



APM TRADE, PEO STRI

12350 Research Parkway

Orlando, FL 32826

March 19, 2013

## Request for Information

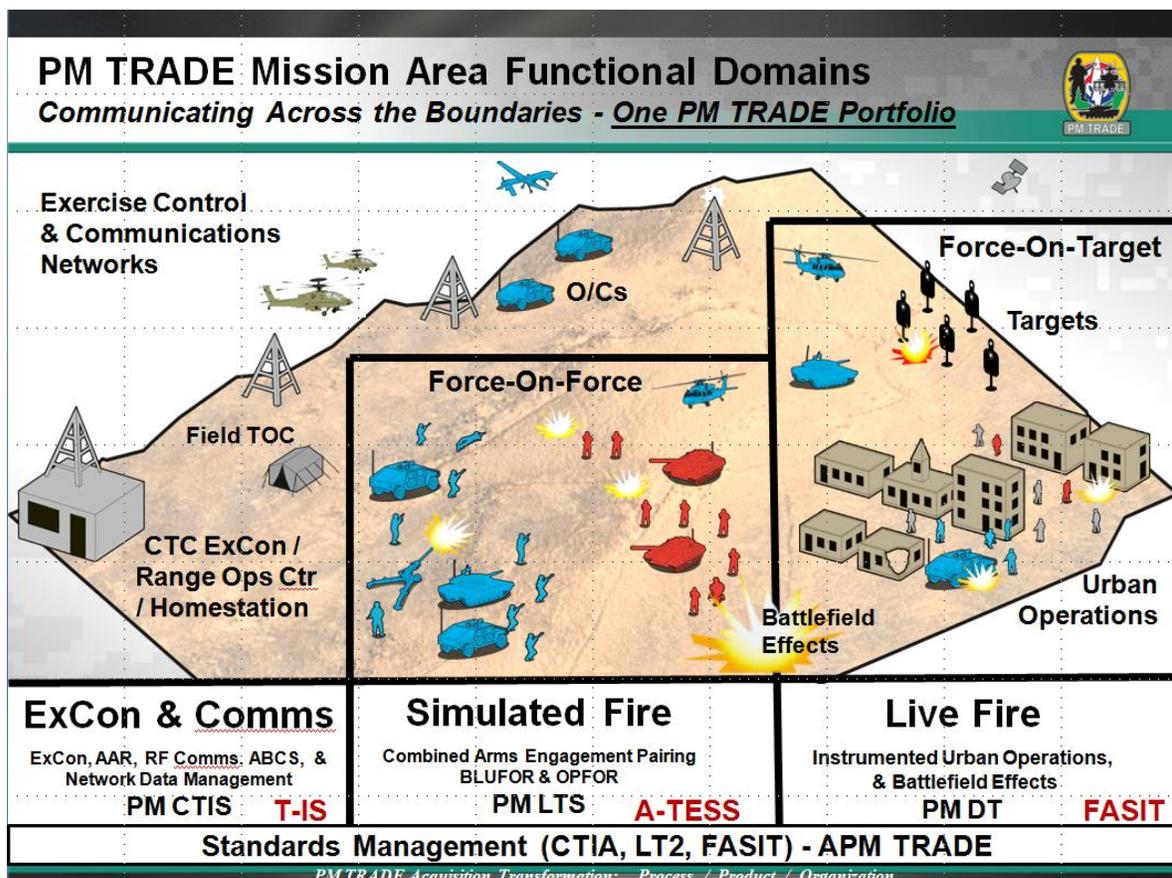
### Live Training Interface Standards Working Group

**Industry Note:** This RFI working group announcement supports general program planning related to evolving the PM TRADE standards portfolio in a collaborative working group environment. This RFI will not result in a contract action related to interface standards development. This working group is strictly voluntary.

## I. Introduction

PM TRADE is seeking industry participation, support, and feedback on identifying, maturing, and instantiating key Live Training interface standards. This is an opportunity for industry to provide knowledge, insight, and recommendations in shaping the logical partitions and in developing key Live Training interface standards with the government. Adhering to these key interface standards will be a requirement in future programs.

Interdependencies across the PM TRADE product line portfolio are becoming more prevalent and necessitate that non-proprietary PM TRADE wide interface standards must be established and actively managed to ensure continuity in development and sustainment.



