



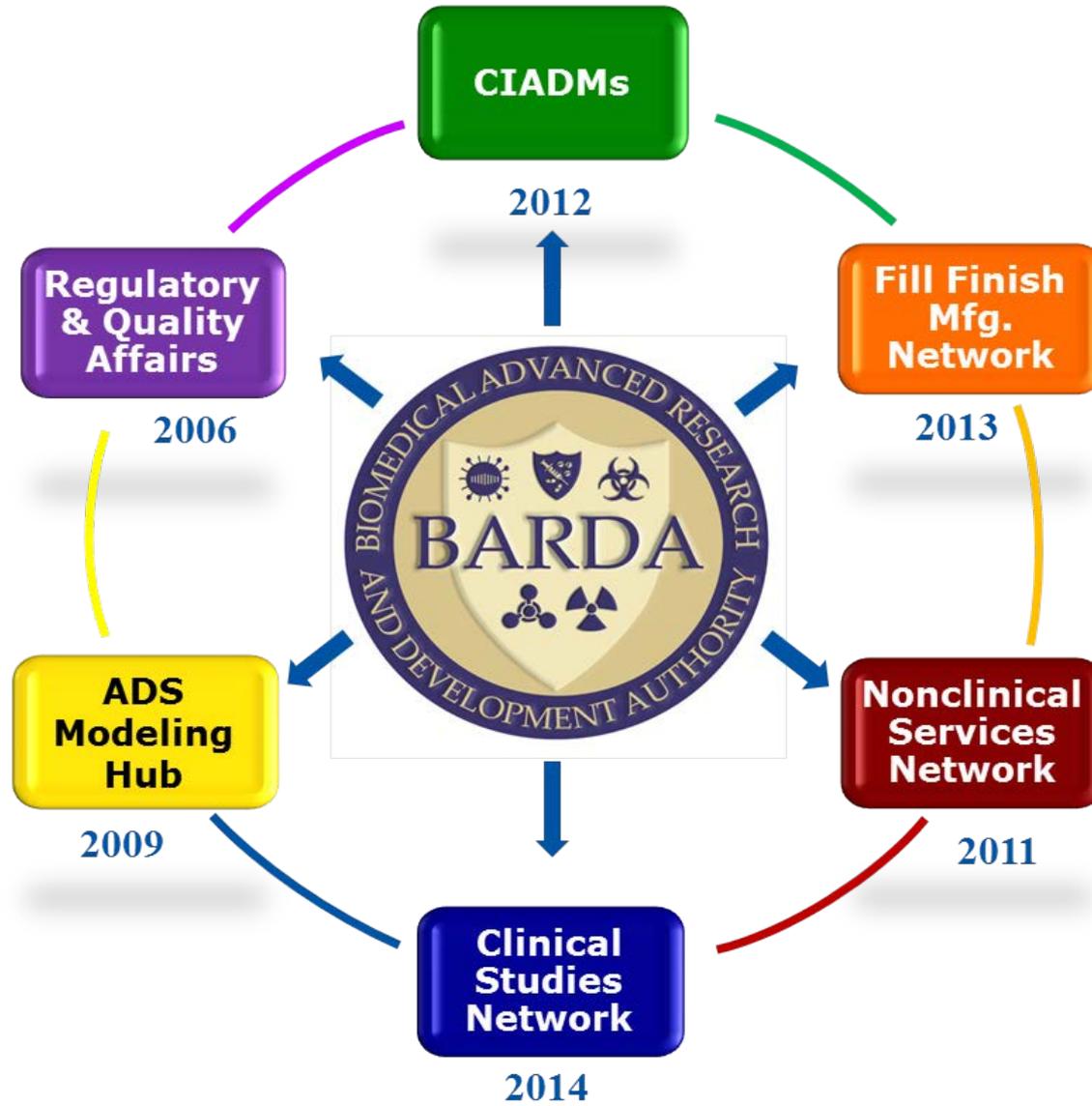
NATIONAL MEDICAL COUNTERMEASURE RESPONSE INFRASTRUCTURE

Mike Angelastro

