The VHA VINCI OMOP Experience

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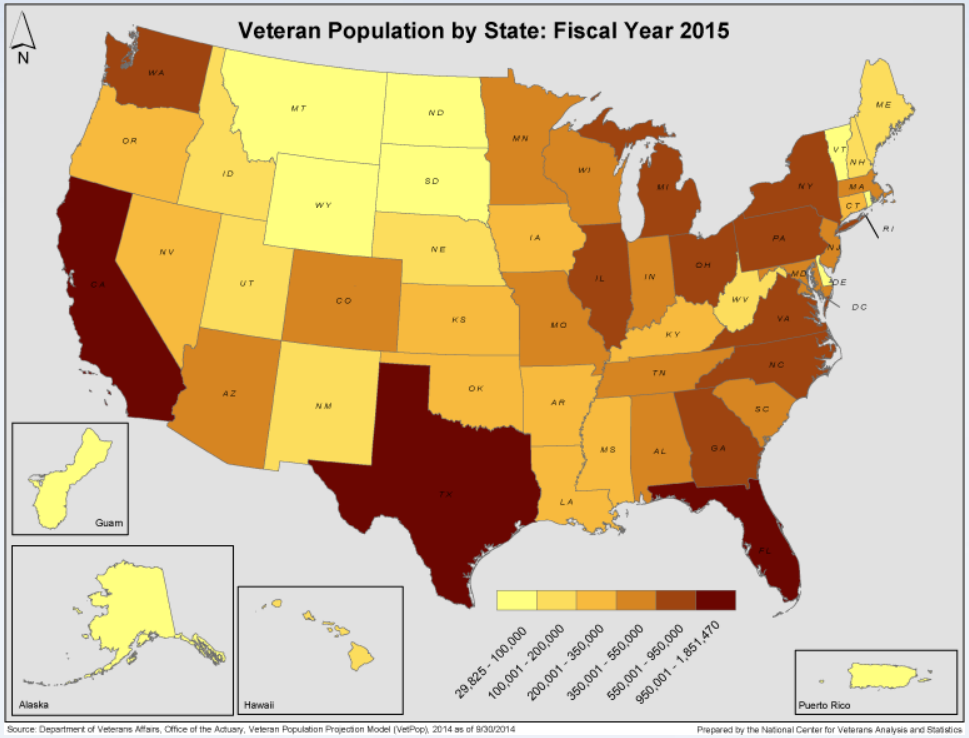
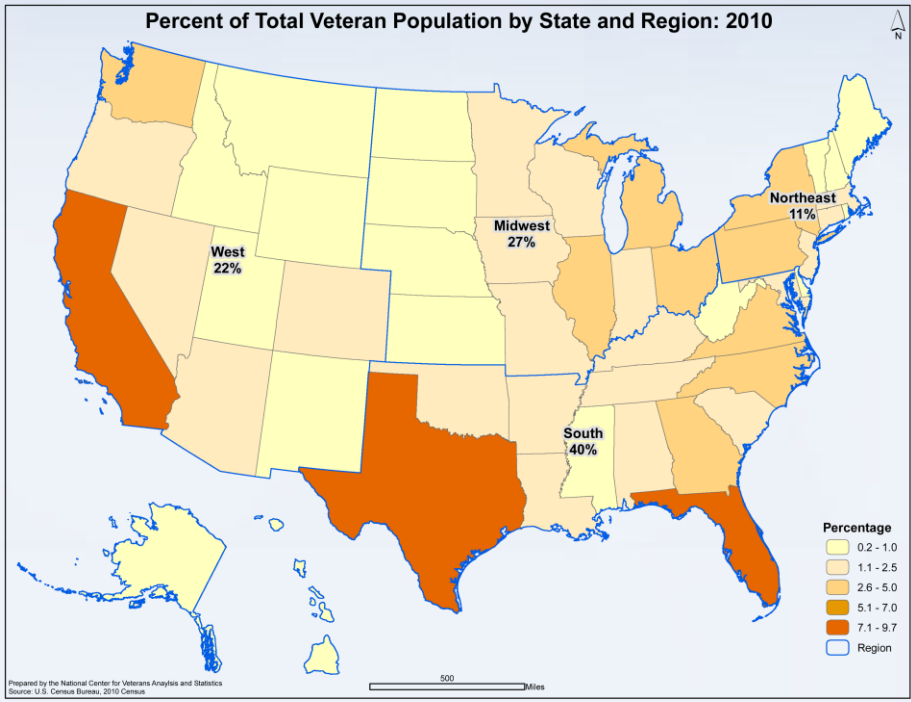
Department of Veterans Affairs – U.S. Patient Coverage





- 0.2-10% population coverage by state
- Unified EHR (CPRS/ViSTa) – with much site to site variation
- large numbers of data domains

VHA Infrastructure/Service Collaboration

- VHA Health Services Research & Development Central Office
- VHA HSR&D VINCI Resource Center
- VHA Corporate Data Warehouse
- VA Office of Information & Technology

