**Agile Documents**

**Document 1- Definition of Done**

**Answer**

This document establishes the agreed-upon Definition of Done for the project. All team members must follow these criteria to ensure that work meets quality standards and delivers value consistently across all levels of the project.

*A user story is considered "Done" when all of the following criteria have been met:*

Functional Requirements

* Code developed for all functionality specified in the user story
* All acceptance criteria from the user story have been implemented
* All assumptions documented in the user story have been validated
* Edge cases and error handling have been addressed
* Feature functions correctly within the existing system

Code Quality

* Code follows project coding standards and style guide
* Unit tests written with minimum 85% code coverage
* All unit tests pass successfully
* Integration tests written and passing
* No critical or high bugs remain open
* Technical debt properly documented if any shortcuts taken
* Peer code review completed with all required changes addressed
* Static code analysis shows no critical or high issues
* Refactoring completed if necessary

Data & Model Requirements

* Data pre-processing pipeline correctly handles the required genetic data formats
* Model training scripts execute without errors
* Prediction accuracy meets minimum threshold
* Performance benchmarks meet or exceed defined targets
* Model explainability components generate appropriate visualizations
* Data privacy requirements implemented as specified

Testing & Validation

* Feature tested against all acceptance criteria
* QA testing completed on the feature
* All identified issues resolved or documented
* Feature verified on all target browsers/devices
* Feature tested with genetic data from all supported sources
* Accessibility requirements met and verified

Approvals & Documentation

* Feature demonstrated to and accepted by Product Owner
* Feature approved by UX designer for usability requirements
* Clinical domain expert has verified medical accuracy
* Documentation updated including:
* API documentation
* User guides (for applicable features)
* Technical specifications
* System architecture documentation (if modified)
* Knowledge transfer completed for complex features

*A sprint is considered "Done" when all of the following criteria have been met:*

Functionality & Integration

* All user stories in the sprint are "Done" per user story DoD
* Integrated features work together without conflicts
* Sprint builds without errors in the CI/CD pipeline
* System deployed to test environment that mirrors production
* All sprint features pass integration tests
* System-level regression tests pass

Sprint Review & Documentation

* Sprint demo prepared and presented to stakeholders
* Sprint retrospective completed and action items documented
* Sprint documentation finalized, including:
* Updated product backlog
* Sprint burndown chart
* Release notes for completed features
* Configuration changes documented
* All known issues are documented and prioritized for future sprints

Clinical & Regulatory Considerations

* Clinical validation tests for sprint features documented
* Any regulatory compliance issues addressed
* Data security and privacy review completed
* Bioethics review completed if applicable to sprint features

*A release is considered "Done" when all of the following criteria have been met:*

System Quality & Performance

* All sprints included in the release are "Done"
* End-to-end testing completed successfully
* Performance testing completed (load, stress, and endurance tests)
* Security testing completed with no critical vulnerabilities
* System meets all non-functional requirements (performance, scalability, availability)
* Production deployment checklist completed
* Rollback procedure documented and tested

Clinical Validation

* Clinical validation completed against historical patient data
* Accuracy metrics meet or exceed targets across all disease domains
* False positive/negative rates within acceptable thresholds
* Clinician usability testing completed with minimum satisfaction score of 4/5
* Comparison against current standard of care documented

Documentation & Knowledge Transfer

* Complete user documentation finalized
* Administrator documentation completed
* API documentation completed
* Training materials created
* Support team trained on the new release
* Release notes finalized

Regulatory & Compliance

* All regulatory requirements satisfied for target deployment
* Privacy impact assessment completed
* Data protection review completed
* Audit trail functionality verified
* Required certifications obtained or in process as planned

Business Approval

* Final demo completed for all stakeholders
* Product Owner approval obtained
* Executive sponsor sign-off received
* Go/No-go decision documented

**Document 2- Product Vision**

**Answer**

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| **Scrum Project Name:** | Personalized Medicine Prediction Tool | | |
| **Venue:** | Virtual with bi-weekly in-person sessions at Biotech Hub | | |
| **Date:** | **Start time:** | **End time:** | **Duration:** |
| **Client:** | National Healthcare System & Academic Medical Centres | | |
| **Stakeholder list:** | Clinical Directors from Partner Hospitals, Bioinformatics Research Team, Pharmaceutical Development Partners, Healthcare AI Ethics Committee, and Regulatory Affairs Specialists. | | |