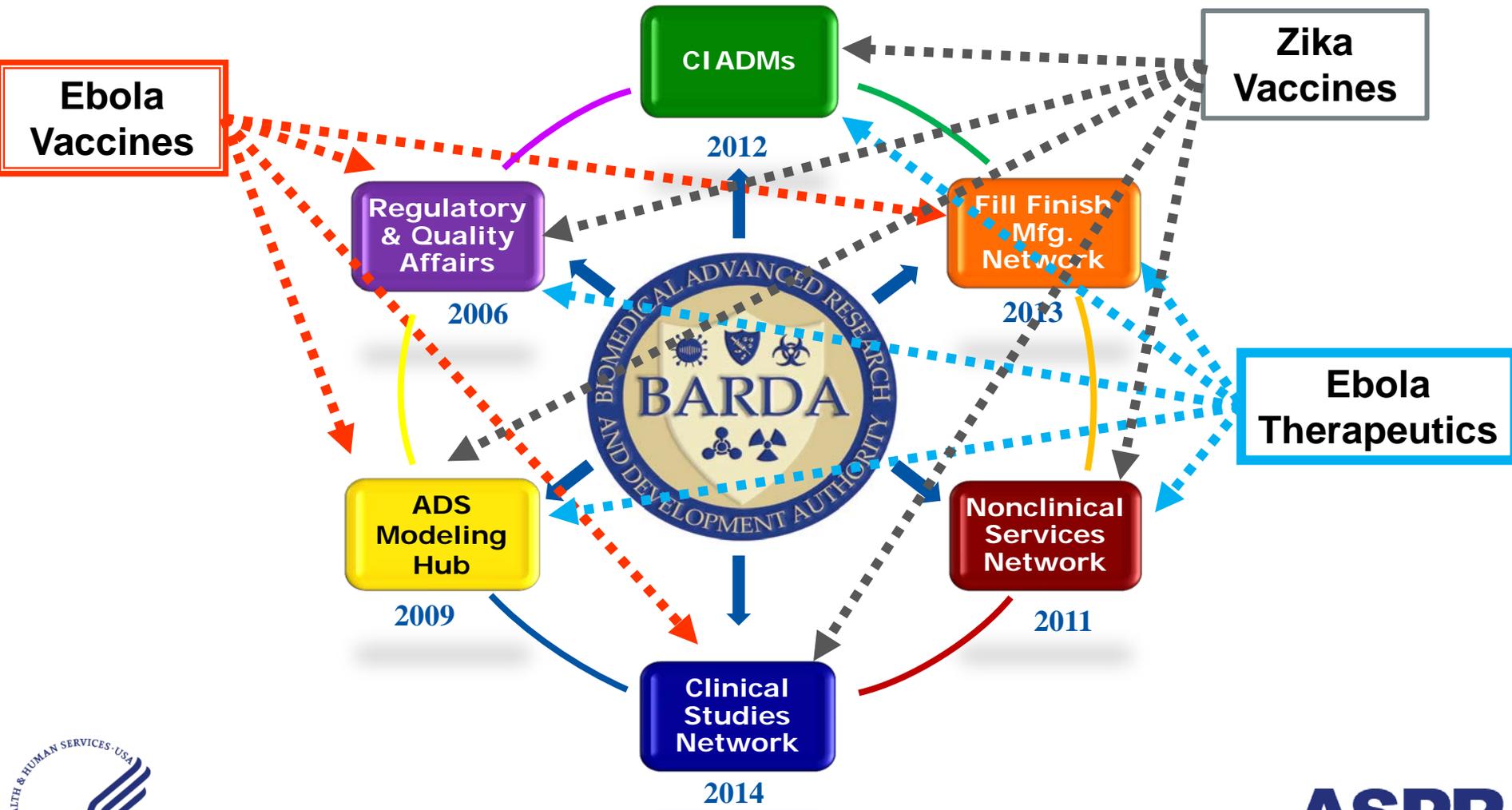
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BARDA's Core Services 'Wheel'



