CENTER for Supply Chain Studies™

ReferenceModel-based Exploration and Education

Blockchain For Cold Chain

Exploring the use of blockchain technology within Healthcare

Introduction Briefing

9/27/2017

Welcome to the Introductory webinar of the Cold Chain and Blockchain Study.

We will start at 11am EST

How to make the most of the call:

Please mute your line if you are in a noisy environment.

Please don't put us on hold. Your "hold" music will interrupt the call.

Please ask questions and engage as we go along and enjoy the call!

Use the chat area if you are finding it difficult breaking into the conversation. Our calls get pretty lively at times☺

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- The Center for Supply Chain Studies (the Center) is nonprofit organization that serves as a forum for free and open discussion of diverse opinions without in any way attempting to encourage or sanction any particular business practice.
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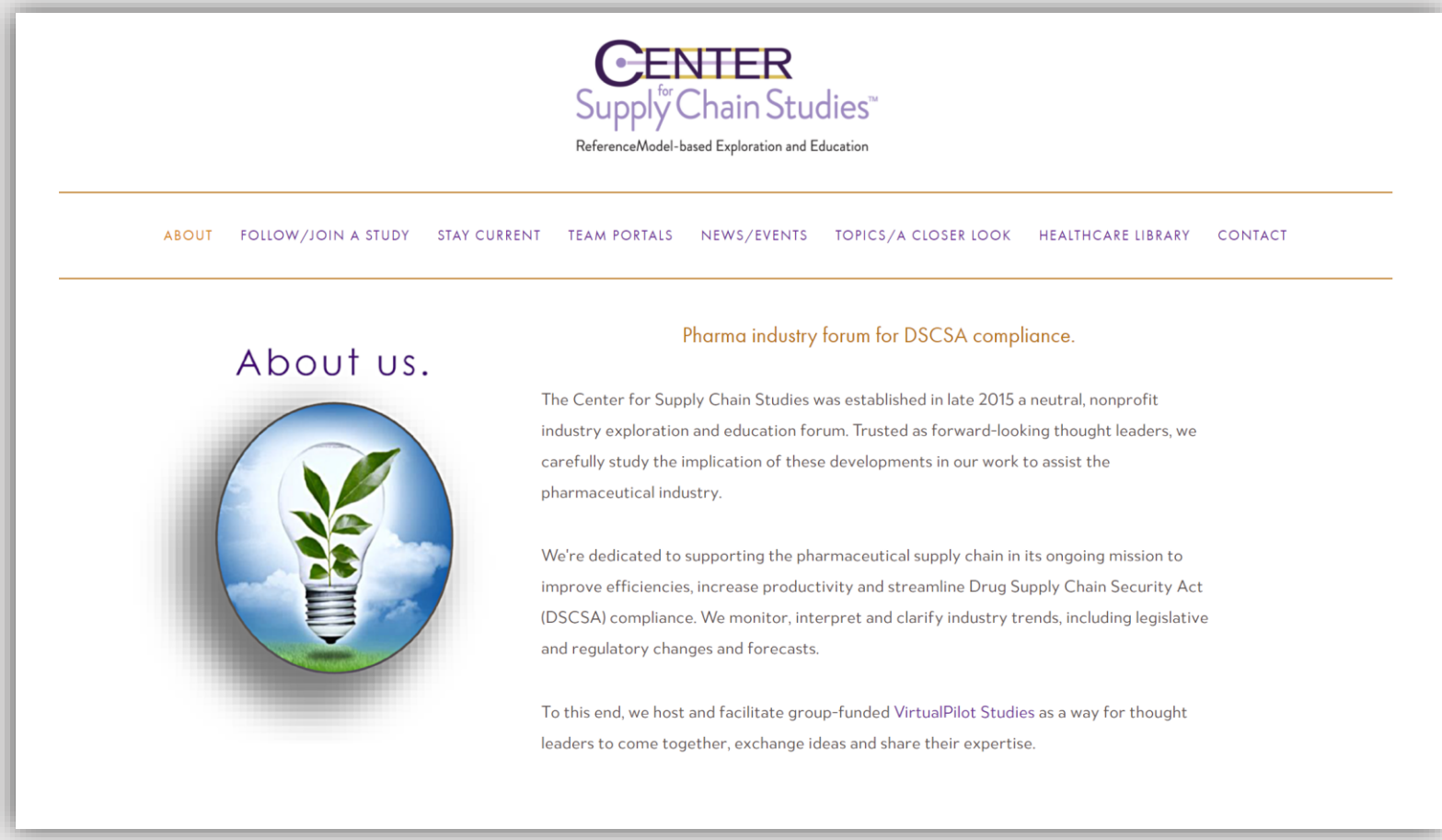
CENTER for Supply Chain Studies™
ReferenceModel-based Exploration and Education

Neutral, Non-Profit, 501(c)(6)
Exploration and Education
VirtualPilotTM, and ReferenceModel™ Library



Content

- Studies at the Center
- Leveraging Previous Studies
- Blockchain for Cold Chain Study
- Next Steps

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Studies at the Center

Studies

STUDY: DSCSA & MDM

VirtualPilot was completed in the summer of 2017. The Study Team's White Paper, ***"Demonstrating how Master Data Management can be used in support of DSCSA Requirements,"*** *is available now.*

STUDY: DSCSA & Blockchain

Team is examining the use of blockchain technology as a possible way to address some of the unresolved DSCSA data security issues facing the U.S. pharma industry.

