

## EHR Integration, FHIR & HL7 for Genomics — Hands-on

Build secure, interoperable pipelines that deliver genomic results directly into clinical systems. This hands-on module covers the FHIR Genomics Reporting ecosystem, mapping from VCF/JSON to FHIR resources, bridging HL7 v2/CDA, SMART on FHIR app patterns, CDS Hooks for clinical decision support, and operational governance (consent, audit, provenance, and access control) for production EHR integration.

### EHR Integration, FHIR & HL7 for Genomics

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[Session 1](#)

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#### FHIR Genomics Foundations

FHIR essentials & resources

[Patient/Specimen/Observation/DiagnosticReport](#)  
[Genomics Reporting IG \(overview\)](#) [profiles & extensions](#)

Legacy bridges

[HL7 v2 ORU^R01 mapping](#) [CDA to FHIR transforms](#)  
[LIS/LIMS integration](#)

EHR workflows

**ordering → reporting** **inbox/in-basket flows**  
**longitudinal updates**

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## **Mapping Pipelines & Terminologies**

VCF/JSON → FHIR mapping

**variants, CNVs, fusions** **references & assemblies**  
**provenance links**

Nomenclatures & coding

**HGVS/ClinVar IDs** **LOINC/SNOMED/ICD-10**  
**Gene/Transcript IDs**

Results & attachments

**PDF/HTML reports** **bundle transactions** **search &**  
**subscriptions**

### **Session 3**

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## **SMART on FHIR & CDS Hooks**

App patterns & UX

**launch/context passing** **patient & user scopes**  
**embedded vs standalone**

Decision support hooks

**order-select/order-sign** **cards & suggestions**  
**actionability rulesets**

Testing & sandboxes

**test servers & validators** **synthetic patients**  
**conformance checks**

**Session 4**

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## Security, Governance & Deployment

AuthZ/AuthN & privacy

**OAuth2/OIDC/SMART scopes** **data minimization** **de-identification**

Provenance, audit & consent

**Provenance/AuditEvent** **consent directives** **lifecycle policies**

Deployment & SRE

**APIs, queues & retries** **monitoring & alerts** **change control & SOPs**