



MDA Implementers' Workshop

Managing A Global Payment Data Model

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Agenda

■ Situational Analysis

- ◆ Inovant Overview

■ Visa Global Data Architecture

- ◆ Technology Vision
- ◆ Architectural Paradigm
- ◆ Technology Solution
- ◆ Models for Interoperability

■ Visa Global Business Element

- ◆ Metadata for Data Models
- ◆ VGBE Specification

■ Demo: VGBE Prototype

- ◆ VGBE Prototype Underpinnings

■ Conclusions & Next Steps

■ Questions



Inovant Overview

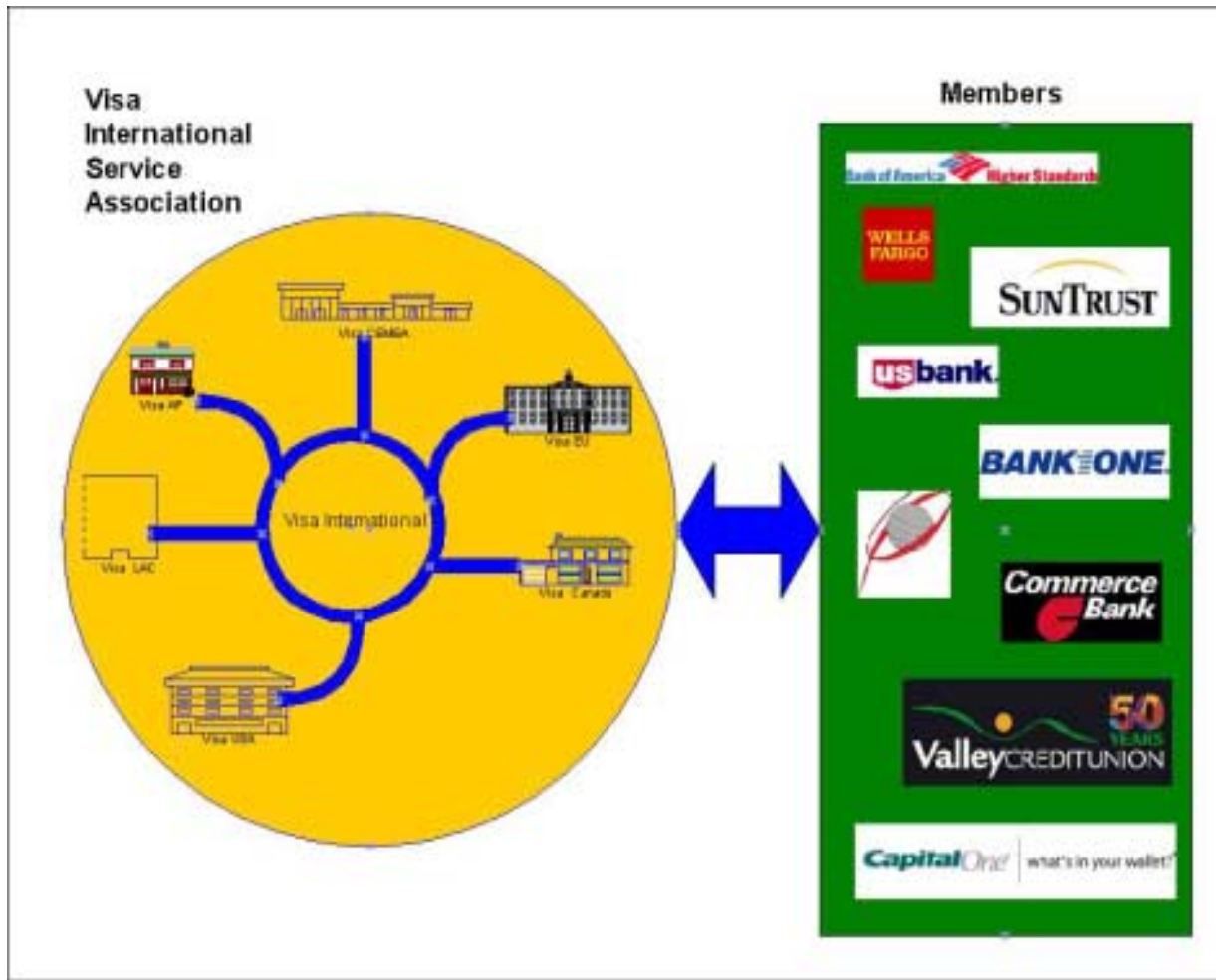
Inovant provides global payment processing for Visa's 21,000 Members.