To deploy a data model for health system use, it takes an army…

ETL

Fern FitzHenry

Michael Matheny

Brian Sauer

QA

Scott DuVall

Steve Deppen

Help Desk/ Documentation

Kristine Lynch

Aize Cao

Tools

Guanhua Chen

Jason Denton

Jesse Brannen

Daniel Park

Ji Won Chang

Ben Viernes

Liz Hanchrow

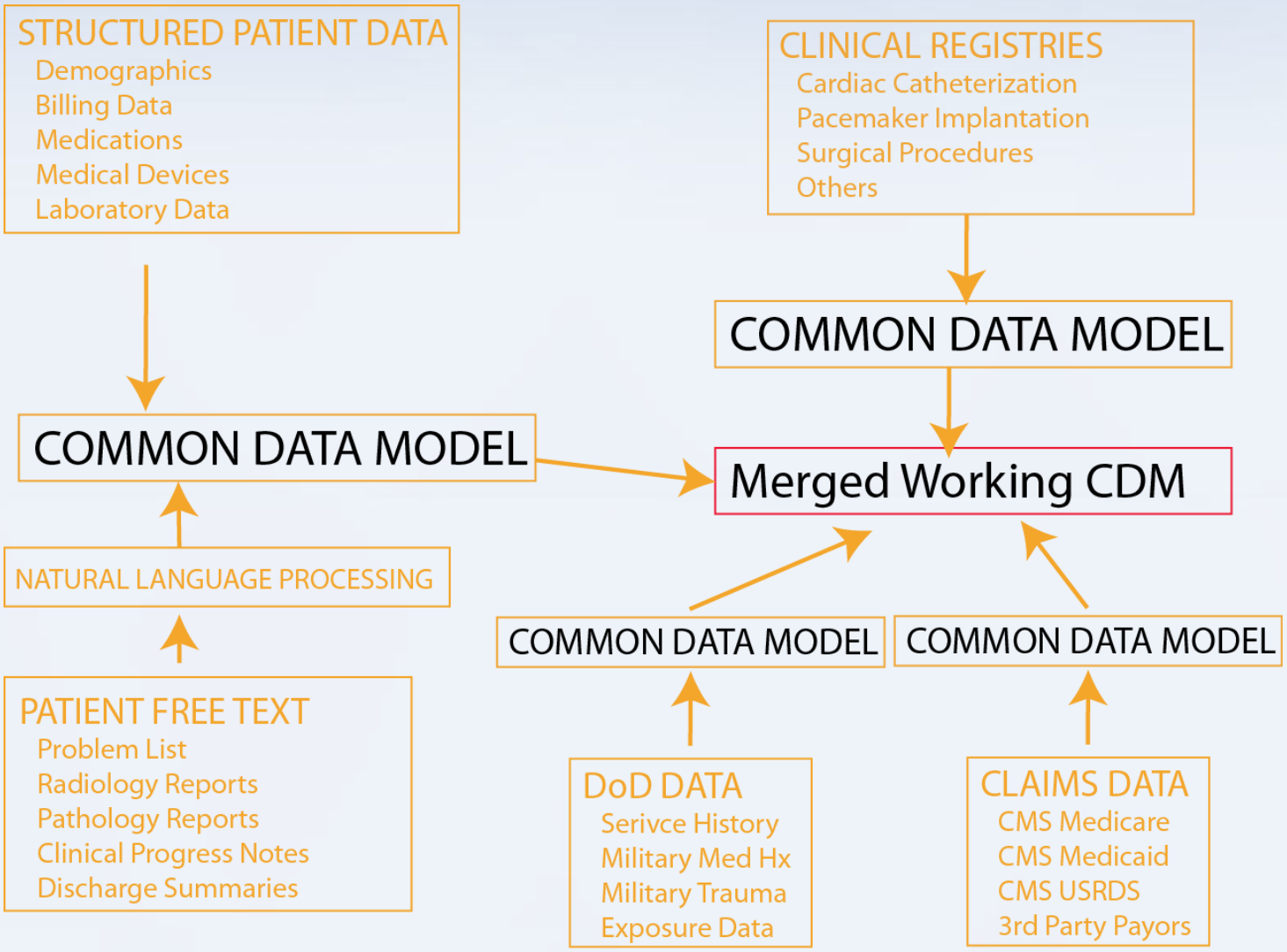
Abby Hillard

Amy Perkins

Key Data & QA Partnerships

- Data Partners
  - Department of Defense
  - VIReC – VHA CMS Stewards
  - VA CART CL – Cardiac Catheterization Registry
  - Infectious Disease / Microbiology Research Group
  - Medical Device / Prosthetics
  - Natural Language Processing Researchers
- QA Partners
  - Million Veterans Program
  - Measurement Science QUERI Program
  - e Health Management Platform EHR Development

