OBIM Solution Architecture Models

Informational

Presented at NBAC Face to Face

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Briefing Purpose & Agenda

BLUF: Provide information about the OBIM Enterprise Architecture (EA) modeling and related DNA model artifacts.

Agenda:

- Architecture and Modeling Approach
- Modeling Benefits
- Modeling Example, DNA Prototype Project
- Standards Utilized, DNA Prototype Project
- Sample Use Case, DNA
- UML Artifacts
- DNA Data Model
- Summary

Architecture & Model Approach

Background:

Gartner Research & Consulting: “To obtain the benefits of a business-led analysis for modernization, you must obtain a complete and detailed understanding of the interconnections and interdependencies between the various systems of your IT estate, through automated code level analysis. This level of application interaction cannot be performed by hand - you must use a purpose-built tool from a third party that will help unravel the complexity of your application landscape.”

DHS OBIM is implementing processes and a model-based systems engineering (MBSE) tool to deliver comprehensive project models capable of supporting OBIM’s architecture, engineering, and performance analysis.

Cameo Systems Modeler ™ is a cross-platform collaborative MBSE environment, which provides smart, robust, and intuitive tools to define, track, and visualize all aspects of systems in standards-compliant models and diagrams.

Modeling Benefits

1. Modeling and simulation ensure essential capability requirements are understood and applied to the design, development, and implementation, while ensuring acceptance criteria are defined and approved.

2. Integrated architectures facilitate the development of use cases to link stakeholders' business needs to new technological capabilities (e.g., new biometric modalities).

3. A comprehensive model captures essential system behaviors and effectively presents, preserves, and disseminates (through a common repository) the expert knowledge needed for successful operations of the current system (As-Is) and transition to a modernized system (To-Be).

Modeling Example / DNA Prototype Project

Background:

DHS OBIM supports the DHS mission to protect our nation by providing biometric identification services to Federal, State, and local government. As such, OBIM has developed a DNA Prototype to leverage Rapid DNA capabilities developed by DHS Science & Technology Directorate to support identity fraud use cases. This provides biological identification and relationship (kinship) testing and utilizes pedigree, which is essentially a register recording a line of ancestors to assist with identifying fraud and biological relationships.

Expected Benefits:

One key objective of the DNA prototype development and implementation is to adopt a NIEM-conformant, standards-driven data model enabling exchange interfaces. These messaging interfaces facilitate data sharing among United States Government agencies and international partners.