Inovant operates VisaNet in over 250 countries and territories around the world.

Inovant processes a vast number of electronic payments handling 22 billion authorizations and settling \$1.3 trillion annually.



Group Dynamics



- Jointly owned by 21,000 member financial institutions around the globe, Visa is a private, for profit association dedicated to serving its members, cardholders and merchants. Through its member financial institutions, Visa offers the world's most established and widely accepted payment solutions for both consumers and businesses.
- Inovant is the technology provider for the Visa family.

Global Vision of Shareable Data

■ What we don't want

- Definition overloading
- Ambiguous data definition
- Multiple sources of definition



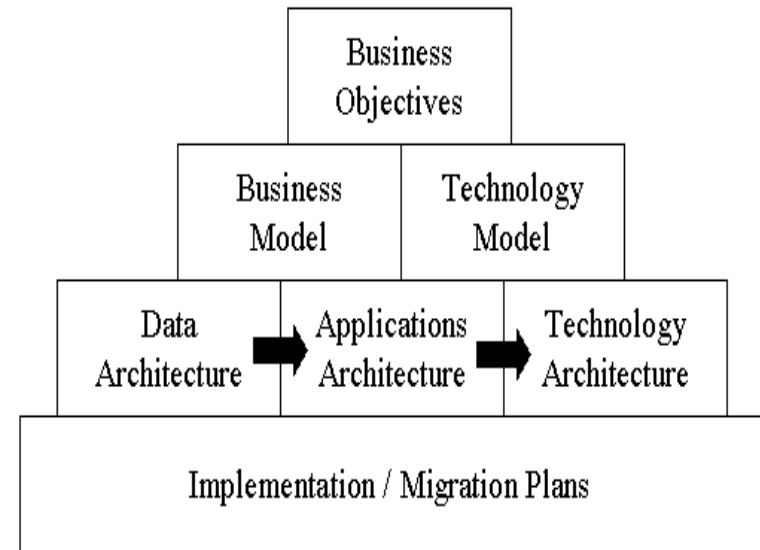
■ What we want

- Atomic definitions
- Clear and concise definitions
- Single and certified source of definitions



