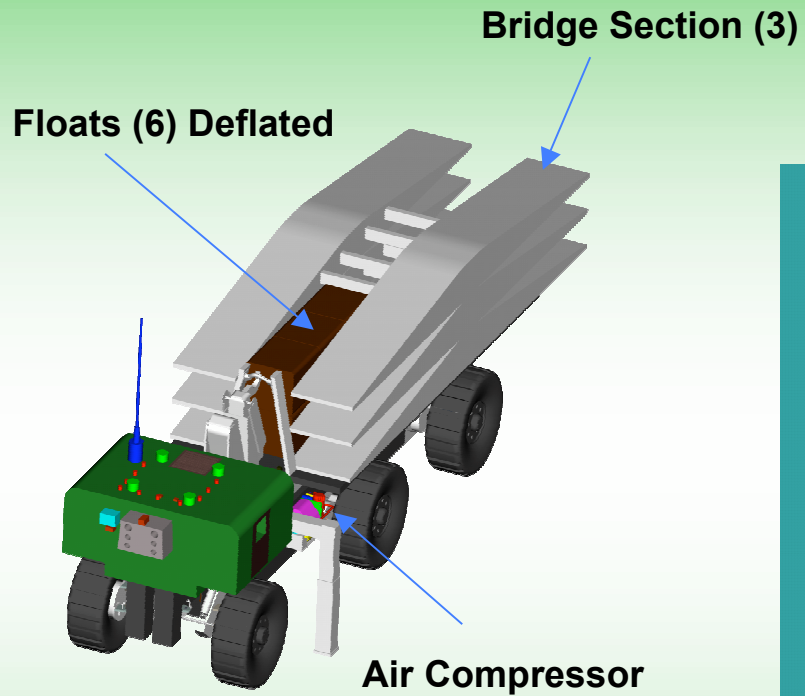


# FTTS MS Unit of Employment Dry Assault Bridge



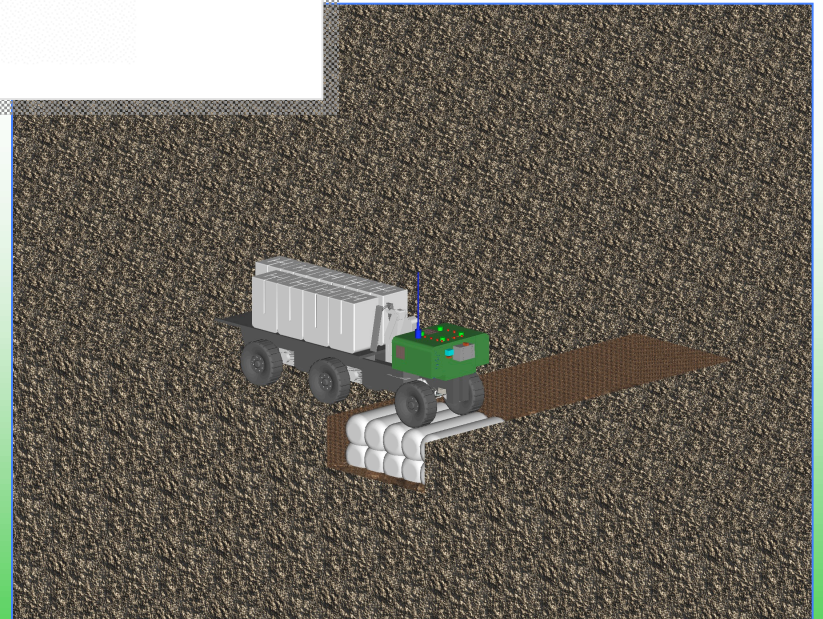
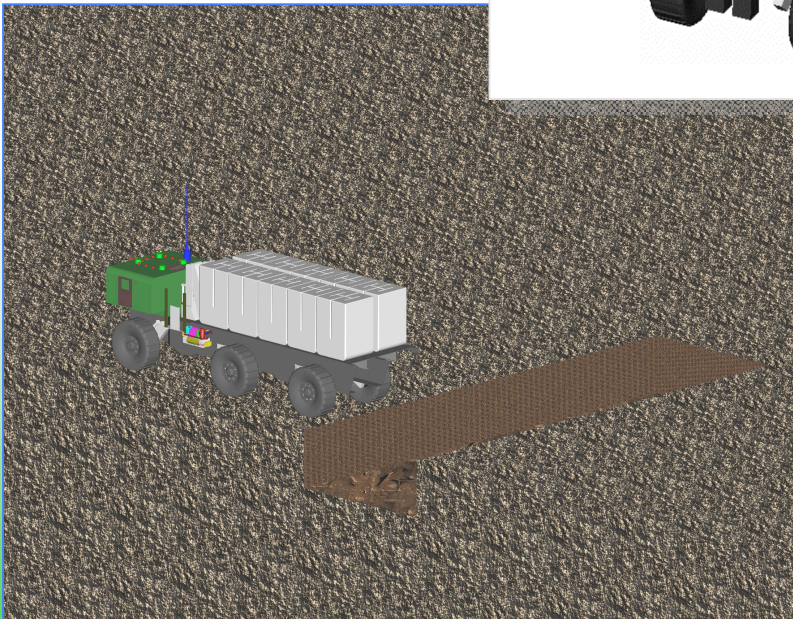
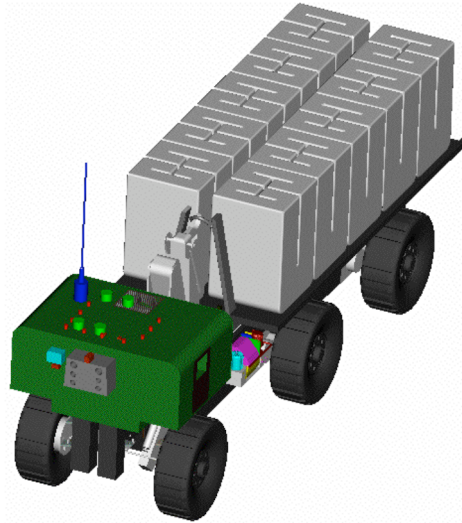
# FTTS MS