Key Elements of BARDA's National MCM Response Infrastructure



BARDA's National MCM Response Infrastructure



CSN
Clinical Studies Network

RQA
Regulatory & Quality Affairs

ADS
Analytics Decision Support

2014

2006

2009



FFMN
Fill & Finish Manufacturing Network

2013

2012

2011

NSN
Nonclinical Services Network

CIADM
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Nonclinical Services Network

- **BARDA Core Service**
 - Proof of concept studies
 - Repurposing studies
 - Animal model development support
- **BARDA's National MCM Infrastructure**
 - Provide nonclinical and preclinical study support for MCM development
 - Coordinate efforts with other Core Services to strengthen rapid response capabilities



Nonclinical Services Network

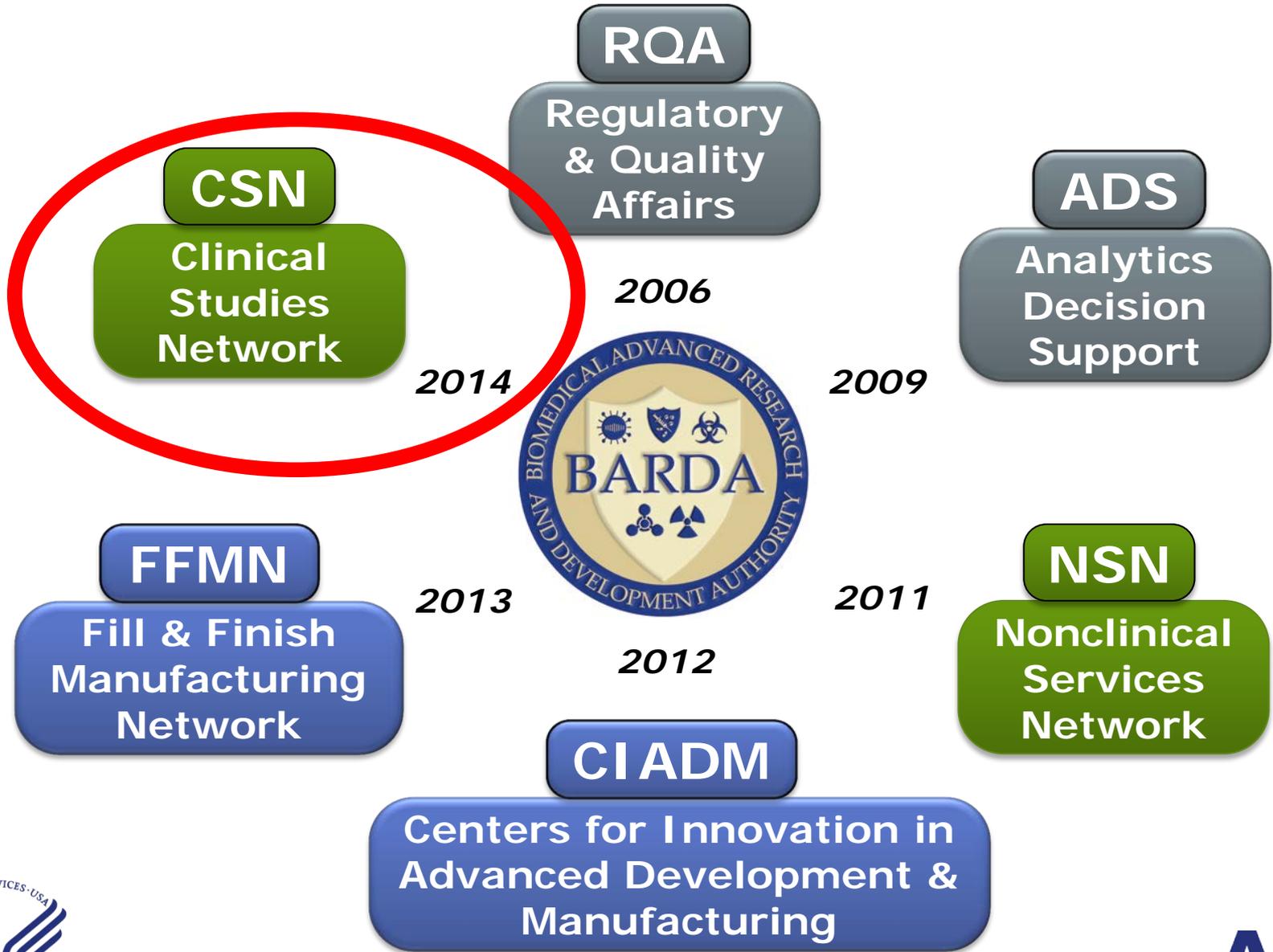
- Chemical, Radiation, Nuclear (CRN) Network
 - Contracts awarded SEP 2015
 - 5 RADNUC & 4 CHEM
- New “BIO” Network
 - Awards expected this year
 - Animal Model Testing
 - Toxicology Testing
 - Analytical Services



