

The Life Sciences Database: An Foundation for Regulated Information in Healthcare & Life Sciences



Architecture

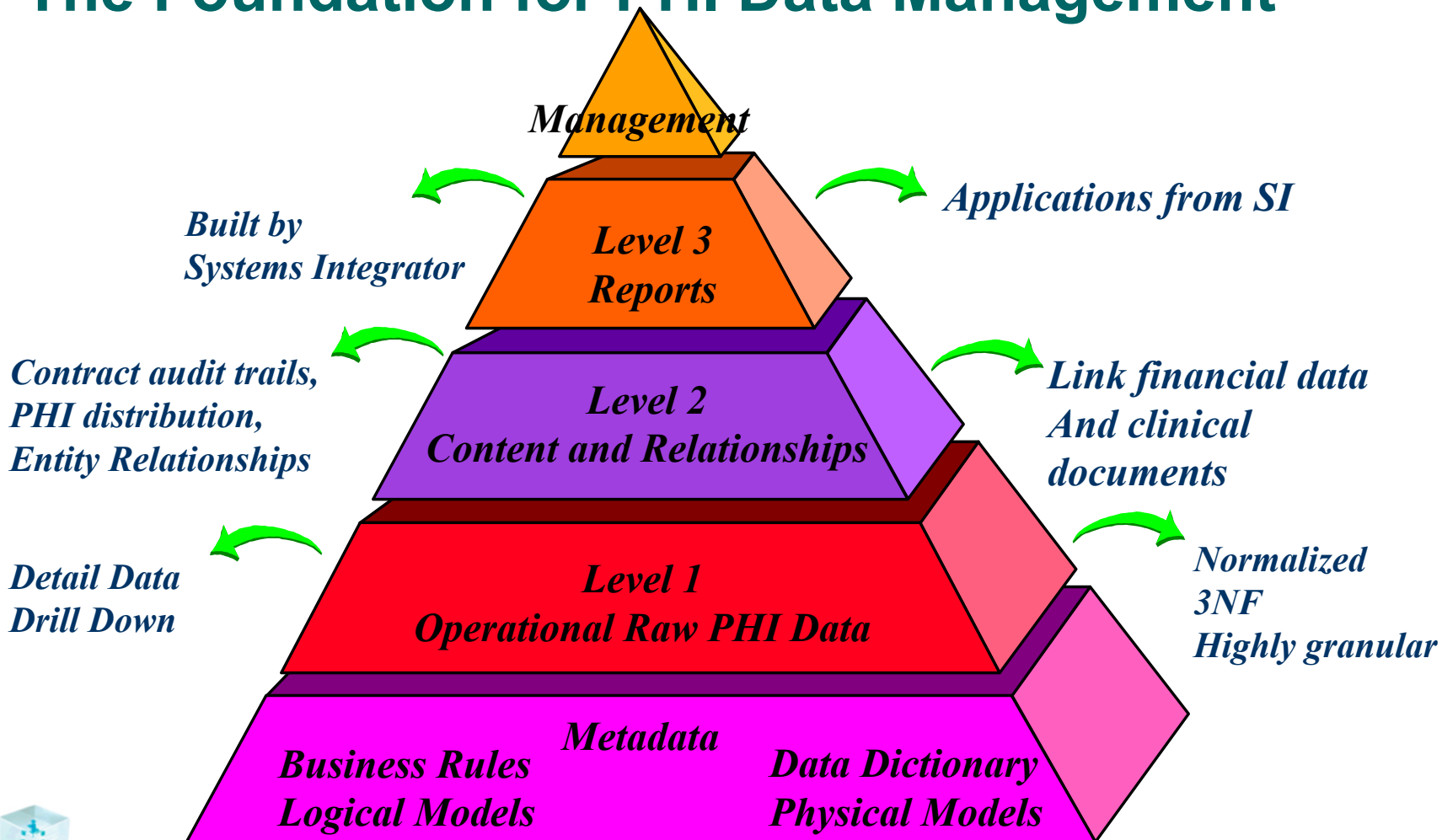


Example: A PHI Repository for HIPAA

- Manages enterprise PHI data
- Creates persistent audited PHI data
- Coordinates linking documents & data objects
- Captures all legal and healthcare relationships
- Secures and updates information among internal groups and external partners
- Enables a complete audit trail of PHI data
- HIPAA with NPRM April 2002 (PwC Guide)



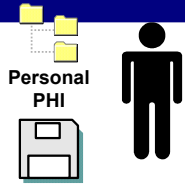
The Foundation for PHI Data Management



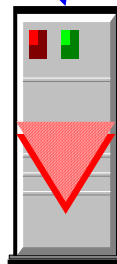
Architecture



Architecture of the PHI Solution



Person requests, amends or annotates PHI. Person requests designated record set. Communications between covered entity and person or another covered entity.