## Unit of Employment/Objective Force Bridging





# FTTS MS FASCINE Deployment

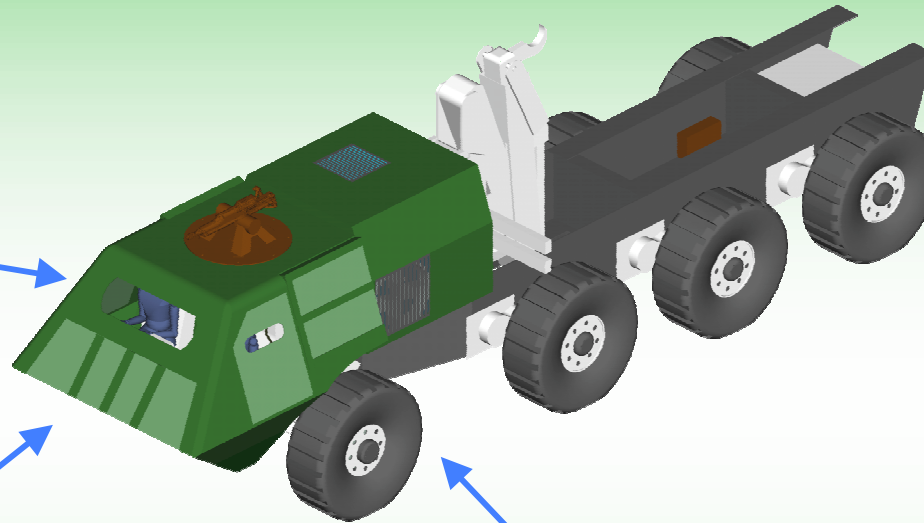


# **Technology Integration Studies**

# FTTS MS KE Threat Technology

## Windows

- Reduced Area
- Polycarbonate
- Al-ON



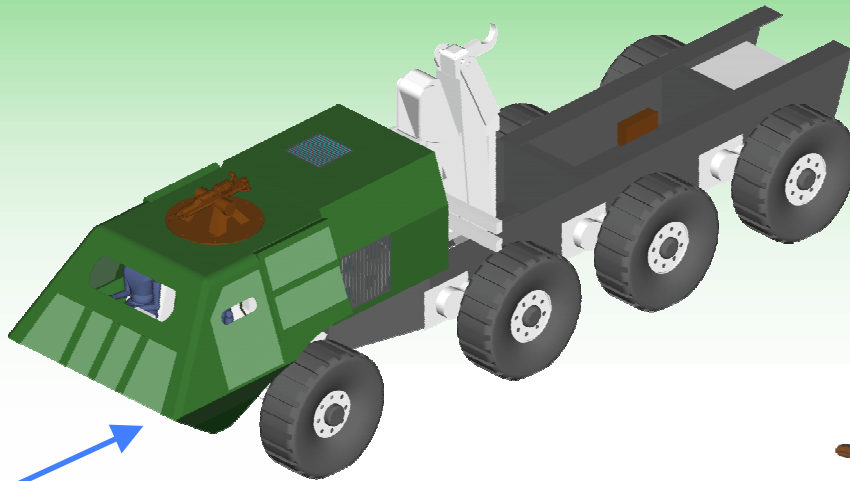
## Applique Cab & Compartment Structure (Ceramic)