STUDY: DSCSA & Blockchain 2

Phase 2 will apply the scenarios, processes and information flows identified in *DSCSA & Blockchain: Phase 1.*

STUDY: Blockchain for Cold Chain

Study will incorporate the ability to capture temperature, light and vibration data from the Internet of Things (IoT), and provide data collection solutions for verifying real-time status of supply chain items.

STUDY: Global Pharma Track & Trace

Based on core set of info w/in the blockchain, Study will include international laws & regulations to explore *how to provide data to individual. countries*, and *how to provision serial and traceability data for their specifications.*

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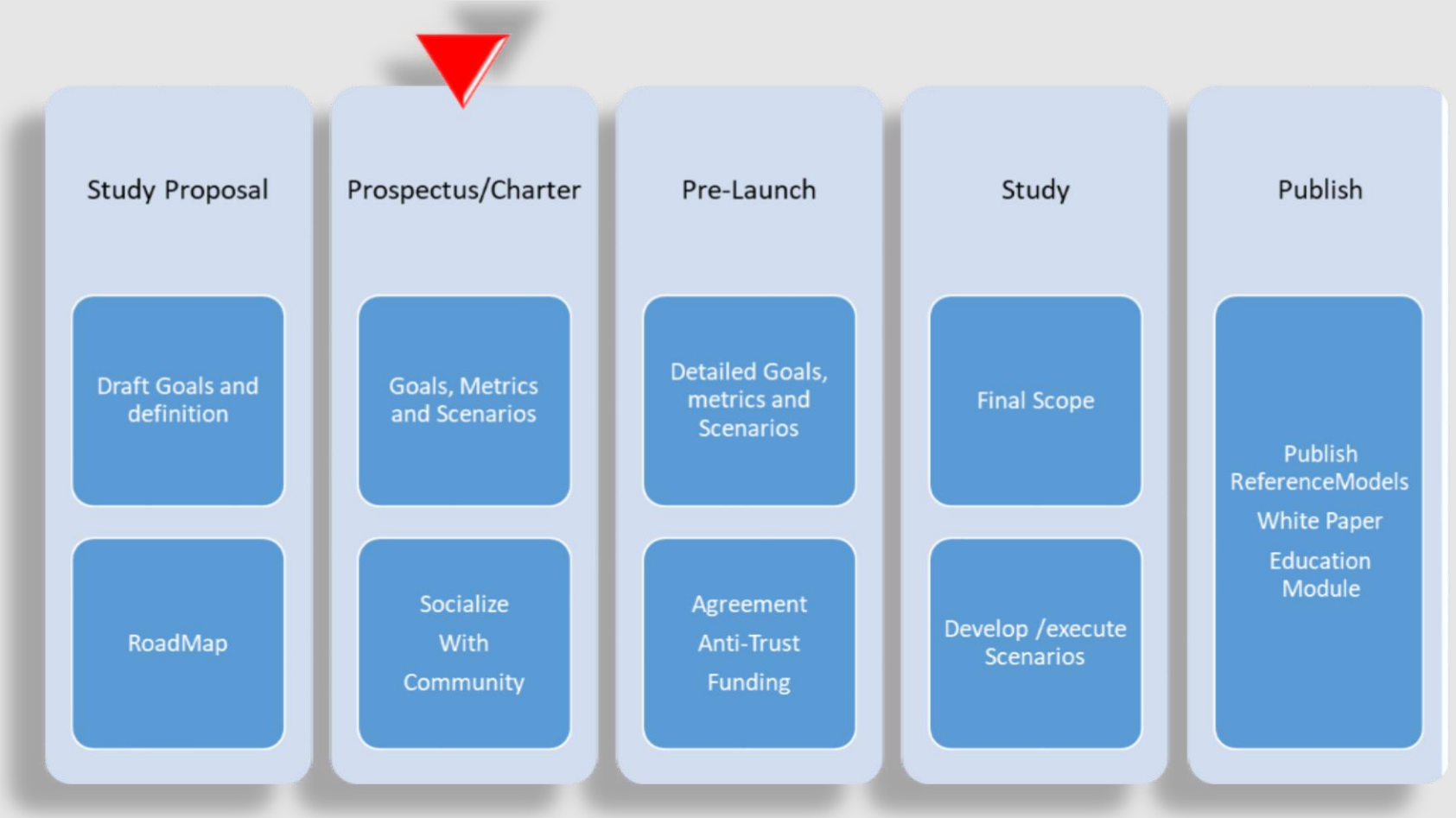
Study Lifecycle

