The Ultimate Destination
From the GER Mission Scenario

- Ultimate objective is Mars
- Significant precursor activities necessary to prepare required systems
- Several interim destinations are possible
- ISS role in shaping technical basis and managerial model
- Strong partnership between human and robotic exploration programs
- International partners are prepared for and require key mission critical roles
The Next Step Beyond ISS

- Crew tended habitat in cis-lunar space
  - Builds off of the Asteroid redirect mission and ISS
    - Allows for further study of gravity assist trajectory operations
    - Builds off of ISS life support with less earth support
    - Enables international partner and commercial lunar surface activities
    - Develops incremental risk management concepts to be developed and accepted
    - Test radiation mitigation options

- Allows for Mars operational strategies to be developed
Orion docked to EAM
EAM Ports…
Russian SPM-derived Module

*SPM – Science Power Module*
Orion with Robotic Lander

- Orion with Robotic Lander
  - Lander injects into a lunar phasing orbit
  - Target for Aiken Basin
  - Phase to time landing at the beginning of the lunar day
  - Lander Payload: Ascent Vehicle and option for Rover
  - Sample returned to crew at the end of the Lunar day

- Orion mission to EAM
  - Longer duration stay (3.5 revs-50 days)?
  - Farside comm considerations
  - Several options for sample retrieval:
    - OSCAR integrated into EAM
    - Grapple arm on EAM; EVA sample retrieval
    - NDS for ascent vehicle; EVA sample retrieval
    - NDS ascent (pressurized); IVA sample retrieval
Risk Reduction for Exploration

- EAM increases science return of the Asteroid Redirect Mission

- EAM demonstrates many core capabilities needed for deep space missions
  - Electric propulsion
  - EVA
  - Deep space navigation and communications
  - Long duration operations beyond low earth orbit
  - Commercial/international interaction
  - Long duration radiation countermeasures and mitigation
  - Solar Polar Beaming

- EAM benefits Exploration as a residual asset
  - Lunar Far side robotic experiments
  - Proof of concept for stand-off Mars activities
Questions?