- 14.5mm
- Howitzer HE Fragment

## Cab & Mobility Compartment Structure (5/16" RHA)

- 7.62 mm ball
- HE Mortar

# FTTS MS Mine Threat Technology



**Cab Forward Design  
(‘V’ Shaped,  
Fragment Liner)**

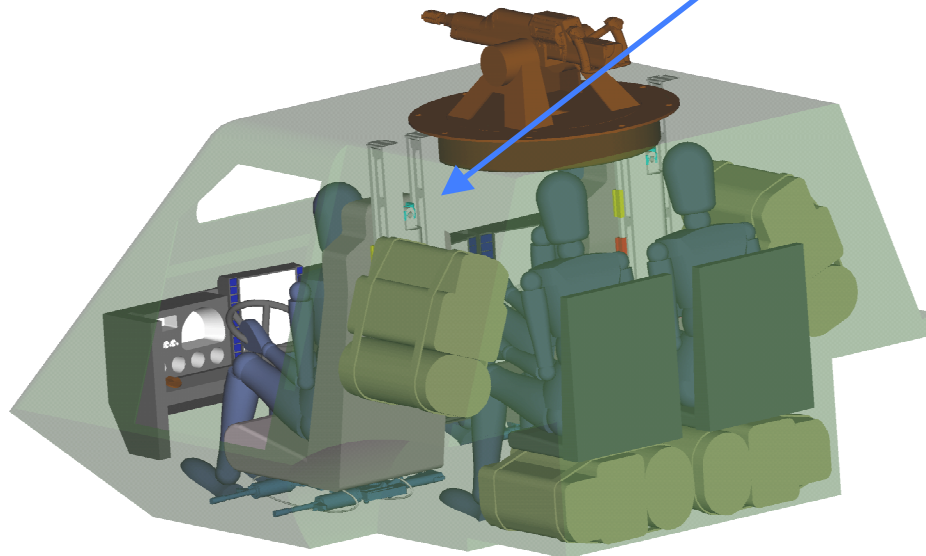
- AP Mine

**Applique**

- AT Mine

**Crew Seats**

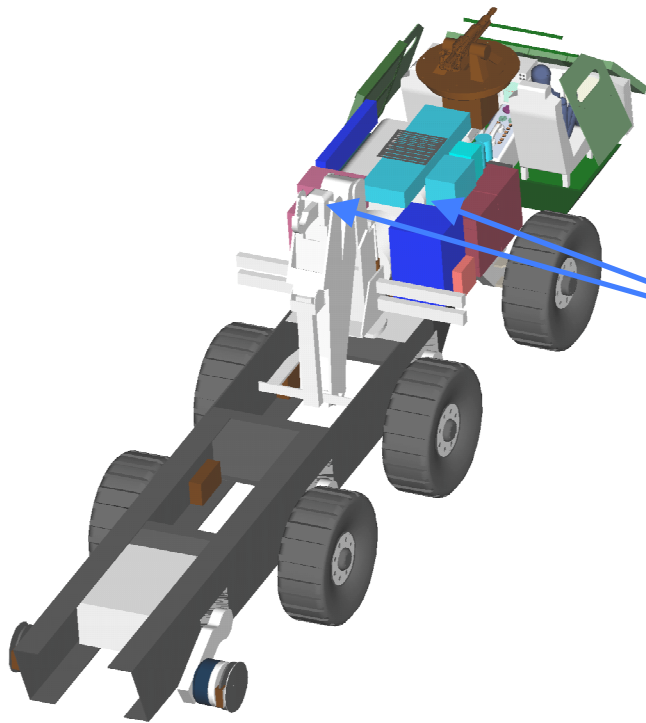
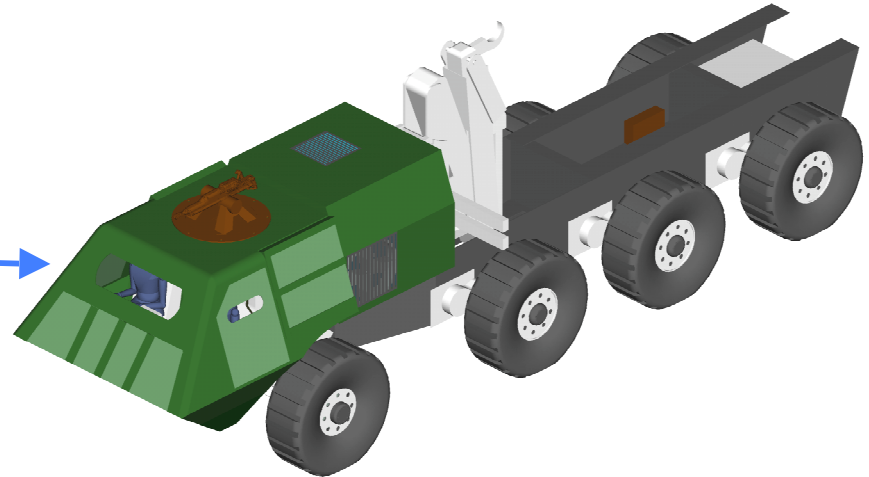
- Energy absorbing
- Crashworthy
- Roof mounted





