VEHICLE OPTIONS

A. Modify existing hybrid electric car
B. Modify existing tracked vehicle
C. Design and build new vehicle
D. Modify XRV
E. Half Scale RST-V
Option A – Modify Existing Hybrid Electric Car
i.e. Opel-Astra Diesel Electric Hybrid

The Diesel Electric Hybrid power train would be a plug and play power

- 1.7L, 92 KW Turbo Diesel
- Two electric motors attached to engine, 30kW and 40 kW
- Full Electric propulsion capability
- Can be adapted to FWD, RWD and AWD
- infinitely variable drive system
- Two separate electrical systems; Conventional 12v DC and High voltage for motors
- 1.3kW battery
- GM-DaimlerChrysler collaboration

Advantages:
  - Low technical risk for powertrain
  - Fastest path to operating chassis

Disadvantages:
  - Poor off-road mobility
  - Poor payload capacity
  - Not unique
Option B – Modify Existing Tracked Vehicle  
  i.e Wolverine

High mobility tracked vehicle with the correct size characteristics.

- 45 kW Turbo Diesel
- 3,500 lb vehicle + 2,500 lb payload
- Hydraulic drive system
- Walking beam suspension with tracks-over-wheels
- Steel frame with aluminum body

**Advantages:**
- Good starting point for chassis
- Good off-road mobility
- Good payload capacity

**Disadvantages:**
- Conversion to electric drive
- Slightly overweight and under-powered
- Slow (20 mph)
- Skid steer
- Not unique, i.e. TAGS
CONCEPT C – New Design

Fundamental Concept
8x8 wheeled vehicle
Two 4x4 pods connected by platform
Walking Beam suspensions
Skid steering

Background
8x8/track-over-wheels/swiveling concept selected as Best Technical Approach for excellent mobility and immobilization resistance from “High Mobility Robotic Platform Study”, GDLS 1999. Preliminary design for 1,500-2,500 lb vehicle would be scaled up by 29% = 62” wide, 140” long, 57” high, 4,300 lb

Future Upgrade Possibilities
Tracks over Wheels
Swivel Steering
Pneumatic suspension
Option D – Modify XRV

953 cc, 3-cylinder Diesel
CVT – belt drive
On-demand 4WD
Ladder type frame, steel chassis
Semi-independent suspension
1,400 lb payload capacity
Option E – Half scale RST-V

Current RST-V
Weight = 3,629 kg
Payload = 1,360 kg
Length = 5.45 m = 17.9 ft
Width = 2.06 m = 79 in.
Height = 1.7 m = 67 in

Power: - Electric Hybrid
• 2.5 L, 138 HP, turbo Diesel
• 110 kW generator
• Li-Ion batteries 80kW
• 50 kW Wheel Drive motors
VEHICLE DESIGN STATUS SUMMARY

- Continue to look at additional concepts
- Develop down-select criteria for selecting candidate
  - Capabilities vs requirements
  - Schedule (design effort, component availability)
  - Cost (design, components, fabrication)
  - Risks (meeting schedule, within budget, performance)
- Proceed with preliminary designs of initial concepts