

Space and Missile Systems Center



M-Code Benefits and Availability

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Informational Briefing

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- Operational Benefits of M-Code
- Process for M-Code Delivery and Initial Operations
- M-Code Available for Use Forecast

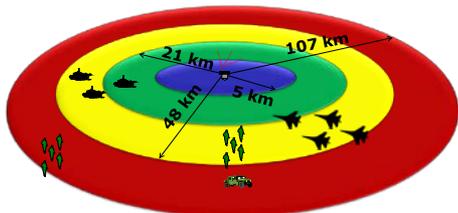


Operational Benefits of M-Code

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M-Code Increased Power

Operate closer to jammer, under trees



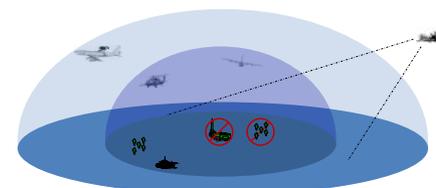
M-Code Jamming Resistance

Initial fix enhanced, anti-jam extended



Blue Force Electronic Attack Compatibility

Operate near friendly jamming



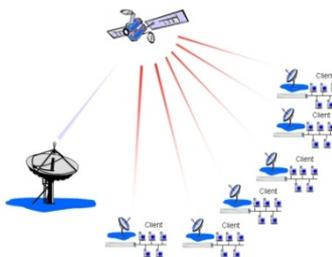
M-Code Cryptography

More secure, more flexible



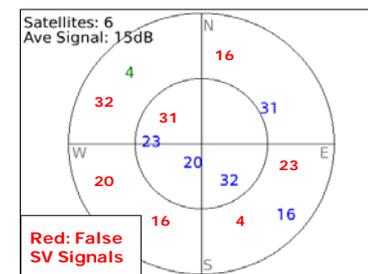
M-Code Key Management

Reduced user burden, improved interoperability



M-Code Anti-Spoof

Detect and reject false signals





M-Code Delivery & Initial Operations

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- SMC/GP delivers space system, control system, and user equipment assets to support “M-Code Available for Use”
 - M-Code PPS PNT
 - Crypto key OTAD & OTAR
- HQ AFSPC/A3 authorizes “M-Code Early Use” prior to System Capability IOC or FOC
 - M-Code/MNAV SIS operational broadcast prior to Block II EP FOC and GPS III MPO IOC



EP: Electronic Protection
 FOC: Full Operational Capability
 IOC: Initial Operational Capability
 MNAV: Modernized Navigation

MPO: Military Protection & Operations
 MPS: Mission Planning System
 OTAD: Over-the-Air Distribution
 OTAR: Over-the-Air Rekey

PPS: Precise Positioning Service
 PNT: Positioning, Navigation & Time Transfer
 SIS: Signal in Space

UE: User Equipment



M-Code UE Mandate Driving Need Date

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- Public Law 111-383 precludes purchasing non-M-Code UE after FY17
- Derived need dates
 - Available for Use delivery: Q4FY19
 - Early Use authorization: Q1FY20
- GPS Directorate exploring alternatives to meet or beat need dates

	FY 15				FY 16				FY 17				FY 18				FY 19				FY 20				FY 21				FY 22				FY 23			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Enterprise Capabilities	Block II EP FOC ★ (Both Dates Notional) GPS III MPO IOC ★																																			
HQ AFSPC/A3	M-Code PNT Early Use Need Date (Same as M-Code UE fielding start) ◆ M-Code/MNAV SIS Operational 24/7 Broadcast ▲																																			
SMC/GP	M-Code PNT Available for Use Need Date (3 mos prior to Early Use) ◆																																			
Military Services	M-Code UE Procurement Mandate Start (Public Law 111-383) ◆ M-Code UE Procurement ▲ M-Code UE Fielding Start (24 mos after procurement start) ▲ M-Code UE Fielding ▲																																			



Summary

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- M-Code provides significantly improved warfighter benefits
 - Increased power
 - Jamming resistance
 - BFEA compatibility
 - More secure and flexible cryptography
 - Reduced crypto key management burden
 - More robust anti-spoofing
- M-Code PPS PNT expected to be operationally available before FY20