# FTTS MS NBC Technology

**Welded RHA  
Structure with Air  
Seals to reduce  
leakage**



**M48 Passive  
Filtration  
with Overpressure  
sized with  
Environmental  
Control System**



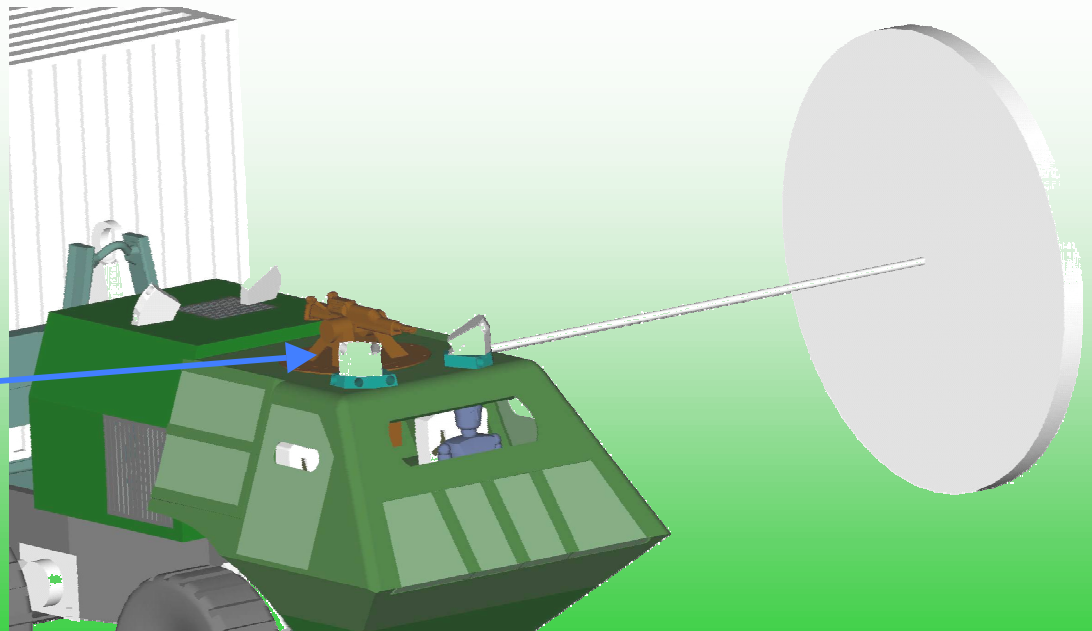
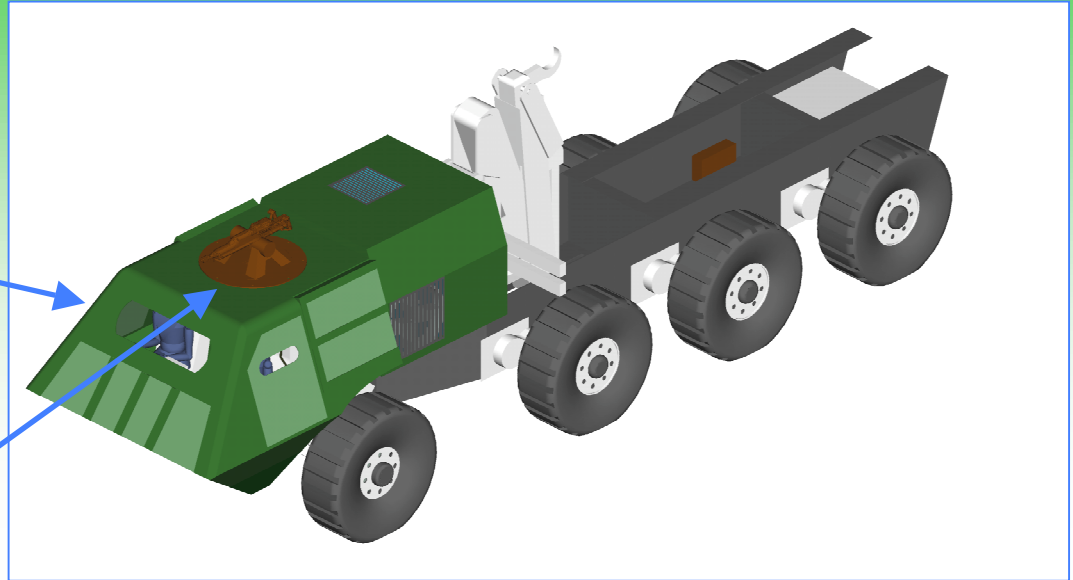
# FTTS MS Survivability & Lethality Technology

