TMF Workshop
Berlin July 1-2005

CLINICAL DATA INTERCHANGE STANDARDS CONSORTIUM

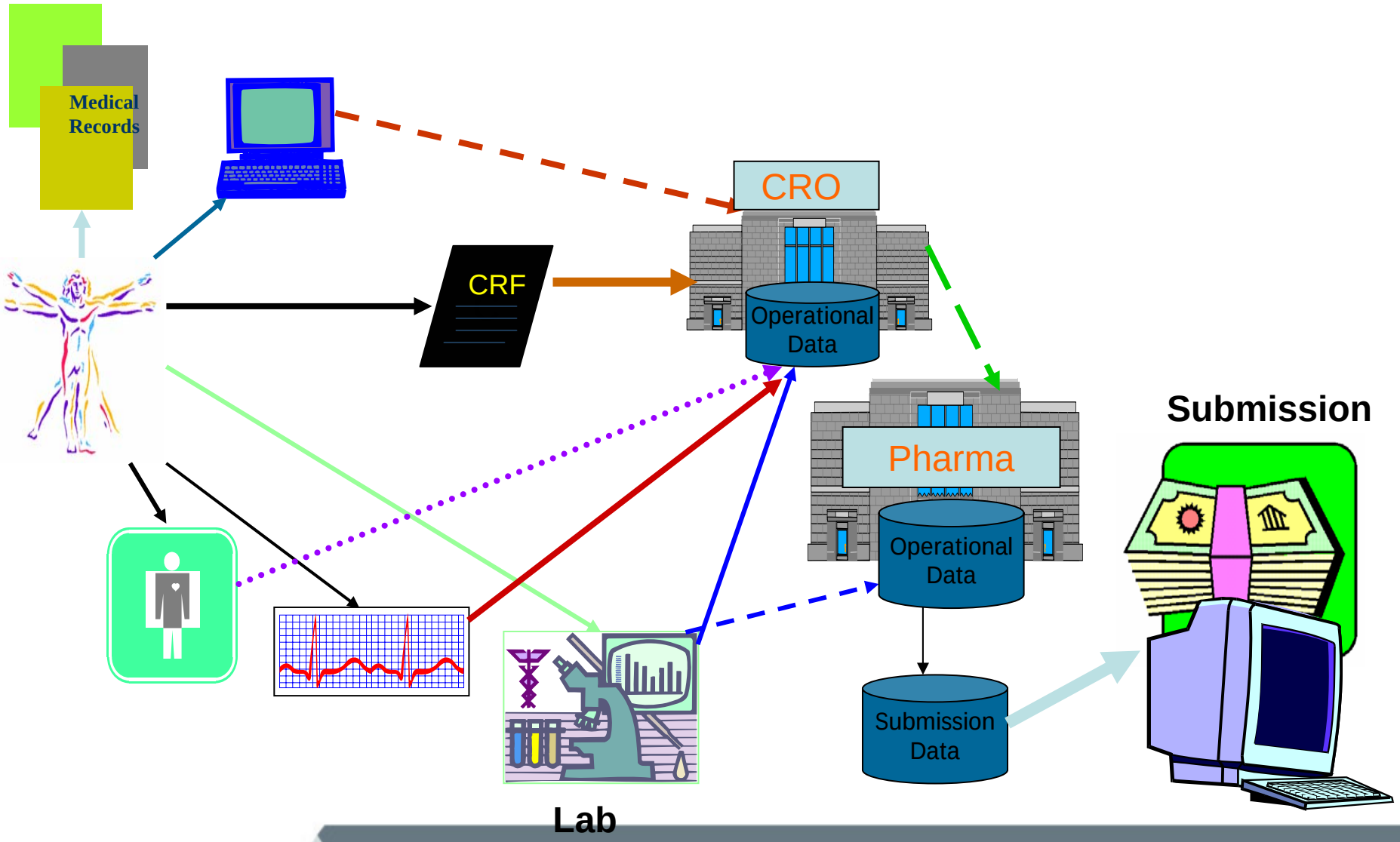
Udo Siegmann
Board of Directors, CDISC

Sen. Dir. Acc. Management
PAREXEL

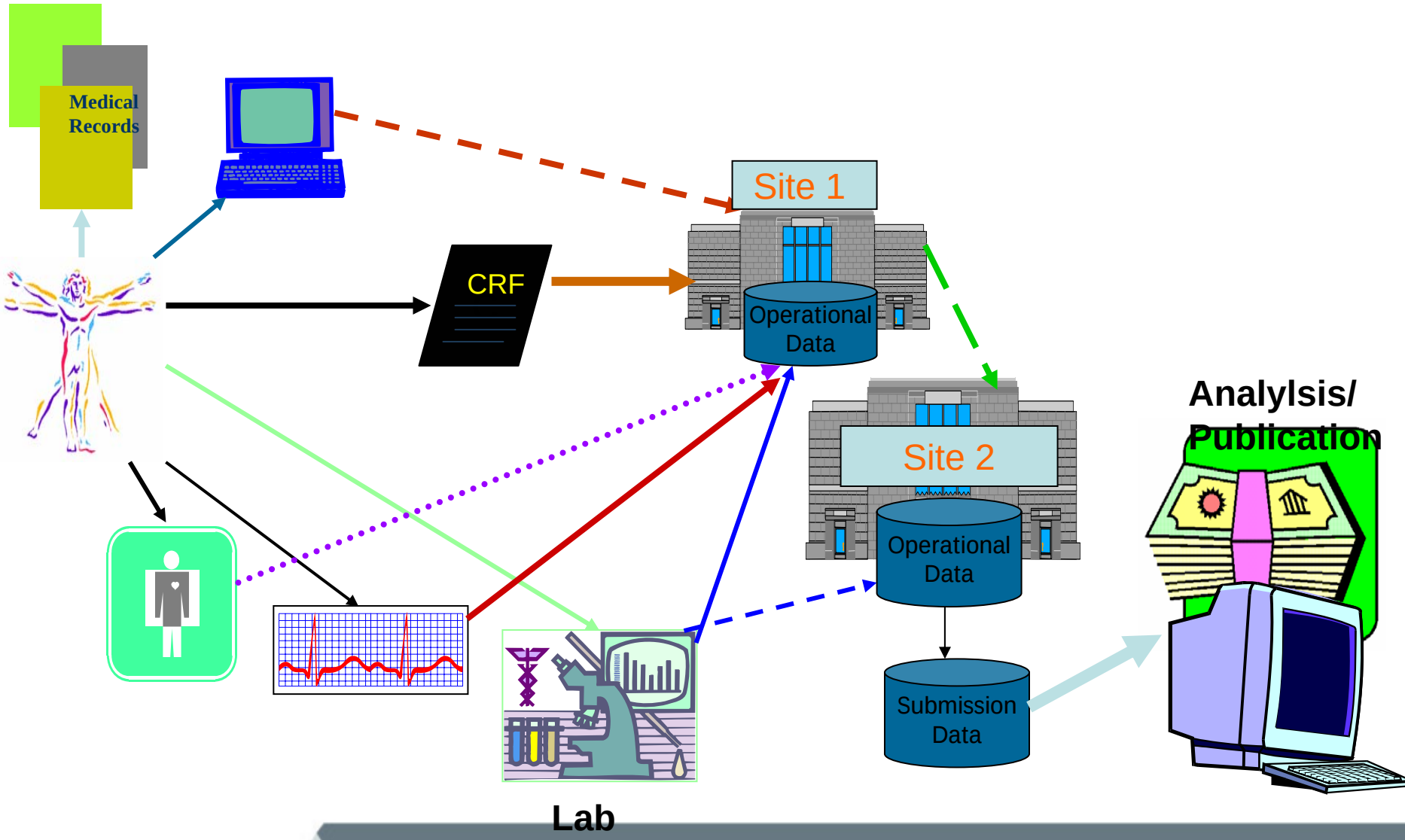
Facts about PAREXEL

- Full service CRO (Clinical Research Organisation)
- Involved in more than 500 clinical trials (Phase I – IV) per year
- Annual Revenue 500+ MIO $
- WW employees 5000+
- 57 Offices in 36 countries
- 55% of staff and revenue in Europe
- > 1000 employees in data management and statistics