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| **Scrum Team** | | |
| **Role** | **Name** | **Contact** |
| **Scrum Master:** |  |  |
| **Product Owner:** |  |  |
| **Scrum Developer 1:** |  |  |
| **Scrum Developer 2:** |  |  |
| **Scrum Developer 3:** |  |  |
| **Scrum Developer 4:** |  |  |
| **Scrum Developer 5:** |  |  |

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| **Vision:** Transform healthcare delivery through AI-powered personalized medicine, enabling clinicians to prescribe the right treatment to the right patient at the right time based on their unique genetic profile. | | | |
| **Target Group** | **Needs** | **Product** | **Value** |
| Market Segment being addressed here is:  - Healthcare providers (hospitals, clinics, physicians)  - Precision medicine research centres  - Pharmaceutical companies developing targeted therapies  - Health insurance providers | The problem being solved is:  - Trial-and-error approach to medication selection  - High rates of adverse drug reactions  - Extended treatment timelines for patients  - Inefficient use of genetic data in clinical practice  - Lack of standardized interpretation of genomic markers | The product is:  An AI-driven clinical decision support system that analyses individual genetic data to predict treatment responses across multiple disease domains.  What makes it desirable and special is:  - Multi-omics integration  - Explainable AI that provides transparency into recommendations  - Continuously learning system that improves with new data  - Seamless EHR integration  - Clinician-centric design focused on workflow integration | Benefits to the company with product is:  - Positions organization as leader in personalized medicine market  - Creates platform for ongoing pharmaceutical partnerships  - Establishes recurring revenue through SaaS model  - Generates valuable proprietary datasets  The business goals are:  - Achieve 30% market penetration in oncology by 3 Years  - Expand to 5+ disease domains within 24 months  - Generate ₹500M in annual recurring revenue by Year  - Secure 3+ pharmaceutical partnerships for companion diagnostics |
| The target users and customers are:  Oncologists, Cardiologists, Psychiatrists, Clinical pharmacists, Genetics counsellors, Hospital administrators, and Researchers in translational medicine | The benefits being provided are:  - Decreases time-to-effective-treatment by 65%  - Lowers per-patient costs by ₹1M annually  - Improves treatment adherence through better outcomes  - Reduces clinician cognitive load and decision fatigue  - Enables evidence-based personalized care | The feasibility of the product development:  Yes, the product is feasible to develop with considerations:  - Sufficient training data available from partner institutions  - Technical architecture leverages existing ML frameworks  - Development team has required domain expertise  - Regulatory pathway is defined with precedent products  - Integration standards exist for target EHR systems  - Timeline and budget are realistic for scope | The business model is:  - Revenue sharing model with pharmaceutical partners for companion diagnostics  - Additional services revenue for implementation and customization  - Value-based contracting option tied to demonstrated outcomes improvement |

**Document 3- User Stories**

**Answer**

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| **User Story No: 01** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A BIOINFORMATICIAN  I WANT TO UPLOAD AND PROCESS WHOLE GENOME SEQUENCING (WGS) FILES IN STANDARD FORMATS (FASTQ, BAM, VCF)  SO THAT I CAN ANALYSE A PATIENT'S COMPLETE GENETIC PROFILE FOR TREATMENT RECOMMENDATIONS. | | | |
| **BV:** Rs. 500 | | **CP:** 13 | |
| **Acceptance Criteria:**  - System accepts WGS files in FASTQ, BAM, and VCF formats  - Validation checks confirm file integrity and format compliance  - Processing status is displayed with progress indicators  - Summary statistics of processed genome are displayed upon completion  - Processing completes within 20 minutes for a standard 30x coverage genome | | | |

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| **User Story No: 02** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A CLINICAL RESEARCHER  I WANT TO CONNECT TO HOSPITAL ELECTRONIC HEALTH RECORD (EHR) SYSTEMS USING FHIR STANDARDS  SO THAT I CAN CORRELATE GENETIC DATA WITH ACTUAL TREATMENT OUTCOMES. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - System connects to EPIC, Cerner, and Allscripts EHR systems  - FHIR API endpoints for patient demographics, medications, and outcomes are functional  - Patient data is correctly matched with genetic profiles  - All data transfers are encrypted and HIPAA compliant  - Audit logs record all data access events | | | |

