



@twitterhandle

Crossing Borders: Uniting the World through Health Data Sharing

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Biomedical Informatics*



Distributed Research Network and CDM

Technical Issues

- Heterogeneity in data type and structure
- Data Quality and Volume
- Technical Limitations



Legal Issues

- Privacy Protection Law
- Permission from data owner

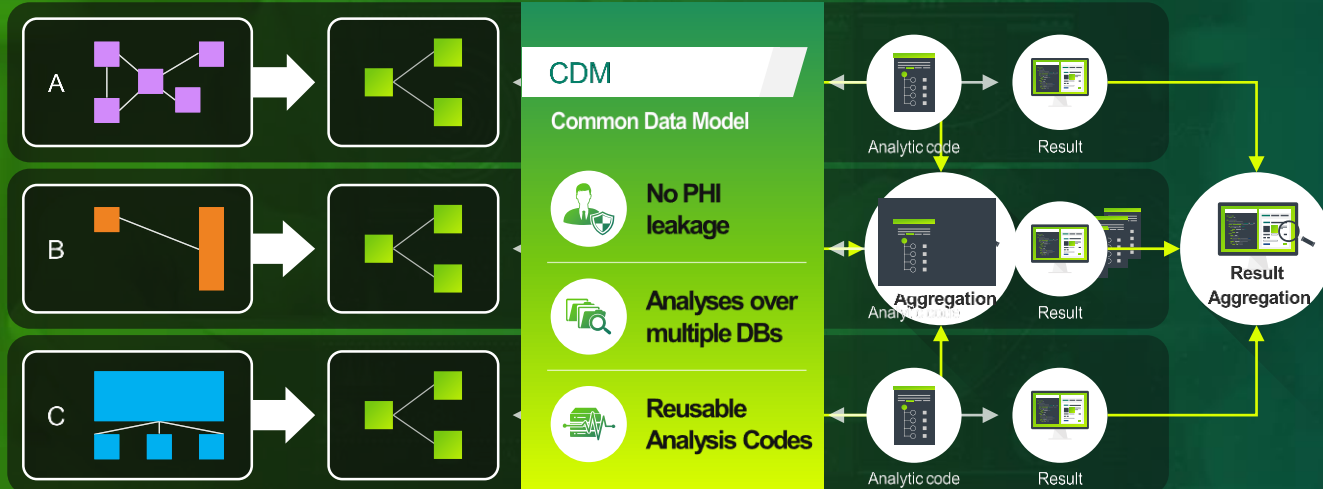


Human Nature

- Fear of being used against
- Unwilling to provide confidential and/or proprietary data



Distributed Research Network



Observational Health Data Sciences and Informatics, OHDSI

OHDSI has been established as a multi-stakeholder, interdisciplinary collaborative to create open-source solutions for large-scale analytics using the OMOP CDM.

Collaborators



Objectives

Innovation : we encourage fresh methodological approaches from disruptive thinking

Reproducibility : we sought reproducible and well-calibrated evidence avoiding bias

Community : everyone is welcome to participate in OHDSI

Collaboration : we work collectively

Openness : all our community's process open

Beneficence : we seek to protect the rights of individuals and organizations

OHDSI

- Thousands of researchers from > 200 institutions over the world

International Standardized Platform

- OMOP CDM
- Standardized vocabulary
- International collaborative researches

OMOP CDM

- > 450 Databases from 41 countries
- > 900M population
- 12% of world population