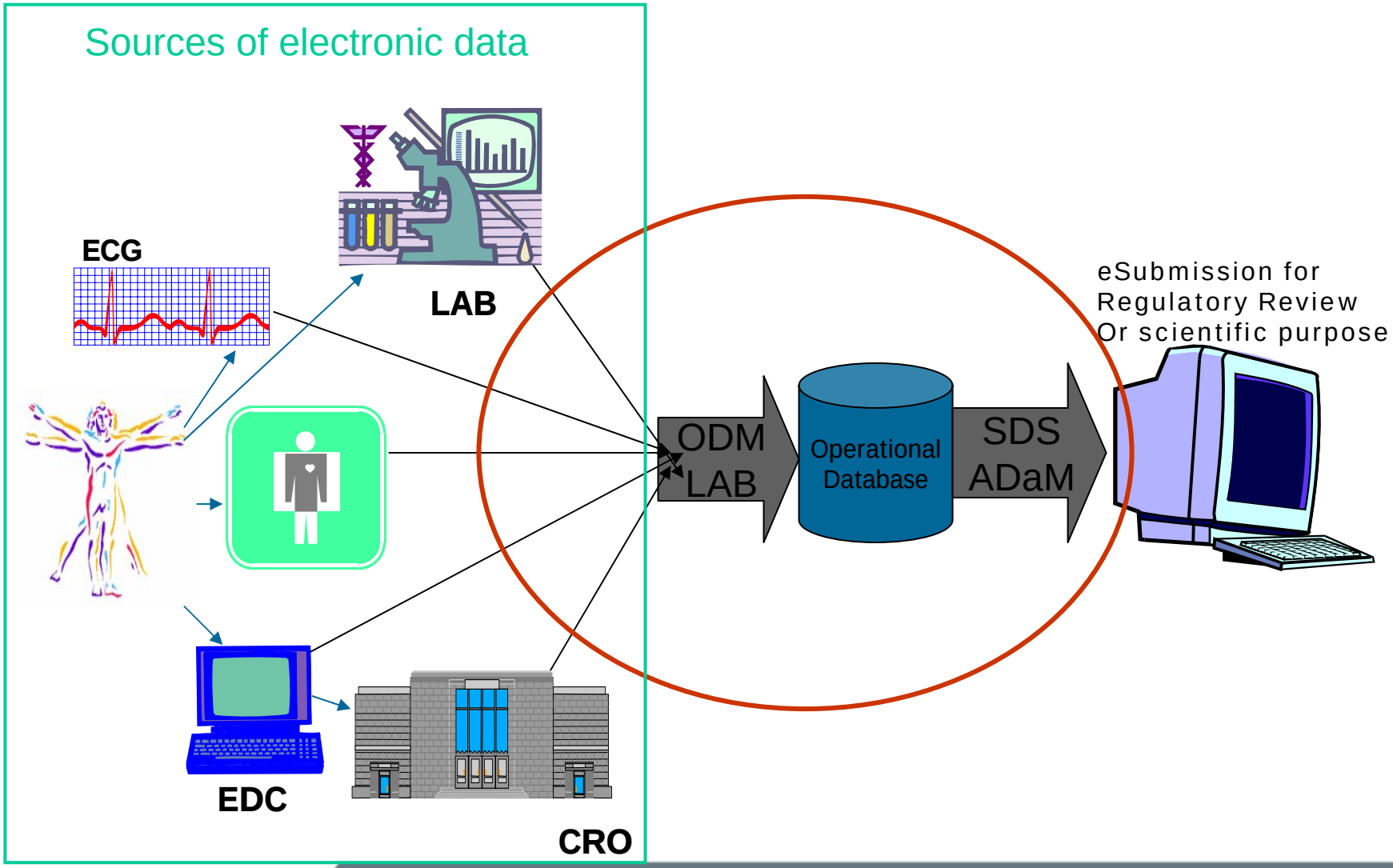
The Current State of Data Transfer



Academic research



The Future: Standards to Facilitate Data Flow ….from Source to Reviewers



Clinical Data Interchange Standards Consortium

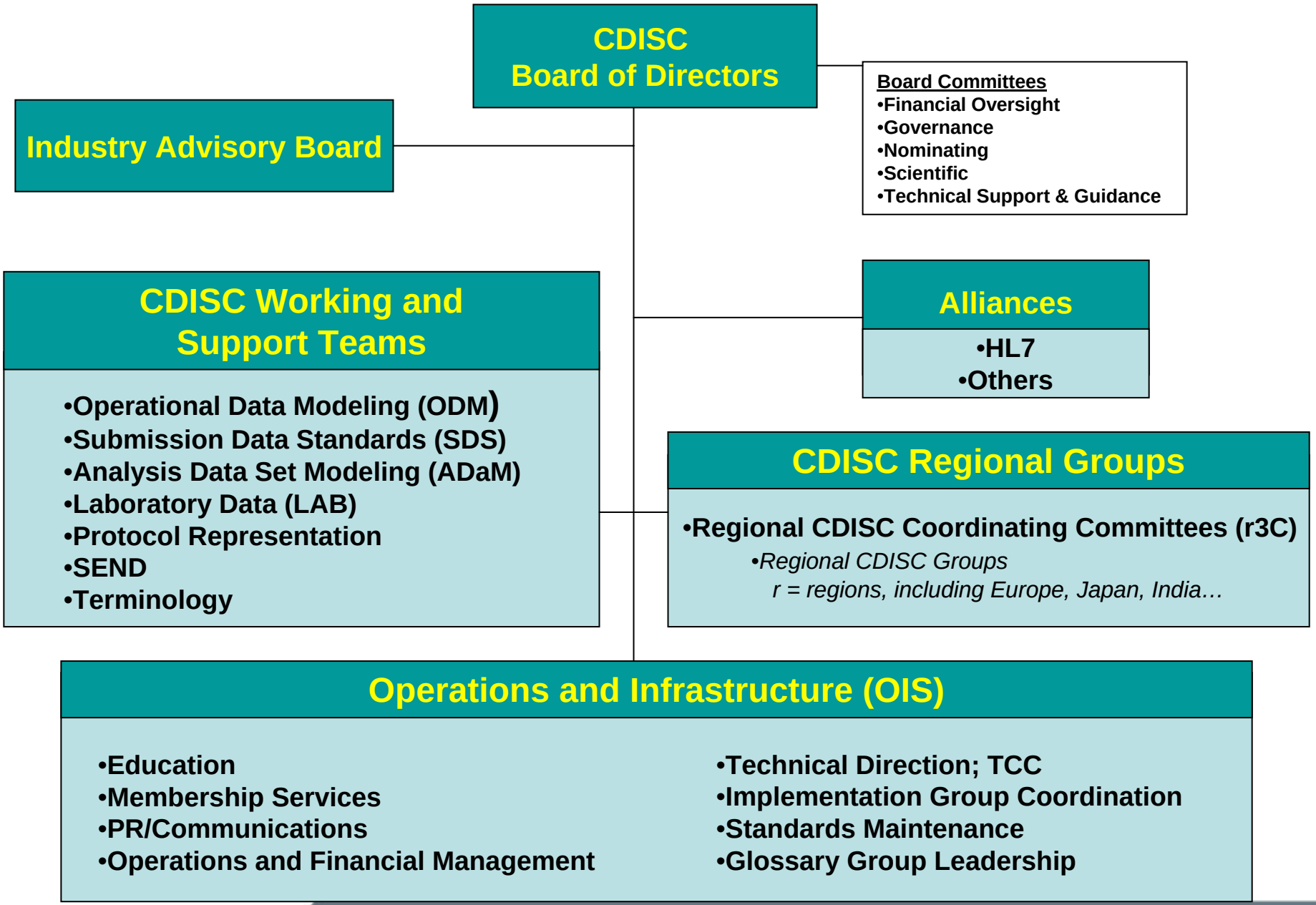
CDISC is an open, multidisciplinary, non-profit organization committed to the development of worldwide industry standards to support the electronic acquisition, exchange, submission and archiving of clinical trials data and metadata for medical and biopharmaceutical product development.

The CDISC mission is to lead the development of global, vendor-neutral, platform-independent standards to improve data quality and accelerate product development in our industry.