Secure
PHI
Server

PHI Systems Integrator's Application

Systems Integrator builds PHI application based on standard data objects and metadata. Loads and updates PHI Repository.



Remote

Remote access to Repository

Covered entities in contracts can access PHI under a "selective transparency" security, access and control model implemented in Repository.



Local
Users



PHI Administrator

Customer PHI administrator creates data definitions for PHI to create PHI attribute for enterprise.

Perseid Software PHI Repository

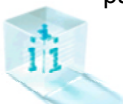


Intelligent Storage Architecture

Enterprise Intelligent Storage PHI Repository becomes a HIPAA solution and an enterprise data repository for clinical, financial and administrative data with full audit trails and personal security.

Personal Health Information

Healthcare designated datasets, annotations, images, email, faxes, datasets to patients, audit trails



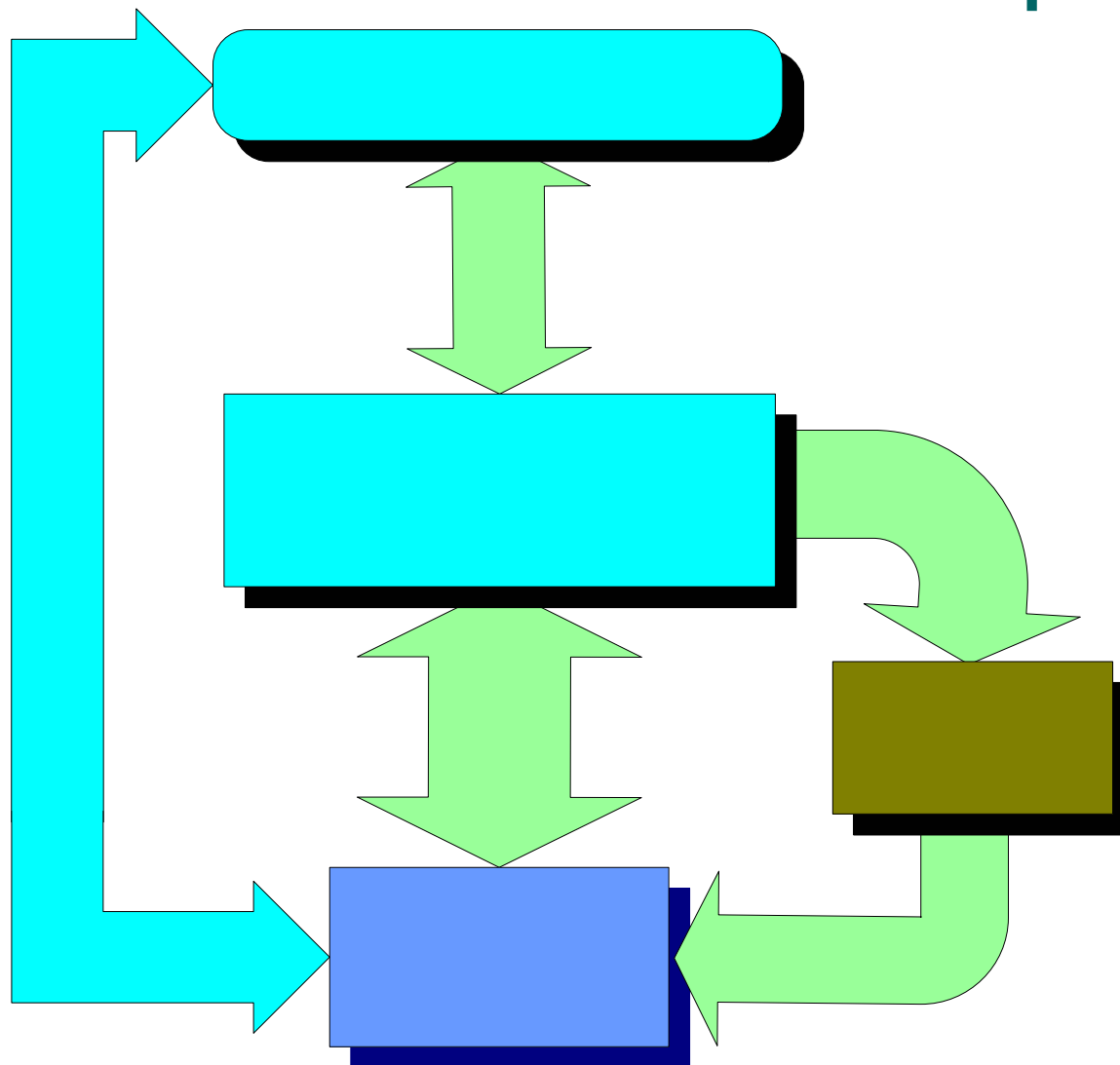
Architecture

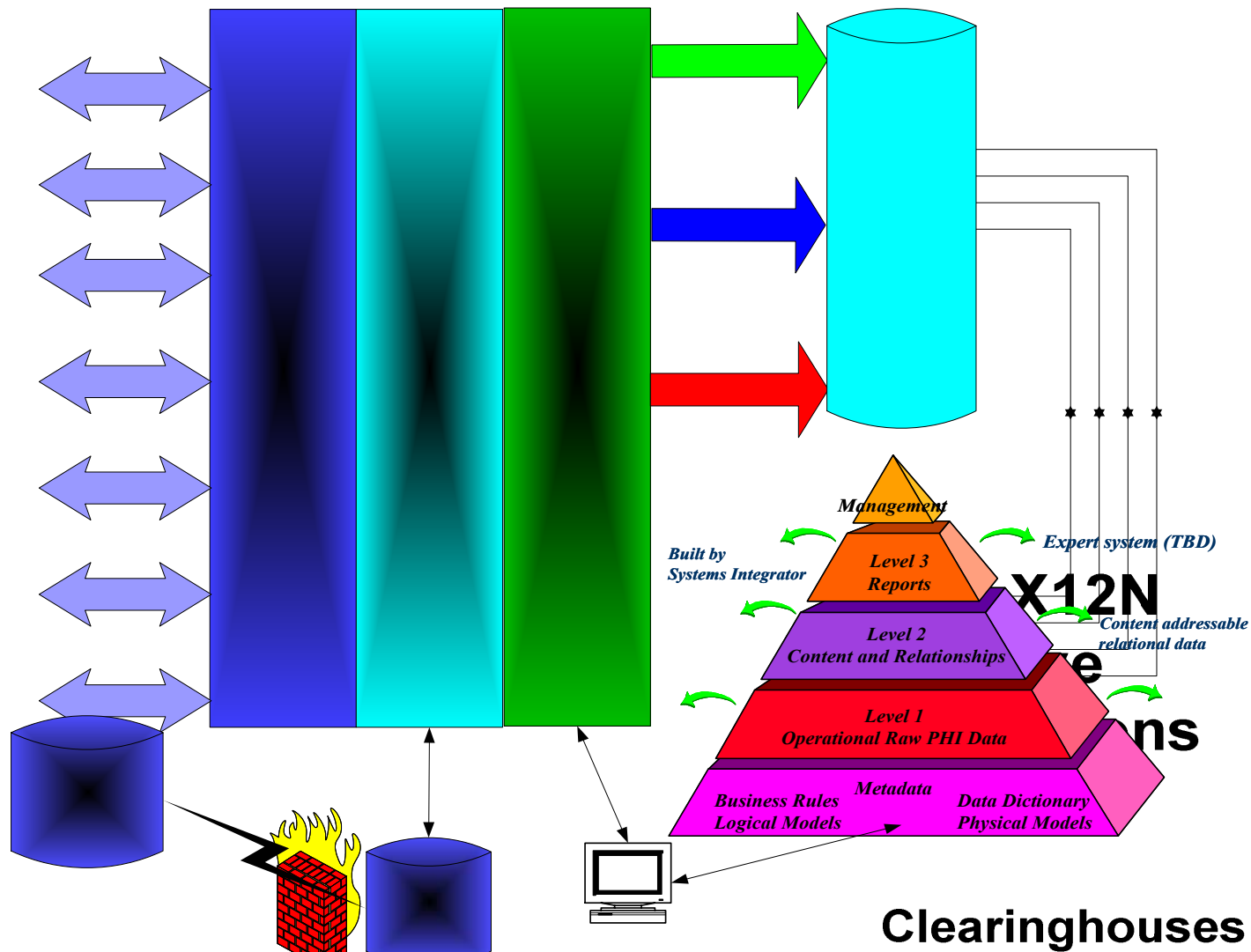
Systems Integration Focus

Example Using Claredi-PwC

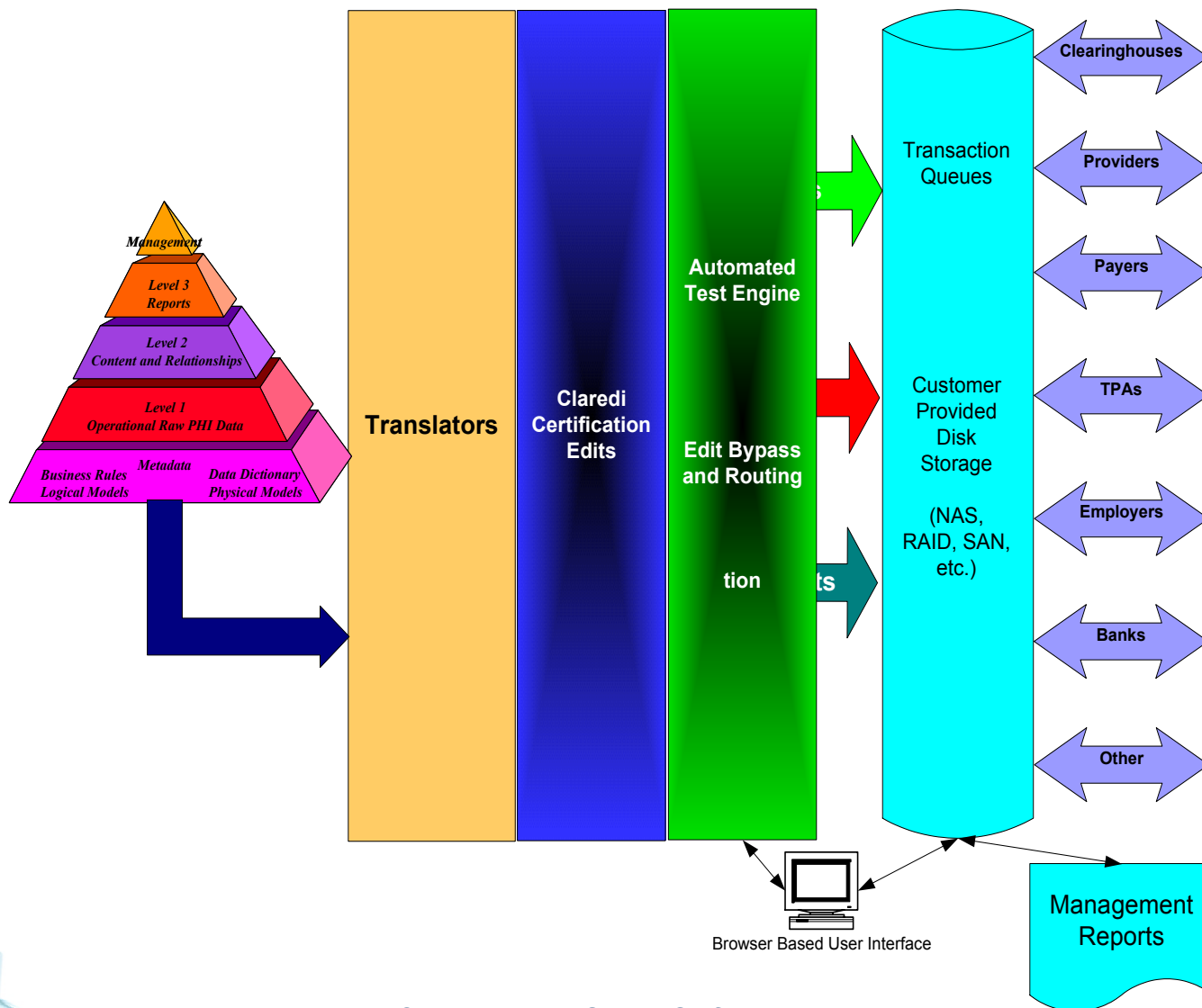


PwC – Claredi/PERSEID Relationship





Faciledi OutboundArchitecture



Technology

- MS SQL Server, Oracle and DB2 database