Idea to Publication



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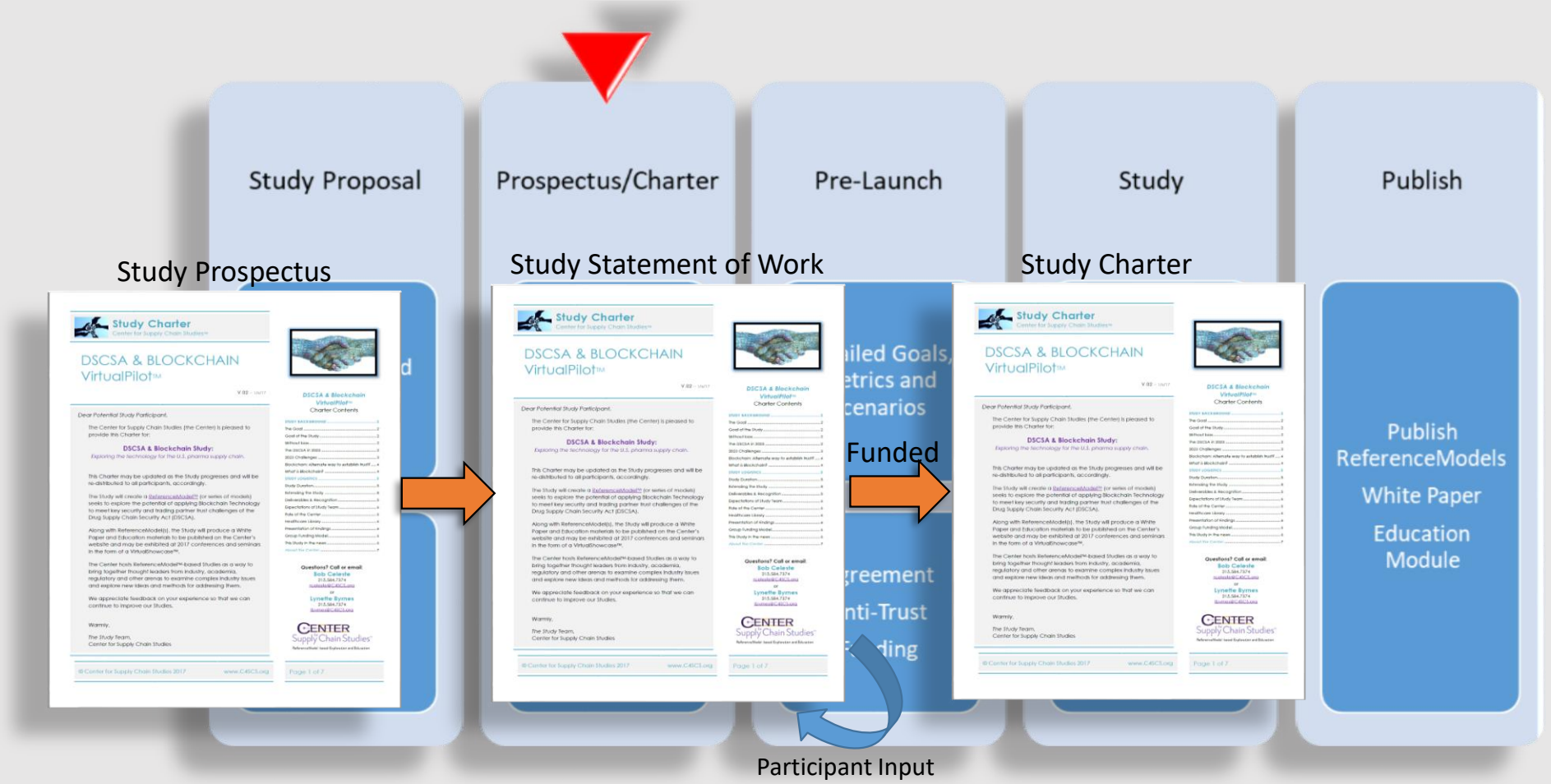
Study Lifecycle

