Industrial Base Cybersecurity Initiative

ED2701000

Los Alamos National Lab/Y-12 National Security Complex

Y/PM-19-059

Dennis Miller, Y-12 National Security Complex
Rich Taylor, Los Alamos National Laboratory

U.S. DOE Advanced Manufacturing Office Program Review Meeting
Washington, D.C.
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Overview

Project Title: Industrial Base Cybersecurity Initiative IBCI

Timeline:

Project Start Date: 10/01/2018

Budget Period End Date: 09/30/2019

Project End Date: 09/30/2019

Barriers and Challenges:

- List barriers/challenges that the project is addressing

AMO MYPP Connection:

- Emerging and Cross Cutting Areas
- Smart Manufacturing: Advanced Sensors, Controls, Platforms and Modeling for manufacturing – Cyber risk resiliency
- Advanced Manufacturing for Energy Systems – integrated cybersecurity of manufacturing systems

Project Budget and Costs:

Budget	DOE Share	Cost Share	Total	Cost Share %
Overall Budget	752,369	1,510,000*	2,262,369	67%
Approved Budget (BP-1&2)	752,369	1,510,000*	2,262,369	67%
Costs as of 3/31/19	133,536	255,334	388,870	66%

*Y-12/LANL Split: $760K Y-12 | $750K LANL

Project Team and Roles:

- Dennis Miller (Y-12)/Rich Taylor (LANL) Co-leads Cyber/Manufacturing

- Bill Barkman, Y-12 Manufacturing R&D
- Richard Secrist, Y-12 Cyber
- Brian Gaschen, LANL Cyber
- Ed Schaller, LANL Cyber

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INDUSTRIAL BASE CYBERSECURITY INITIATIVE

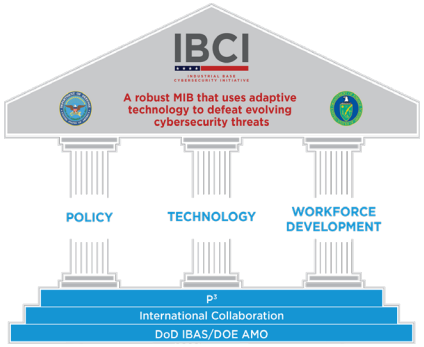
Objectives

Goal:

- Provide a level of cybersecurity for MIB/DIB supply chain SMMs enabling not only compliance but cost-effective operational cybersecurity in a dynamic threat environment that safeguards sensitive information and achieves substantive risk reduction

Objectives:

- Federated Cyber-physical Infrastructure
  - Dynamic database of MIB, small-medium sized manufacturer, cyber-physical characteristics relevant to production operations
  - Virtual/physical environment for testing MIB cyber infrastructures for DFARS compliance
  - Data-driven modeling of cyber-physical systems, enabling preemptive prediction and mitigation of vulnerabilities and threats to shop floor operations
  - War gaming of supply chain breakdown to shift from reactive to proactive operations that minimize supply chain vulnerabilities and disruptions
  - Manufacturing Operations Center (MOC) – a DHS-like security operations center (SOC), continuously managing dynamic threats to the Manufacturing Defense *and* Industrial Base (MDIB)



MIB – Manufacturing Industrial Base
DIB – Defense Industrial Base
SMM – Small to Medium Size Manufacturers

Technical Innovation

IBCI Vision Includes A Federated Cyber-Physical Infrastructure

- A national network of policy, technology, and workforce development partners that is focused on cybersecurity for the MIB
- A dynamic database of cyber-physical characteristics relevant to production and shop floor operations
- A virtual/physical environment – a Cyber-physical Test Range (CpTR), that models a statistically-significant representation of the MIB and assesses vulnerabilities
- Advanced war gaming of supply chain issues, supplemented by intelligence community data, to shift from reactive to proactive operations
- A Manufacturing Operations Center (MOC) – a DHS-like security operations center (SOC), that continuously manages dynamic threats