Technology Vision

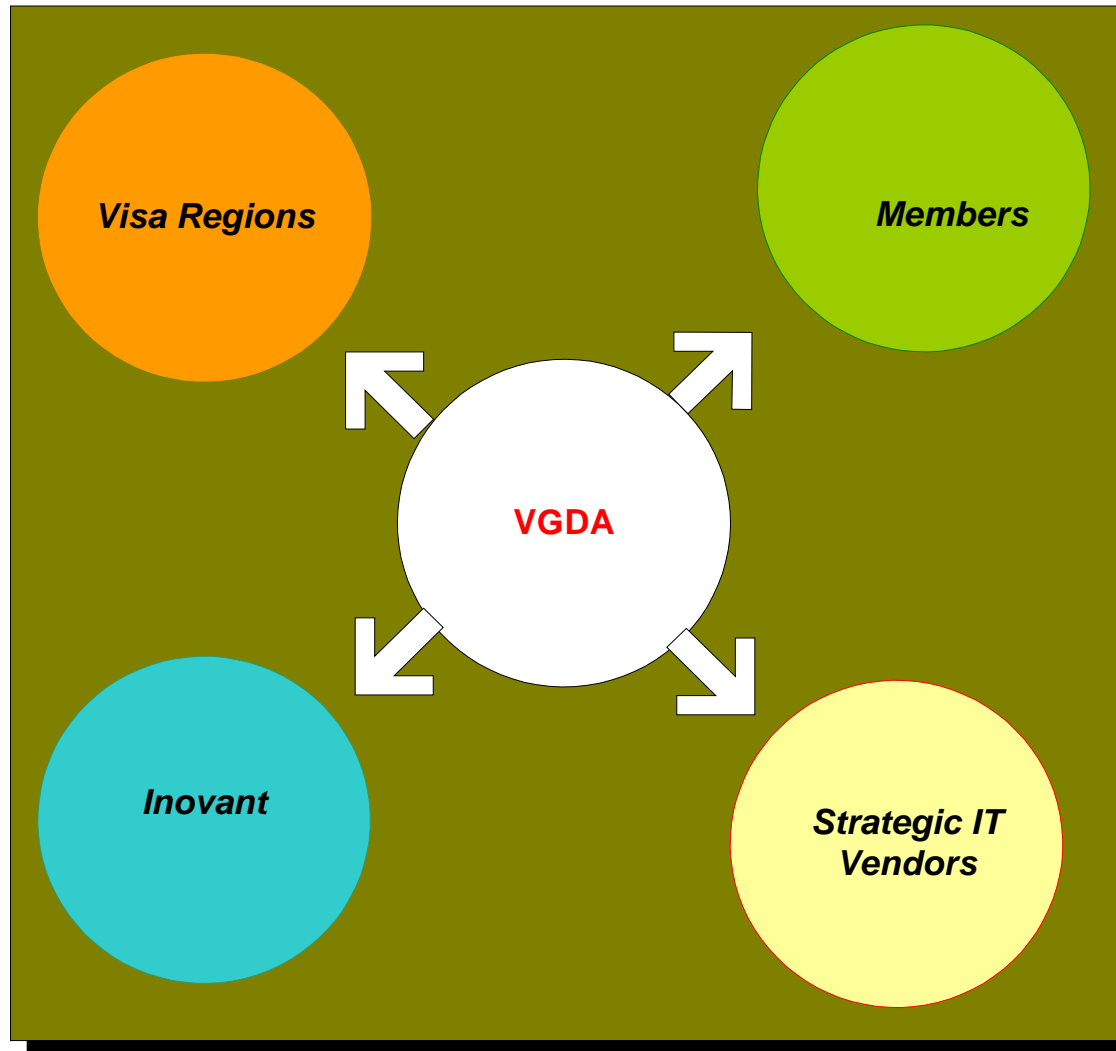
- **Business objectives drive IT**
- **Apply industry standards (OMG, ISO)**
 - Decouple source code from data
 - Separate business models from technology models
 - Create payment industry level meta-models and metadata



Adapted from Spewak, Steven H. Enterprise Architecture Planning. John Wiley & Sons, New York, p. 13.

**Global
Data
Architecture**

Solution: Visa Global Data Architecture



VGDA – Architectural Paradigm

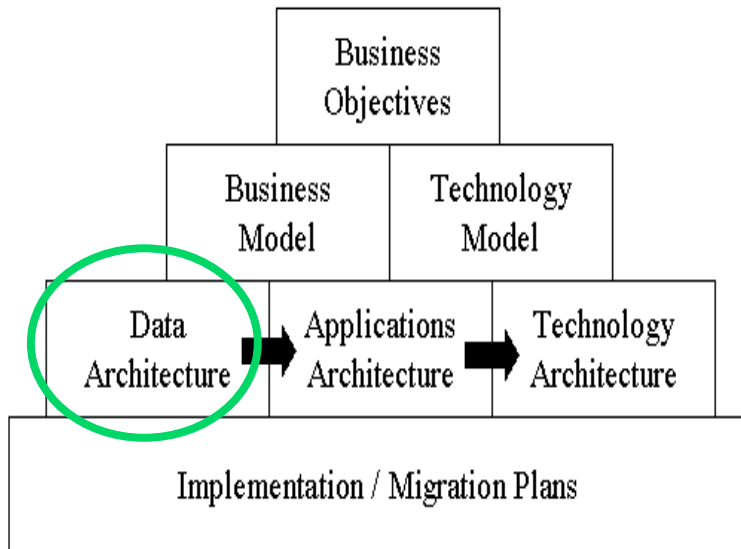
Architectural Features

- Visa Global Business Elements (VGBE) are standard, well-defined components
- UML is the standard notation
- Consistent with MDA, a standard methodology
 - XML and XML Metadata Interchange (XMI) are standard protocols
 - CWM is the meta-model standard

Visa Global Business Element

- is a formal encapsulation of business elements critical to the interoperability of Visa's information and processing systems.
- provides a standard context within which business elements are defined to determine their true content and meaning.
- represents a unit of data shareable across the entire enterprise and our strategic IT partners.
- its characteristic and behavior is consistent no matter how it is implemented.
- is described in a structurally stable documentation that contains its definition, behavior and relationships. It does not change for individual events.
- is described in a structurally dynamic documentation that exposes its definition, behavior and relationships to application code.
- it can be extended and enhanced. As business definitions are refined and new business strategies are adopted, these can be captured within the VGBE.