CDISC

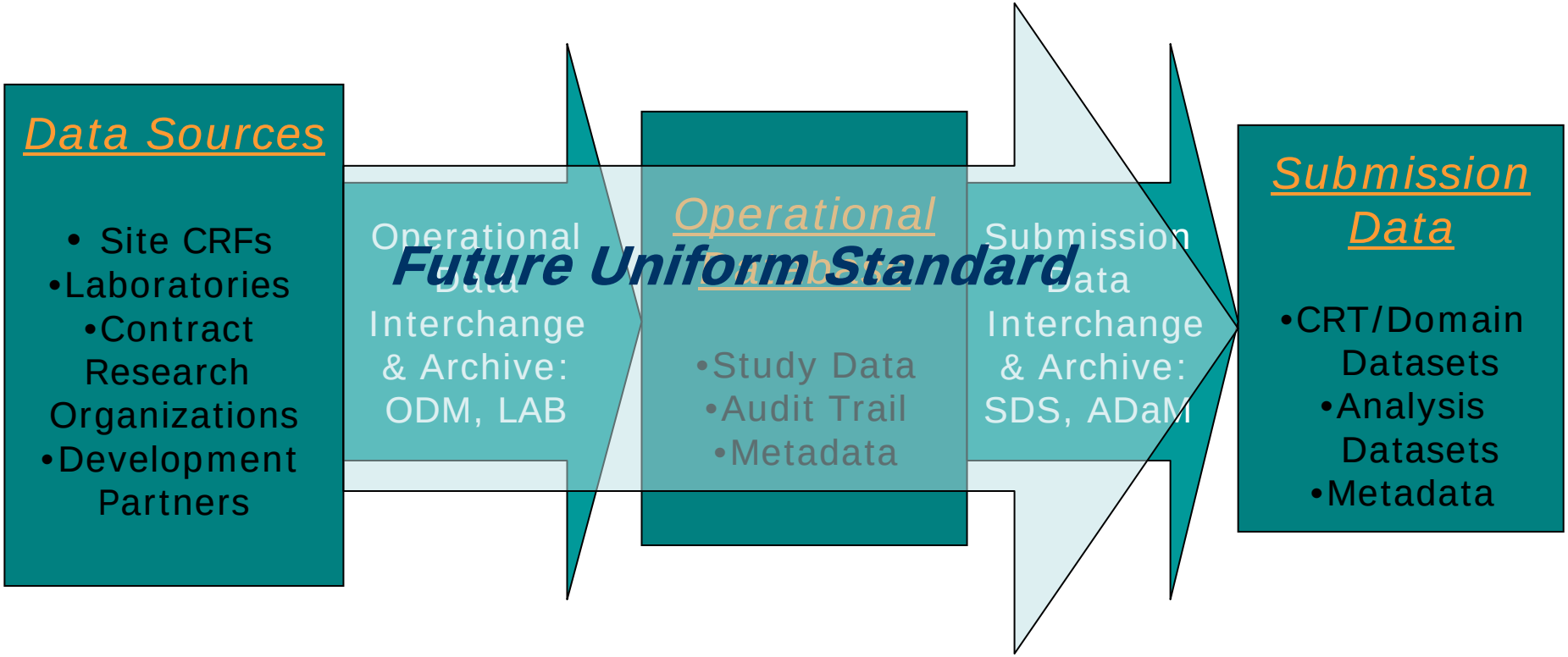
CDISC History

- Started as ‘grass roots’ volunteer group in Fall 1997 with 25 attendees at first meeting
- Invited to form DIA SIAC in 1998
- Independent, non-profit organization formed in February 2000
- >150 Corporate Memberships, of which ~50 are Corporate Sponsors (e.g. global pharmaceutical companies, CROs and technology providers)
- Originally two working teams (Nomenclature and Modeling); Modeling split modeling into four teams; Nomenclature to Glossary Group
- Models developed by consensus-based process


CDISC
Board of Directors
Board Committees
•Financial Oversight
•Governance
•Nominating
•Scientific
•Technical Support & Guidance
Industry Advisory Board
CDISC Working and
Support Teams
•Operational Data Modeling (ODM)
•Submission Data Standards (SDS)
•Analysis Data Set Modeling (ADaM)
•Laboratory Data (LAB)
•Protocol Representation
•SEND
•Terminology
Alliances
•HL7
•Others
CDISC Regional Groups
•Regional CDISC Coordinating Committees (r3C)
•Regional CDISC Groups
r = regions, including Europe, Japan, India…
Operations and Infrastructure (OIS)
•Education
•Membership Services
•PR/Communications
•Operations and Financial Management
•Technical Direction; TCC
•Implementation Group Coordination
•Standards Maintenance
•Glossary Group Leadership

CDISC Standards Development

Evolution of CDISC Standards



ODM = Operational Data Model/Std
LAB = Laboratory Data Model/Std

SDS = Submission Data Standards
ADaM = Analysis Data Models

CDISC

Current CDISC Teams

- Submission Data Standards (SDS)
- Operational Data Modeling (ODM)
- Clinical Laboratory Standards (LAB)
- Analysis Dataset Modeling (ADaM)
- Standards for the Exchange of Non-Clinical Data (SEND)
- Protocols
- Terminology

Available CDISC Standards

www.cdisc.org

- Operational Data Model (ODM)
  - Production Version 1.2
  - XML schema
- Laboratory Data Model (LAB)
  - Production Version 1.0.1
  - Implementations through SAS, ASCII, XML/ODM and HL7 V3 RIM message
- Submissions Data Tabulation Model (SDTM)
  - Production Version
  - Referenced as specification in FDA Guidance as of 21 July 04
- Standards for the Exchange of Non-clinical Data (SEND)
  - Based upon CDISC SDS V3.1
  - Included in SDTM model now referenced in FDA Guidance
  - Pilot and Implementation Guide in progress
- Analysis Dataset Models (ADaM)
  - Guidelines and Examples of Standard Datasets for Submissions
- Protocol Representation Model
  - HL7-CDISC Collaboration
  - Spreadsheet of protocol elements with definitions; documentation; initial HL7 model

Global Activities

Global CDISC Activities

- Europe CDISC Coordinating Committee (E3C) and Europe CDISC Group (ECG)
  - Initiated 2002 in Frankfurt
  - ~40 companies represented from ~ 10 countries
  - 1st € CDISC Interchange May 2004 (~ 100 attendees and speakers from FDA and EMEA);
  - 2nd €-Interchange April 2005, 120 attendees
  - 3rd €-Interchange April 2006, Berlin

€3C and European CDISC Group

- Leader: Udo Siegmann
- E3C ~ 8 individuals (originally focused regionally, but now have working groups similar to Japan) with focus on:
  - Regulatory
  - Education
  - Membership
  - PR/Communications
  - Case Studies
- For modeling/standards, European members are on CDISC Teams (SDS, ODM, LAB, Protocol Representation, Terminology)
- Active EU participation on CDISC Technical Coordinating Committee and on CDISC Board of Directors and Industry Advisory Board

J3C and Japan CDISC Group

- **Japan CDISC Coordinating Committee (J3C) and Japan CDISC Group (JCG)**
  - Leader: Yoshio Tsukada
  - J3C organized to support:
    - Education
    - Modeling
    - PR/Communications
  - JCG includes representatives of more than 40 companies operating in Japan
  - Meetings with MHLW, KIKO in 2003
  - Presentations and Training in 2004 and 2005 and Interchange planned for May 2005

Global CDISC Activities

- **India CDISC Coordinating Committee (I3C)**
  - Initiated mid-2003 with I3C meeting
  - December presentations for academic conference
    - International Symposium on CLINICAL DATA MANAGEMENT
    - Institute of Bioinformatics & Biotechnology, University of Pune, Pune, India
  - CDISC Day planned for December 2004
- **Australian CDISC Group**
  - Association of Regulatory and Clinical Scientists (ARCS) Workshops – June 2004
  - CDISC Group currently being formed

Top 5 Benefits of Using CDISC Models

BioPharma Only

Percent Agree

International

1. **Decreased personnel time spent on data transfers (82%)**
2. **Facilitated data exchange among partnering companies (80%)**
3. **Facilitated regulatory reviews of submissions (75%)**
4. **Decreased cost of data transfer (75%)**
5. **More efficient eClinical Trial processes overall (73%)**

N. America

1. **Facilitated data exchange among partnering companies (75%)**
2. **Decreased personnel time spent on data transfers (74%)**
3. **Decreased cost of data transfer (71%)**
4. **Improved data quality earlier in the process (67%)**
5. **More rapid agreement on standards within a company (65%)**

Corporate Sponsors

CDISC

Corporate Members / Associate Members

CDISC Collaborations

afternoon session

CDISC Principles

- Maintain a *global, multidisciplinary, cross-functional* composition for CDISC and its working groups.
- Work with other professional groups to encourage that there is *maximum sharing of information and minimum duplication of efforts*.
- Provide *educational programs* on CDISC standards, models, values and benefits.
- Accomplish the CDISC goals and mission *without promoting any individual vendor or organization*.