Through vendor-neutral interface standards, PM TRADE’s intent is to reduce the total cost of ownership, improve interoperability, and implement an architecture that supports technology and component insertion. Upon publishing, these PM TRADE non-proprietary interfaces and associated software will be configuration managed under the LT2 construct. *This specific initiative does not impact and is separate from the FASIT interface standards.*

## II. Industry Day Information Request

On 2 April 2013 PM TRADE will host an Industry Day to initiate key Live Training interface standards development and to provide a standards update on the Vehicular Integration for C4ISR/EW Interoperability (VICTORY) architecture and specification, Live Training Engagement Composition (LTEC), Aviation, and A-TESS initiatives. Specific open forum topics to be addressed include: Live component key interface standards overview; player unit radio interface (pin assignments and connector); batteries and battery interfaces; and component to ExCon common message format. Also addressed will be the establishment of Government- Industry interface development working groups followed by an update of ongoing standards initiatives.

The following key interface paragraphs and illustrations will be used to facilitate industry day discussion and solicit advance feedback for time critical decisions involving the selection of the RS-232, 802.15.4, USB standards and the radio connector pin assignments.

Industry is requested to provide pro/con comments for each of the following areas by COB Wednesday 27 March, 2013 to [rob.wolf1@us.army.mil](mailto:rob.wolf1@us.army.mil). Major pro/con bullet points will be added, anonymously, to the industry day discussion slides to facilitate discussion.

### a) **Key Interface #1 – Instrumentation Radio to Live Component**

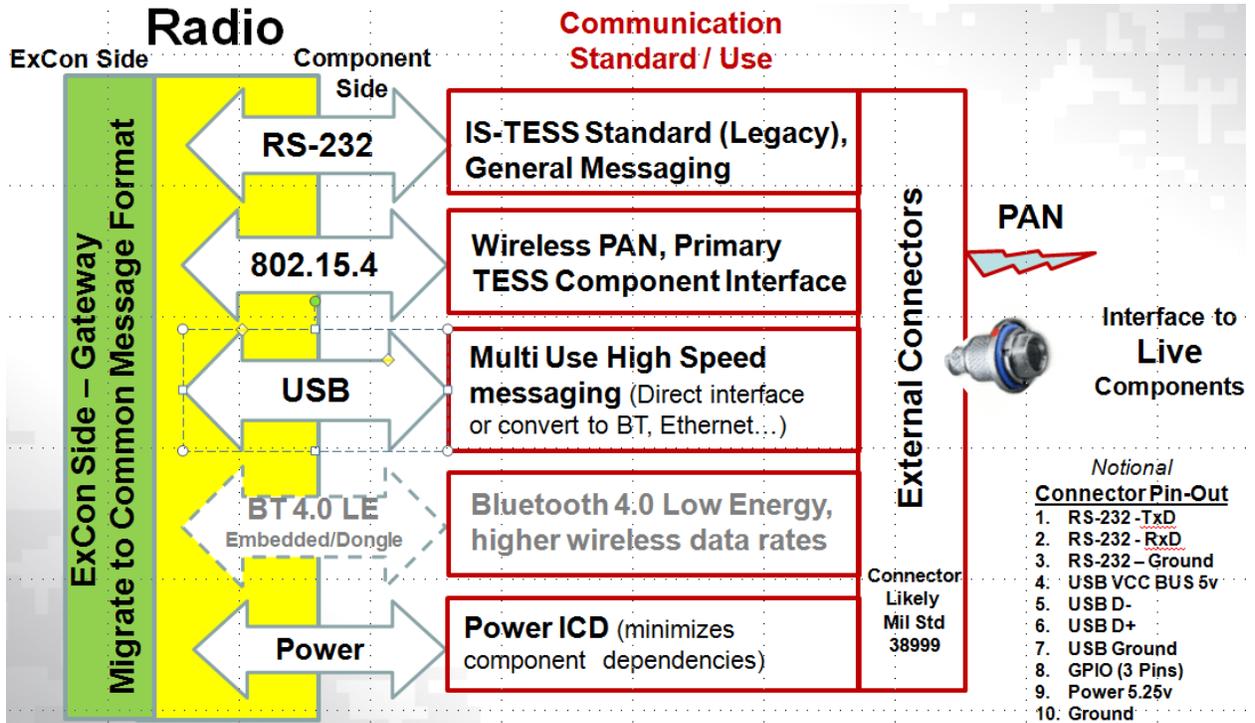
A live component is considered any battlefield component used in supporting Force-on-Force and Force-on-Target exercises that is dependent on an instrumentation radio for control, status, and messaging. Products that directly interface to a radio (current and future) include: the LTS family of products (TESS, OneTESS, Mines, Medical, etc...); DT family of products (Battlefield effects devices, mounted and dismounted instrumentation); and CTIS family of products (Combat Controller and Forward Observer tablets).

