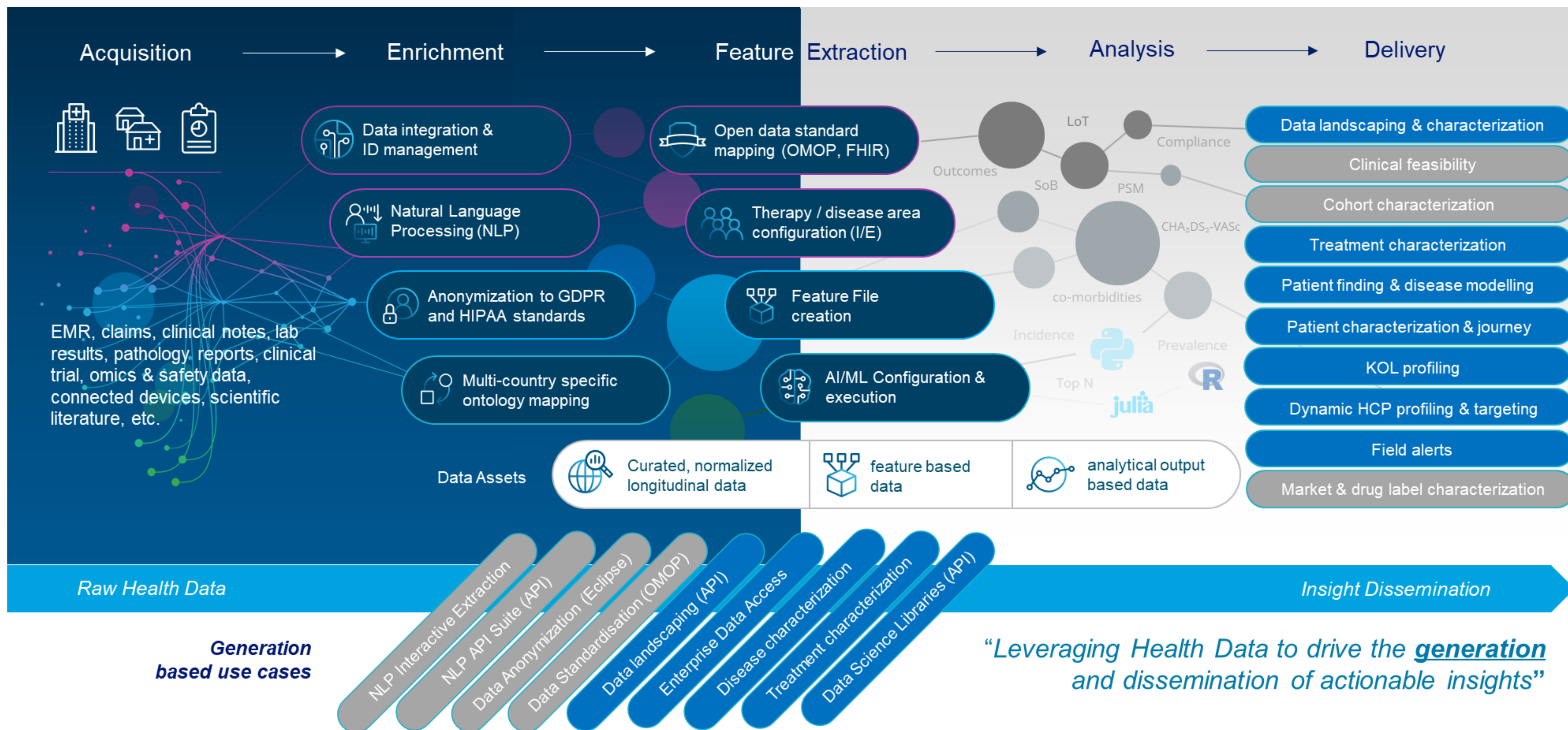# Bringing to life MHS Research via user-centric informatics & analytics
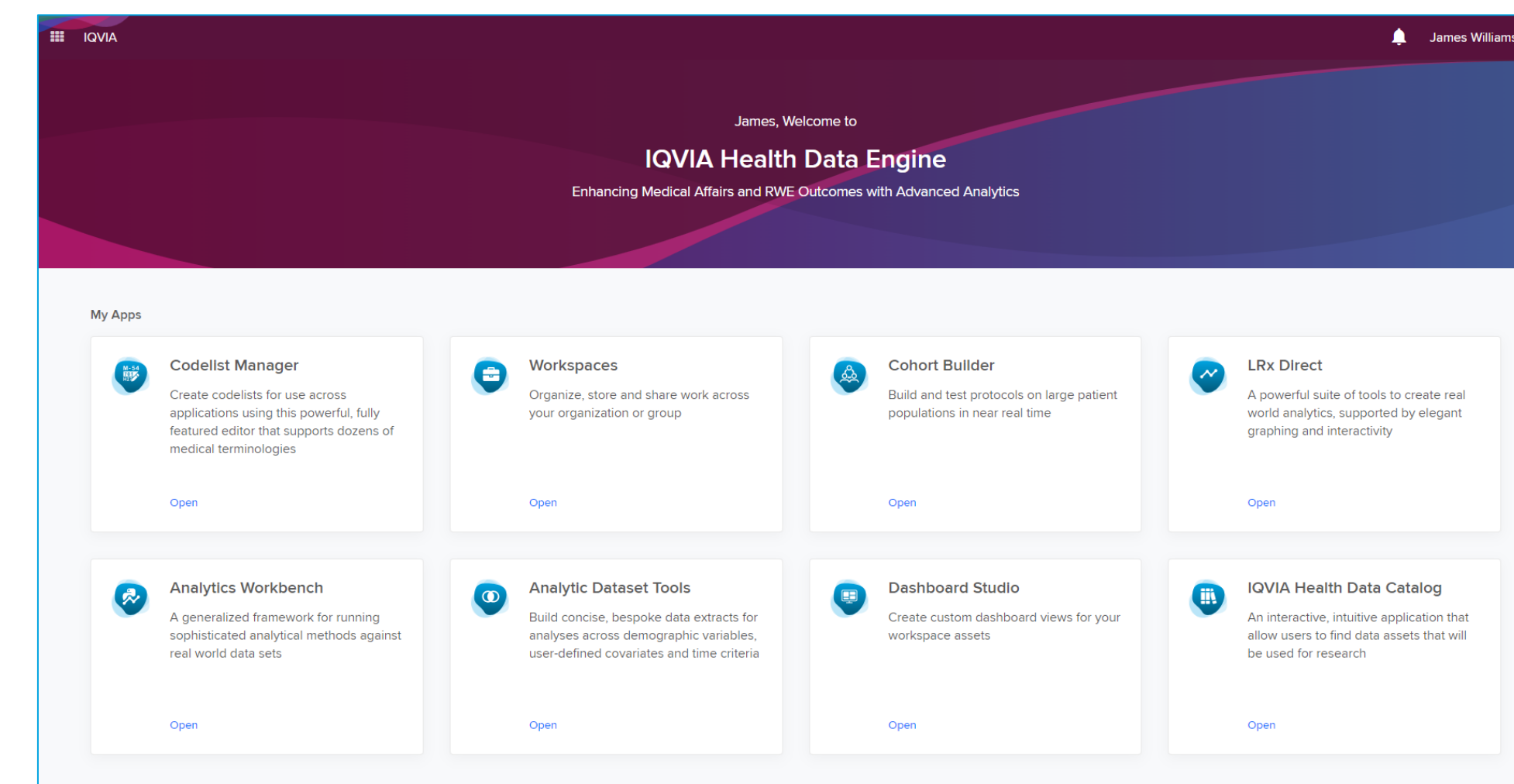
A data transformation, analytics, & artificial intelligence solution hosted within the Military Health System Information Platform (MIP)