HSR&D VINCI Strategic Roadmap



Contact

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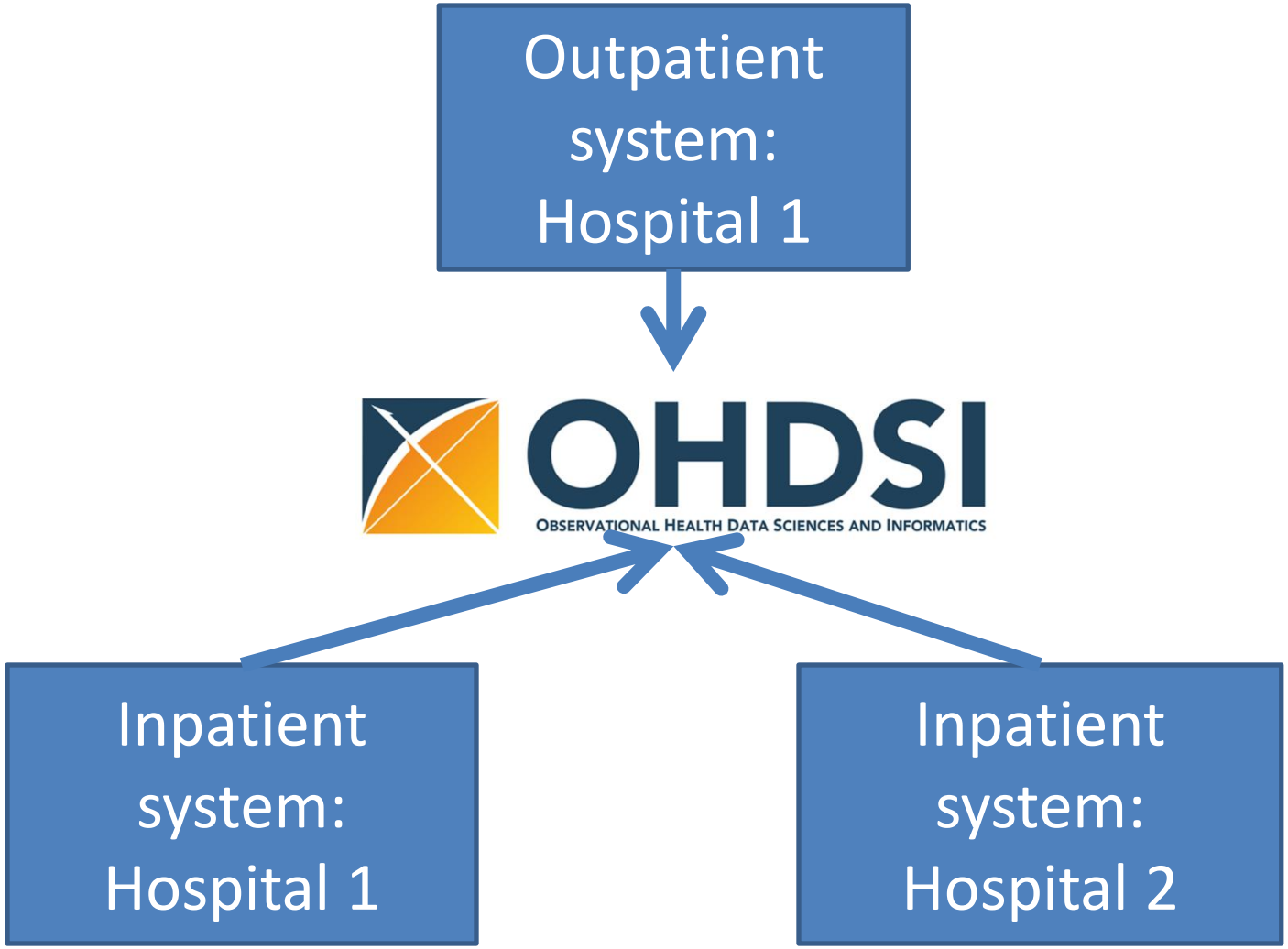
Integrating a multi-generational multi-system clinical data warehouse with OHDSI