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| **User Story No: 03** | **Tasks:** 4 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT A UNIFIED PATIENT PROFILE THAT COMBINES GENETIC MARKERS AND CLINICAL HISTORY  SO THAT I CAN SEE ALL RELEVANT FACTORS AFFECTING TREATMENT DECISIONS IN ONE PLACE. | | | |
| **BV:** Rs. 200 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Profile displays key genetic markers relevant to treatment decisions  - Clinical history including past medications and outcomes is visible  - Information is organized in intuitive sections with clear labels  - Unified search function works across both genetic and clinical data  - Profile loads within 5 seconds | | | |
| **User Story No: 04** | **Tasks:** 5 | | **Priority:** Medium |
| **Value Statement:**  AS A DATA SCIENTIST  I WANT TO INCORPORATE REFERENCE DATA FROM PUBLIC GENOMIC DATABASES  SO THAT I CAN IMPROVE MODEL ACCURACY WITH LARGER TRAINING DATASETS. | | | |
| **BV:** Rs. 300 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Automated data pipelines connect to TCGA, GEO, and UK Biobank APIs  - Data is normalized to match internal data formats  - Data provenance is tracked and displayed  - Update frequency can be configured per source  - Integration errors are logged and trigger alerts | | | |

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| **User Story No: 05** | **Tasks:** 1 | | **Priority:** Medium |
| **Value Statement:**  AS A PHARMACOLOGIST  I WANT TO IMPORT STANDARDIZED PHARMACOGENOMIC DATA FROM NCBI AND PDB  SO THAT I CAN INCORPORATE KNOWN DRUG-GENE INTERACTIONS INTO TREATMENT RECOMMENDATIONS. | | | |
| **BV:** Rs.400 | | **CP:** 5 | |
| **Acceptance Criteria:**  - System imports and parses XML/JSON data from NCBI and PDB  - Drug-gene interactions are categorized by evidence level  - New entries are flagged for review if they conflict with existing data  - Weekly automatic updates with manual override option  - Complete audit trail of data sources | | | |

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| **User Story No: 06** | **Tasks:** 1 | | **Priority:** Highest |
| **Value Statement:**  AS AN ONCOLOGIST  I WANT TREATMENT RESPONSE PREDICTIONS SPECIFIC TO CANCER TYPE AND GENETIC PROFILE  SO THAT I CAN SELECT THERAPIES WITH THE HIGHEST PROBABILITY OF SUCCESS FOR EACH PATIENT. | | | |
| **BV:** Rs. 700 | | **CP:** 21 | |
| **Acceptance Criteria:**  - Model predicts response to at least 20 common cancer treatments  - Predictions are specific to cancer type and stage  - Accuracy exceeds 80% in validation datasets  - Confidence intervals are displayed with each prediction  - Processing completes in under 5 minutes | | | |

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| **User Story No: 07** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO SEE WHICH GENETIC MARKERS INFLUENCED EACH TREATMENT RECOMMENDATION  SO THAT I CAN UNDERSTAND AND TRUST THE SYSTEM'S REASONING. | | | |
| **BV:** Rs. 500 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Key influencing genetic markers are displayed for each prediction  - Visual indicators show the relative importance of each factor  - References to relevant clinical studies are provided  - Interactive elements allow exploration of specific markers  - Explanation is presented in clinician-friendly terminology | | | |

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| **User Story No: 08** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO VISUALLY COMPARE PREDICTED OUTCOMES FOR MULTIPLE TREATMENT OPTIONS  SO THAT I CAN EVALUATE TRADEOFFS AND DISCUSS OPTIONS WITH PATIENTS. | | | |
| **BV:** Rs. 300 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Side-by-side comparison of up to 5 treatment options  - Predicted efficacy displayed with confidence intervals  - Potential side effects ranked by likelihood based on genetic profile  - Cost comparison included where data is available  - Ability to generate patient-friendly version for shared decision making | | | |

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| **User Story No: 09** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO SEE GENETIC MARKERS INDICATING POTENTIAL ADVERSE DRUG REACTIONS  SO THAT I CAN AVOID PRESCRIBING MEDICATIONS LIKELY TO CAUSE HARMFUL SIDE EFFECTS. | | | |
| **BV:** Rs. 500 | | **CP:** 13 | |
| **Acceptance Criteria:**  - System flags medications with high adverse reaction risk based on genetic profile  - Severity and likelihood of reactions are clearly indicated  - Alternative medications with lower risk profiles are suggested  - Documentation includes relevant pharmacogenomic evidence  - Critical warnings are prominently displayed | | | |