Prospectus to Charter



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Go fast by going slow

Leveraging Previous Studies

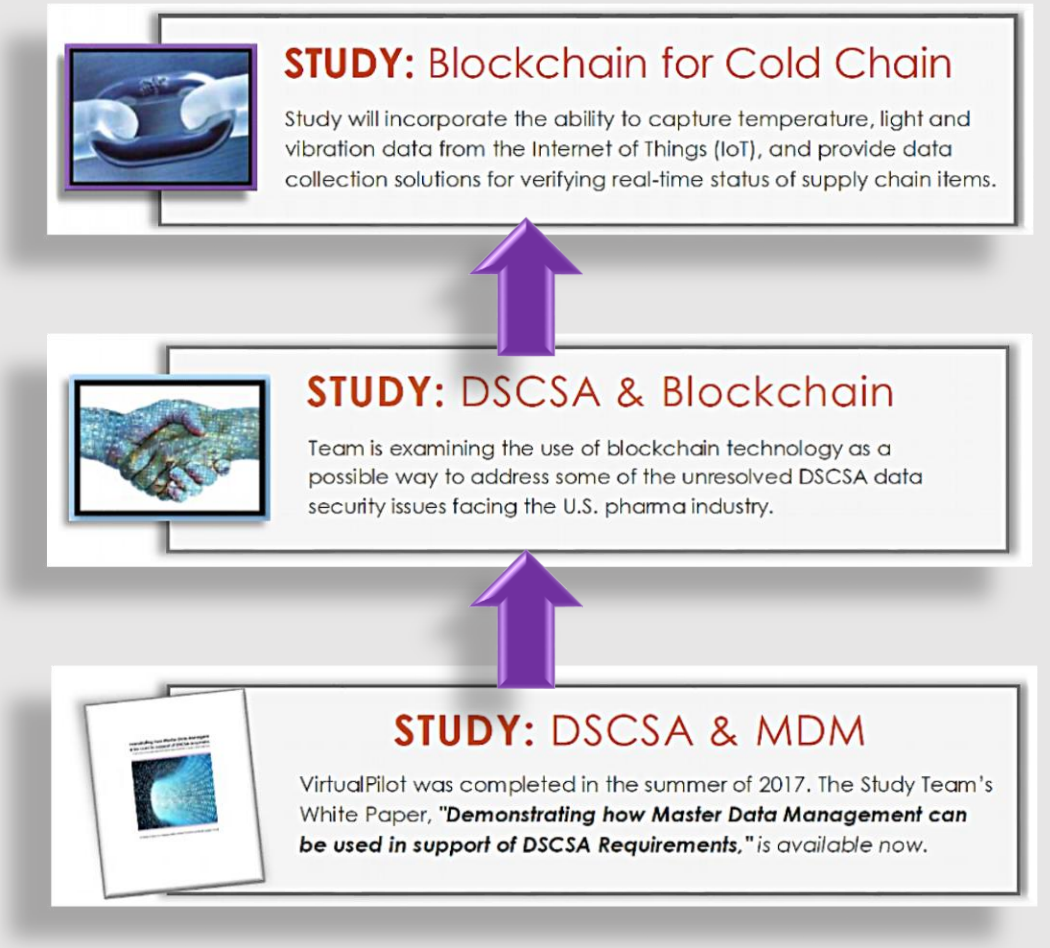
Blockchain for Cold Chain

Building on previous Studies to add value for supply chain partners and solution providers

Leveraging the DSCSA and Blockchain data sharing models to also collect and share sensor data.

Exploring the use of Blockchain technology to share data required by the Drug Supply Chain Security Act

Independent management of Product Data, Supplier / Customer Data and Transaction Data.



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DSCSA – Blockchain Study

Applicable to sharing cold chain sensor data

1. Establishing an electronic connection between non-adjacent trading partners.
2. Establishing trust between these trading partners.
3. Sharing required data without inadvertently exposing proprietary information.
4. Reduce the potential activity required of trading partners.
5. Designing for expansion beyond DSCSA compliance
6. Funding the architecture.

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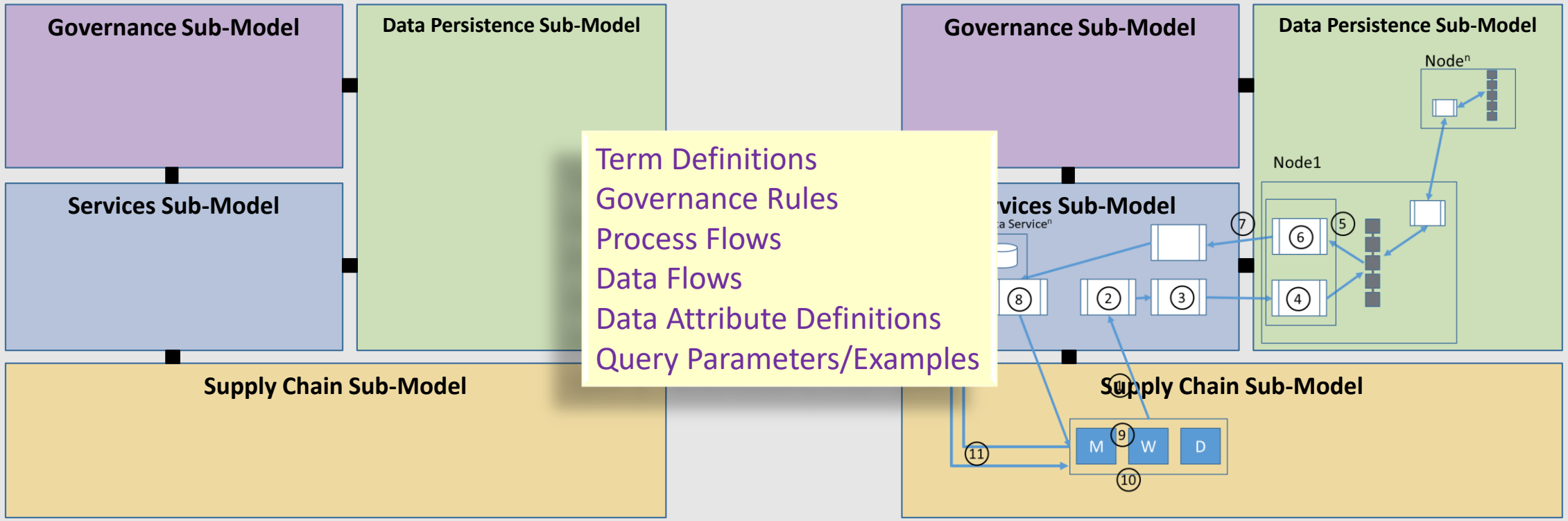
Phase I