Technology Vision



Types of Models

- **Data Models** — data architectures, data integration strategies, enterprise data models, logical data models, database designs, data warehouse designs, or data mart designs
- **Infrastructure Models** — application architecture, network, security, report distribution
- **Process Models** — includes application processing, scheduling

ISO 11179

An international standard for the specification of data elements

- **Framework for the specification and standardization of data elements**
- **Classification for data elements**
- **Basic attributes of data elements**
- **Rules and guidelines for the formulation of data definitions**
- **Naming and identification principles for data elements**

■ Identifying Attributes

- Name
- Identifier
- Version
- Synonymous Name
- Abbreviated Name
- Representation
- ISO Field Number
- XML Tag
- MDR Attribute

■ Definition Attributes

- Business Definition

■ Representational Attributes

- Minimum Storage Length
- Maximum Storage Length
- List of Permissible Values
- Numeric Precision
- Numeric Scale

■ Administrative Attributes

- Responsible Organization
- Submitting Organization

■ Business Entity Rule

- Business Domain
- Subject Area
- Business Entity
- Business Entity Attribute
 - Nullability
 - Default Value
- Primary Key
- ISO Field Number

■ Business Element Interaction Rule

- Relationship Type
- Related Business Element
- Cardinality
- Optionality

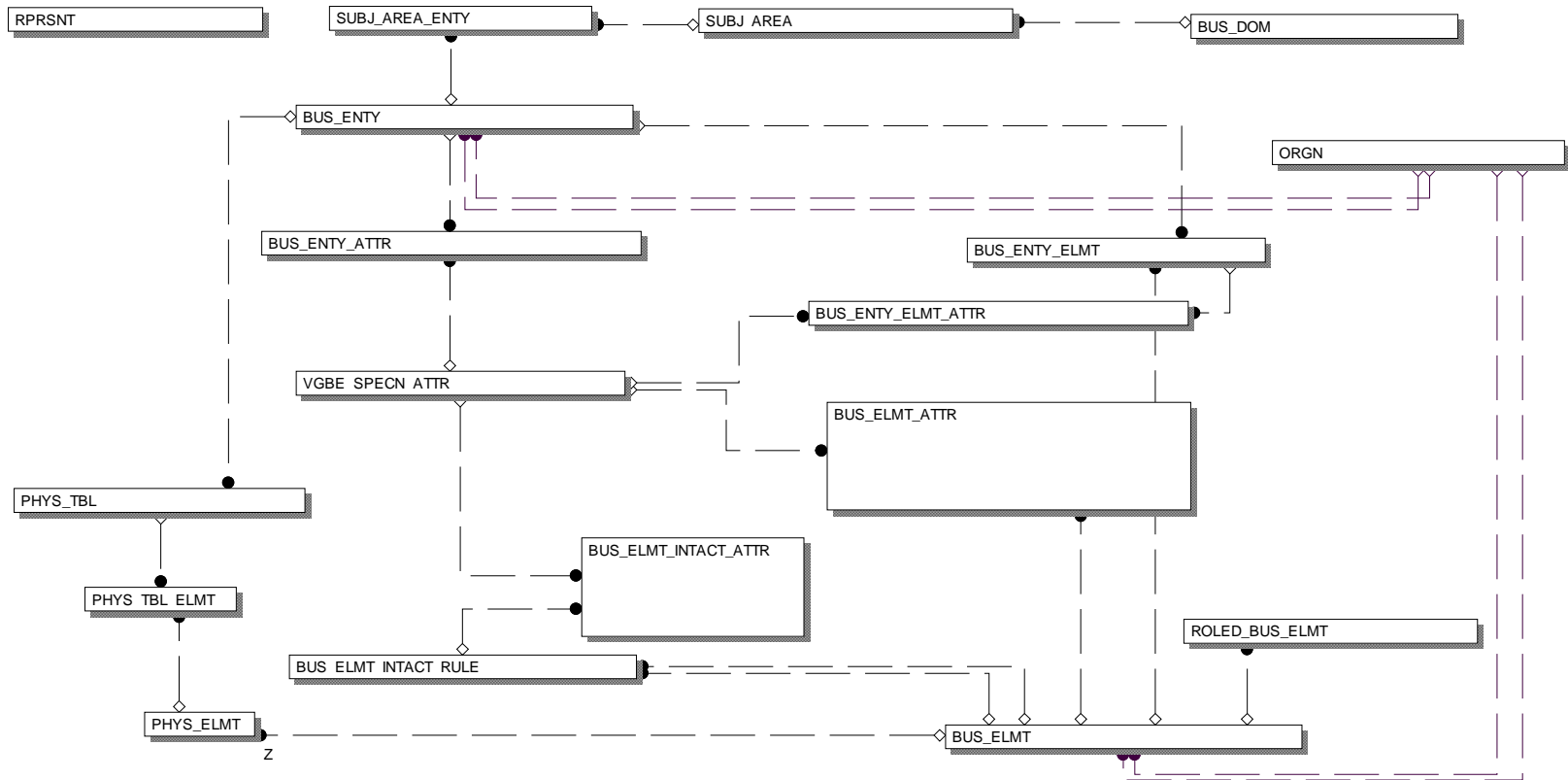
■ Roled Business Element Rule

- Roled Name
- Roled Definition
- Fundamental Business Element
- Identifier
- Version
- Roled Synonymous Name
- Roled Abbreviated Name
- Roled Context