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| **User Story No: 10** | **Tasks:** 3 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO SEE PREDICTED TIMELINES FOR TREATMENT RESPONSE  SO THAT I CAN SET APPROPRIATE EXPECTATIONS AND MONITORING SCHEDULES. | | | |
| **BV:** Rs. 200 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Timeline visualization shows expected response progression  - Key monitoring timepoints are highlighted  - Confidence intervals widen appropriately over time  - Alternative scenarios are available for various response levels  - Timeline adjusts based on patient characteristics (age, comorbidities) | | | |

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| **User Story No: 11** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A PHYSICIAN  I WANT A PERSONALIZED DASHBOARD SHOWING MY PATIENTS AND THEIR TREATMENT STATUSES  SO THAT I CAN EFFICIENTLY MANAGE MY PERSONALIZED MEDICINE WORKFLOW. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Dashboard displays patient list with key status indicators  - Filtering and sorting capabilities for various parameters  - Quick-access to recent and upcoming patient appointments  - Notification system for new predictions and critical alerts  - Dashboard loads in under 3 seconds | | | |

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| **User Story No: 12** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO ACCESS TREATMENT RECOMMENDATIONS ON MY MOBILE DEVICE DURING ROUNDS  SO THAT I CAN MAKE INFORMED DECISIONS AT THE POINT OF CARE. | | | |
| **BV:** Rs. 300 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Interface automatically adapts to smartphone and tablet screen sizes  - Critical information is visible without scrolling on mobile devices  - Touch targets are appropriately sized for finger interaction  - Performance is optimized for slower mobile connections  - Mobile sessions maintain security with appropriate timeouts | | | |

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| **User Story No: 13** | **Tasks:** 4 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO GENERATE PATIENT-FRIENDLY TREATMENT RECOMMENDATION SUMMARIES  SO THAT I CAN FACILITATE INFORMED CONSENT AND SHARED DECISION-MAKING. | | | |
| **BV:** Rs. 300 | | **CP:** 5 | |
| **Acceptance Criteria:**  - System generates summaries using plain language (8th grade reading level)  - Visual elements illustrate key concepts without medical jargon  - Customizable content based on physician preferences  - Available in multiple languages with appropriate cultural considerations  - Can be printed or sent electronically via patient portal | | | |

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| **User Story No: 14** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A PHYSICIAN  I WANT TO IMPORT THE MODEL RECOMMENDATIONS DIRECTLY INTO MY CLINICAL NOTES  SO THAT I CAN DOCUMENT MY DECISION-MAKING PROCESS EFFICIENTLY. | | | |
| **BV:** Rs. 400 | | **CP:** 5 | |
| **Acceptance Criteria:**  - One-click addition of recommendation summary to clinical notes  - Templates adapt to common EHR formats (EPIC, Cerner)  - Customizable text templates for different clinical scenarios  - Includes timestamp and version of recommendation algorithm  - Maintains all references to supporting evidence | | | |

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| **User Story No: 15** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS A HOSPITAL ADMINISTRATOR  I WANT TO CONFIGURE SYSTEM SETTINGS AND USER PERMISSIONS  SO THAT I CAN MANAGE ACCESS AND CUSTOMIZE THE PLATFORM FOR OUR INSTITUTION. | | | |
| **BV:** Rs. 100 | | **CP:** 5 | |
| **Acceptance Criteria:**  - User management interface with role-based permissions  - Department and specialty-specific configuration options  - Integration settings for local EHR and laboratory systems  - Customizable branding and terminology  - Audit logs of all administrative changes | | | |

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| **User Story No: 16** | **Tasks:** 4 | | **Priority:** High |
| **Value Statement:**  AS A PRIVACY OFFICER  I WANT GRANULAR ROLE-BASED ACCESS CONTROLS FOR GENETIC AND CLINICAL DATA  SO THAT I CAN ENSURE ONLY AUTHORIZED PERSONNEL ACCESS SENSITIVE INFORMATION. | | | |
| **BV:** Rs. 200 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Predefined roles with appropriate permission sets  - Custom role creation capabilities  - Access controls at both patient and data type levels  - Emergency access protocol with appropriate logging  - Automatic session timeouts for inactive users | | | |