Virtual Pilot: DSCSA & Blockchain ReferenceModels



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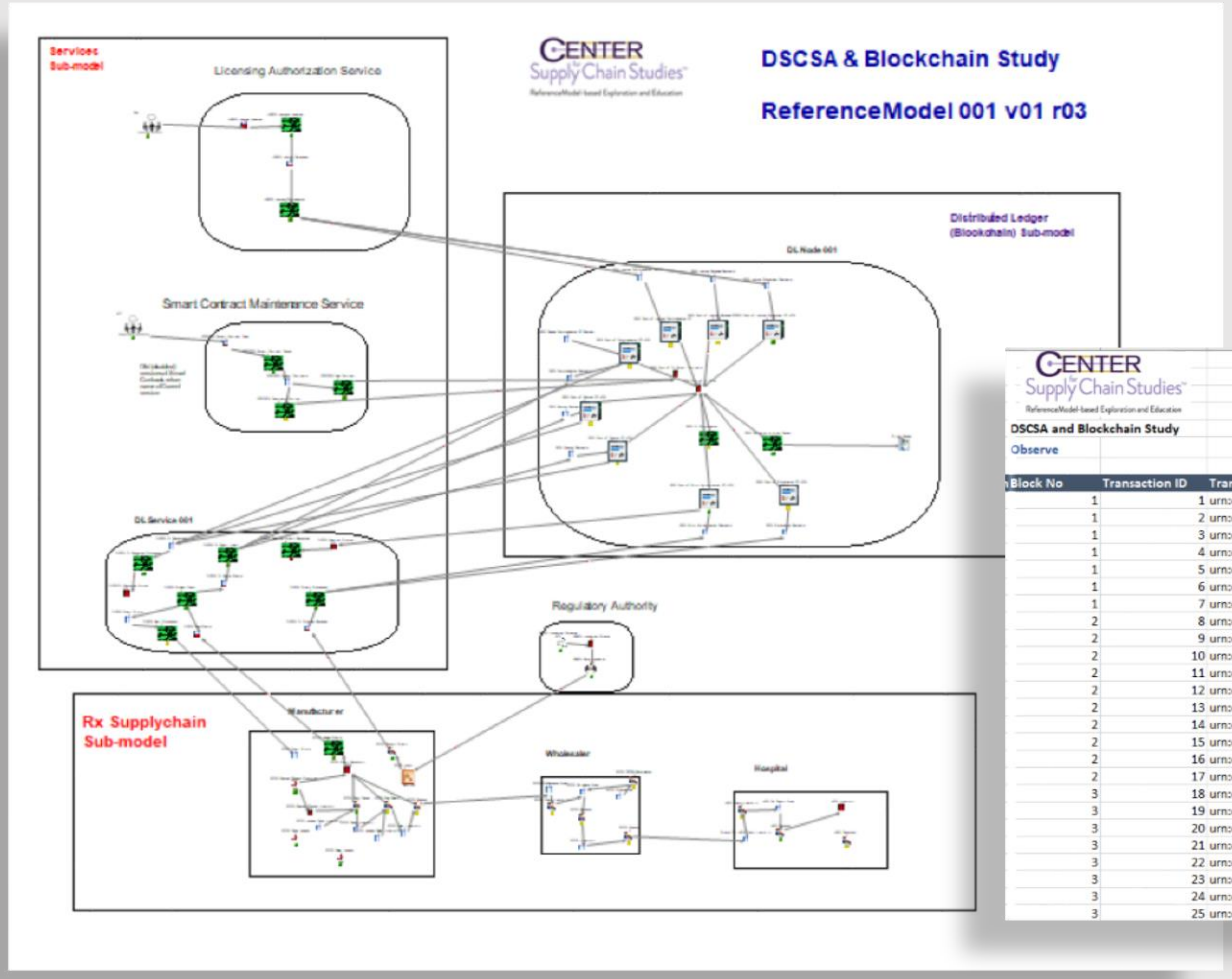
Phase I

Virtual Pilot: DSCSA & Blockchain ReferenceModels



DSCSA and Blockchain Study

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Exploratory ReferenceModels

Sample ReferenceModel Design Variations

RM001 – Minimal Model: Minimal data in Blockchain. Includes Aggregation Events

RM002 – Minimal/Flat Model: Minimal data in BC BizSteps and Dispositions inherited by Items

RM003 - All data in the Blockchain (Master Data, Production Data, Transaction Data)

RM004 - All data in the Blockchain - no restrictions to access (Tom's Model)

RM006 - Blockchain based Discovery Service (look up the address of EPCIS (TI) repositories)

RM007 - Cloud or Databased Discovery Service (same as RM006 with traditional DB technology)

RM008 – Aggregated Model: Blockchain holds chain of Event IDs (Beth's Model)

RM009 – Many Sources Model: Assumes initial implementations on multiple platforms

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Virtual Pilot – managing sensor data

Blockchain for Cold Chain Study

Blockchain for Cold Chain Study

Exploring the use of blockchain to support sensor data sharing

Concept:

- Define or identify a common set of cold chain (temp sensor) data
- Demonstrate the movement, use and trading partner reaction to temp data (and possibly other sensor data)
- Explore whether blockchain technology provides benefits
- Explore different sensor inputs (data loggers, online sensors, binary indicators, etc.) and how they might be incorporated

Timing:

- Fall 2017:
  - Study organization
  - Feature set selection
- Winter 2017 - 2018:
  - Study to commence
  - Augment existing supply chain ReferenceModels with temp sensor data
- Spring 2018
  - Publish White Paper, Education Module
  - Initiate pilots based on developed cold chain ReferenceModels