Collaborations

- Drug Information Association
  - eClinical SIAC
  - Fall Conference (October 2004)
- Controlled Terminology Task Force (NIH/NCI, VA, FDA, DCRI)
- U.S. CDM Group (SCDM)
- Europe (EMEA and CDM Groups: DMB, ACDM, INCDMA)
- Japan (KIKO, MHLW, JPMA)
- Australian CDM/Statistics Group (ARCS)
- Health Level Seven (HL7) – FDA, CDISC, HL7

Health Level Seven (HL7)

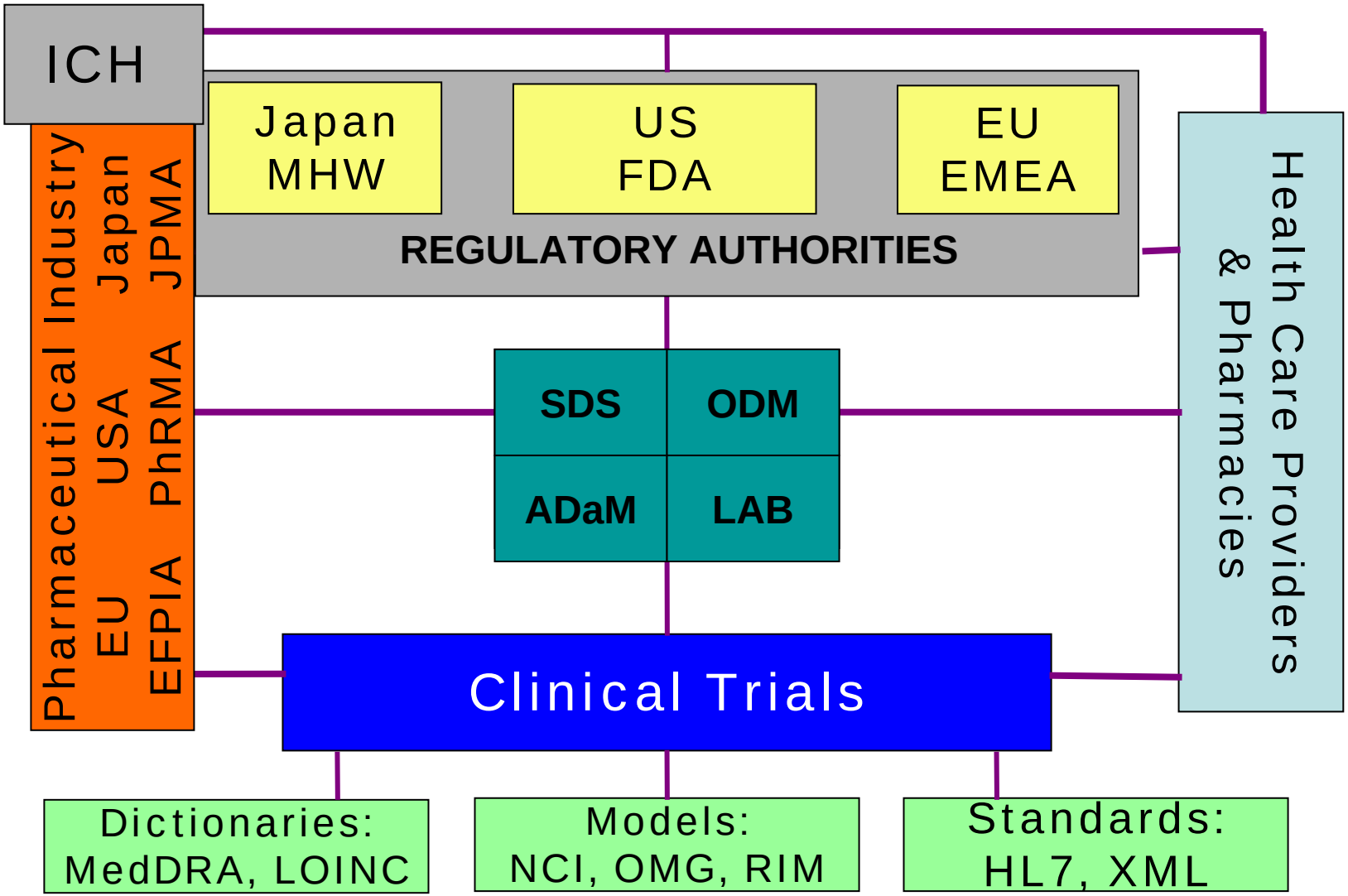
- The world's leading standard for the electronic interchange of healthcare information
  - >20 Global affiliates
  - 16 years of operation
- American National Standards Institute (ANSI)-accredited Standards Development Organization (SDO);also, ISO standard
- Acknowledged by the Department of Health and Human Services (HHS) as the standard for healthcare information exchange

CDISC, FDA, HL7

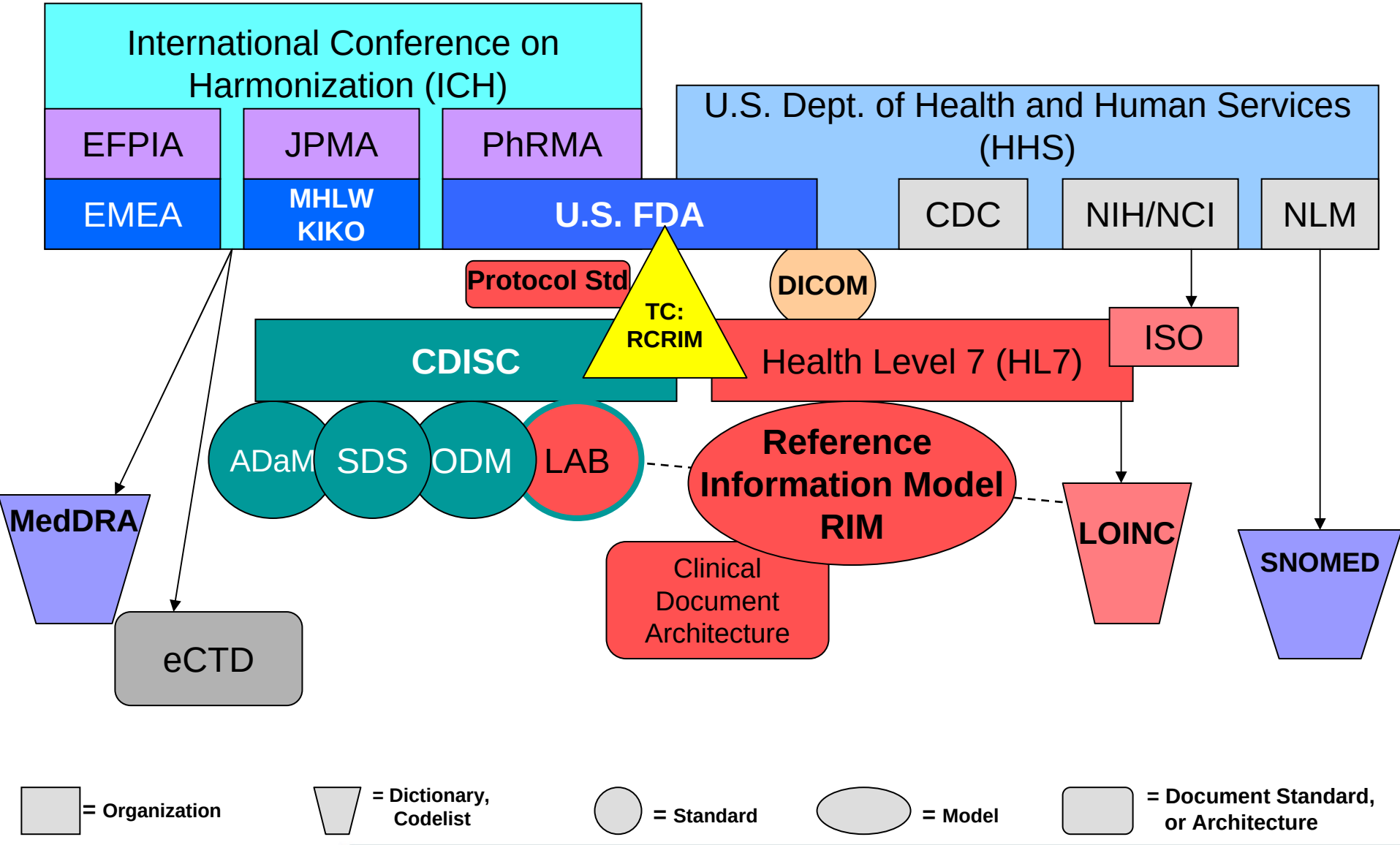
- Shared Purpose
  - To improve the quality of public health
  - To have **one** overarching standard model for data interchange for
    - healthcare information
      - **and**
    - clinical trial/clinical research data

- Domain Expertise Contributions
  - CDISC and FDA
    - Regulated clinical research data acquisition, review and archive requirements
  - HL7
    - Healthcare information exchange standards and methodology; accreditation process