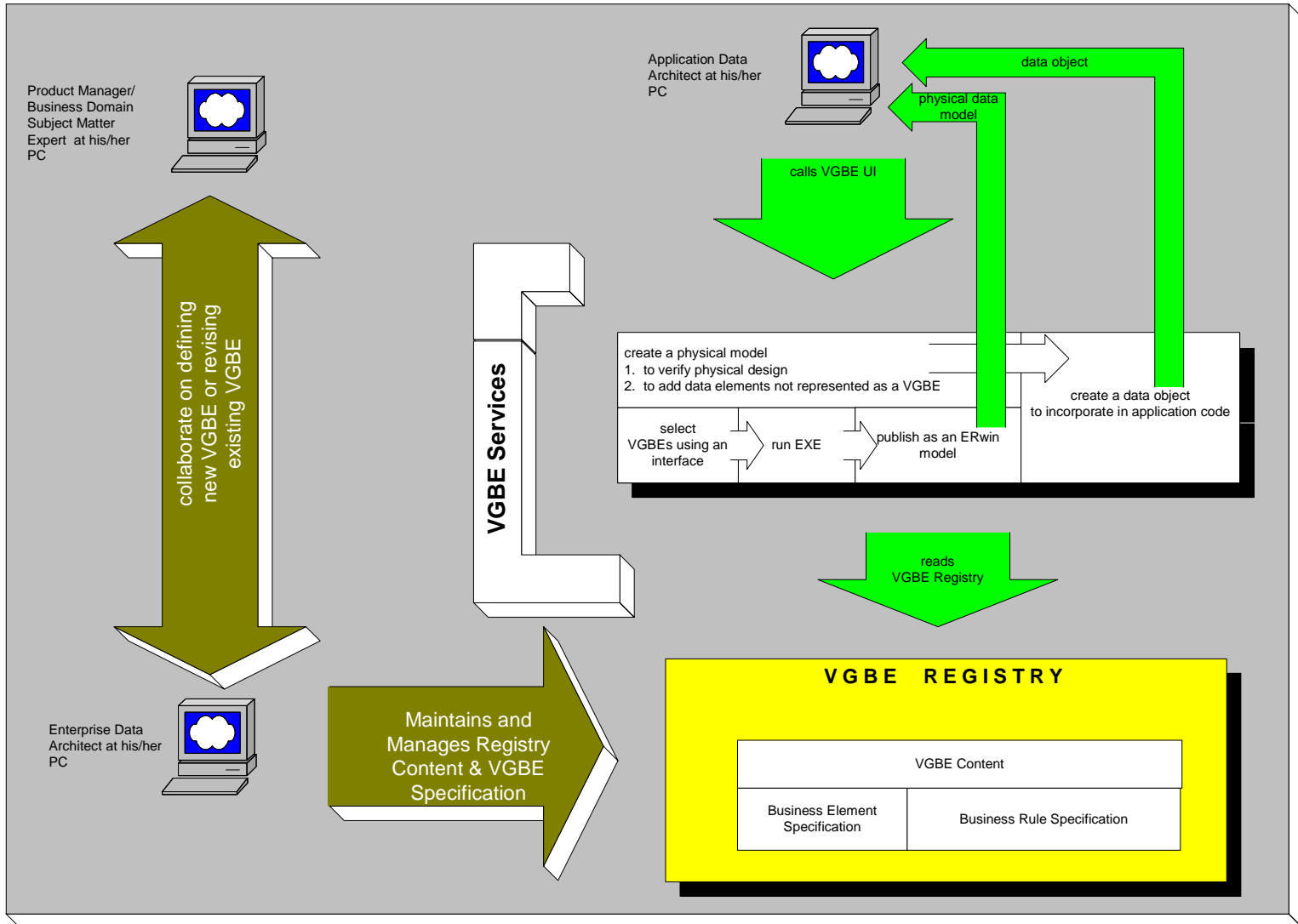
■ Action Assertion Rule

- Conditional Business Element
- Influenced Business Element
- Assertion Rule

VGBE Registry



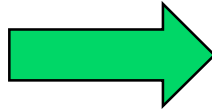
VGBE Services Framework



Mapping: VGBE Registry to CWM