OHDSI Tools

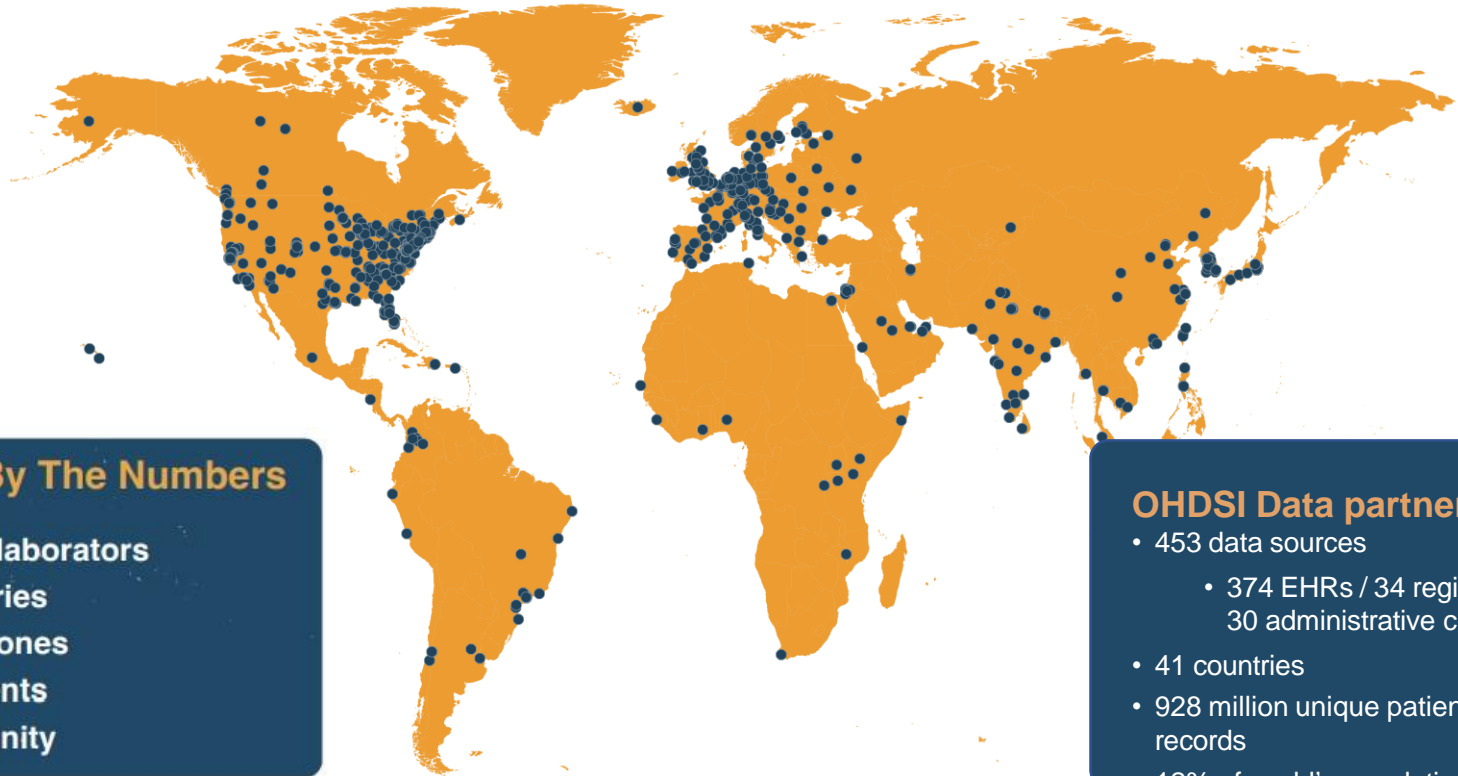
- > 150 open source tools developed or under development

Developer community

- > 18,700 discussions on > 3,250 topics
- > 3,000 users



Map of collaborators



OHDSI By The Numbers

- 3,266 collaborators
- 80 countries
- 21 time zones
- 6 continents
- 1 community

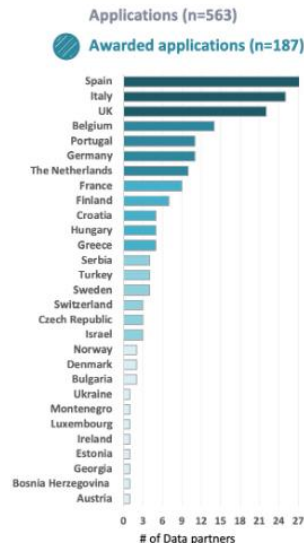
OHDSI Data partners

- 453 data sources
 - 374 EHRs / 34 registries / 30 administrative claims
- 41 countries
- 928 million unique patient records
- 12% of world's population



Mission: to reduce the time needed to provide answers in real world, health research.