Adler Perotte, MD, MA

Biomedical Informatics

Columbia University

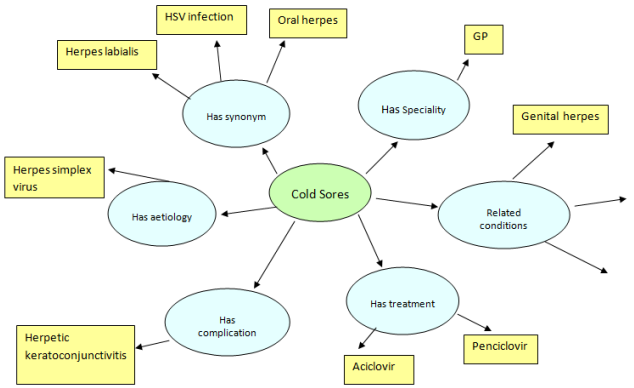
Multi-system



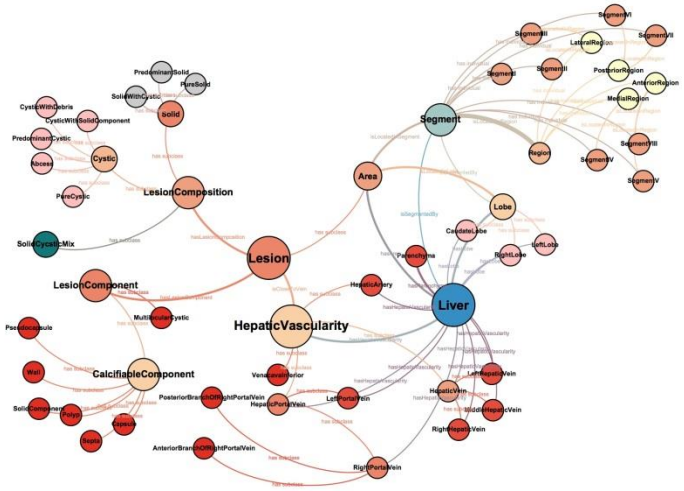
Multi-generational

Standardization and Integration

Columbia University
Medical Entities Dictionary



OHDSI Standard Vocabulary



Lessons Learned

- Data with history requires people with historical knowledge
- The ETL process was a history lesson for those of us who are newer to the institution
- Our research will benefit from a greater understanding of our data
- A data model and a vocabulary are great, but the tools truly open up the data

IMS Health

OHDSI Symposium 2016
Community Panel

Where are we on the Journey?

23-September-2016

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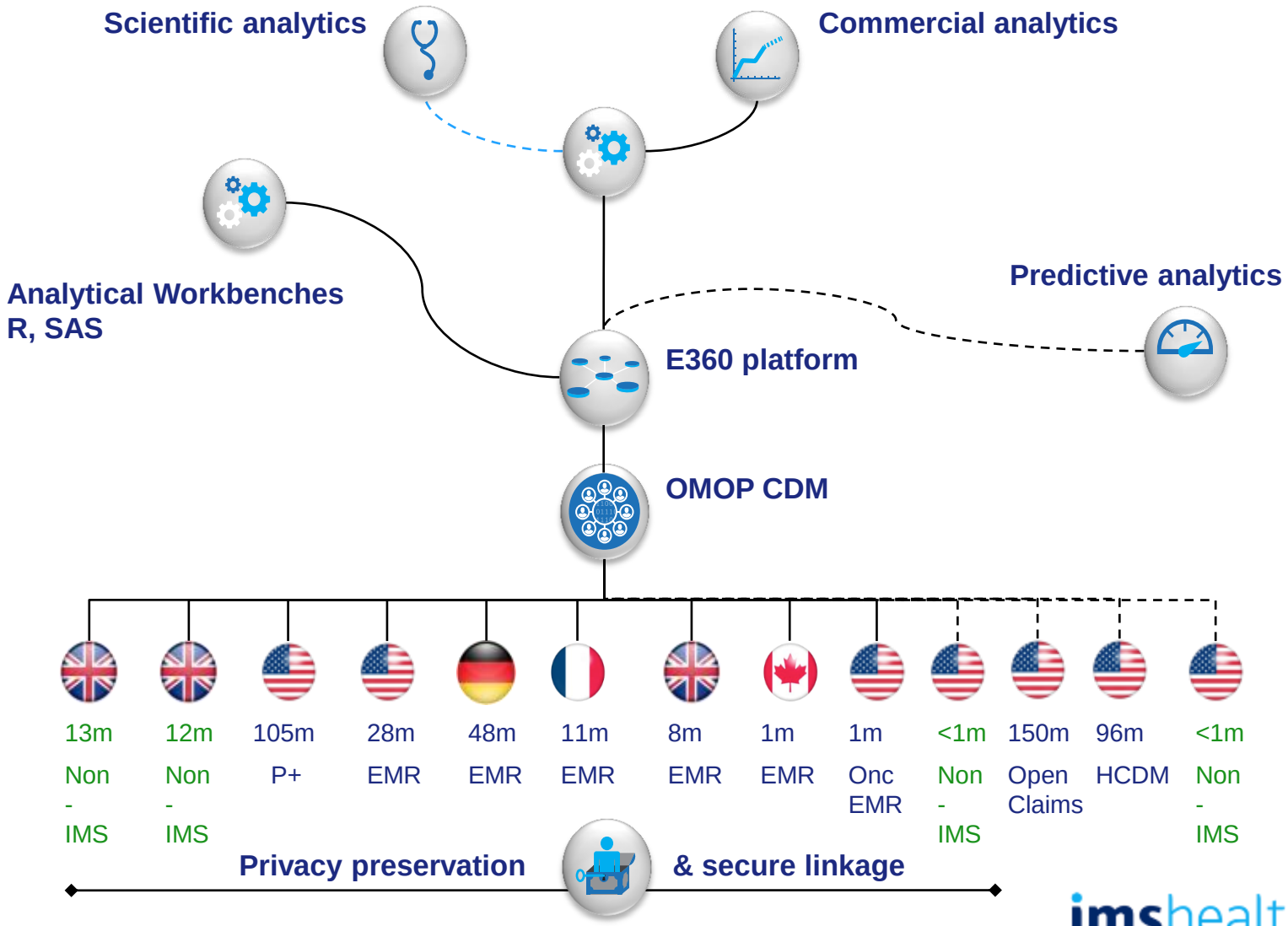
INTELLIGENCE APPLIED.

