The objectives of this workshop are to:

- Generate knowledge in data integration and interoperability with experience in a controlled environment
- Interact with the different devices of the DIT-ECRI lab
- Identify how to use semantic standard terminologies in the interoperability process
- Understand how the HL7 messaging and HL7 CDA flow in an interoperability context, using an interoperability engine
- Understand the FHIR resources and interact with an FHIR server
- Learn the principles of DICOM standard
- Understand the role and practice with some tools of IHE
- Know the principles in data integration and data sharing
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| Jonathan Okereke | 14:00 - 15:30 | • Presentation  
|                  |            |   o Context of the workshop, a brief description of the context and the methodology and goals of the activity  
|                  |            |   • Theoretical Concepts  
|                  |            |   o Introduction to Data Integration.  
|                  |            |   o Medical Informatics Initiative  
|                  |            |   o Federated Health Information Exchange  
|                  |            |   o Data Sharing and Security  
|                  |            |     - Authentication  
|                  |            |     - Authorization  
|                  |            |     - DFN (Deutsches Forschungsnetz)  
|                  |            |   o Data privacy (GDPR §)  
|                  |            |   o Patient consent (GDPR §)  
|                  |            |   o Introduction to FHIR  
|                  |            |   o SMART on FHIR  

| Fernando Portilla | 15:45 - 17:15 | • HL7 V2 Messaging & HL7 V3 Documents  
|                  |              |   - Main components, parsing and sending an HL7 V2 Message. Understanding and validating an HL7 CDA Document.  
|                  |              | • Messaging HL7 V2  
|                  |              |   - Messaging structure  
|                  |              |   - Patient Demographics, ADT  
|                  |              |   - Order, ORM  
|                  |              |   - Results, ORU  
|                  |              |   - HL7 Parser  
|                  |              |   - Use cases  
|                  |              | • Clinical Documents HL7 CDA  
|                  |              |   - CDA Fundamentals  
|                  |              |   - Components  
|                  |              |   - CDA levels  
|                  |              |   - CDA Validator  
|                  |              |   - Use cases  
|                  |              | • HL7 FHIR  
|                  |              |   - Resources  
|                  |              |   - FHIR server  
|                  |              |   - REST operations  

Agenda
## Agenda

### DAY 2. SEMANTICS INTEROPERABILITY & DICOM, DATA INTEGRATION TECHNIQUES
May 14th

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| Fernando Portilla     | 14:00 - 15:30 | • Terminologies and semantic interoperability  
                        |             |   Use and application of clinical terminologies in interoperability, how to use it in HL7 Messaging, CDA documents, and HL7 FHIR  
                        |             |   - SNOMED CT  
                        |             |   - LOINC  
                        |             |   - Terminology Services in FHIR |
| Jonathan Okereke      | 15:45 - 17:15 | • DICOM  
                        |             |   - DICOM Standard/File Structure  
                        |             |   - DICOM Viewer(s)  
                        |             |   - DICOM Header/Metadata  
                        |             |   - PACS/RIS  
                        |             |   - DICOM ETL Process (Practical Session - Metadata to RDBMS Experiment)  
                        |             |   - Use case (Sharing DICOM images using NEXTCLOUD™)  
                        |             | • IHE - IHE PROFILES  
                        |             |   - PIX/PDQ  
                        |             |   - BPPC, APPC (XaCML)  
                        |             |   - ATNA  
                        |             |   - XDS.b and XDS.i  
                        |             |   - MHD  
                        |             |   - Use cases (Document/Image sharing, Consent Management)  
                        |             | • Data Integration Techniques  
                        |             |   - Medical Data Integration Architecture  
                        |             |   - ETL Pipeline (Extract, Transform, Load)  
                        |             |   - Data Lakes and Analytics  
                        |             |   - Pseudonymization techniques (GDPR §)  
                        |             |   - Consent management  
                        |             |   - Privacy-Preserving Record Linkage technique (PPRL) |