- Developing the required infrastructure in a federated network at scale across Europe
- Collaboration on research methodologies
- Education in an open science collaboration





Data Analysis and Real-World Interrogation Network

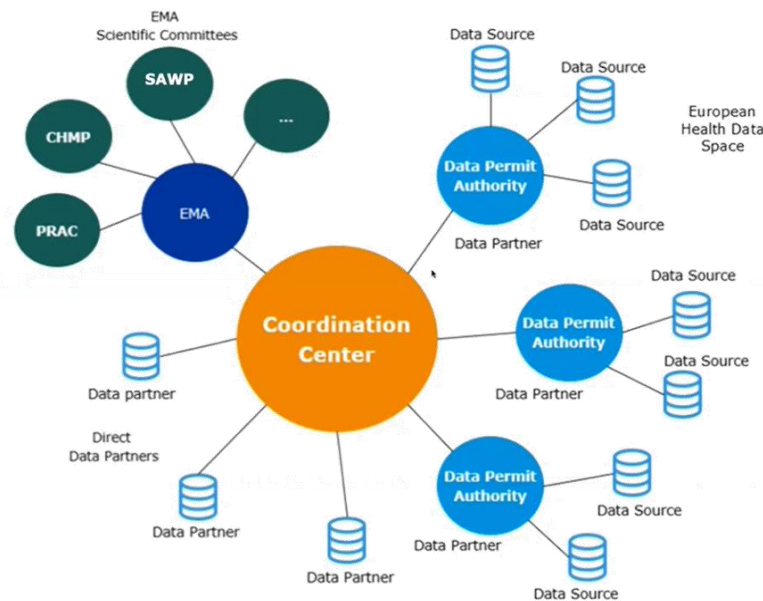


DARWIN EU® is a federated **network of data, expertise and services** that supports better decision-making throughout the product lifecycle by generating reliable **evidence from real world healthcare data**

The European Medicines Agency (EMA) and the [European Medicines Regulatory Network](#)

FEDERATED NETWORK PRINCIPLES

- Data stays **local**
- **Use of Common Data Model** (where applicable) to perform studies in a timely manner and increase consistency of results



Korea CDM network in Feb. 2016



기업 정부기관



병원



의료기관외부
기업, 정부기관의
개발자, 연구자, 일반인



의료기관 내부/외부
임상의사

Come in We're
OPEN



주요 테이블	건수 (2015.4월)
환자기본정보 테이블	281만 4569건
외래 내역 테이블	2079만 829건
입원 내역 테이블	220만 8852건
환자 진단 내역 테이블	2471만 8757건
검사결과 내역 테이블	2억 8660만 2345건
약 처방 테이블	1억 3484만 3408건



가천대길병원
Gachon University Gil Hospital

**Only 2 hospitals
had CDMs**

연구중심병원

1유닛: 수요자 요구 맞춤형 면역질환 임상증개연구 플랫폼 구축 및 확산
4주관: 면역질환 임상 빅데이터 기반 임상개발 가속화 ROD 서비스 사업화

최종목표

표준화 임상데이터 기반 Real Time ROD 서비스 개발 및 제공

연구목표

표준기반 임상빅데이터 구축 및 공 유 네트워크 확대	다기관 임상데이터 분석 서비스 앱 연계 플 랫폼 구축	RT-ROD 분석 서비스 앱 개발 및 R&D 생태계 구 축	RT-ROD 분석 서비스 고 도화 및 운영 최적화
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추진전략

데이터 파트너 모집 및 개인정보 보안 확 보	자생적인 수익 창출 시스템 확보	사용자 맞춤 분석모듈 개발 전략	서비스의 지속적인 운영 및 규모 확대
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연구내용