CDISC in the "World of Standards" 2000

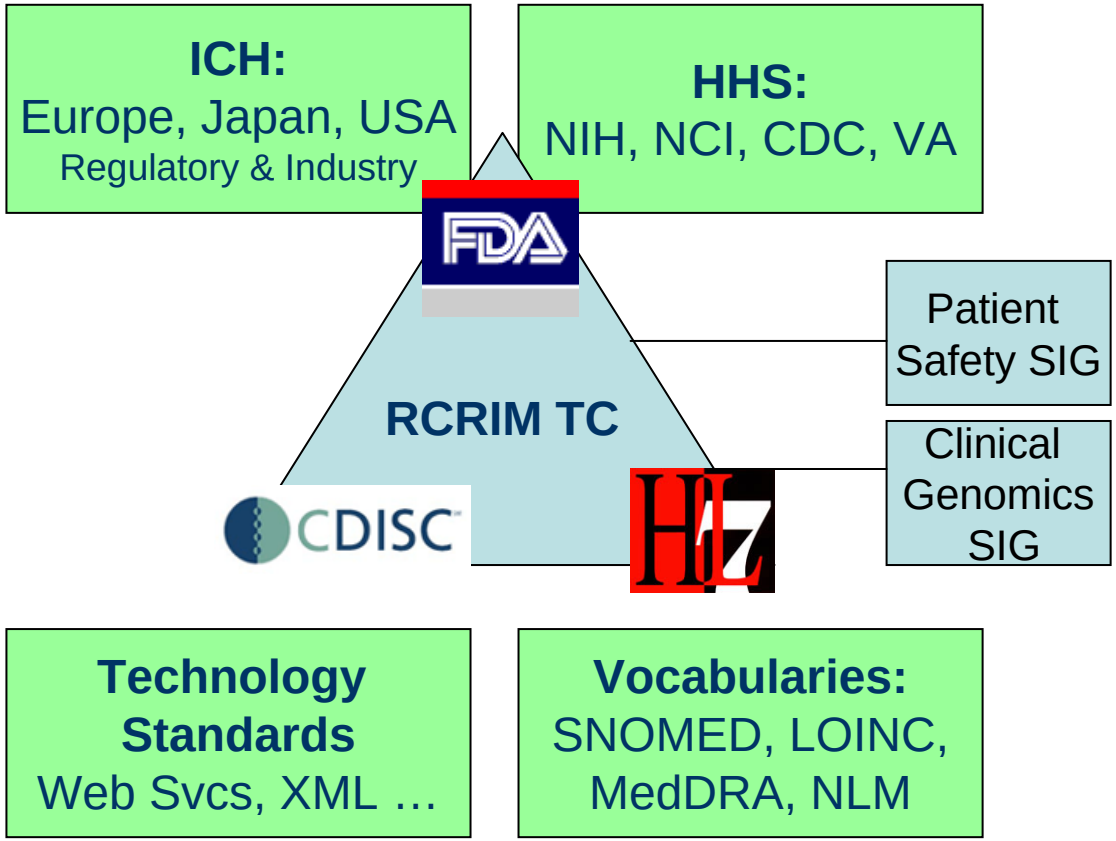


CDISC in the "World of Standards" Today



CDISC

Key Participants in the Clinical Research Standards Process



Source: Wayne Kubick

RCRIM: Current Initiatives

Research Process

- Standardized representation of clinical trial protocol

Regulatory Information

Structured Product label

eStability data

Research Data

- Periodic reporting of clinical trial laboratory data
- Annotation of ECGs
- Clinical trial data for regulatory submission (Informative Doc)
- Define.xml (Informative Doc)
- Non-clinical data for regulatory submissions (SEND)

Surveillance
(+new Pt. Safety SIG)
Individual Patient Safety Reports (eMedWatch)

CDISC

High Level Goals for Standards

- Have one overarching information model to support both Healthcare and Clinical Research
- Ensure **interoperability** among the CDISC standards
- Develop interoperability between CDISC standards and the HL7 Reference Information Model (RIM)

Interoperability

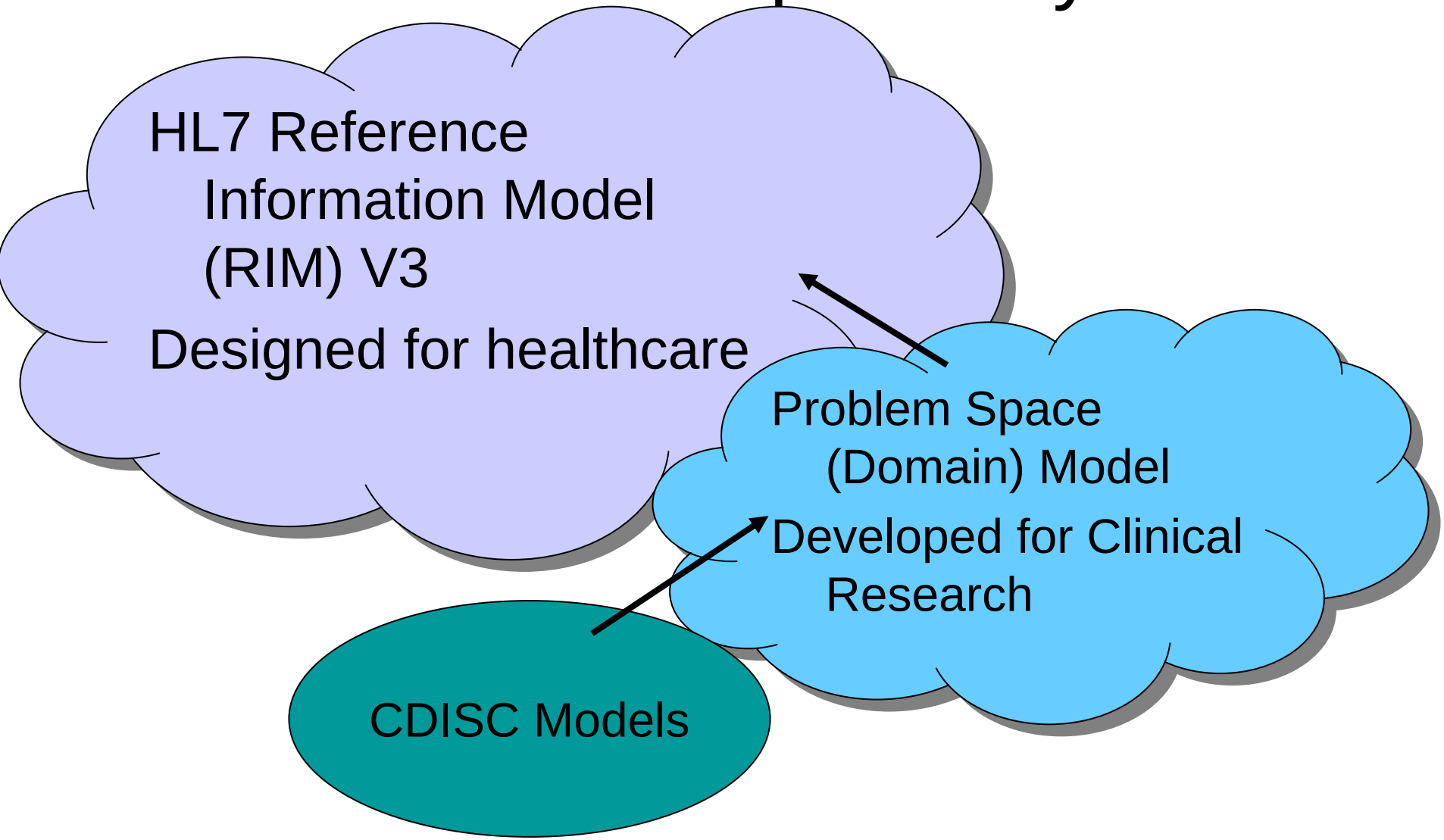
- Main Entry: **in·ter·op·er·a·bil·i·ty**
  : ability of a system ... to use the parts or equipment of another system
  Source: Merriam-Webster web site

- **interoperability**
  : ability of two or more systems or components to exchange information and to use the information that has been exchanged.
  Source: IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries, IEEE, 1990]