VGBE Registry

- VGBE Object
- VGBE Attribute

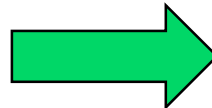


CWM

- CWM Object
- CWM Object Attribute

VGBE Registry

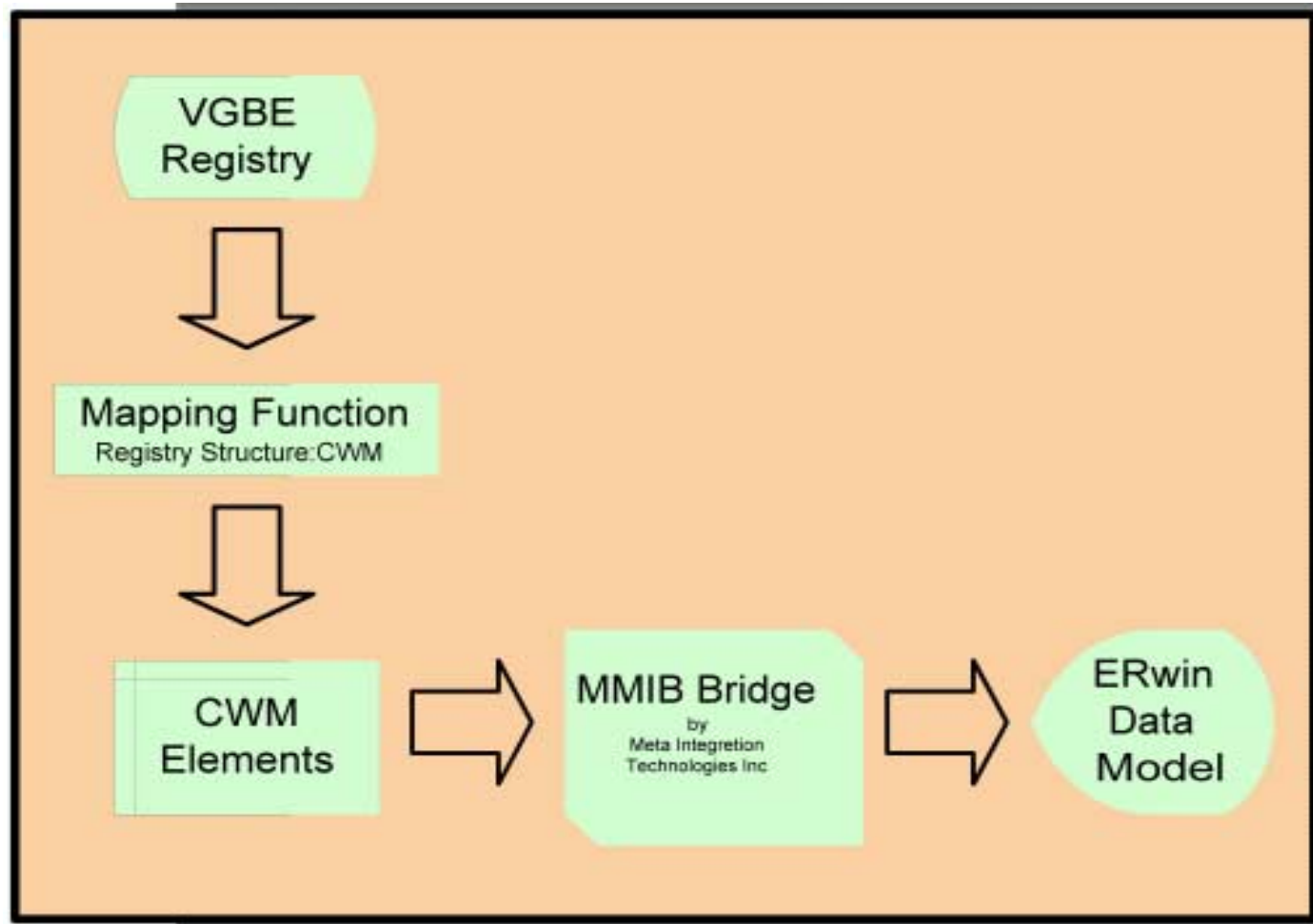
- *Physical Table*
- *Physical Table Abbreviated Name*