<ul style="list-style-type: none"> • 병원 임상데이터를 국제 표준기반 공통데이터 모델로 구축 및 개정 • 신규 참여기관의 임상자료를 표준 공통데이터모델로 구축/운영/유지 지원 	<ul style="list-style-type: none"> • OHDSI 플랫폼을 기반으로 한 다기관 임상빅데이터 분석 플랫폼 분석 및 활용 • 국외 선형 플랫폼 기반 한국형 다기관 데이터분석 플랫폼 구축 및 운영 	<ul style="list-style-type: none"> • 제약회사 및 의료기기 업체 대상 R&D 서비스 모델 수요 조사 • 서비스 모델별 연구분석 설계 및 모듈화에 따른 자체 분석 서비스 앱 개발 • 독립된 외부 개발자들도 분석 서비스 앱을 개발할 수 있는 서비스 앱 개발 환경 구축 	<ul style="list-style-type: none"> • RT-ROD 서비스 이용절차, 과금체계 수립 및 포털 구축 • RT-ROD 분석 앱 스토어 확장 및 고도화 • 운영 및 관리를 위한 지속적인 시스템 모니터링, 버전관리, 품질관리, 유지보수 수행 • 국외 네트워크와의 연계
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June 2017

Korean OHDSI network: 14 organizations



CDM Projects in Korea

1st Project ('18~ '20)

- **Purpose**

- Establishment of Nation-wide CDM data network
- Development of Distributed medical data analysis platform (FeederNet)

- **Budget** : 8.92million

- **Period** : 2018~2020 (3 years)

- **Participating institutions** : 30 institutions (23 hospitals / 7 companies)

2nd Project ('19~ '22)

- **Purpose**

- Expansion of CDM data network
- Sophistication of CDM analytic process and platform

- **Budget** : 3.12million

- **Period** : 2019~2022 (4 years)

- **Participating institutions** : 15 institutions (13 hospitals / 2 companies)