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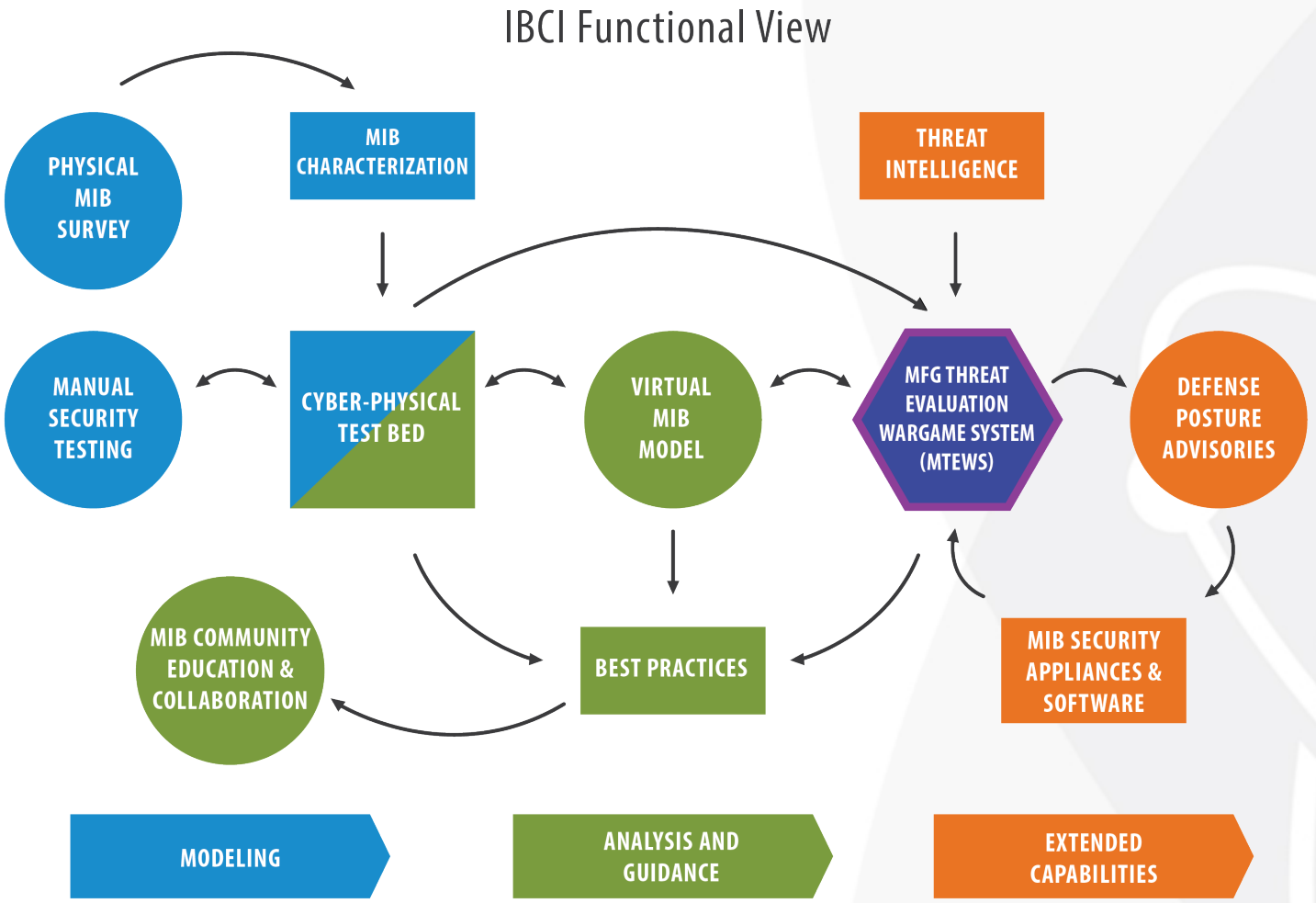
Technical Approach