Analytical Landscape



IMS RWD Portfolio	Electronic Medical Records	Integrated EMR	LRx	Adjudicated Claims	Pre-adjudicated Claims	Oncology Cross-sectional Survey	Hospital	Therapy Area	Other
Canada	▲		▲	▲		▲			
United States	▲		▲	▲	▲		▲	▲	▲
Belgium	▲		▲			▲	▲		
Finland			▲						▲
France	▲		▲			▲		▲	
Germany	▲		▲			▲		▲	
Hungary			▲						
Italy	▲		▲			▲			
Netherlands			▲			▲	▲		
Poland			▲						
Portugal							▲		
Scandinavia		▲	▲				▲	▲	▲
Spain	▲					▲			
Switzerland			▲						
Turkey						▲			
UK	▲		▲			▲	▲		
Australia	▲		▲	▲		▲			
China						▲			
Japan			▲			▲			
UAE - Dubai				▲	▲				

RWD PORTFOLIO UNFOLDED

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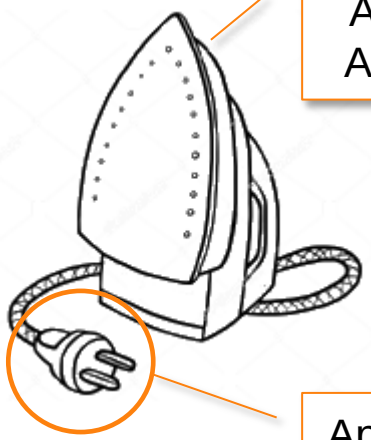
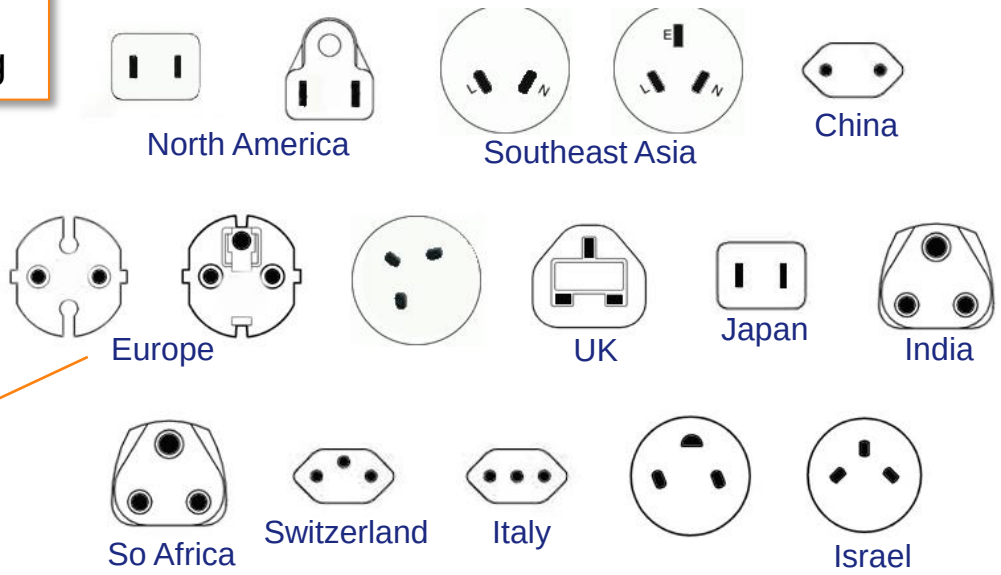
Current “One Study – One Script“ Approach

"What's the adherence to my drug in the data assets I own?"