CDM Data Network in Korea

Data Network of 62 Hospitals (76M patients), 3 National Claims

No.	Name of Data Partner (Eng)	Type of Data	# Unique Patients	No.	Name of Data Partner (Eng)	Type of Data	# Unique Patients
1	Gachon University Gil Medical Center	EHR	1,709,983	33	Seoul National University Hospital	EHR	3,240,850
2	The Catholic University of Korea, Seoul ST. Mary's Hospital	EHR	3,212,915	34	Asan Medical Center	EHR	4,896,016
3	The Catholic University of Korea, Yeouido ST. Mary's Hospital	EHR	2,279,292	35	Chungnam National University Sejong Hospital	EHR	94,562
4	The Catholic University of Korea, Uijeongbu ST. Mary's Hospital	EHR	961,049	36	Soonchunhyang University Hospital (Gumi)	EHR	632,252
5	The Catholic University of Korea, ST. Vincent's Hospital	EHR	1,102,630	37	Soonchunhyang University Hospital (Bucheon)	EHR	1,301,117
6	Gangnam Severance Hospital	EHR	1,661,794	38	Soonchunhyang University Hospital(Seoul)	EHR	1,098,041
7	Kyung Hee University Hospital At Gangdong	EHR	810,031	39	Soonchunhyang University Hospital (Chonan)	EHR	987,701
8	Kangdong Sacred Heart Hospital	EHR	1,194,685	40	Ajou University Hospital	EHR	2,873,443
9	Kangbuk Samsung Hospital	EHR	1,472,253	41	Severance Hospital	EHR	3,605,088
10	Gangneung Asan Hospital	EHR	915,643	42	Wonju Severance Christian Hospital	EHR	1,050,538
11	Kangwon National University Hospital	EHR	553,708	43	Yongin Severance Hospital	EHR	291,349
12	Konkuk University Medical Center	EHR	1,063,104	44	Ulsan University Hospital	EHR	400,609
13	Konyang University Hospital	EHR	555,005	45	Wonkwng University Hospital	EHR	837,461
14	Kyungpook national university hospital	EHR	1,324,716	46	Ewha Womans University Medical Center (Mokdong)	EHR	1,667,671
15	Gyeongsang National University Hospital	EHR	626,663	47	Ewha Womans University Medical Center (Seoul)	EHR	
16	Kyung Hee University Medical Center	EHR	1,168,640	48	Incheon Sejong Hospital	EHR	219,834
17	Korea University Guro Hospital	EHR	2,106,320	49	Inha University Hospital	EHR	1,978,186
18	Korea University Ansan Hospital	EHR	1,537,665	50	Chonnan National University Hospital	EHR	1,802,241
19	Korea University Anam Hospital	EHR	1,891,753	51	Jeonbuk National University Hospital	EHR	1,466,713
20	National Cancer Center	EHR	103,573	52	Gyeongsang National University Changwon Hospital	EHR	286,642
21	National Health Insurance Service Ilsan Hospital	EHR	1,427,424	53	Chungnam National University Hospital	EHR	645,922
22	Catholic Kwandong University International ST. Mary's Hospital	EHR	403,989	54	Kyungpook National University Chilgok Hospital	EHR	642,572
23	Dankook University Hospital	EHR	1,153,345	55	Korea Institute of Radiological & Medical Sciences	EHR	487,965
24	Daegu Catholic University Medical Center	EHR	906,587	56	Hanyang University Seoul Hospital	EHR	1,783,111
25	Dongguk University Medical Center	EHR	695,280	57	Chonnam National University Hwasun Hospital	EHR	504,073
26	Myongji Hospital	EHR	882,646	58	The Catholic Univ. of Korea, Eunpyeong ST. Mary's Hospital	EHR	436,645
27	Myongji Hospital (Jecheon)	EHR	219,574	59	Keimyung University Daegu Dongsan Hospital	EHR	122,526
28	Pusan National University Hospital	EHR	791,935	60	Keimyung University Dongsan Medical Center	EHR	491,805
29	Bucheon Sejong Hospital	EHR	416,686	61	SMG-SNU Boramae Medical Center	EHR	1,849,638
30	Seoul National University Bundang Hospital	EHR	2,006,000	62	Presbyterian Medical Center (예수병원)	EHR	1,412,042
31	Cha University Bundang Medical Center	EHR	2,363,386	63	Health Insurance Review & Assessment Service	Claim	56,579,726
32	samsungmedical Center	EHR	3,575,923	64	Health Insurance Review & Assessment Service	Claim	9,822,577
				65	National Health Insurance Service	Claim	55,651,898

OHDSI Korea Leadership Meeting

- A total of **21 OHDSI Korea Leadership Meetings** have been held since 2017
- At this meeting, Issues, policies, and governance were discussed to establish CDM network and promote collaborative research



Research border-Free Zone (RFZ)

Purpose

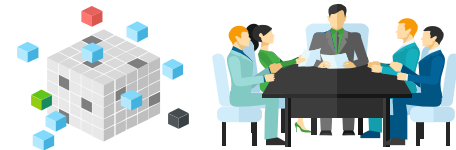
Mutual Cooperation Agreement for Multi-center Collaborative Research using OMOP-CDM

Contents of Agreement

1. Reciprocal unlimited access to CDM of RFZ hospitals
2. Single IRB

RFZ Inauguration

Korea, Dec 13, 2019



Research border-Free Zone (RFZ)

30 Hospitals are participating in RFZ

No.	기관명	MOU 날짜	진행 현황
1	아주대병원	2019.12.13	완료
2	강원대병원	2019.12.13	완료
3	원광대병원	2019.12.13	완료
4	전북대병원	2019.12.13	완료
5	세종부천병원	2019.12.13	완료
6	메디플렉스세종병원	2019.12.13	완료
7	대구가톨릭대병원	2020.03.11	완료
8	부산인제백병원	2020.03.25	완료
9	강동경희대병원	2020.03.27	완료
10	강동성심병원	2020.04.08	완료
11	건양대학교병원	2020.06.23	완료
12	부산대학교병원	2020.09.15	완료
13	경희의료원	2021.07.05	완료
14	이화여대서울병원	2021.07.14	완료
15	명지병원	2021.07.16	완료