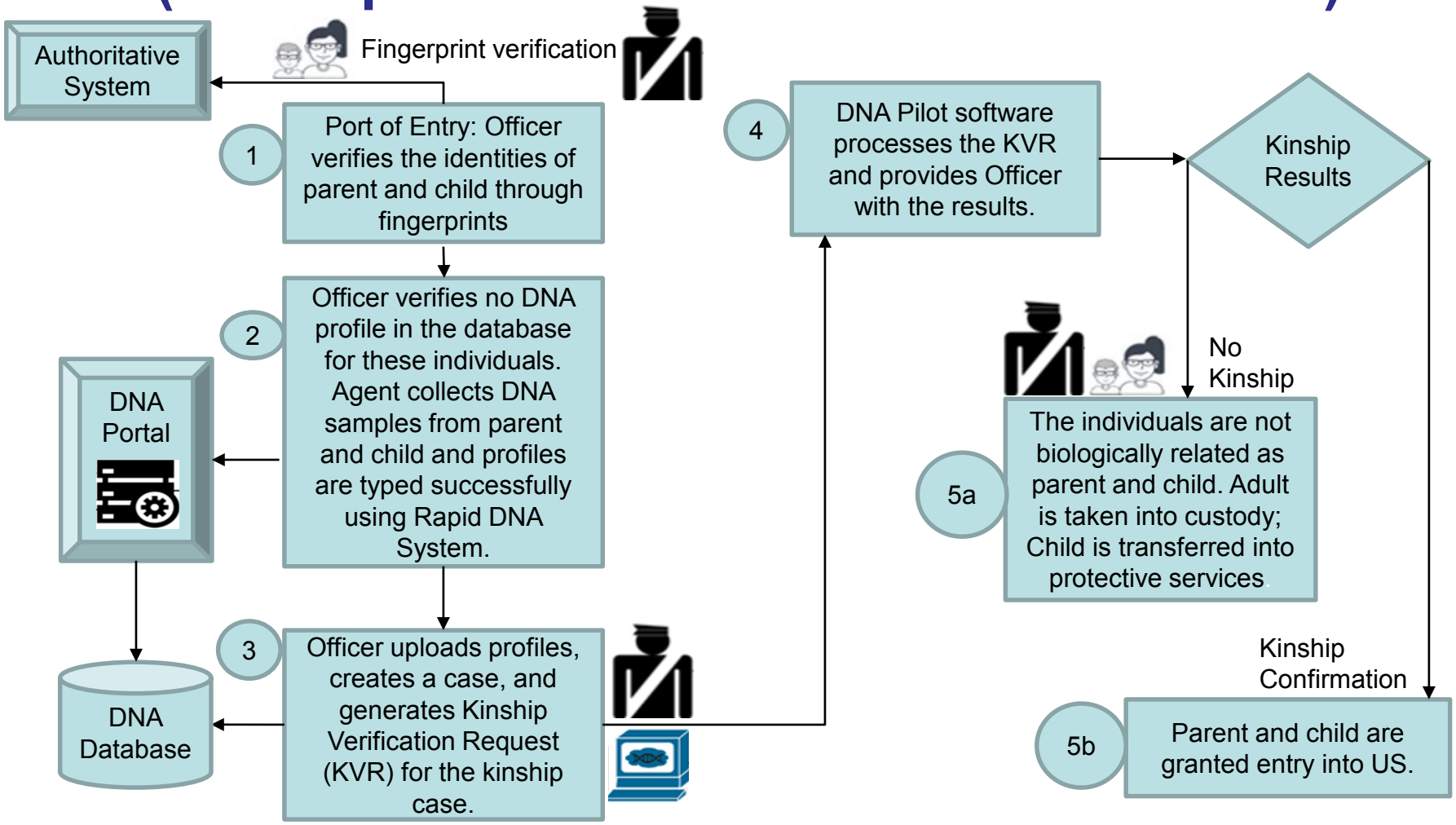
DNA Prototype Implementation

To implement DNA capabilities and exchanges, the ANSI/NIST ITL Type 18 Record was selected as the DNA data model. The DNA Exchange Schema utilizes elements from the NIEM Core and domains (including NIEM's Biometrics and Screening domains), thereby ensuring a NIEM-conformant, DNA model.

A gap analysis identified the need for changes, modifications, and extensions to enable an advanced data model supporting all the DNA data exchange scenarios, current and future. The DNA Schema developed for this exchange contains pedigree information, thereby enabling the utilization of Kinship use case scenarios.