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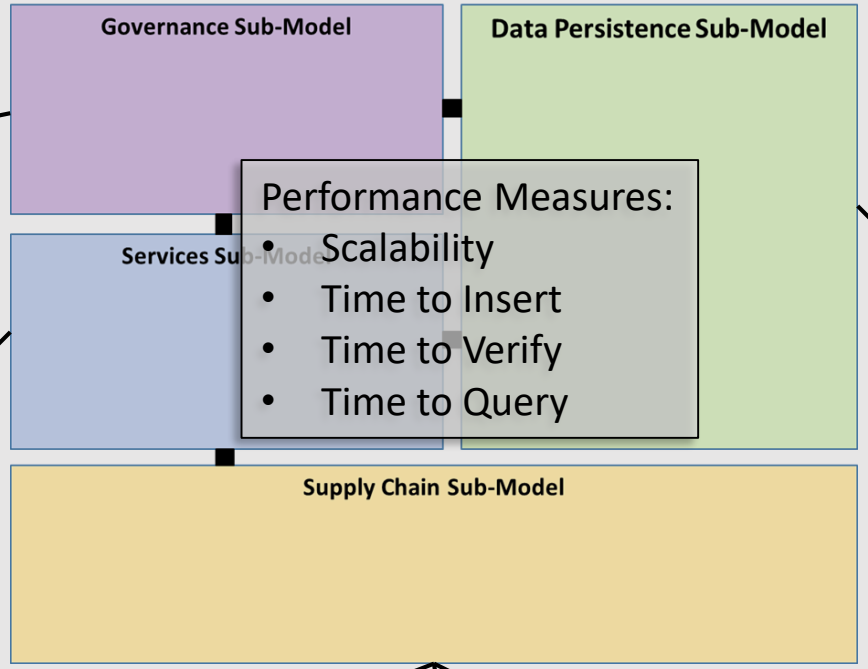
Material to support Study

Leveraging previous work

Governance Variations:
- Data Provisioning & Access Rules
  - DSCSA Required
  - Industry Practice
  - Trading Partner Agreements
- Version Control



Performance Measures:
- Scalability
- Time to Insert
- Time to Verify
- Time to Query

Services Variations:
- Master Data Provisioning
- EPCIS Event Repositories
- Data Quality Management

Data Persistence Variations:
- Technology:
  - Single Blockchain
  - Multiple Blockchains
  - Cloud/Database
  - Combination
- Immutability
- Scalability
- Confidentiality
- Governance Rule Enforcement
  - Smart Contracts
  - Procedures
- Data Storage Options
  - DSCSA Data
  - Pointers to EPCIS Repositories

Trading Partner Variations:
- Trading Partner Types:
  - Manufacturer
  - Contract Manufacturer
  - 3PL
  - Wholesaler
  - Hospital Pharmacy
  - Retail Pharmacy
  - Bad Actors

Trading Partner Variations:
- Trading Partner Choices
  - Inference Policy
  - Data Update Policy
  - DSCSA Law Interpretation

Supply Chain Capabilities:
- Forward Logistics
- Return Logistics
- Error Corrections
- Data Queries
- Suspect, Illegitimate, Cleared Drug
- Nefarious Behavior

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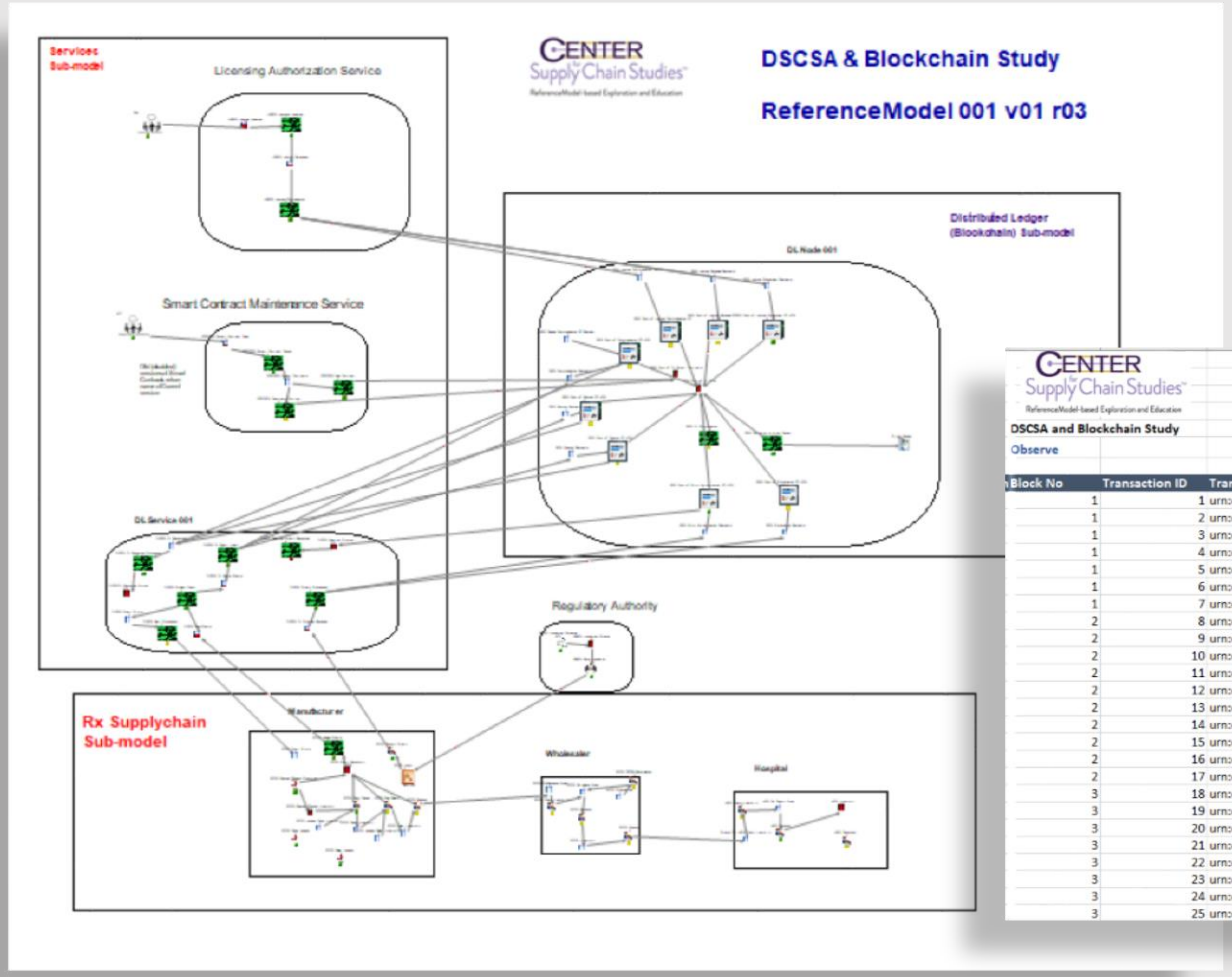
Material to support Study