No.	기관명	MOU 날짜	진행 현황
16	이화여대목동병원	2021.07.29	완료
17	경상대학교국립병원	2022.02.15	완료
18	창원경상국립대학교병원	2022.02.23	완료
19	제천명지병원	2022.08.17	완료
20	순천향대학교서울병원	2022.12.01	완료
21	순천향대학교구미병원	2022.12.01	완료
22	순천향대학교부천병원	2022.12.01	완료
23	순천향대학교천안병원	2022.12.01	완료
24	충남대학교병원	2022.11.11	완료
25	세종충남대학교병원	2022.11.11	완료
26	한국원자력의학원	2022.04.21	완료
27	울산대학교병원	2022.04.03	완료
28	계명대학교 동산병원	2022.06	완료
29	대구동산병원	2022.06	완료
30	경주동산병원	2022.06	완료

Real-time CDM Updates

29 Hospitals are converting CDM daily/weekly/monthly/quarterly

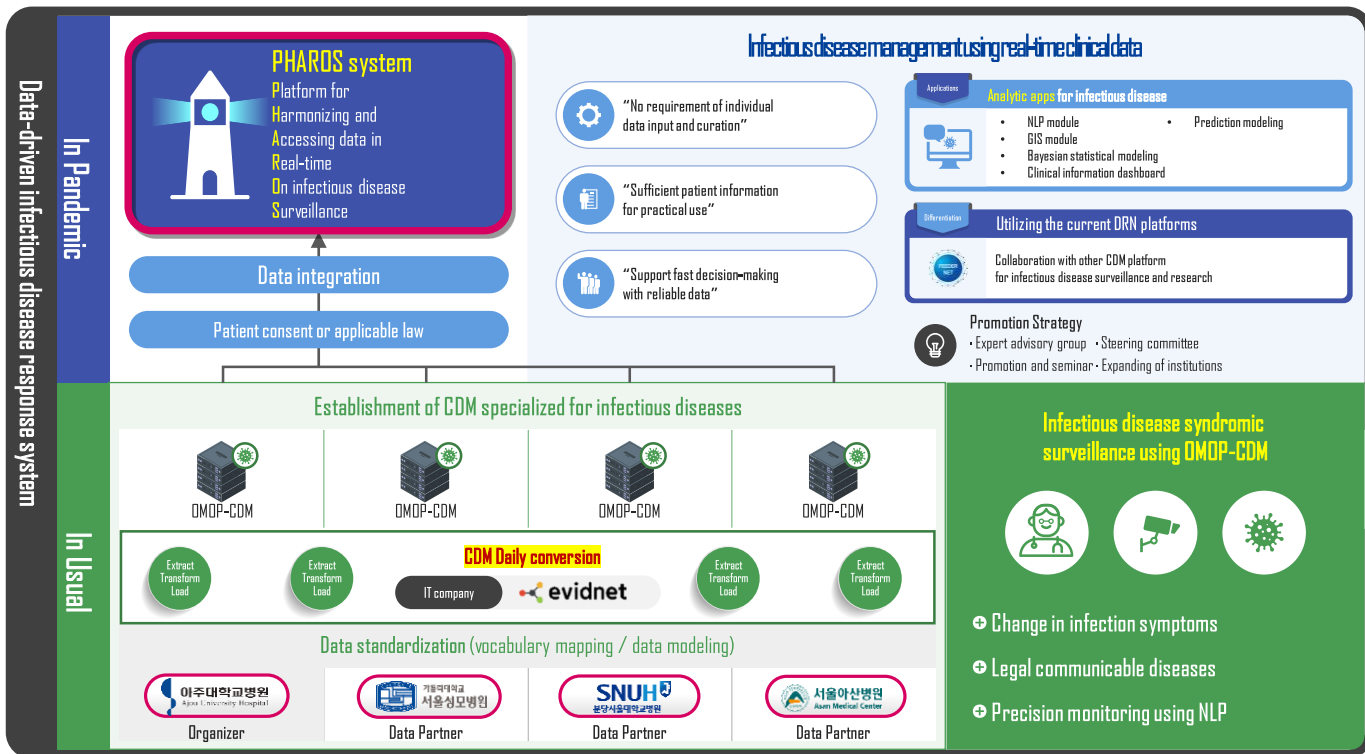
No.	기관명	변환주기
1	인천세종병원	Daily
2	부천세종병원	Daily
3	이화여대 목동병원	Weekly
4	이화여대 서울병원	Weekly
5	국민건강보험공단 일산병원	Weekly
6	원광대학교병원	Weekly
7	경북대학교병원	Weekly
8	철곡경북대학교병원	Weekly
9	아주대학교병원	Weekly
10	대구가톨릭대학교병원	Weekly
11	가천대 길병원	Weekly
12	강릉 아산병원	Weekly
13	경상국립대학교병원	Weekly
14	강동성심병원	Monthly
15	강원대학교병원	Monthly
16	강동경희대학교병원	Monthly
17	원주세브란스기독병원	Monthly
18	단국대학교병원	Monthly