NSN Metrics – Tried & True

- Original 2011 CBRN IDIQ contract
 - Task Orders - 31 BIO, 2 CHEM, 15 RADNUC
 - Glanders, anthrax, meliodosis, rabbitpox, mousepox, Ebola, cyanide ingestion, H-ARS, GI-ARS, MERS, Influenza and Zika
- 2015 CRN IDIQ Contract
 - Task Orders – 3 CHEM & 7 RADNUC
 - Chlorine & cyanide exposure, cutaneous radiation injury, thrombocytopenia & vascular injury
 - Support of biodosimetry testing





Clinical Studies Network (CSN)

- STRATEGY

- To establish a clinical studies network pre-positioned to serve BARDA's clinical research needs

- GOAL

- To support the design, conduct, and analysis of clinical studies needed to advance clinical development of MCMs in preparedness and response environments



CSN Requirements

Phase 1 – 4 Clinical Studies

- Drugs
- Vaccines
- Diagnostics
- Devices
- Procedures

Special Populations



Hospitalized & Outpatient



Domestic & International



During an Emergency



Clinical Studies Network

- Structure

- Awarded to 5 Contract Research Organizations (CROs) in April 2014
- Oversight provided by BARDA's Division of Clinical Studies

- Trajectory

- Planning to initiate four (4) new CSN studies in 2017 using CSN
- Continue to strengthen BARDA's CSN processes and policies



CSN Task Orders, 2014 to Present

Task Order	Date of Issue	Status	Description
001	December 2014	Completed	Compile medical record data for sNDA (midazolam for neurotoxin-induced seizures)
002	February 2015	Ongoing	Clinical operations, project management, and site support for CDC Sierra Leone Ebola vaccine study – Phase 2/3
002A	February 2015	Ongoing	Data management, statistical, and safety support for CDC Sierra Leone Ebola vaccine study – Phase 2/3
003	July 2015	Ongoing	Conduct stockpiled H5N1 influenza vaccine study – Phase 2
004	April 2016	Ongoing	Obtain serum from 100 Zika-infected subjects for diagnostic device development
005	August 2016	Ongoing	Conduct stockpiled H5 influenza vaccine heterologous prime boost study – Phase 2



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Regulatory & Quality Affairs

- Create & maintain systems to support critical processes related to regulatory operations and quality oversight activities

- Professional Depth!