**C4I BMS “Network”**

**Self Defense Weapon**

- XM307
- 0.50 cal
- Ground Surveillance Radar

**Plug and Play  
Active Protection System  
(F-CLAS)**



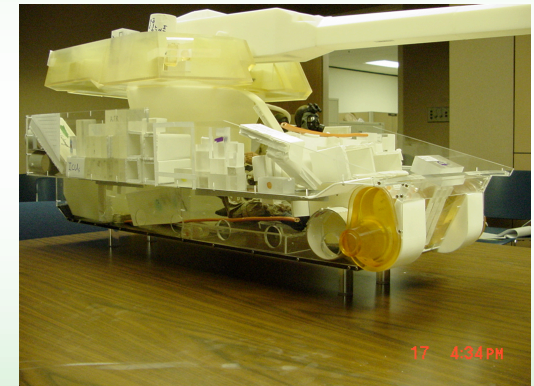
# **FTTS Operational Modeling Results (Phase I)**

- **Survivability**
  - **FTTS Armor results in a 10% survivability increase over current fleet**
  - **Plug and Play APS results in an additional 36% survivability**
  - **Self Defense weapon (OCSW) needs fire control/target acquisition for ambush threat to be effective**

# FTTS use of Pit Stop Design Philosophy

- FTTS MS & UV will be baseline.
- Approach developed by Dennis Carlson.
- Soldier centric.
- Focus on maintainability.
- Achieve defined “standards of excellence”.
- 1/6 scale model of chassis and components developed.
- Cross functional IPTs/Technology/Subsystem Reps work together to integrate components in chassis to achieve design accomplishing the Pit Stop attributes.
- Effort is documented through ACE environment.
- Process will be refined during FTTS MS & UV workshops.
- Pit Stop Design workshops will be conducted with FTTS ACTD contractors.

Example FCS Pit Stop  
Design Product (MCS)



# **FTTS ACTD Analysis and Studies**

- **Analysis Workshops using general Gov't. concepts**
- **Pit Stop Design Workshops**
- **Virtual Prototyping (Concepts Level)**
  - **Unit of Action and Unit of Employment Variants and Modules**
  - **Increment II Alternatives**
    - **Robotics Technology Applications**
- **Performance Analysis**
  - **Mobility (DADS and NRMM)**
  - **Survivability Assessments**
- **Structural Assessments**
- **Operational Analysis of Variants and Modules**
- **Increment II Operational Analysis of**
  - **Increased Mobility**
  - **Increased Survivability**
  - **Fully “Networked” Tactical Vehicles**
- **Global Economic Analysis which includes:**
  - **Estimated Unit Production Cost**
  - **Operation & Support Costs**
    - **Commonality benefits between FCS & Tactical Vehicles**
    - **Reduced fuel consumption impact on Log Footprint**
    - **Cost differential of Flatrack or Module type of Platform Truck Design**

# **Future Tactical Truck System (FTTS)**

## **Concepts and Analysis**

- **Mobility**
  - **Dynamic Analysis & Design System (DADs) or ADAMS**
  - **NATO Reference Mobility Model (NRMM)**
  - **Finite Element Analysis**
- **Operational**
  - **VCAM (Vought Combined Arms Model)**
- **Cost**
  - **Cost Estimates - (govt)**