No.	기관명	변환주기
19	명지병원	Monthly
20	원자력병원	Monthly
21	강북삼성병원	Monthly
22	국제성모병원	Monthly
23	창원경상국립대학교병원	Monthly
24	제천명지병원	Monthly
25	동국대학교 일산병원	Quarterly
26	경희의료원	Monthly
27	계명대학교 대구동산병원	Weekly
28	계명대학교 동산병원	Weekly
29	예수병원	Monthly
30	분당차병원	In progress
31	순천향서울병원	In progress
32	순천향부천병원	In progress
33	순천향천안병원	In progress
34	순천향구미병원	In progress
35	전남대병원	In progress
36	화순전남대병원	In progress

PHARDS: Application of CDM on Infectious Disease Surveillance

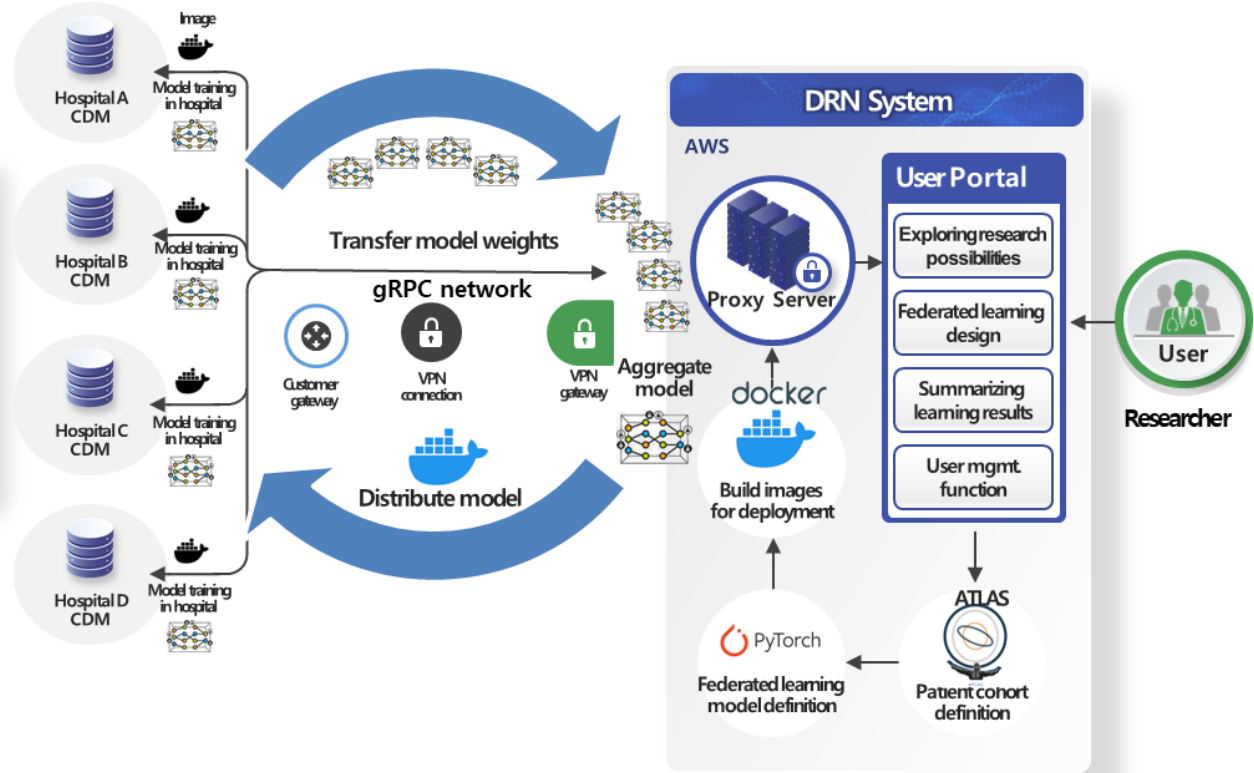
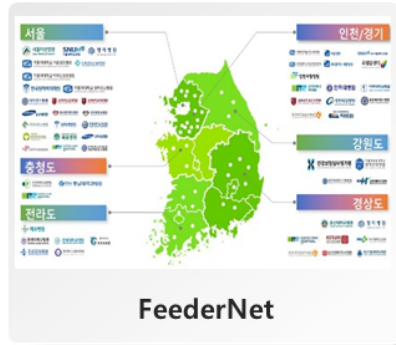
PHARDS - Integrated infectious disease clinical information management system