Radios and Live Components will adhere to the following interface standards vision that has all radios supporting the wireless 802.15.4 PAN standard and the wired RS-232, USB standards, and general purpose I/O ports using a common connector with a specified pin-out. Other non standard interfaces such as Bluetooth, Ethernet, or any other interface would join the network via one of the supported interfaces. New standards may be implemented if adopted and added to the portfolio by the government interface standards management IPT.

To be an effective interface standard the specific message format, data structure, and component associations need to be matured and specified to the greatest extent possible.

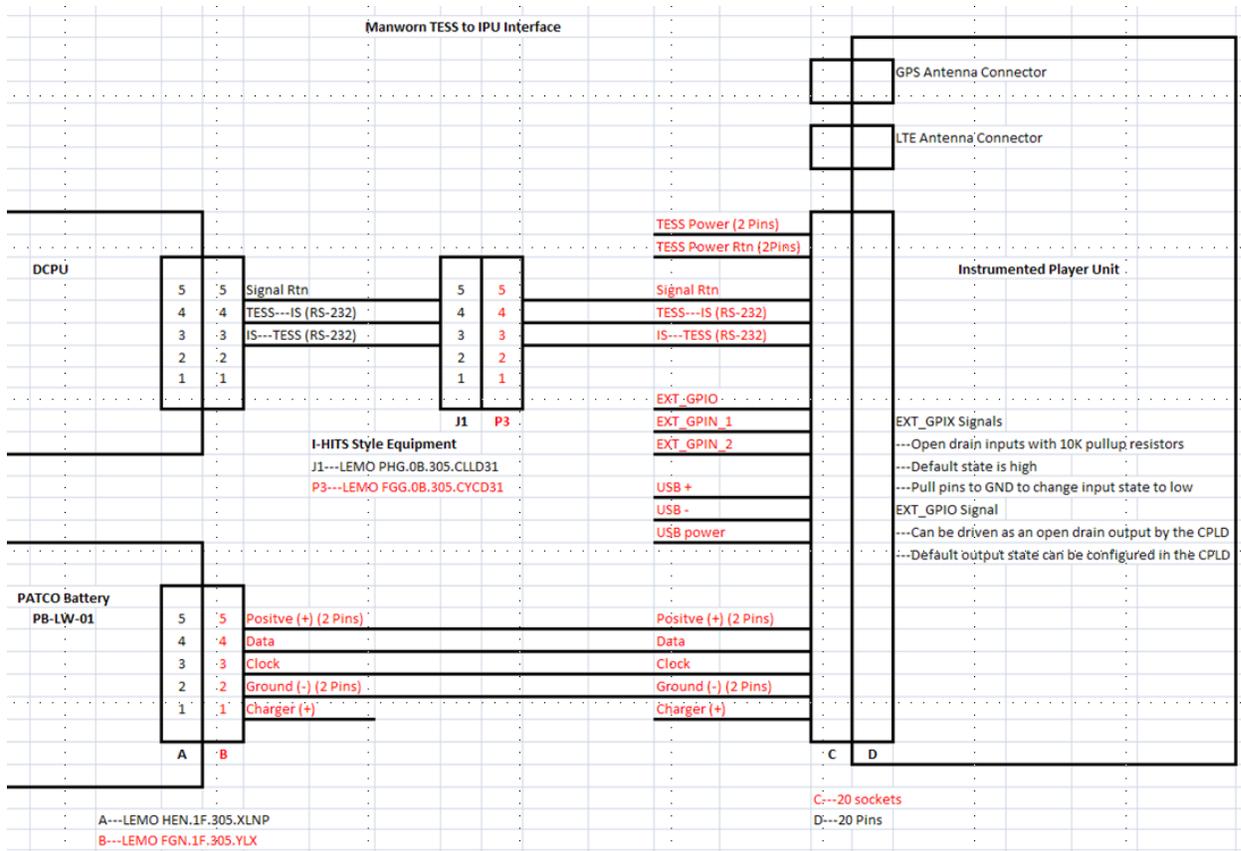
The individual interface standards documents for use in system specifications and performance work statements would be matured by government-industry IPT working groups.