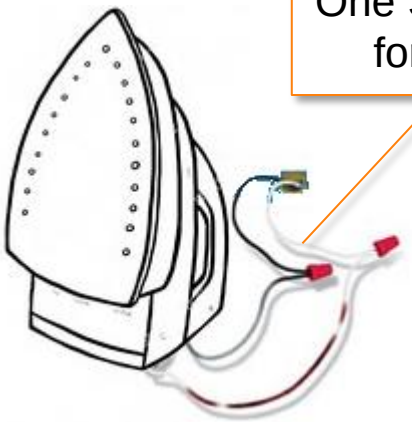


Analytical method: Adherence to Drug

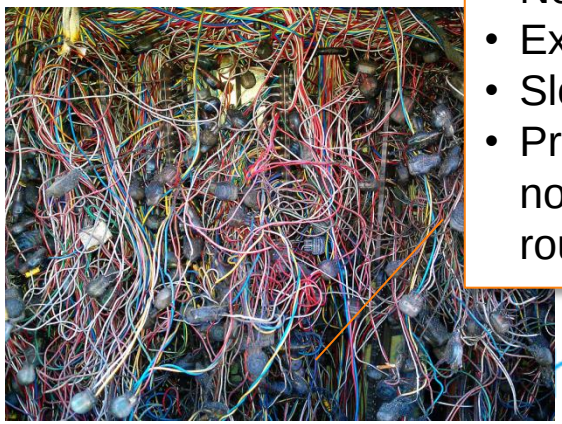
Application to data



Current solution:

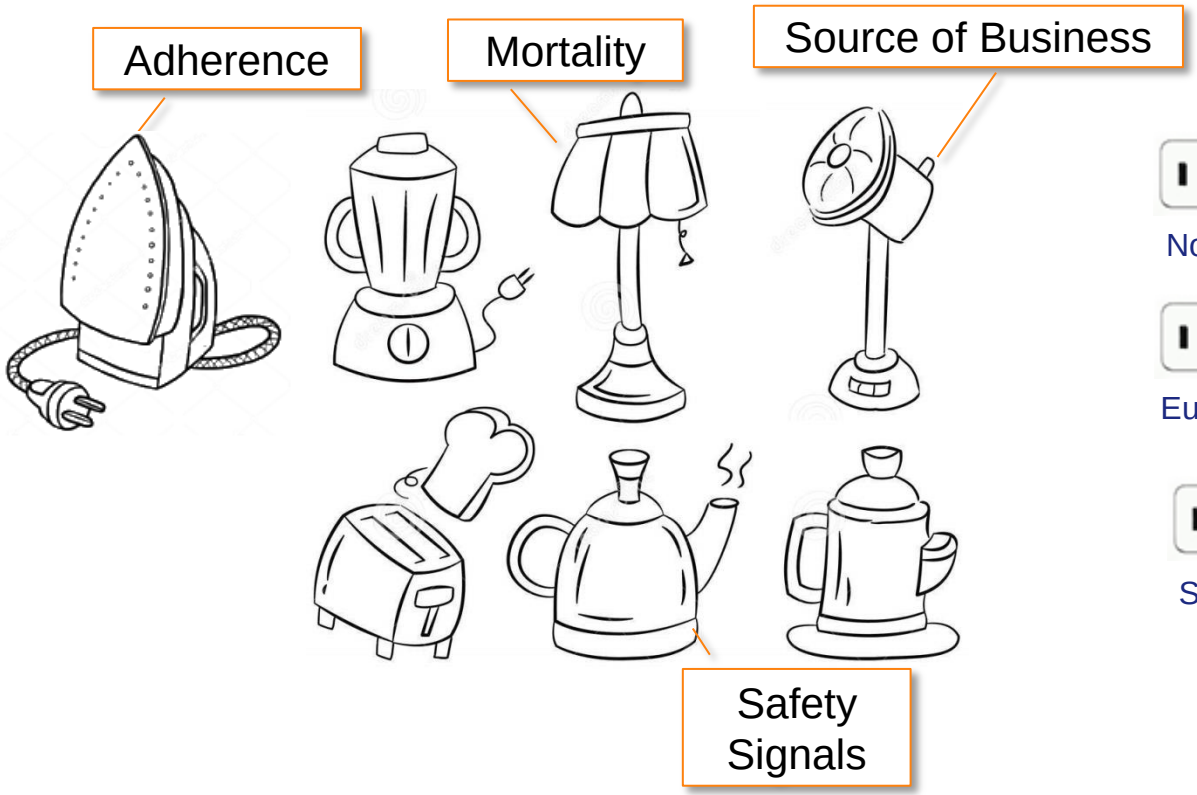


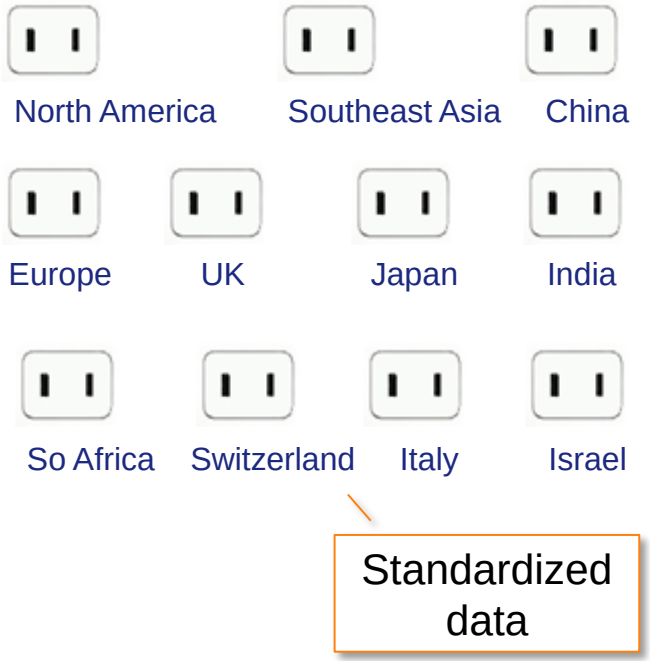
One SAS or R script for each study



- Not scalable
- Expensive
- Slow
- Prohibitive to non-expert routine use

Solution: OHDSI – Standardized Data and Analytics





1. E360
   - Standard Cohorts
   - Standardized Analytics

2. OMOP CDM
   - Standardized Format
   - Standardized Coding

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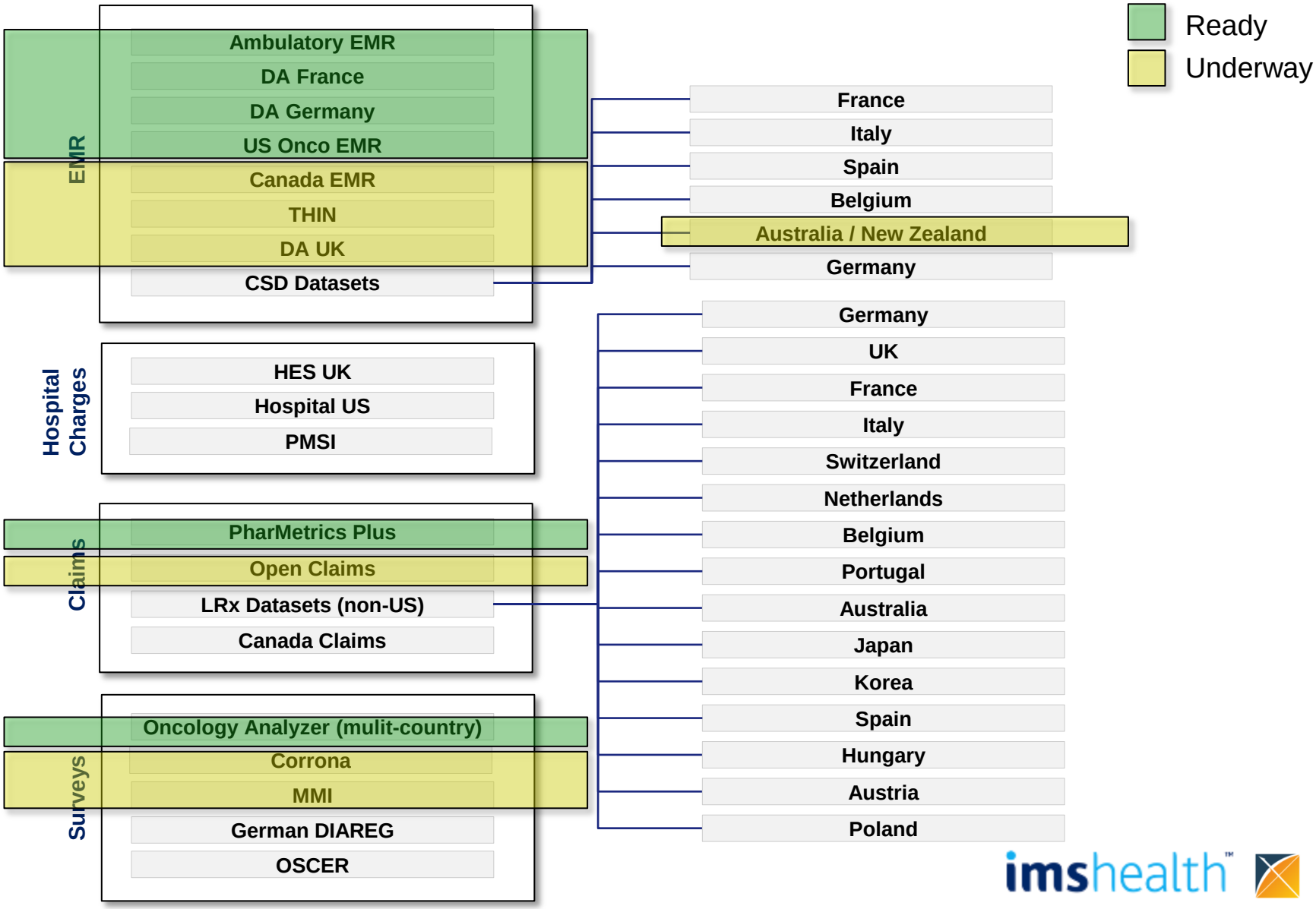
OMOP Factory & Deployments



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Impediments

1. International Vocabularies
   - Drugs > Procedures > Measurements > Conditions

2. Privacy Issues
   - Date Shifting
   - Encrypted patient and provider ID
   - Privacy ICD9/10 Codes (death or sexual abuse)
   - Death table

3. Legal Issues
   - Data "stuck" in country

4. Maintenance rather than original ETL

Evidera

Evidence. Value. Insight.