Platform for Harmonizing and Accessing data in Real-time On infectious disease Surveillance



Federated learning system on FeederNet

Overview







Community Dashboard



- Publications
- Media
- Ehden Courses
- Network Studies
- Phenotype Library
- Opportunities

Welcome!
About the OHDSI
Community Dashboard

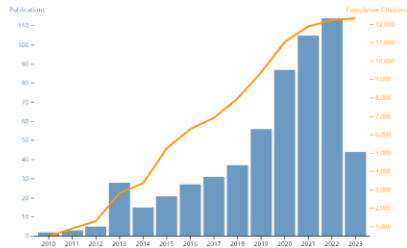
Observational Health Data Sciences and Informatics (OHDSI) is an open science community. OHDSI's mission is to improve health by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care. The OHDSI Community Dashboard is a tool to highlight the progress we are making toward this mission and the collective accomplishments and impact of our community. A goal of the dashboard is help our community identify how members can see the OHDSI eco-system as an interconnected system to make a larger impact. We hope you find these tools useful staying up to date with all the activities in OHDSI as well as finding new colleagues in our community to collaborate with. Dashboards are developed to represent various aspects of the OHDSI community activities.

Publications & Cumulative Citations

Summary

575
PubMed Manuscripts

3401
PubMed Authors



EXPLORE

Working Groups

Summary

28
Total Working Groups

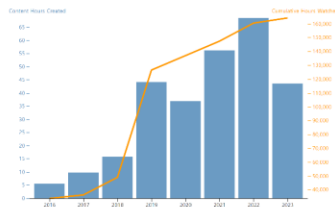
3000+
Members

YouTube

Summary

543
Videos Published

164K+
Hours Watched



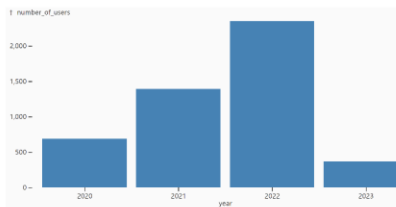
EXPLORE

Ehden Learning

Summary

25
Number of Courses

3397
Course Completions



EXPLORE

Building A Healthier World Together!





Q&A

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- Tel : +82-31-219-4471