Future acquisition statement of work language would reflect the program awardees as being fully responsible for end-to-end performance, using and refining the interface standards, and republishing them to the LT2 portal for future program use.



This architecture standardizes the external connectors and enables individual program teams to select their best means of component communications with the instrumentation radio and obtaining component power. Programs must use the common connector, but may choose not to use all the pins.

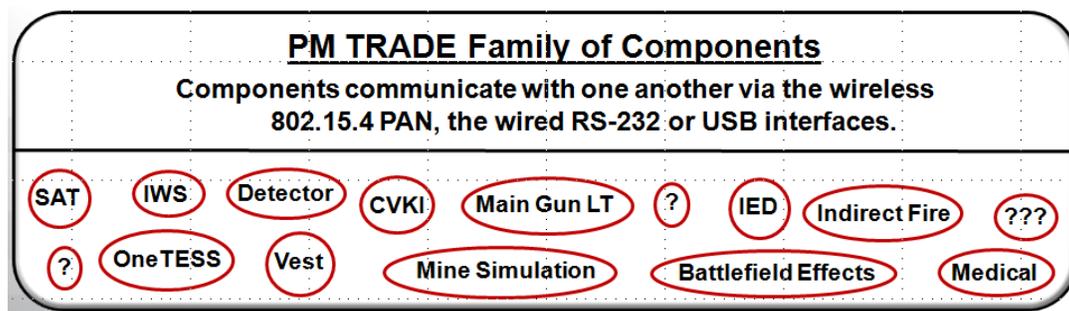
Request that industry provide specific comments, recommendations, and share any lessons learned to help solidify the following physical interface standard that is being considered for the CTS-IS program and would be required for AMITS.



**b) Key Interface #2 – Component Network (Component-to-Component)**

Communications between battlefield components must adhere to the same interface standards as the instrumentation radio key interface using the wireless PAN or the wired RS-232, USB, and general purpose I/O interfaces using the same common connector. Individual programs may elect to utilize all or just some of the supported standards.

Establishing interfaces standards for communicating within and across PM TRADE domains does not diminish in any way industry’s ability to build a better performing component as is illustrated in the red circles in the diagram below. Product and project management offices determine the component boundary to the lowest practical level.



Interface standard documentation, to include message structure formats and component associations need to be matured in support of new component acquisitions.

c) **Key Interface #3 – Battery Interfaces, Power, and Configurations**

Batteries of various sizes, voltages, and configurations power virtually all PM TRADE components. A concerted effort must be given to establish some configuration parameters to positively shape the PM TRADE portfolio. Standard interfaces must be established and managed for the following:

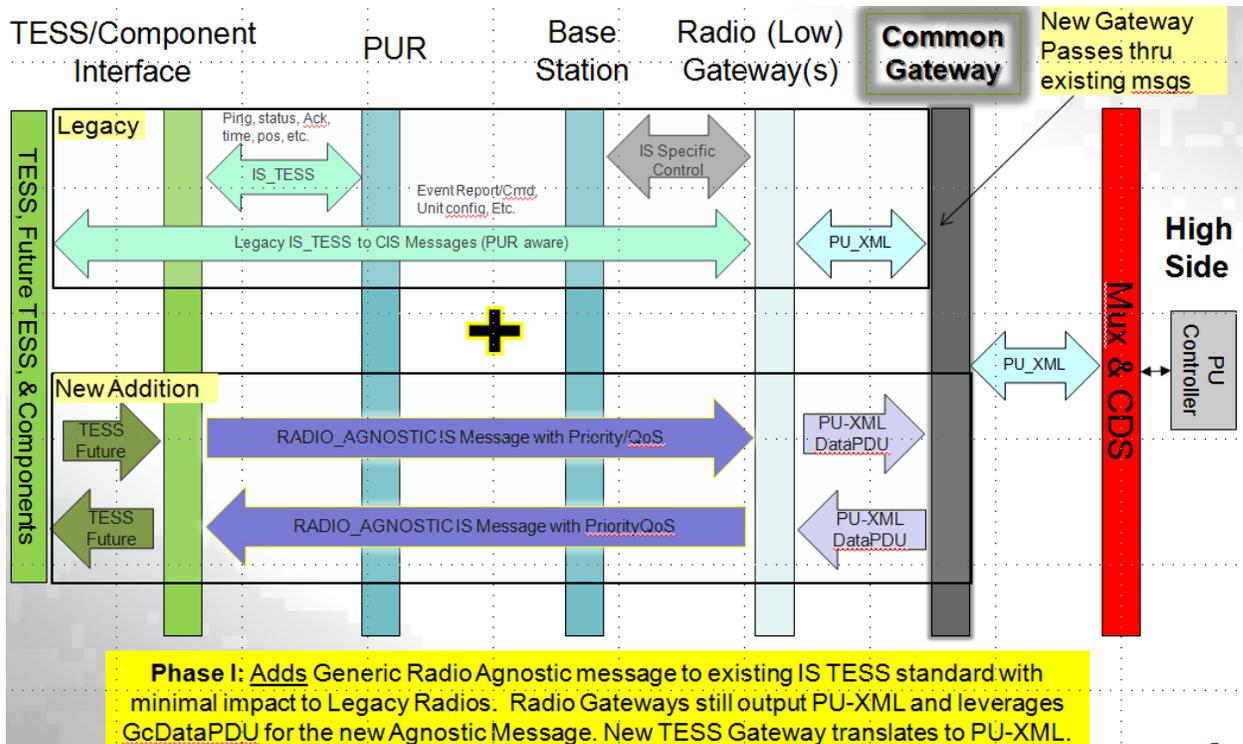
- i. **Rechargeable Battery Connector(s)** – Establish common connectors for all rechargeable battery configurations regardless of size or conformal form factor. Consideration shall be given to retaining both the flush mount connector and the LEMO part number FGN.1F.305.YLC or migrate to just the LEMO connector for power and charging. Consideration shall also be given to multiple connected components and the combined impact on powering multiple components simultaneously.
- ii. **System Management Bus (SMBus)** – Mature and document the SMBUS serial bus for interconnecting, managing and controlling smart batteries and chargers. Proactive maintenance notifications by battery serial number would also be supported.
- iii. **Voltage/Amperage** – Standardized voltage output and ranges; maximum total continuous current draw; maximum short duration (start up draw) and duration; minimum amp hour rating and minimum Ah rating. Identify a family of amp hour rating batteries for different use cases.
- iv. **Physical Configurations** – Based on use cases, optimize a fixed size configuration(s) and address conformal battery configurations. Minimize inventory configuration while maximizing use case configurations.
- v. **Charger Interface Configuration** – Rechargeable batteries should have a common configuration to accept vehicle power and recharge the PM TRADE battery. The configuration should use the PM TRADE battery to power all PM TRADE Components and radios to ensure clean filtered power and utilize the vehicle to just recharge the TRADE battery. Vehicle power interface logic must address switching off accepting power from the vehicle when the vehicle is off to preclude draining the vehicle battery.
- vi. **Charger form factor** – Minimize the charger configurations and/or adopt a connector based charger to enable the input to be common. One charger type for all rechargeable fixed footprint batteries (various charger bank sizes) and/or connector interfaced charging for conformal and fixed shape batteries.