RQA Capabilities Explained

- BRITE Study
 - Regulatory Operations
 - Train and utilize electronic Common Technical Document (eCDT) format for BARDA's first IND application
 - Draft/ Approve Policies and SOPs for Sponsor-related activities
 - Quality
 - Perform audits related to all study materials
 - Release of drug product



RQA Trajectory

- GOALS
 - A successful filing of Zika vaccine candidate IND
 - Continue to enhance BARDA-wide Quality Audit Capability
 - Implement an integrated Quality Audit Schedule (project level)



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Analytic Decision Support (ADS)

Develop modeling, visualization, and decision support tools for medical consequence and public health assessments across the CBRN, pandemic influenza & emerging infectious diseases risk spectrum for preparedness and in a response

**Project BioShield
(2004)**

• **Material Threat Assessments,
Medical Consequences**

**National Influenza
Strategic Plan
(2005)**

• **On-site HHS real-time Modeling
Hub**

**PHEMCE
Implementation
Plan (2012)**

• **Information Visualization Tools**

**HHS Innovation Lab
(2016)**

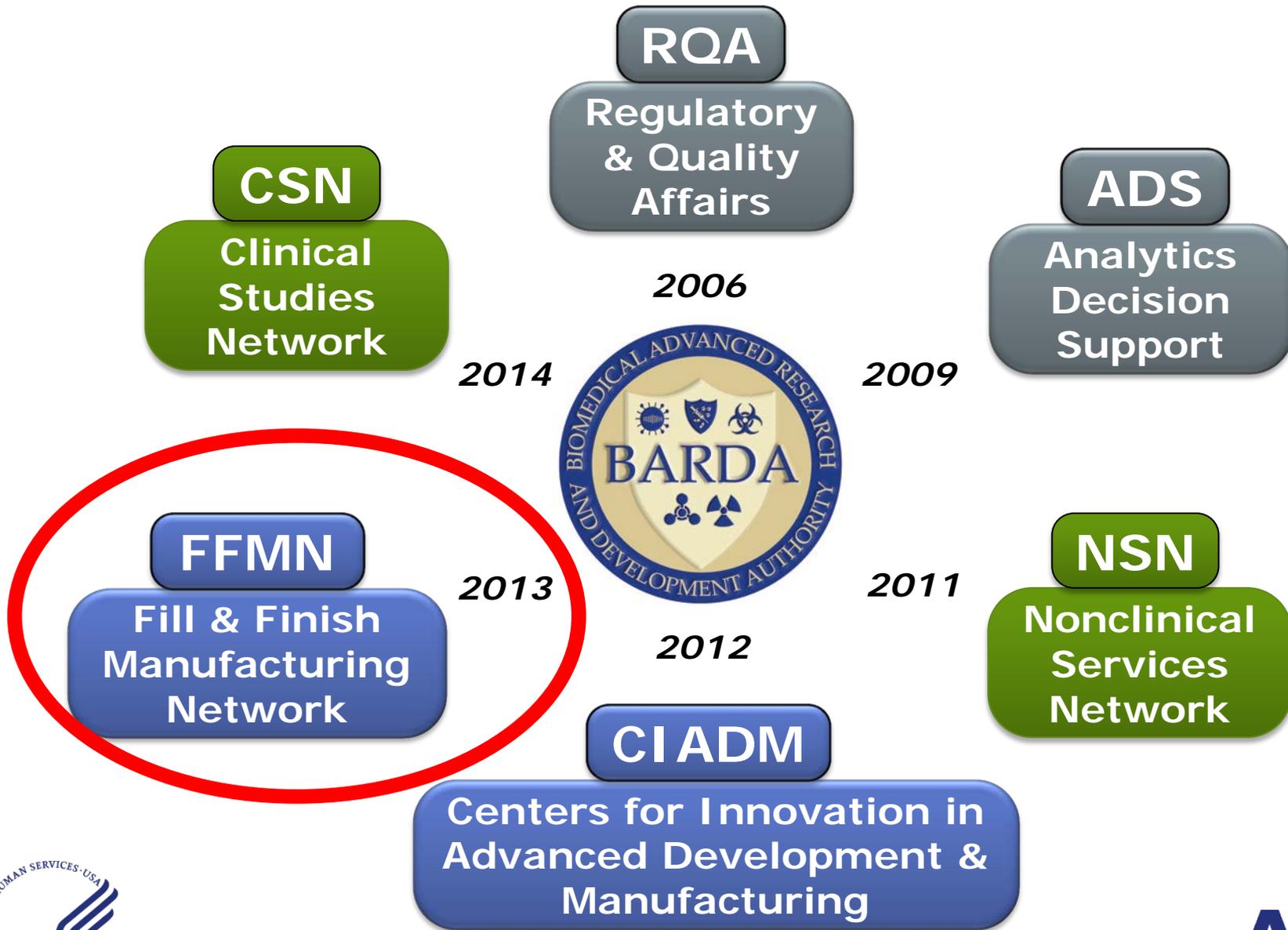
• **BARDA Visualization Hub**



ADS Capabilities

- In-house team of computational modelers, developers, analysts & data scientists
- Environment dedicated to data sciences & collaborative decision-making
- Reach-back capability to interagency partners through the HHS modeling and visualization hub (“VizHub”)
 - DTRA, NIH-MIDAS, CDC, National Labs
- Growing portfolio of computational decision support tools for influenza, CBRN & EIDs





Fill & Finish Manufacturing Network (FFMN)

- Establish a network of existing facilities that are pre-qualified and under contract to fill & finish vaccine/drugs for U.S. Government-contracted manufacturers
 - Fill & Finish surge manufacturing for pandemic influenza
 - Support influenza-focused, EID or CBRN contractors that do not have fill & finish capabilities already in-house
 - Produce clinical investigational lots, engineering lots & commercial scale lots



FFMN Capabilities

- Well-established CMOs with fill & finish expertise in the following:
 - Formulation, Fill & Finish Vials/ Syringes