The state of CDM Adoption, my perspectives:

Research vs Practice

Stephanie Reisinger

- OMOP Researcher
- Commercial OHDSI Vendor

The OHDSI Journey: Historical Perspective

- **Early CDM versions somewhat unsophisticated**
  - Broad assumptions applied at transformation time (remember eras??)
  - Use of one master vocabulary: SNOMED
  - Selection of patients and analysis done together (no Cohort Pickers!!!)
- **Over time evolved & expanded in approach and sophistication**
  - Signal detection → signal refinement → epidemiology
  - Treatment patterns, resource utilization (including cost info in V5)
- **Organizational evolution**
  - OMOP Partnership → Reagan Udall Foundation →
  - OHDSI Collaboration
    - Industry, academia, commercial, research organizations
    - Broad swath of community members contributing to an open source repository
- **Historical focus has been on scientific research**
  - What is the best way to conduct observational research on large patient data sources?
  - **Significant progress in past 8 years!**

Widespread Adoption of CDM has Faced Headwinds

Limited adoption to date

- Mainly developed and used by research organizations
- Growing acceptance within large pharma RWE, **but still early days**

- **Why?**
  - **Multiple standards** -- competing efforts and sometimes conflicting results
  - **Perception of (and potential for) data loss** -- freeform text in EMR and patient centered data sources
  - *(I think both of these will be addressed naturally as the CDM evolves)*

- **And… we still haven't definitively answered a key question:**
  - Is the expense and effort of implementing a CDM worth the **value received?**

How do we measure the value received from a CDM?

- **Measured differently depending on where you sit**
  - **Research perspective**:
    - OHDSI has made HUGE progress in understanding the **scientific value** of a CDM
  - **Practice perspective:**
    - OHDSI Research hasn't adequately addressed many issues encountered when implementing a CDM in a production environment

Differences in OHDSI Research vs Practice

	Research	Practice
Objectives	**Research into** CDM and associated analytic methods	**Use of** CDM for production evidence generation
Organization	**Loosely aligned** organizations with other business priorities	**Resources and priorities** dedicated to evidence generation
Infrastructure & Support	**Reliance on community members** for infrastructure and support	**Dedicated infrastructure and reliable support** are critical
Processes & Workflow	**Ad-hoc, loosely aligned and managed** across the community	**Heavily regulated production processes, workflows** much be carefully managed

Examples of CDM Practice Issues

- What infrastructure do I need to support an OHDSI environment?
- How do I integrate OHDSI modules into my existing workflows?
- How will the data model be supported and extended going forward?
- What if I find a bug or have a time sensitive question?
- How do I hire and train the resources I need?
- How much is all of this going to cost, and how much will it save me?
- Etc.

Is the cost of implementing a CDM worth the value that I'll receive from doing it?

OHDSI Journey next chapter: Addressing Practice Issues

- **OHDSI: More activities to address "practice" questions**
  - Published, maintained development roadmap (where is the organization going)
  - Research work streams focused on practice issues (e.g. more efficient ETL, workflow process integration)
- **Industry: Support for critical "practice" components**
  - Explicit funding for activities critical to practice (e.g. regular vocabulary updates)
  - Published case studies of successful "practice" best practices
- **Academia: OHDSI-specific education and training**
  - OHDSI data science (ETL, observational data transformation assumptions)
  - OHDSI co-ops and fellowships
- **Vendors: Embrace the OMOP standard (coop-etition)**
  - Incorporate OMOP standard into commercial offerings and connect to other OMOP standard offerings
  - Provide "production support" for offerings

More widespread adoption is important to all of us. We can better support this by focusing some of our collective efforts into solving some of these critical practice issues.

Rae Woong Park, MD, PhD

President-elect (2016), Board of the Korean Society of Medical Informatics (KOSMI)

Director, Professor, Department of Biomedical Informatics, Ajou University School of Medicine

Rae Woong Park is the president-elect of board of the Korean Society of Medical Informatics (KOSMI), and director and professor of the department of biomedical informatics at Ajou University School of Medicine, South Korea.

He graduated Ajou University Medical School and received his Master of Science at the same university, and he received his Ph.D. in the Department of Pathology, College of Medicine Chungbuk National University, South Korea. He trained for surgical pathology at the Ajou University Hospital.

He is interested in developing quantitative pharmacovigilance algorithms and drug repositioning algorithms applicable to EHR data.

Dr Park is an active international collaborator of OHDSI. He had converted 22 years of EHR data of the Ajou University Medical Center into CDM. He is now leading the Korean OHDSI community and devoting himself to convert 6 largest Korean hospitals′ EHR data as well as the Korean national health insurance claim data into CDM.