

AFFORDABILITY - Draft 0

Initially Assume:

- Existing DoD requirements must be met – assume all satellites are MEO, w/all existing requirements (M-code, higher signal power, etc), and with existing launch vehicle choice
- Insure U.S. preeminence
 - GPS as the “Signal of First Use”

Potential Concepts for DoD GPS affordability

- Meet only minimum requirements
- Core Satellite Constellation
 - Dual launch
 - Evaluate possibility of removing non-GPS requirements
- User equipment
 - Leverage civil developments – interfaces, speed, SWAP, maps
 - Make M-code modules that can be interfaced to commercial products
 - Evaluate need for exclusive military signals
- Control/Operations
 - Greater use of contractors rather than military personnel
- Signal Monitoring
 - Leverage civil networks JPL/IGS with appropriate screening

Potential Concepts for Civil/Commercial GPS affordability

- Enhance GPS capability with spaceborne commercial or civil government augmentations
 - Civil governmental agencies to support SOL, UAS
 - Local governments for emergency management, first responders
 - Commercial/entrepreneurial opportunities for location authentication, signal integrity, indoor PNT
- Satellites – augment the core GPS constellation
 - Extended operation of residual GPS satellites (beyond 32)
 - Hosted payloads on NASA/NOAA/Commercial GEO and LEO satellites to transmit ranging signals possibly with additional data & other capabilities
 - MEO sub-constellation of small satellites with modernized, civil only, not backward compatible, capabilities
- Operation of augmentation services
 - Commercial operations
 - Leverage commercial and international monitoring sites (e.g. IGS)

Next Steps

- Identify total cost on-orbit (including operations) of the baseline GPS as authorized by law
 - USAF, NGA, Intelother DoD entities
- Identify government spending on auxilliary/augmentations
 - DOT, USCG (NDGPS), NASA
- Look at past studies by DoD for reducing core GPS cost
- Evaluate initial concepts and generate additional ideas for reducing costs of civil specific and enhanced capabilities