Health Data Engine (formerly E360®) generates actionable insights from medical data

Acquisition → Enrichment → Feature Extraction → Analysis → Delivery

Acquisition: EMR, claims, clinical notes, lab results, pathology, reports, clinical trial, omics & safety data, connected devices, scientific literature, etc.

Enrichment:
- Data integration & ID management
- Natural Language Processing (NLP)
- Anonymization to GDPR and HIPAA standards
- Multi-country specific ontology mapping

Feature Extraction:
- Open data standard mapping (OMOP, FHIR)
- Therapy / disease area configuration (I/E)
- Feature File creation
- AI/ML Configuration & execution

Analysis: LoT, Compliance, Outcomes, SoB, PSM, CHA₂DS₂-VASc, co-morbidities, Incidence, Prevalence, Top N

Delivery:
- Data landscaping & characterization
- Clinical feasibility
- Cohort characterization
- Treatment characterization
- Patient finding & disease modelling
- Patient characterization & journey
- KOL profiling
- Dynamic HCP profiling & targeting
- Field alerts
- Market & drug label characterization

Data Assets:
- Curated, normalized longitudinal data
- feature based data
- analytical output based data

Raw Health Data → Insight Dissemination

Generation based use cases: NLP Interactive Extraction, NLP API Suite (API), Data Anonymization (Eclipse), Data Standardisation (OMOP), Data landscaping (API), Enterprise Data Access, Disease characterization, Treatment characterization, Data Science Libraries (API)

*"Leveraging Health Data to drive the **generation** and dissemination of actionable insights"*

IQVIA's Government Solutions team drives Defense Health Agency's Virtual Data Environment (VDE)

- Supports the DHA's need for an innovative and robust self-service, low-code/no-code research environment to actualize internal Military Health System (MHS) research, external party researcher access and predictive analytics capabilities

- Provides a research-ready, de-identified data asset transformed into the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) and an integrated analytics platform to facilitate data insights and predictive analytics

- Integrates fully within the MHS Information Platform (MIP) to analyze DOD health and MIP data securely, faster, and more efficiently, resulting in improved data analytics and data science capabilities within the MIP

- Delivers strategic and operational solution to develop a self-service research environment that can house outpatient, inpatient, pharmacy, laboratory, radiology, and private sector claims data to better understand cost-effectiveness

- Expands accessibility of DoD health/MIP data to researchers via an integrated analytics platform that actively works to ensure that patient privacy is protected

- Allows for faster & wider data analysis, producing actionable, impactful clinical research changes such as expanded accessibility to student researchers at the Uniformed Services University of the Health Sciences (USUHS)

Presented at the 2023 Military Health Systems Research Symposium (MHSRS) in Kissimmee, Florida

Health Data Engine is the foundation for insight generation

James, Welcome to
IQVIA Health Data Engine
Enhancing Medical Affairs and RWE Outcomes with Advanced Analytics

My Apps
- **Codelist Manager** — Create codelists for use across applications using this powerful, fully featured editor that supports dozens of medical terminologies
- **Workspaces** — Organize, store and share work across your organization or group
- **Cohort Builder** — Build and test protocols on large patient populations in near real time
- **LRx Direct** — A powerful suite of tools to create real world analytics, supported by elegant graphing and interactivity
- **Analytics Workbench** — A generalized framework for running sophisticated analytical methods against real world data sets
- **Analytic Dataset Tools** — Build concise, bespoke data extracts for analyses across demographic variables, user-defined covariates and time criteria
- **Dashboard Studio** — Create custom dashboard views for your workspace assets
- **IQVIA Health Data Catalog** — An interactive, intuitive application that allow users to find data assets that will be used for research

Key functionality

Dynamic Query & Extraction Applications
Identify your required cohorts in less time.

Innovative Method Driven Applications
Accelerate insights into patient trends, characteristics and outcomes.

Seamless Data Sharing
Gain immediate access and connectivity.

Improved Collaboration
Enhanced team collaboration through asset sharing, intuitive query workflows and report distribution.

IQVIA Health Data Engine
Gain robust, and simple access to health data across your organization to transform the way teams analyze and generate insights across different workflows.

Powerful Data Investigations
Quickly determine study data appropriateness through IQVIA's intuitive query and visualization tools. Analyse product viability, identify challenges and optimize analysis strategies

Data Science – Made Simple
Accelerate insights into patient characteristics and trends through innovative scientific method driven analytics. Enhanced team collaboration through integrated asset sharing, intuitive query workflows and report distribution.

Synergy of Client and IQVIA Expertise
Unlock and integrate your analysis through innovative, self-managed applications and seamless data sharing. A perfect combination of client and IQVIA analytic skills, tools and expertise.

Demographic and Scientific Analytics

Health Data Engine reporting capabilities include both descriptive analytics within Cohort Builder and scientific method analysis via our Analytics Workbench.

Scientific Methods Library

- Data Exploration
- Patient Characteristic Report
- Incidence/Prevalence
  - Chronic Conditions
  - Acute Conditions
- Prescription Modelling
  - Patients on Drugs
  - Source of Business
  - Line of Therapy
  - Persistence and Compliance
  - Comedication Analysis
  - Dose Calculation
  - Line of Therapy
- Matrix Report
- Undiagnosed Patients
- Propensity Score Match
- Kaplan Meier
- Cox Proportional Hazards
- Charlson Comorbidity Index

- CHA2DS2-VASc Score
- Classical Logistic Regression
- Classical Linear Regression
- Signal Detection (Disproportionality Analysis)
- Independent T-test
- Welch's T-test
- Wilcoxon-Mann-Whitney U Test
- One-Way ANOVA
- Welch's Anova
- Kruskal-Wallis Test
- Paired T-test
- Levene's Test
- Chi-square MxN Test
- Fisher Exact 2x2 Test
- Two-Way ANOVA
- Prescriber Analysis HML