Leveraging previous work



DSCSA and Blockchain Study

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- Term Definitions
- Governance Rules
- Process Flows
- Data Flows
- Data Attribute Definitions
- Query Parameters/Examples
- POC Run Data

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What's Next

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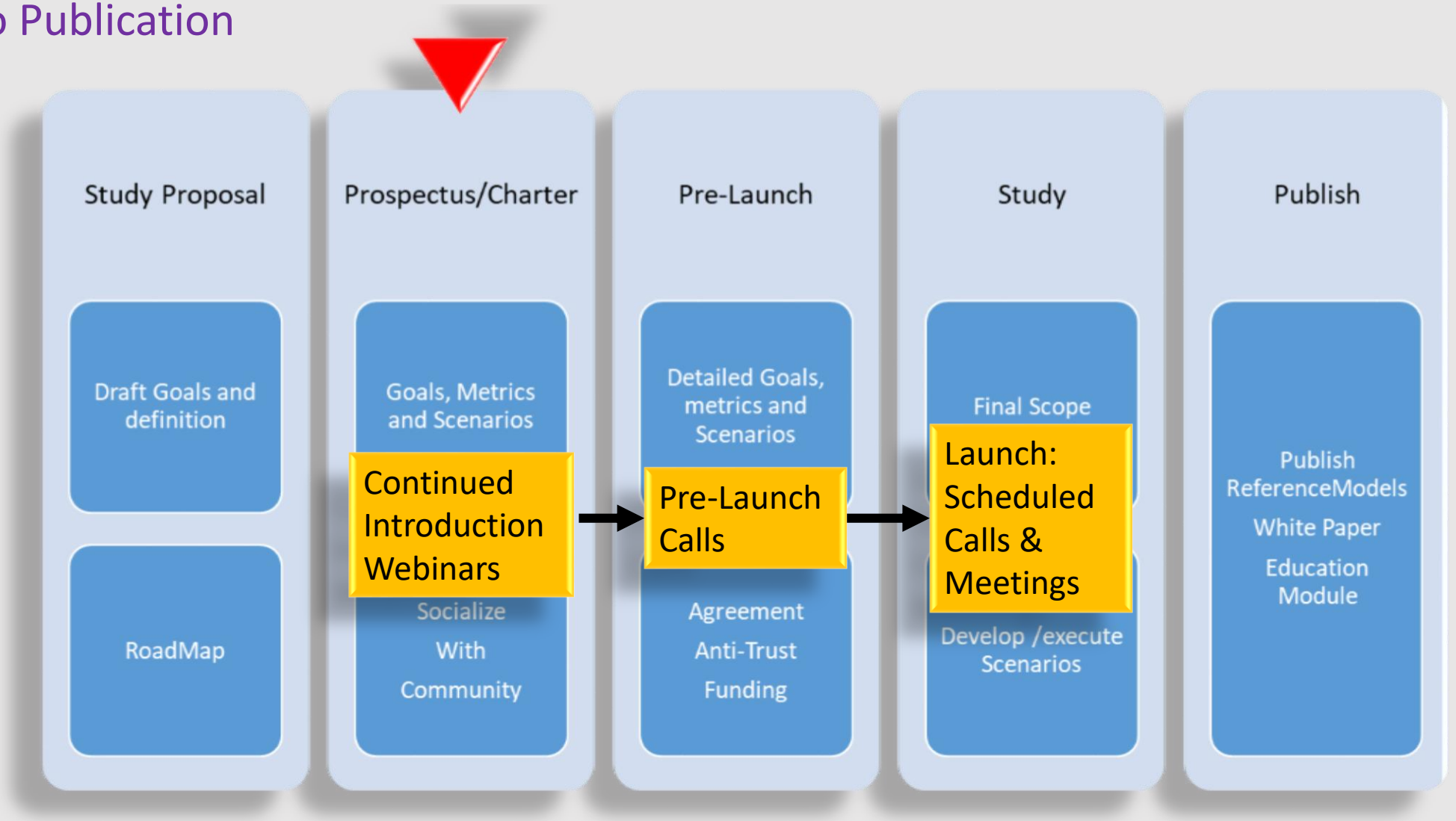
Study Lifecycle

Idea to Publication



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Discussion / Questions

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Studies

STUDY: DSCSA & MDM

VirtualPilot was completed in the summer of 2017. The Study Team's White Paper, ***"Demonstrating how Master Data Management can be used in support of DSCSA Requirements,"*** *is available now.*

STUDY: DSCSA & Blockchain

Team is examining the use of blockchain technology as a possible way to address some of the unresolved DSCSA data security issues facing the U.S. pharma industry.