Syntactic interoperability

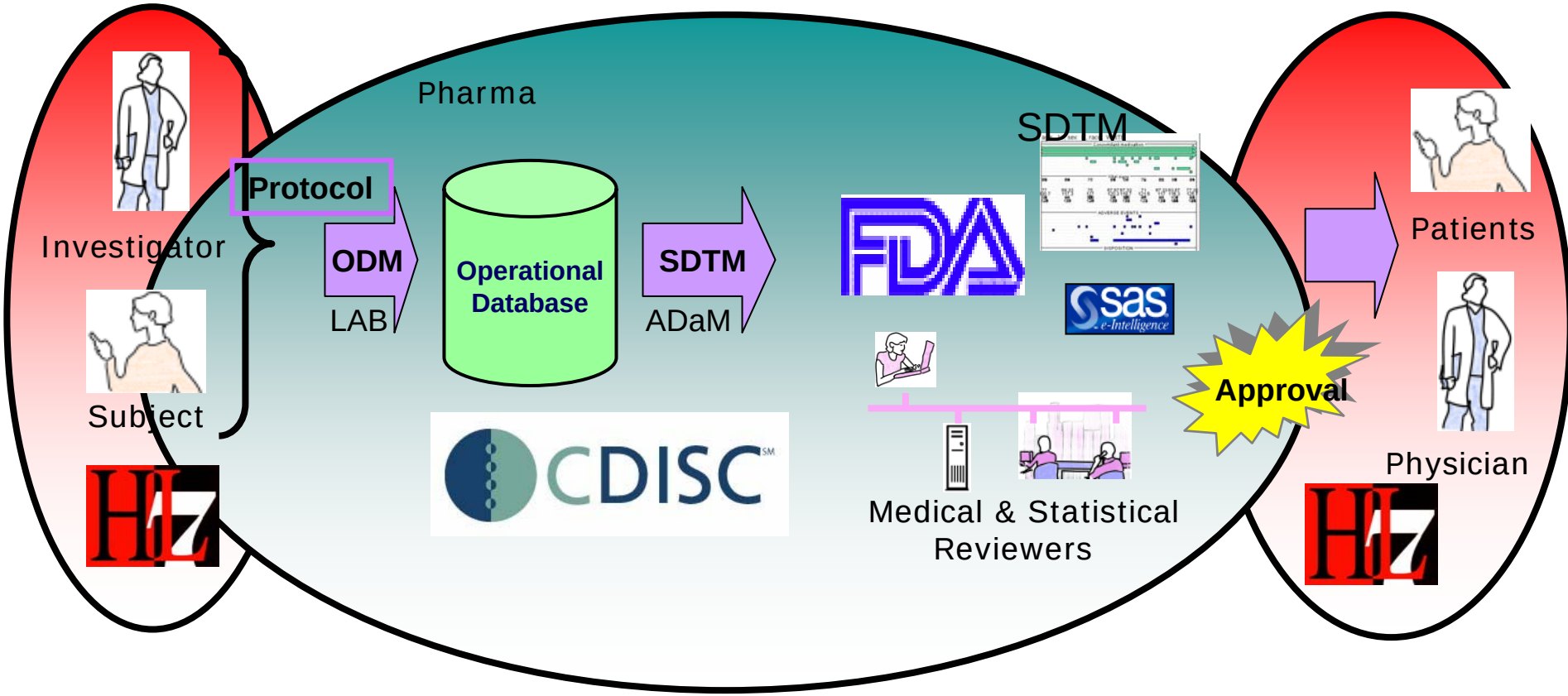
Semantic interoperability

Towards interoperability…..



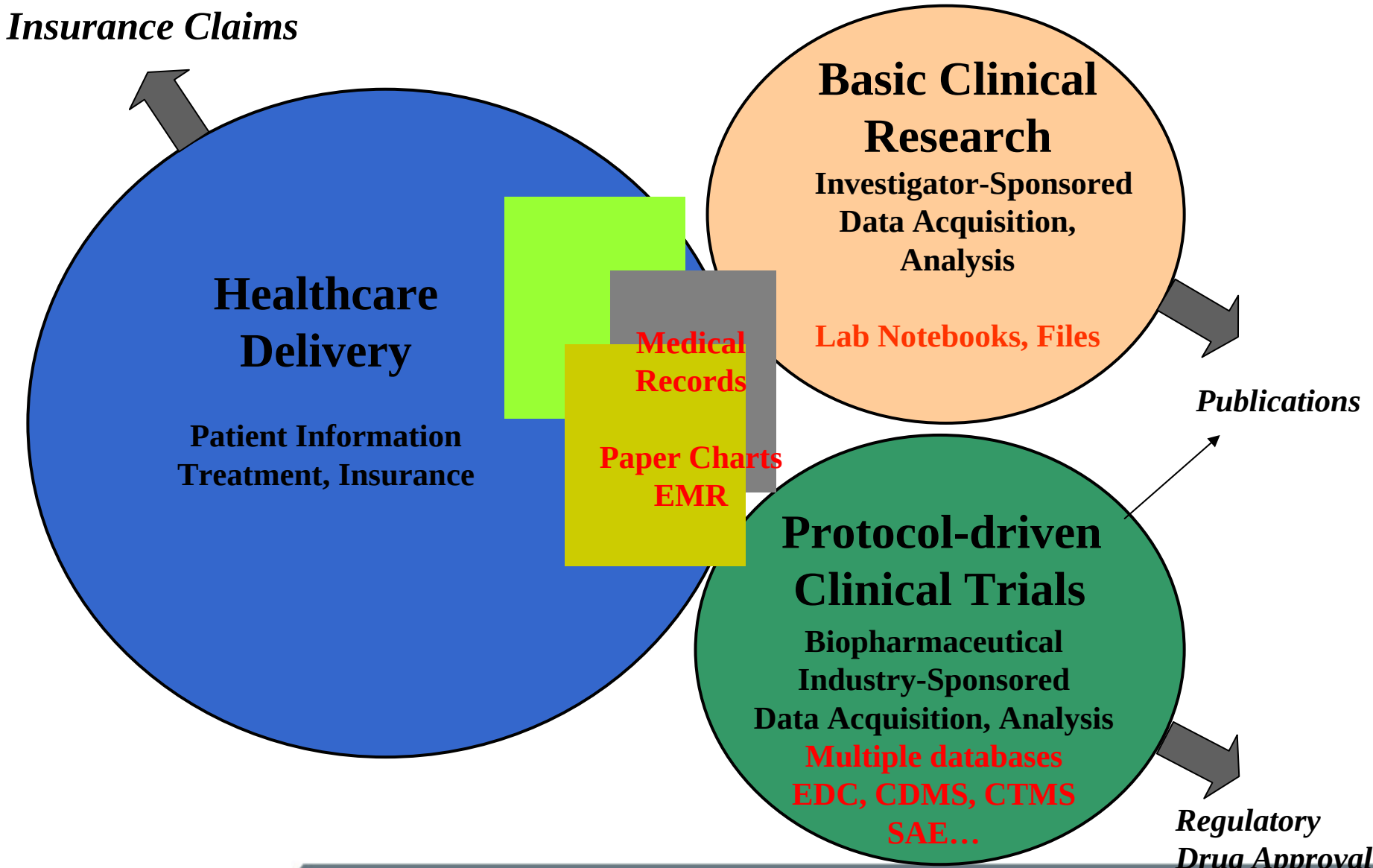
End-to-End Seamless Integration

Open Data Model - XML based, CDISC compliant



Slide designed by D. Iberson-Hurst, Assero

E-source


Insurance Claims
Healthcare Delivery
Patient Information
Treatment, Insurance
Medical Records
Paper Charts
EMR
Basic Clinical Research
Investigator-Sponsored
Data Acquisition,
Analysis
Lab Notebooks, Files
Publications
Protocol-driven Clinical Trials
Biopharmaceutical
Industry-Sponsored
Data Acquisition, Analysis
Multiple databases
EDC, CDMS, CTMS
SAE…
Regulatory
Drug Approval

The Current State of Clinical Information

- Healthcare information is found in paper medical records, in disparate databases, in hospital-based information systems--- there are islands of data
- Clinical research data may exist in additional databases and/or research notebooks
- Clinical trial data is collected on 3-part NCR forms (~80% of trials) or via a multitude of electronic data capture applications

Single-source project

- Participants:
  - CDISC
  - Duke Clinic
  - Duke Clinical Research Institute (DCRI)
  - Technology partners: Microsoft, Arbortext, Topsail
  - Investigators
    - Liora Alschuler, Landen Bain, Rebecca Kush, MD, Meredith Nahm

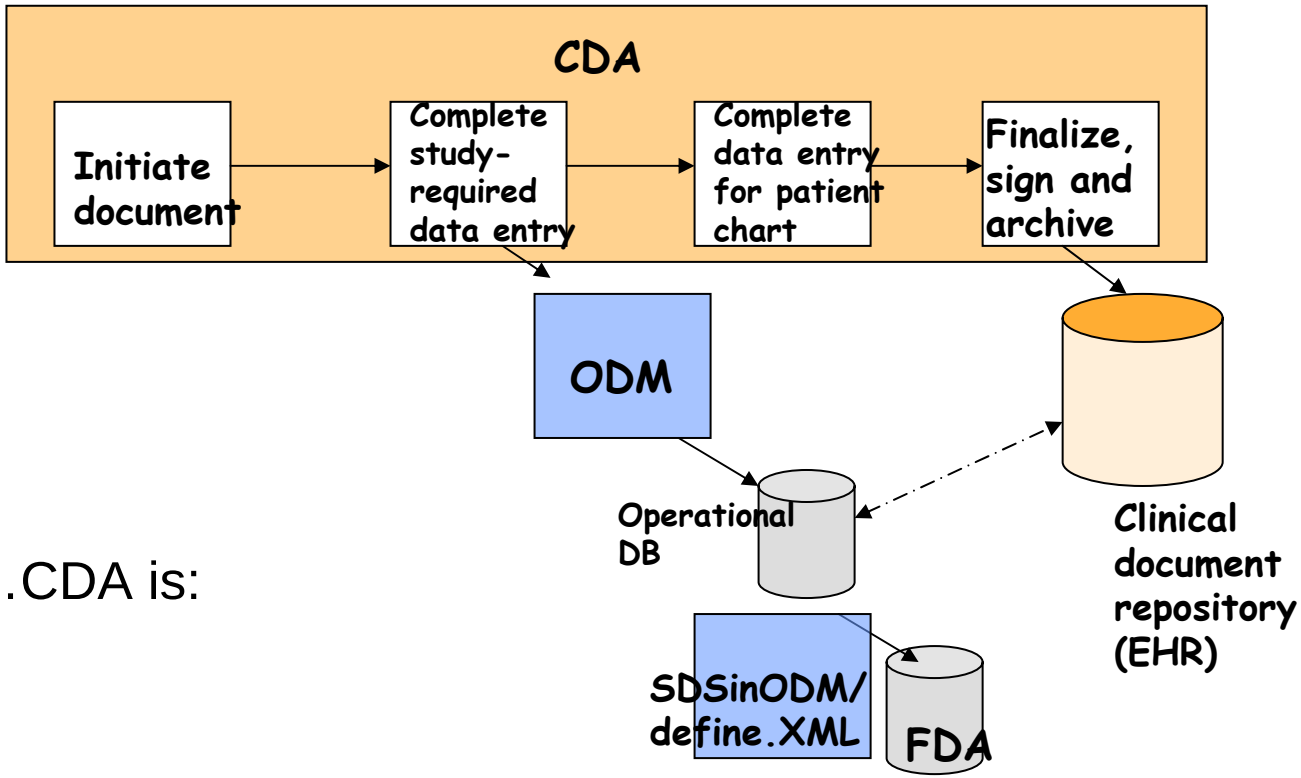
HL7 CDA & CDISC ODM in SS PoC Trial

- Features:
  - contributes to patient chart, not the reverse, optimizes clinical workflow
  - no requirement to create/extract from EMR
  - fewer privacy and regulatory issues
  - can be driven from electronic protocol
  - uses HL7 CDA and CDISC ODM

