# Data Virtualization for Research Data Access Training Course

Professional Development Training Course Outline

| | | | |
|---|---|---|---|
| **Category** | Research and Data Analysis | **Duration** | 5 Days |
| **Base Fee** | $1,500 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

In today’s fast-evolving digital research landscape, data virtualization has emerged as a game-changer in providing seamless, secure, and real-time data access across disparate sources without physical data movement. As researchers, analysts, and data scientists seek faster, scalable, and cost-effective solutions, data virtualization enables unified data integration, enhanced agility, and accelerated research outcomes. Data Virtualization for Research Data Access Training Course offers a comprehensive guide to understanding and implementing data virtualization techniques for efficient research data management and collaboration.

This course is tailored for professionals seeking advanced knowledge in data abstraction, metadata management, data governance, and cloud-based data integration. With a blend of practical case studies, hands-on exercises, and expert insights, learners will explore how virtual data layers support enhanced decision-making and real-time data exploration. Through 8 intensive modules, participants will gain skills necessary to transform how research data is accessed, shared, and analyzed across institutional and cloud environments.

## Programme Curriculum

**Data Virtualization for Research Data Access Training Course**

**Introduction**

In today’s fast-evolving digital research landscape, data virtualization has emerged as a game-changer in providing seamless, secure, and real-time data access across disparate sources without physical data movement. As researchers, analysts, and data scientists seek faster, scalable, and cost-effective solutions, data virtualization enables unified data integration, enhanced agility, and accelerated research outcomes. Data Virtualization for Research Data Access Training Course offers a comprehensive guide to understanding and implementing data virtualization techniques for efficient research data management and collaboration.

This course is tailored for professionals seeking advanced knowledge in data abstraction, metadata management, data governance, and cloud-based data integration. With a blend of practical case studies, hands-on exercises, and expert insights, learners will explore how virtual data layers support enhanced decision-making and real-time data exploration. Through 8 intensive modules, participants will gain skills necessary to transform how research data is accessed, shared, and analyzed across institutional and cloud environments.

**Course Objectives**

1. Understand the fundamentals of data virtualization and its impact on research workflows
2. Explore the architecture of data virtualization platforms like Denodo and Cisco DV
3. Apply real-time data integration techniques across diverse data environments
4. Implement metadata-driven access to enhance data discoverability
5. Address data quality, security, and compliance challenges in virtualized environments
6. Optimize data governance strategies using virtualization
7. Enable self-service analytics for researchers and data consumers
8. Integrate data virtualization with cloud platforms (AWS, Azure, Google Cloud)
9. Utilize AI/ML tools in virtualized research data environments
10. Learn semantic layer modeling for improved query performance
11. Build scalable data access strategies using virtualization
12. Examine case studies on academic research and scientific data sharing
13. Develop action plans for virtualized data ecosystems in research institutions

**Target Audience**

1. Academic researchers
2. Research data managers
3. Data scientists
4. Institutional IT teams
5. Government research analysts
6. Healthcare data specialists
7. Graduate and PhD students
8. Research administrators

**Course Duration:** 5 days

**Course Modules**

**Module 1: Introduction to Data Virtualization in Research**

- Definition and benefits of data virtualization
- Key components and technologies
- Challenges of traditional data access methods
- Importance in modern research environments
- Introduction to Denodo and other platforms
- **Case Study**: Harvard University’s Virtual Research Hub

**Module 2: Architecture of Data Virtualization Platforms**

- Components of a data virtualization architecture
- Virtual data layer overview
- Metadata repository and catalog management
- Query optimization in virtualization engines
- Integration with legacy and cloud systems
- **Case Study**: Stanford's Hybrid Cloud Integration Model

**Module 3: Real-Time Data Integration Techniques**

- Connecting structured and unstructured sources
- Federated queries vs. ETL
- Data abstraction and transformation layers
- On-demand data provisioning for research
- Caching and performance tuning
- **Case Study**: Real-time Genomic Data Access in Bioinformatics

**Module 4: Metadata and Semantic Layer Management**

- Role of metadata in virtualization
- Designing semantic models for research data
- Ontologies and taxonomies
- Data cataloging and lineage
- Metadata-driven query acceleration
- **Case Study**: European Open Science Cloud Metadata Framework

**Module 5: Data Governance and Security**

- Policy-based access control
- Masking and encryption in virtualized systems
- Role-based data access for researchers
- Compliance with GDPR, HIPAA, etc.
- Auditing and monitoring access
- **Case Study**: NIH Compliance Strategy for Virtual Data Systems

**Module 6: Self-Service and Advanced Analytics Enablement**

- Empowering researchers with self-service tools
- Connecting BI and visualization tools (Tableau, Power BI)
- Data wrangling and mashup techniques
- Creating reusable virtual views
- Democratizing data for interdisciplinary collaboration
- **Case Study**: Self-Service Analytics at University of Michigan

**Module 7: Cloud Integration and Scalability**

- Virtualization in hybrid and multi-cloud environments
- Connecting to AWS S3, Azure Data Lake, Google BigQuery
- Load balancing and distributed queries
- Scalability best practices
- Security and performance in cloud DV
- **Case Study**: CERN’s Cloud-Native Research Access Platform

**Module 8: Strategic Implementation and Future Trends**

- Planning DV implementation in research institutions
- Change management and stakeholder alignment
- ROI evaluation and KPIs
- Trends in AI-driven data virtualization
- Sustainability in digital research infrastructure
- **Case Study**: Oxford’s Journey to Full Data Virtualization

**Training Methodology**

- Instructor-led interactive lectures

- Hands-on lab sessions with Denodo/SAP DV
- Real-world case study discussions
- Group projects simulating institutional DV deployment
- Knowledge assessments and quizzes
- Capstone project for institutional implementation roadmap

**Register as a group from 3 participants for a Discount**

**Send us an email: info@fineskilltrainingcenter.org or call** *+254769199797*

***Certification***

*Upon successful completion of this training, participants will be issued with a globally- recognized certificate.*

***Tailor-Made Course***

*We also offer tailor-made courses based on your needs.*

**Key Notes**

**a.** The participant must be conversant with English.

**b.** Upon completion of training the participant will be issued with an Authorized Training Certificate

**c.** Course duration is flexible and the contents can be modified to fit any number of days.

**d.** The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

**e.** One-year post-training support Consultation and Coaching provided after the course.

**f.** Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

## Upcoming Scheduled Sessions

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 27 Nov 2026 | Online | $1,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $1,500 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $3,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $3,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $4,500 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |
| **23 Nov 2026** | 27 Nov 2026 | Physical | $6,000 |

Ready to enroll or request a customized program? Book online or contact us:

**Register Online Now**

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com