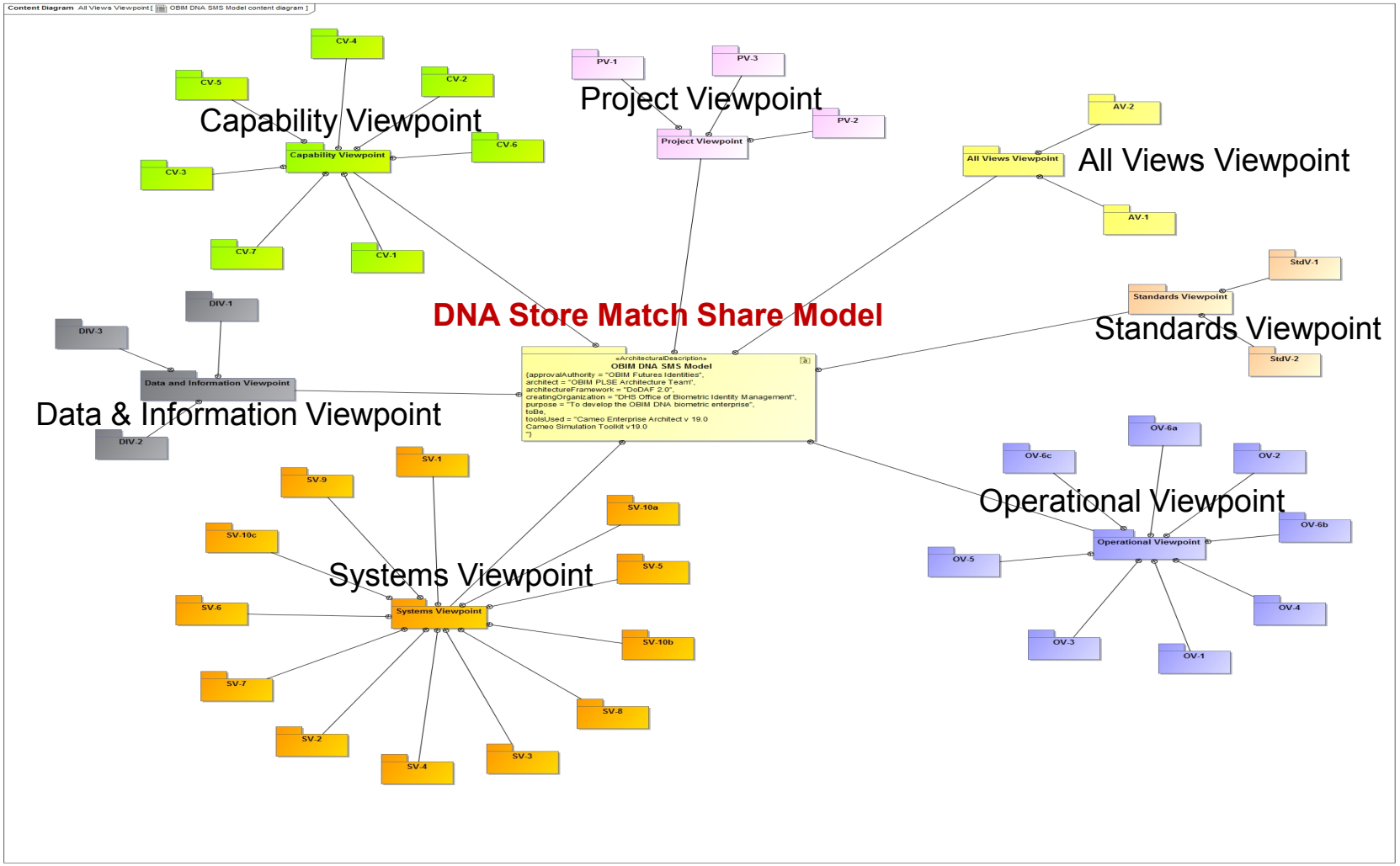
Sample Use Case /DNA

Prevent Human Trafficking (Kinship DNA Verification-Same location)