CDA & ODM in SS PoC

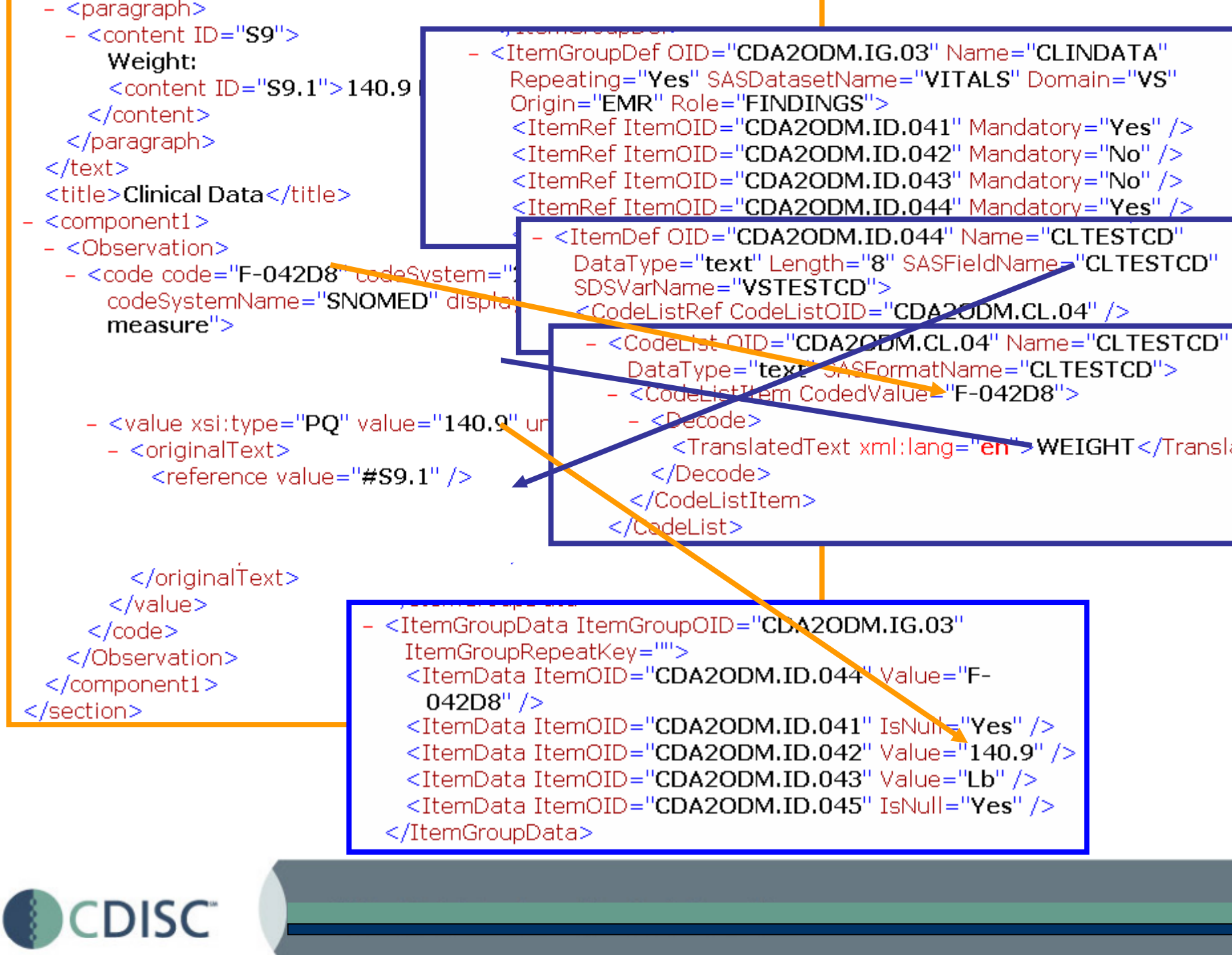
- System features/requirements:
  - multi-stage, incremental document creation
  - optimal re-use (minimal redundant entry)
  - minimal change to current workflow
  - create both ODM-compliant XML for trials and CDA-compliant XML for clinical records, mapping between ODM.xml and CDA.xml
  - low cost
  - rapid development
  - optimal use of technology partners, off-the-shelf technology

Use of ODM & CDA in Single-source PoC



Why not ODM2CDA…CDA is:

- **Comprehensive**
- **General**
- **Human readable**
- **Defined by abstract data model and controlled vocabulary**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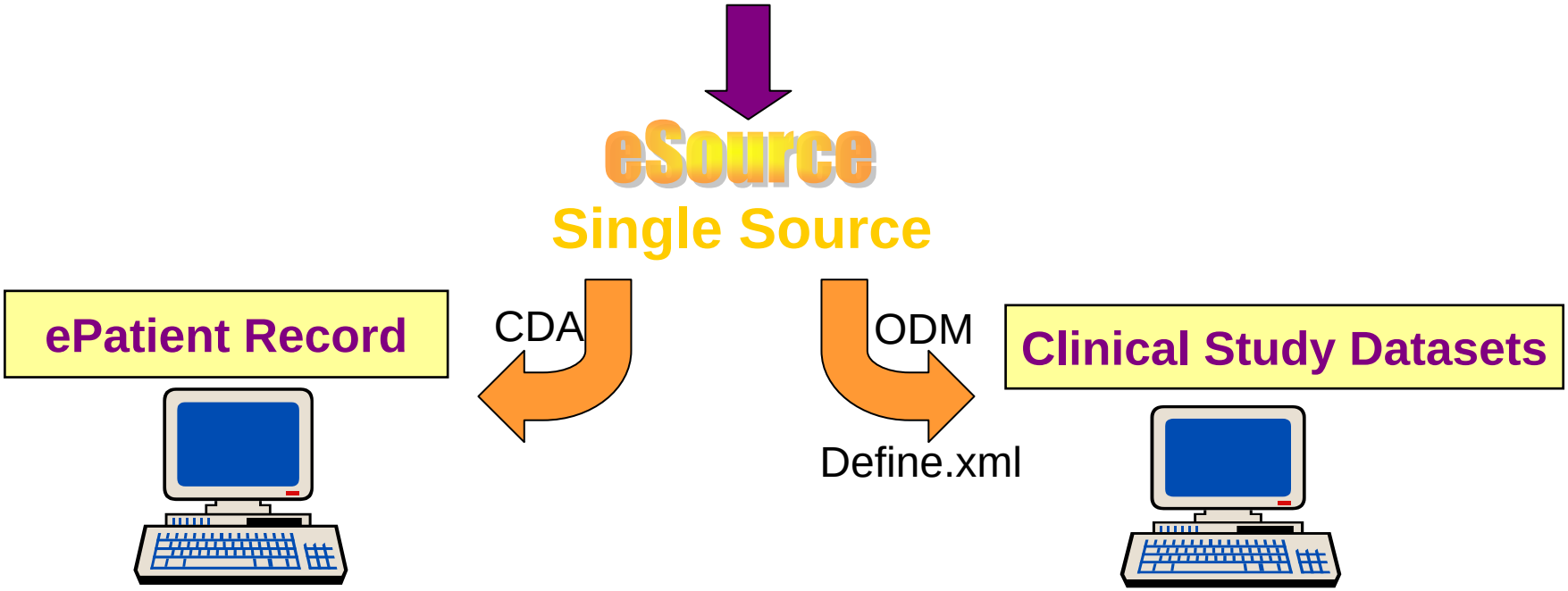
ePROTOCOL