An Integrated Cyberphysical Infrastructure

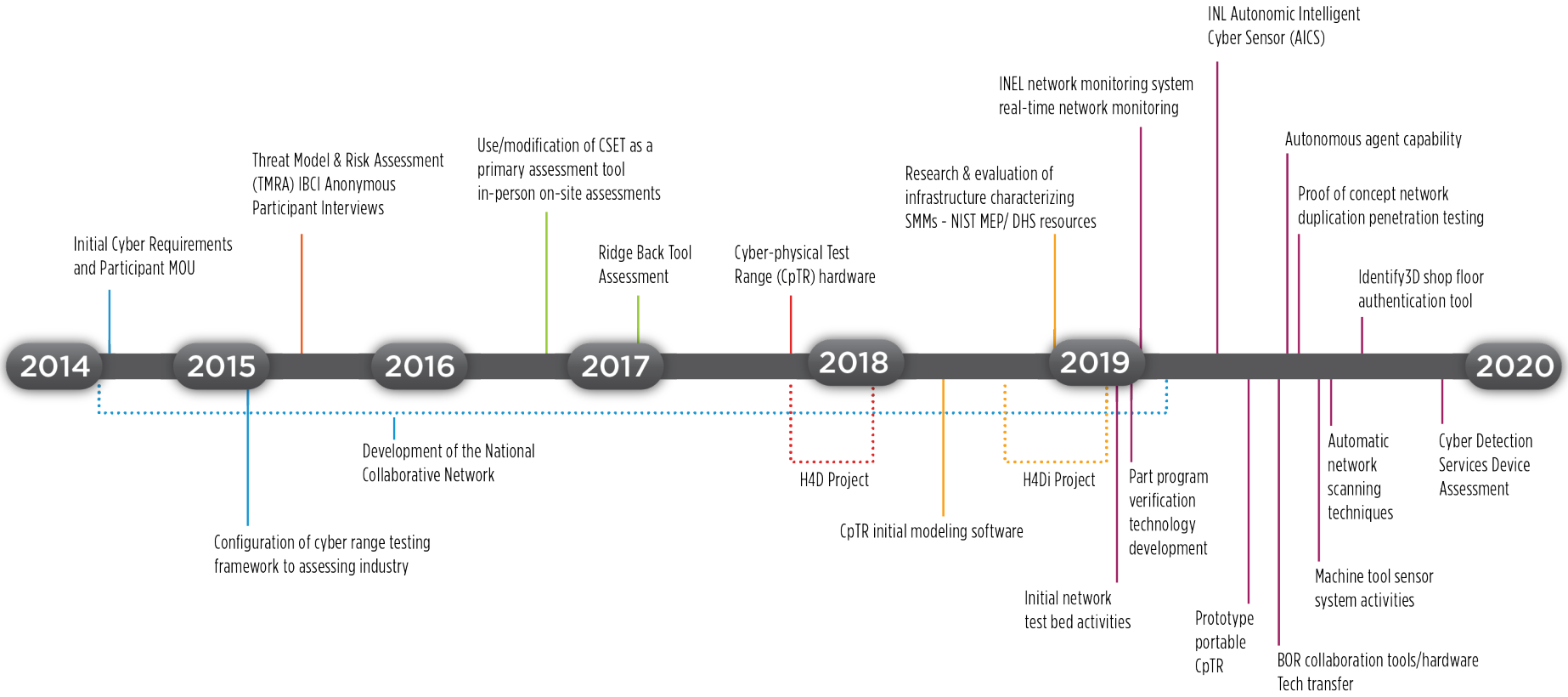


IBCI models MIB constituents to create a cyber test range composed of physical and virtual machines. The cyber range can then be analyzed for security vulnerabilities based on known threats, or war-gamed with emergent threats to explore the effectiveness of cybersecurity protective measures.

Technical Approach

An integrated national network of technical and workforce development collaborators

Results and Accomplishments



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Transition

- Further development & commercialization will be focused on working with the anticipated CEMII to advance the modeling, wargaming, and data collections activities for piloting with industry