 - Technology Transfers
 - Regulatory Support
 - Analytical Development
 - Clinical Trial & Commercial Scale lots
 - Labeling & Packaging
 - Storage & Distribution
 - Lyophilization
 - Live Vectored/Virus Products



FFMN Task Orders

Task Order Number	Description	Status
1T	Tech transfer of influenza vaccine candidate for pandemic fill & finish surge manufacturing capability	Ongoing
2T	ZMapp® Filling	Complete
3T	CDER Pathway pilot program for drug shortage product: Magnesium Sulfate Injection Solution Aseptically Filled into 10mL Plastic Syringes	Collaboration with FDA
4T	CDER Pathway pilot program for drug shortage product: Succinylcholine Chloride Injection Solution Aseptically Filled into 10 mL Glass Vials	Collaboration with FDA



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HHS CIADM Program Objectives

- Establish public-private partnerships to construct/retrofit U.S.-based, commercial-scale, biopharmaceutical facilities that support advanced development and manufacturing of MCMs
- Provide core services, on a routine basis, for the advanced development and manufacturing of CBRN biopharmaceuticals supported by the U.S. Government
- Provide, in an emergency, necessary U.S.-based surge capacity to respond to an emerging infectious disease, pandemic influenza, and currently known or unknown threats
- Provide biopharmaceutical oriented workforce development through training programs aligned with current regulatory guidelines



CIADM Program Numbers

- 3 awards in June 2012... potential 25 year contractual public-private partnerships
- Cost share for infrastructure building in Base Period [up to 8 years]
- Once fully operational [“ready”], 50% capacity for core services is to be allocated for USG directed work
- To date, 4 Task Orders have been awarded



CIADM Program Trajectory

- Continue to leverage available Core Service capabilities for routine, & response oriented, requirements
- Work with CIADMs to de-risk pandemic surge requirement
- Address capability gaps
 - mergers & acquisitions
 - industry technology advancements
- Maintain/ Enhance collaboration with Dept of Defense ADM program
- Sustainment!



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