PROJECT MANAGER FORCE PROJECTION

Robotics Enhancement Program (REP) Update to NDIA Robotics Division 08 December 2015

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PM Force Projection

- REP Overview & Process

- REP 16.1 Progress

- Lessons Learned & Planning for REP 16.2 & Beyond

Robotic Enhancement Program (REP)

Problem: Robotic technology is rapidly evolving. The standard requirements/acquisition timeline of 3 to 7 years increases the risk that robotic systems will be obsolete before it is fielded or more likely, before it even reaches Initial Operational Capability (IOC).

Mitigation: Evaluate small quantities of state-of-the-art robotic systems and/or payloads to inform the requirement and acquisition process.

Concept:
- Concept based off of Solider Enhancement Program
- REP is a special project (not a full life cycle acquisition program)
- Uses a "buy-try-inform" methodology to better inform future Army requirements
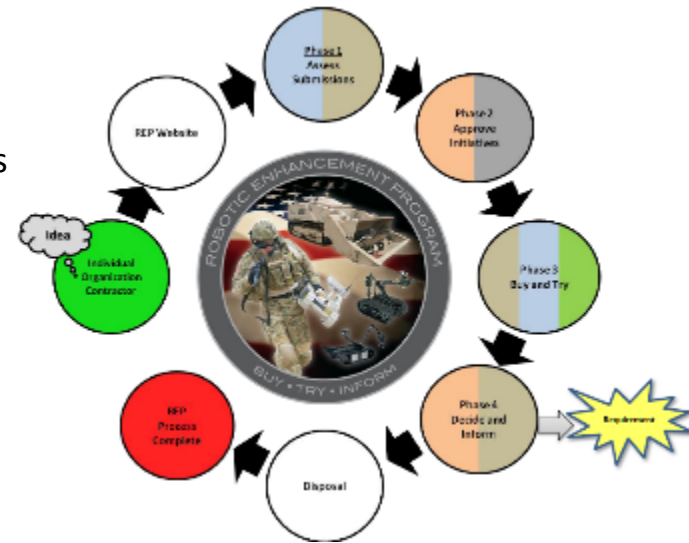
Experiment Focus:
- Protect the Force
- Reduce Warfighters' Workload
- Enable Situational Awareness
- Sustain the Force
- Enable Lethal/Non-lethal Engagements
- Reduce Cost

http://www.peocscss.army.mil/rep.html
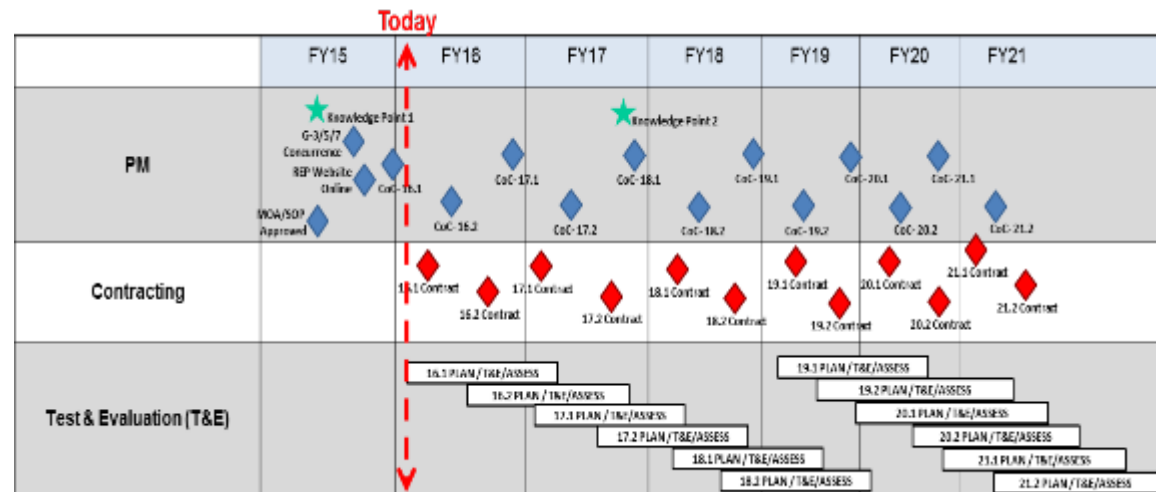
Note: REP Counsel of Colonels (CoC) 16.2 in Feb 16
Submission Deadline: 31 December 2015

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REP Organizational Structure

Acquisition Community

ASA (ALT)

PEO Combat Support
& Combat Service
Support

PM
Force Projection

Requirements Community

HQDA G-3/5/7

MCoE,
Director CDID

Director
Soldier Division

CDID
&
PEO CS&CSS
Signed MOA
(Pending)

Council of Colonels

REP Working Group

PdM Unmanned Ground Vehicles   Soldier Division

REP Advisory Council

ASA (ALT)		TCMs	ATEC	AMEDD
PEO CS&CSS	PM FP	TRADOC/ARCIC	CASCOM	HQDA G-3/5/7
	PdM UGV	MCoE	MANSCEN	HQDA G-4
		MSoE	USASOC	HQDA G-8