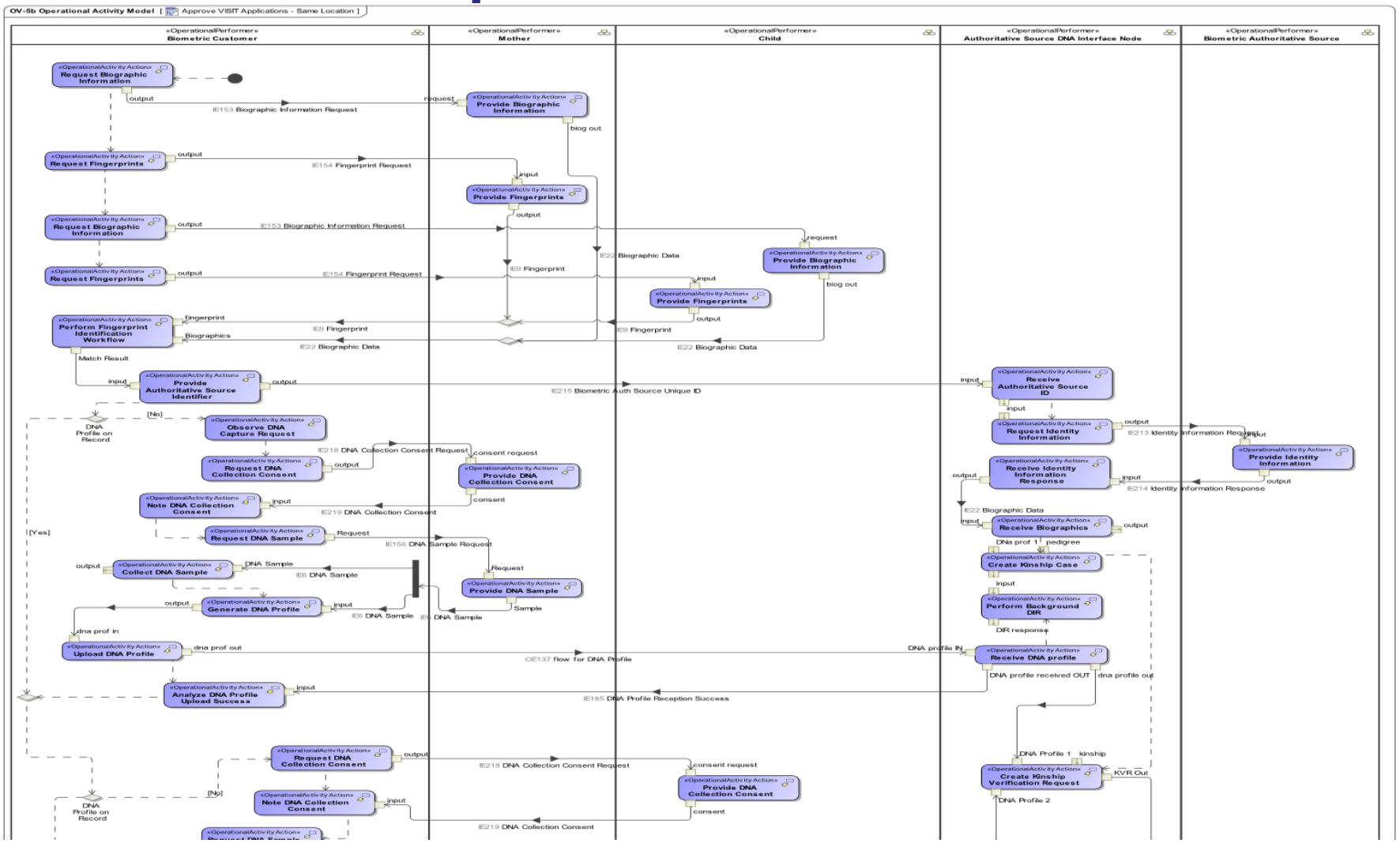
UML Artifacts / DEMO

DNA Prototype Model Content



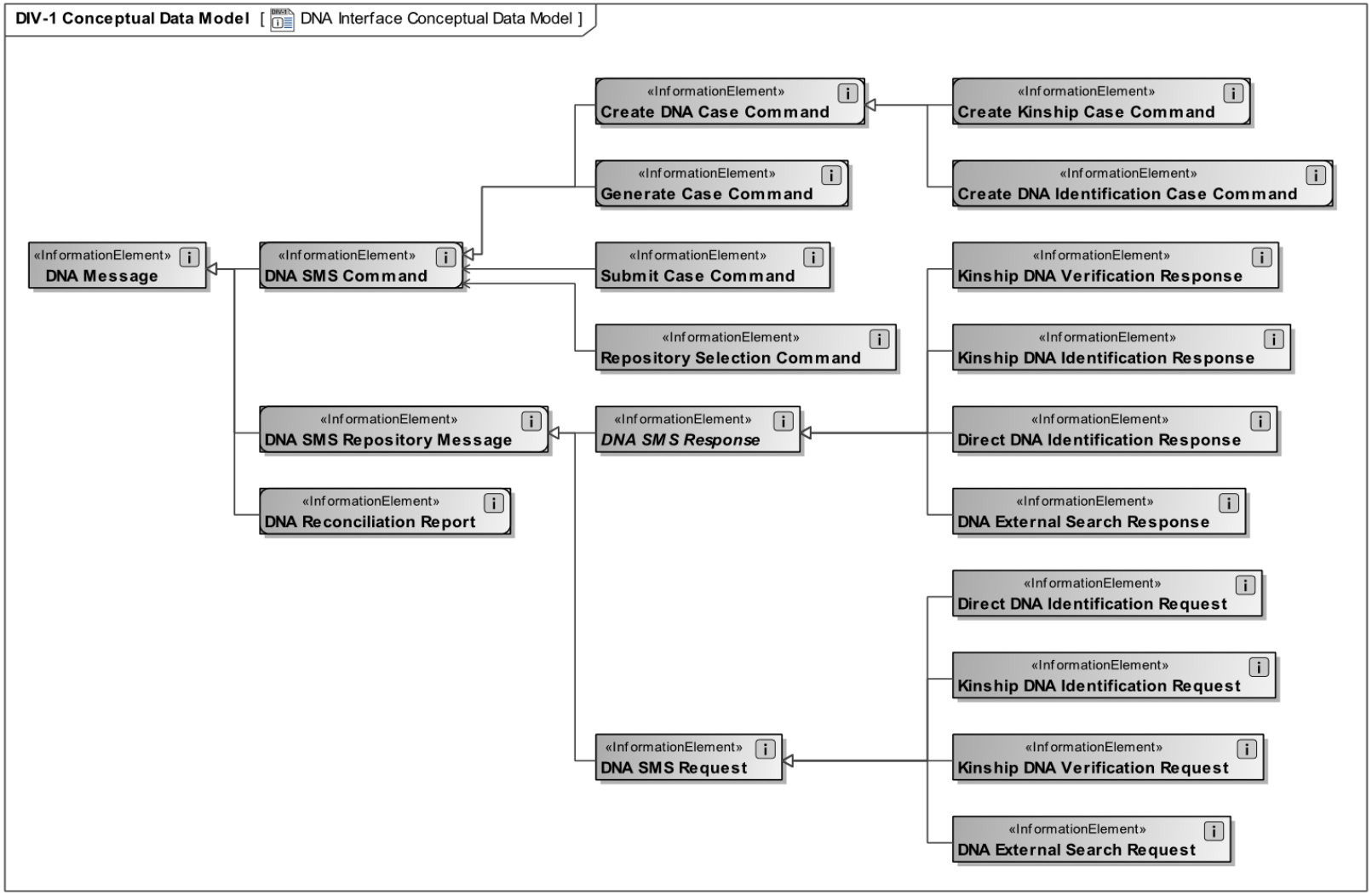
UML Artifacts / DEMO

Operational Model



UML Artifacts / DEMO

DNA Interface Conceptual Data Model



Summary

DHS OBIM is implementing processes and tools to deliver comprehensive project models capable of supporting project architecture, engineering, and performance analysis. The models will be shared across stakeholders and will establish a baseline in the understanding of business processes, system design patterns, and architectures. OBIM can leverage these models to identify opportunities, risks, and design decisions.

NIEM-Conformant, standards-driven modeling and simulation will ensure essential capability requirements are applied to DHS's design, development, and use, while ensuring acceptance criteria are defined and approved.

Summary (con't)

DHS OBIM plans to evaluate "what if" scenarios using the simulation capabilities in the Cameo suite of tools. Useful simulations will require accurate timing information, etc. across various rich and illustrative scenarios.

Contact Information

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