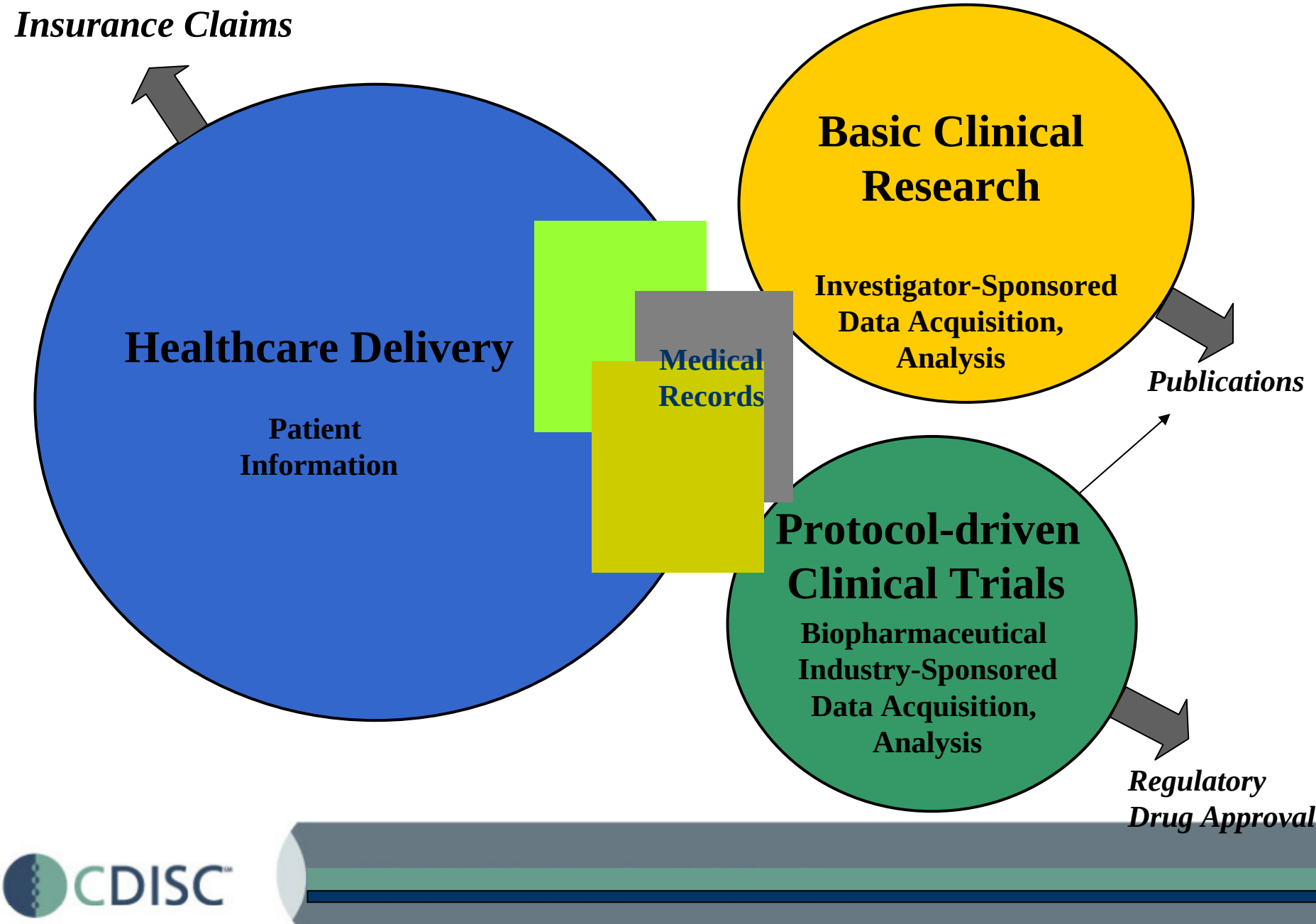


- Leverages healthcare (HL7) and research (CDISC) data interchange standards; tool interoperability
- Facilitates investigator workflow; eliminates transcription steps
- Compliance with 21CFR11 and HIPAA feasible
- **Enables the protocol (PLAN) to drive the entire process**

Interchange Standards: Long-term Desired Outcomes (CDISC)

- A holistic approach to standards, facilitating data interchange from sites through regulatory submission, utilizing XML
- Standards for data acquisition supporting the population of a cross-trial warehouse within FDA
- HL7-CDISC models harmonized to yield value for both clinical research and healthcare – sharing of information between EMR and clinical trials
- Global adoption of CDISC data standards

CDISC Meeting with FDA Commissioner 2003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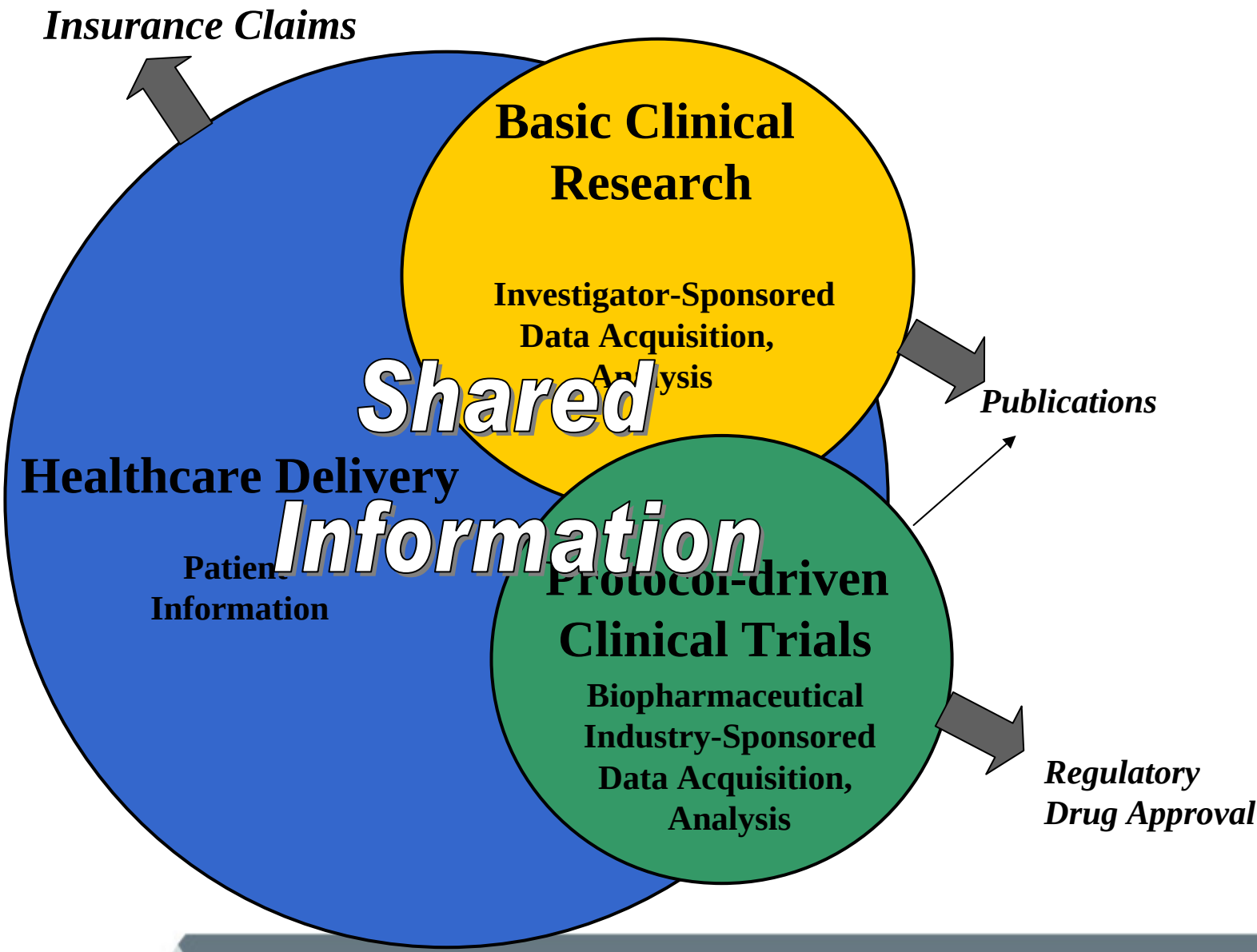
Regulatory Drug Approval


Insurance Claims
Basic Clinical Research
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Shared
Information
Healthcare Delivery
Patient Information
Protocol-driven Clinical Trials
Biopharmaceutical Industry-Sponsored Data Acquisition, Analysis
Publications
Regulatory Drug Approval

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- call for papers / Beiträge / success stories
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    - Kompetenznetze / Verbände
    - IT Anbieter

Information and Contacts

- For standards and information, see www.cdisc.org
- eNewsletters available via e-mail; contact Shirley Williams swilliams@cdisc.org or sign up on the CDISC website.
- Technical questions: Julie Evans jevans@cdisc.org or Public Discussion Forum
- Education and Membership: Frank Newby fnewby@cdisc.org
- Udo.siegmann@parexel.com