STUDY: DSCSA & Blockchain 2

Phase 2 will apply the scenarios, processes and information flows identified in *DSCSA & Blockchain: Phase 1.*

STUDY: Blockchain for Cold Chain

Study will incorporate the ability to capture temperature, light and vibration data from the Internet of Things (IoT), and provide data collection solutions for verifying real-time status of supply chain items.

STUDY: Global Pharma Track & Trace

Based on core set of info w/in the blockchain, Study will include international laws & regulations to explore *how to provide data to individual. countries*, and *how to provision serial and traceability data for their specifications.*

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"DSCSA & Blockchain Study: PHASE 2" ...coming Fall '17 *(click for info)*

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STUDY: DSCSA & Blockchain

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Join Team: CLOSED

FOLLOW Study

DOWNLOADS:

- Info sheet
- Study Charter

STUDY: DSCSA & Blockchain 2

Phase 2 will apply the scenarios, processes and information flows identified in *DSCSA & Blockchain: Phase 1*.

JOIN Pre-launch Team

FOLLOW Study

DOWNLOAD:

- Info sheet
- Intro Slides
- Watch VIDEO

STUDY: Blockchain for Cold Chain

Study will incorporate the ability to capture temperature, light and vibration data from the Internet of Things (IoT), and provide data collection solutions for verifying real-time status of supply chain items.

JOIN Pre-launch Team

FOLLOW Study

INTRO WEBINAR

Wed 9/27: **REGISTER**

Fri 9/29: **REGISTER**

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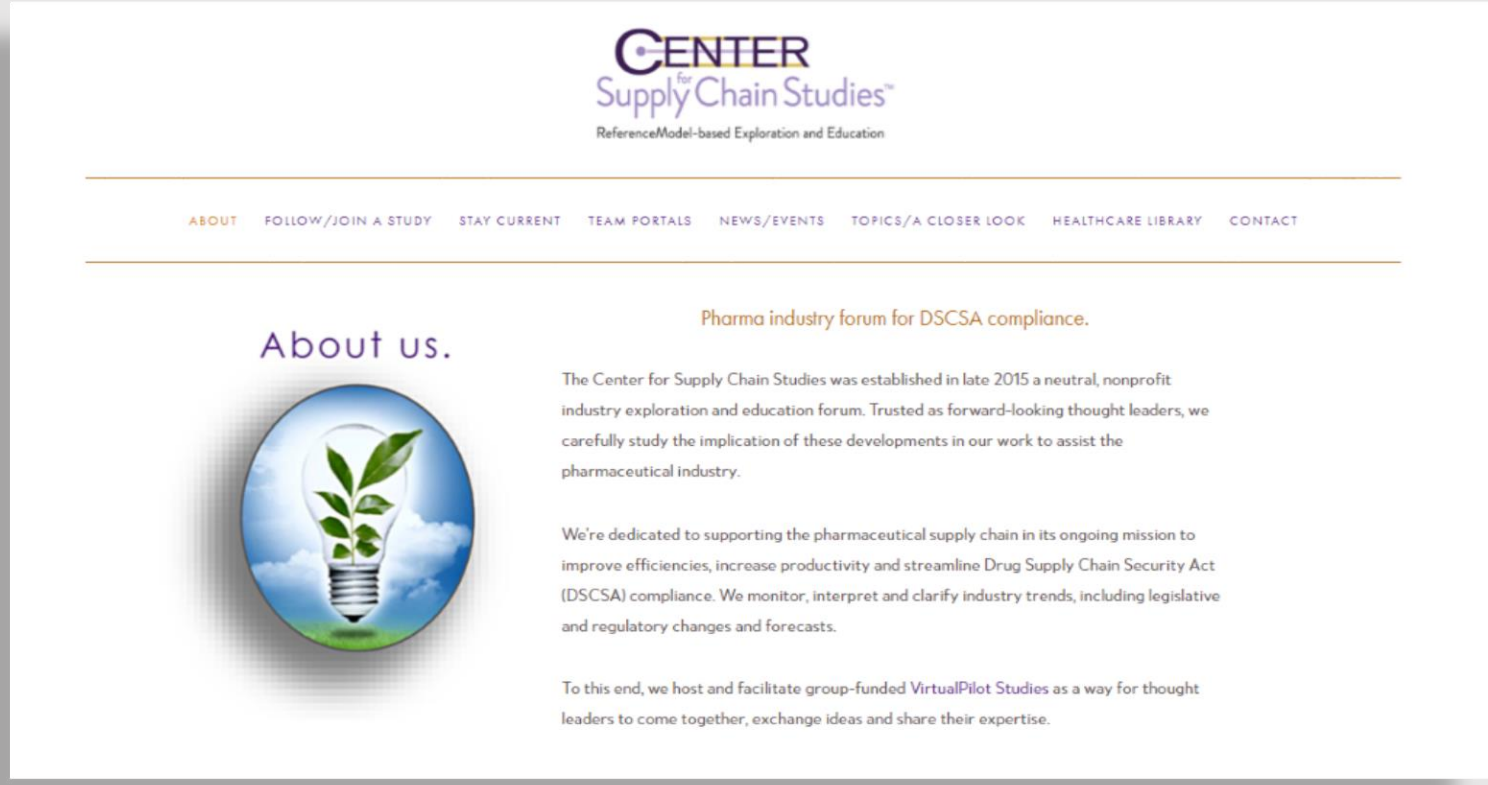

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