- ErWin database model and documentation
- Content-addressable storage vocabulary implemented with relational database architecture
- Stores data, images, documents
- Tracks all entity and PHI relationships
- Fully integrated enterprise metadata
- Standard transactions and quick CAS variables



Technology

- Data elements are added as metadata
- Metadata is linked to PHI content using relational database to create PHI per patient
- Content-addressable architecture provides flexibility
- High-performance “thin” database
- Results in very easy database administration
- Supports all forms of current and future PHI without database modification



PHI Repository Models

- Main Model (PHI Repository Complete Model)
- PHI Repository (PHI Repository Model)
- Entities (Report)
- Entities & Attributes (Report)
- Attributes (Report)



Server Configurations

- Scalable, high availability environment
 - Clustered redundant servers ensures high availability
 - Apache modules facilitate load balancing
 - PERSEID DBMS
 - IBM DB2
 - ORACLE
 - MS SQL Server 2000



Demonstration



Classes and Codes

- Domain Value Classes (Report)
- Codes are maintained in two tables
 - Application Code Classes (AppCodeClasses)
 - Application Codes (Report) (Report)
 - All codes are text and language independent



Key Formal Entities in Database

- Business Units (Report)
- Business Unit Relationships
- Communications Methods (Report)
- Contracts (Report)
- Contract Healthcare
- Documents (Report)
- Employees (Report)
- Employers



Key Formal Entities in Database

- Facilities (Report)
- Healthcare Accounts
- IP Assets (Report)
- Locations (Report)
- MCOs
- Members
- Organizations (Report)
- Persons (Report)



Key Formal Entities in Database

- Providers (Report)
- Purchasing Pool
- Subscribers
- Territory



Key Encounter/Claims Entities

- Healthcare Transactions (Claims)
- Healthcare Services
- Healthcare Dx
- Healthcare Tx
- Healthcare Pharmacy
- Healthcare Service Action
- Healthcare Medical Expense



Key Provider Entities

- Provider Affiliations
- Provider Assessments
- Provider Credentials
- Provider Coverage
- Provider Education
- Provider Claims
- Provider Equipment



Relationships among Healthcare Entities

- Relationships can be formed among any two entities in real time:
 - Families
 - Social Units
 - PCP Relationships
 - Provider Groups
 - Other healthcare relationships ([Report](#))



Relationships among Healthcare HIPAA Entities

- Relationships can be formed among any two entities in real time:
 - Contracts
 - Documents
 - Provider Groups
 - Persons
 - Other healthcare relationships ([Report](#))



Vocabulary Driven Solutions

- Vocabulary can be formed in real time:
 - Clinical
 - Administrative (HIPAA, 21 CFR 11, RDEx)
 - CRM
 - Outcomes
 - Marketing
 - Real-time vocabulary (Report)



Vocabulary Driven Solutions

- Vocabulary Relationships can build any representation of variables for business needs:
 - CRM
 - Clinical
 - HIPAA
 - Financial
 - Administrative



Vocabulary Driven Solutions

- Vocabulary Relationships can build any representation of variables for business needs:
 - Add Variables “PHI” and “handedness”
 - Create relationships:
 - person 1 has PHI-restriction-request
 - Person 1 has handedness
 - Attribute Entity Report



Security



Security

- Security can be applied to:
 - Users
 - Entities (rows of a table)
 - Entities within Users (rows of a table by user)
 - PHI Attributes Directly (Form)
 - Applications



Key Security Entities

- Security for Applications
- Security for Data
- Security for Users
- Security for Entities
- Security for PHI
- Security Audit Trail



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