Proposals reviewed & approved bi-annually (FEB and SEP)

REP Project Flow Chart
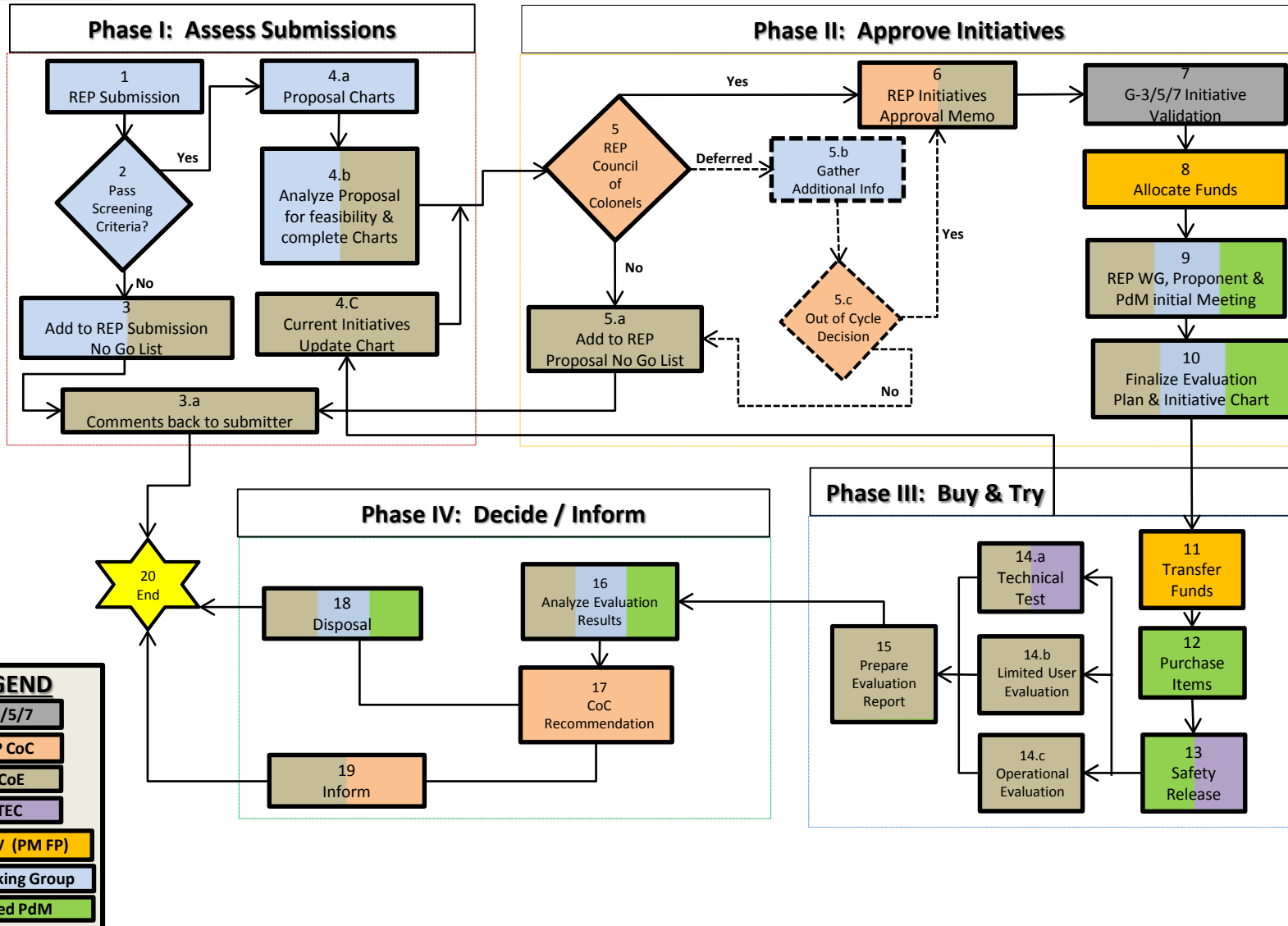
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- REP Overview & Process

- **<u>REP 16.1 Progress</u>**

- Lessons Learned & Planning for REP 16.2 & Beyond

REP CoC 16.1 Summary (SEP 15)

Fifty-Six (56) REP Submissions Received:

- **28 "No-Go":** Did not meet selection criteria
- **20 Deferred**: Interested but lower priority
- **6 Recommended** for CoC 16.1 consideration: Meet Performance, Schedule, Cost
- **1 Recommended** for CoC out of cycle consideration (Wireless Personal Area Network (WPAN))
- **1 Recommended** for consideration if Advocate identified (Applique Pronto4 Uomo)

Summary of CoC Approved Experiments:

- **UxAutonomy Behaviors (AB):** Meets the Autonomy, General Platform, and Power Gap capability (MCoE*).
- **Top Layer – Underground 3D Mapping Capability Payload:** Meets the Intelligent, Surveillance and Reconnaissance requirements (MCoE).
- **Underground Tactical Robotics Ground Team (UTRGT):** Meets Sustainment capabilities (MCoE).
- **Stream Caster Multiple Input Multiple Output (MIMO) Mesh Radio:** Meets the requirement for a Universal Controller and Communications data link to operate multiple systems within a unit's Area of Operation (MSCoE**).
- **UGVs "Breadcrumbs" – Communications Restrictive/Underground Signal Relay Kit**: Meets the Intelligent, Surveillance and Reconnaissance capability (MSCoE).
- **Tethered Mast ISR (UAS):** Meets the Autonomy, General Platform, and Power requirements (MSCoE).

Experiment Information:

- Three Experiments Scheduled for 3QFY16 at Ft. Benning
- Three Experiments Scheduled for 3QFY16 at Ft. Leonard Wood

*MCoE = Maneuver Center of Excellence
** MSCoE = Maneuver Support Center of Excellence

Obstacle Avoidance & Mapping (OA&M) Capability

Currently available Light Detecting And Ranging OA&M Capability to the future MTRS Inc II platform.

- ✓ **16.1-8: UxAutonomy Behaviors (AB)**
  (Provides an IOP-compliant autonomous navigation capability in a small SWaP configuration.)
- ✓ **16.1-40: Top Layer-Underground 3D Mapping Capability Payload**
  (Compact operational imaging device capable of extracting depth and distance information and pairing it with a standard video of scenes for intuitive situational awareness in tunnel warfare.)
- ✓ **16.1-47: Underground Tactical Robotics Ground Team (UTRGT®)**
  Provides tactical, squad level set of solutions to deal with the main challenges in the Sub-Terrainian environment: consists of 4 high mobility unmanned platforms, an underground repeater network, real time 3D mapping to enhance situational awareness and operational effectiveness in the subterranean environment.

JCIDS Requirement for Initiatives 8, 40, 47:

These support the subterranean CBA effort ongoing at CAID, MCoE. The CBA will lead to subterranean ICD with multiple CDD/CPD solutions from the ICD. Define how Unmanned Systems (UMS) will enable the warfighter in subterranean operations. UxAB also supports the KPP in SMET CDD for OCU for anti-spoofing.

Acquire (2-3 Months)	Integrate/Safety (2-3 Months)	Demonstration (2-3 Months)	Transportation (1 Month)	Disposition (1 Month)

Extending the Range of the Platform and Payload Capability

Currently available radio range extenders such as repeaters and/or re-transmitters that will increase overall standoff and range of the platform with its payloads.

- ✓ 16.1-3: Multiple Input Multiple Output (MIMO) Mesh Radio

    (Provides enhanced range, throughput, and range in a variety of environments including tunnels and extreme non-line-of-sight.)

- ✓ 16.1-39: UGVs "Breadcrumbs" – Communications Restrictive/Underground Signal Relay Kit (CRUSR)

    (Improves the capabilities of unmanned ground vehicles during subterranean operations.)

- ✓ 16.1-53: Tethered Mast (UAS)

    (Designed for the austere environment where high fidelity, persistent SA is required, but lack of infrastructure prevents use of existing, larger systems.)

JCIDS Requirement for Initiatives 3, 39, 53:

Extending the Range - 39 Supports the subterranean CBA effort. 3 supports the subterranean CBA effort and Universal Controller to control multiple platforms. 53 supports MRD effort to provide SA to mounted systems in hide/defilade/NLOS positions. This will lead to a separate JCIDS effort called Tethered Mast being pursued by MRD, MCoE.

Acquire (2-3 Months)	Integrate/Safety (2-3 Months)	Demonstration (2-3 Months)	Transportation (1 Month)	Disposition (1 Month)

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- COTS/GOTS/NDI Means:
  - Products are available within 6-8 weeks from contract award; not more than 6 months
  - Products are safe and easy for Soldiers to use within appropriate training
  - Can only fund integration but not development to "meet" a requirement

- Provides "Enhancement" capability over current inventory vs equivalent to a program of record
  - If already demonstrated to government, submission should indicate new capability over previous demonstration: We will check.

More Submissions are better than a single all inclusive.
Let us Bundle

REP Key Events

- 31 Dec: CoC 16.2 Industry Submission Cut-Off
- Jan 16: REP Working Group Open 17.1 Submission
- Jan 16: Stakeholders Working Group
  - Re-Assessment of 16.1 Active Deferred and Deferred
  - Assessment of 16.2 Submissions
  - Acquire 16.1 Initiative Products (Thru TARDEC)
- Feb 16: 16.2 CoC
- Mar 16: Integration of 16.1 Initiatives' Products
- Apr 16.1: Evaluation of 16.1 Initiatives
- Aug 16: CoC 17.1 Industry Submission Cut-off
- Sep 16: CoC 17.1