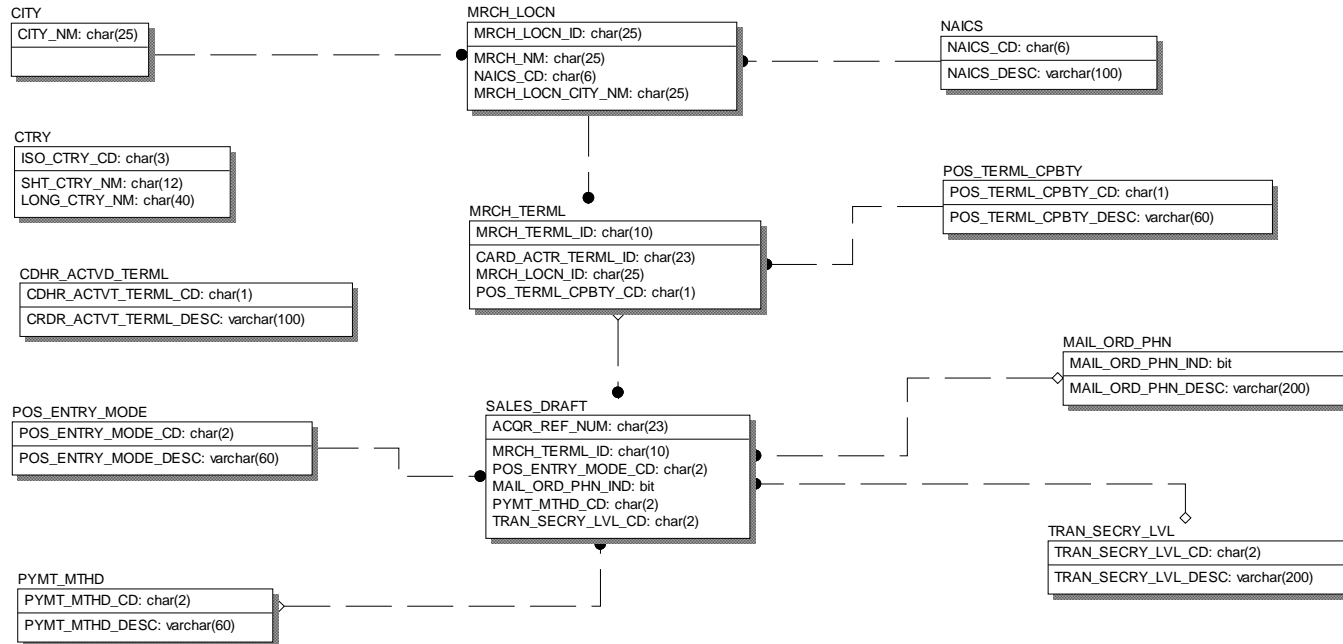
CWM

- *Table*
- *Table Name*

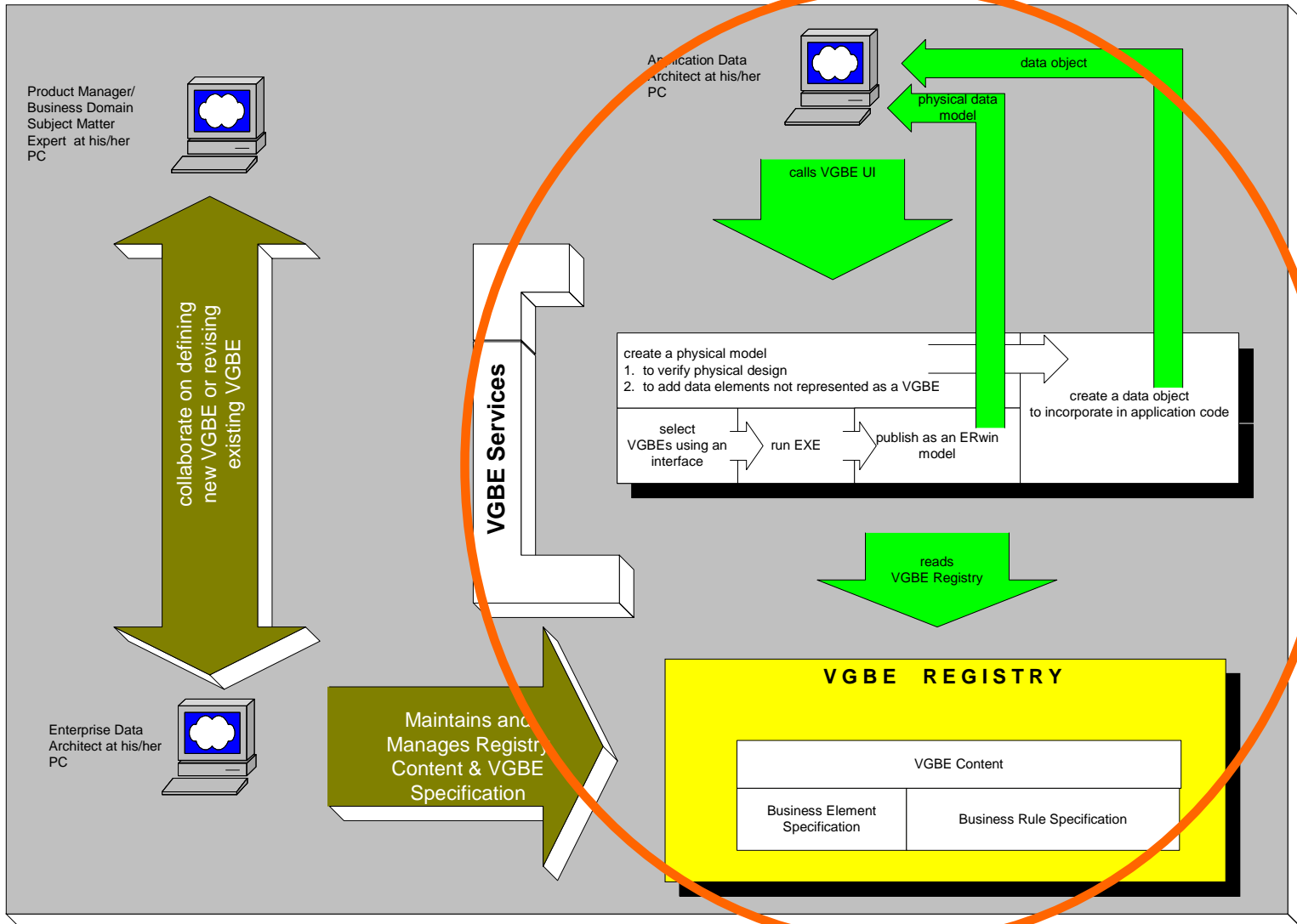
Data Model Generation



Result



Demo: VGBE Services Prototype



Conclusions & Next Steps

Conclusions

- As a Service Architecture, VGDA supports each of the functional areas as they evolve at their own speed.
- By applying MDA, we are guaranteed consistency and interoperability.

Next Steps

- Extend the content of the VGBE Registry to other core business elements.
- Construct the VGBE Services Framework as an implementation of the Visa Global Data Architecture solution to global data interoperability.



Think globally, act locally.

Questions?