- vii. **Family of Disposable Batteries** – Establish a family of battery form factors for industry to choose from in developing their components to minimize logistics and supportability issues (e.g., AA, ½ AA, coin type#1 with voltage x, coin type #2 with voltage y....).

d) **Key Interface #4 – Component to ExCon/Operations Center Data Format**

Develop and implement a common message format/structure that is independent of the instrumentation radio. Conceptually a common message format with variable content in the header and data fields would be output by the component device and packaged in the appropriate data fields in the radio. The ExCon radio network interface would decode the message set based on header and data information for processing, display, and archival. Implementing this notional type of structure would enable future devices and messages to be incorporated without the need to modify the radios. Consideration must be given to supporting future messages such as OneTESS player unit initiated indirect fire missions, medical simulation, higher fidelity Battle Damage Assessment reporting, and Battle Field Effects devices, and other new Components. PM TRADE's LT2 process would manage the data field content at the component and ExCon interfaces levels. New messages corresponding to new components or behaviors would be remote configuration managed via the existing LT2 process. *(Note: given network bandwidth limitations there may be two message format structures, one for narrow band TDMA type implementations and the second for more robust wideband implementations.)*

The following depicts the data flow and common message structure to facilitate Industry Day discussions.



Maximum Size of payload messages

- Upstream from PUR (100 bytes?)
- Downstream to PUR (200 bytes?)

Data fields required by radio to transmit the agnostic message

- Priority (Urgent, Normal, Low)
- QoS (including: Reliable/Best effort, Broadcast, Multicast, etc)
- Compression/Encryption: Is payload compressed or could be compressed.
- Source/Dest?

Other Impacts to existing radio systems?

Byte #	Hex	Field	Description
1	BB	Sync	Sync Byte
2	80	Message ID	Identifies IS Message type
3	XX	Size	Message Length (10 to 250) in bytes
4-5	XXXX	Event Number	Index indicating the # of the event. (16-bit unsigned integer).
6	XX	Priority/QoS	IS Transport Priority & QoS Enumeration
7-8	XXXX	Sub-Payload Message ID	Unique ID from 1-65535 indicating the type of payload included in this message. Portion of 16-bits could be assigned for control bits (encrypt).
9-N	XX...XX	Payload	0 to x bytes of defined data defined by the unique Payload ID. (Limits: <100 bytes for PU->CIS, <200 bytes CIS-<->PU?)
N+1-N+2	XXXX	Checksum	Addition of preceding N bytes.

### III. April 2<sup>nd</sup> meeting objectives

1. Inform and solicit industry to support PM TRADE in establishing Live Training standards interfaces
2. Establish the key standards and pin-out for the radio/component interface (*immediate program impact*).
3. Initiate discussion on the component, battery, and common message format interfaces standards. Capture recommendations and lessons learned considerations. Identify other potential near term key interfaces to establish.
4. Discuss government-industry large group/small group IPT working group structure to mature the interface standards.
5. Identify individual government- industry IPT working group teams. Short team break out session to discuss path ahead and solidify team composition and address.
6. Provide industry an update on current standards initiatives.

### IV. Registration

Each company is requested to RSVP via email to [Rob.Wolf1@us.army.mil](mailto:Rob.Wolf1@us.army.mil) and [Christie.P.Martinez@us.army.mil](mailto:Christie.P.Martinez@us.army.mil) by COB on 27 March 2013 with the following information.

1. Organization Name
2. Names and Titles of Attendees
3. Number of Attendees
4. Point of Contact (Name, Title, Address, Phone/Fax, Email)

Questions or comments regarding this effort should be directed to Rob Wolf at 407 384-5233.

### V. Event information and Parking Information

What: Live Training Interface Standards Working Group

When: 2 April 2013

Time: 0900-1530

Where: Partnership III Building, Conference Room 321 (*same location as the PALT meetings*)

3039 Technology Parkway

Orlando, FL 32826

**Parking Instructions** – Working Group participants should park in the lot west of the main gate and walk to PIII (reference parking map). Parking in other lots may result in your vehicle being towed.

# Parking Pass

for DoD Events at the Partnership Buildings complex

*Print and use this pass to guide you to uncongested free DoD Event Parking at the corner of Technology Parkway and Science Drive.*



*Park in the DoD Event Parking lot and enjoy a short walk north on Technology Parkway to your meeting. With proper authorization you also may enter other DoD areas from this location.*

Proprietary information, if any, should be minimized and **MUST BE CLEARLY MARKED**. To aid the Government, please segregate proprietary information. Please be advised that all submissions become Government property and will not be returned.