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| **User Story No: 17** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A COMPLIANCE OFFICER  I WANT DETAILED AUDIT LOGS OF ALL SYSTEM ACTIVITIES  SO THAT I CAN MONITOR USAGE PATTERNS AND INVESTIGATE POTENTIAL BREACHES. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - All data access events are logged with timestamp, user, and action  - Logs are tamper-evident and cannot be modified by users  - Filtering and search capabilities for investigating specific activities  - Automated alerts for suspicious access patterns  - Log retention complies with regulatory requirements (minimum 7 years) | | | |

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| **User Story No: 18** | **Tasks:** 5 | | **Priority:** Medium |
| **Value Statement:**  AS A CLINICAL RESEARCHER  I WANT TO DE-IDENTIFY PATIENT DATA FOR RESEARCH AND MODEL IMPROVEMENT  SO THAT I CAN ADVANCE SCIENTIFIC KNOWLEDGE WHILE PROTECTING PRIVACY. | | | |
| **BV:** Rs. 300 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Automated removal of 18 HIPAA identifiers  - Configurable de-identification levels based on use case  - Re-identification risk assessment tools  - Preservation of statistically relevant data distributions  - Complete audit trail of de-identification processes | | | |

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| **User Story No: 19** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A DATA PROTECTION OFFICER  I WANT TOOLS TO COMPLY WITH GDPR AND OTHER INTERNATIONAL PRIVACY REGULATIONS  SO THAT I CAN OPERATE THE SYSTEM LEGALLY IN MULTIPLE JURISDICTIONS. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Consent management system with version tracking  - Data subject access request (DSAR) fulfilment tools  - Right to be forgotten implementation with appropriate medical exemptions  - Data portability export functions  - Jurisdictional configuration for regional legal requirements | | | |

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| **User Story No: 20** | **Tasks:** 4 | | **Priority:** Medium |
| **Value Statement:**  AS A SYSTEMS INTEGRATOR  I WANT A SECURE API FOR CONNECTING THE SYSTEM TO OTHER CLINICAL APPLICATIONS  SO THAT I CAN BUILD AN INTEGRATED HEALTHCARE TECHNOLOGY ECOSYSTEM. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - RESTful API with comprehensive documentation  - OAuth 2.0 authentication and appropriate scopes  - Rate limiting and abuse prevention  - Sandbox environment for testing  - Versioning system for backward compatibility | | | |

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| **User Story No: 21** | **Tasks:** 3 | | **Priority:** Highest |
| **Value Statement:**  AS A DATA SCIENTIST  I WANT A FRAMEWORK TO VALIDATE PREDICTION MODELS AGAINST REAL-WORLD OUTCOMES  SO THAT I CAN MEASURE AND IMPROVE MODEL PERFORMANCE. | | | |
| **BV:** Rs. 300 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Automated comparison of predictions against actual outcomes  - Statistical metrics including accuracy, precision, recall, and F1 score  - Cohort analysis by disease type, demographics, and genetic profiles  - Performance visualization and trend analysis over time  - Identification of underperforming prediction categories | | | |

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| **User Story No: 22** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A MODEL DEVELOPER  I WANT TO MANAGE MULTIPLE VERSIONS OF PREDICTION MODELS  SO THAT I CAN RELEASE IMPROVEMENTS WHILE MAINTAINING TRACEABILITY. | | | |
| **BV:** Rs. 400 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Version control for all model components  - A/B testing capabilities for comparing model versions  - Rollback functionality for problematic releases  - Documentation of changes between versions  - Clear display of model version used for each prediction | | | |

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| **User Story No: 23** | **Tasks:** 1 | | **Priority:** Medium |
| **Value Statement:**  AS A DATA SCIENTIST  I WANT TO IMPLEMENT FEDERATED LEARNING ACROSS MULTIPLE INSTITUTIONS  SO THAT I CAN IMPROVE MODELS WITHOUT SHARING SENSITIVE PATIENT DATA. | | | |
| **BV:** Rs. 400 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Secure model parameter sharing without raw data exchange  - Institutional participation controls and permissions  - Performance metrics to measure contribution impact  - Cryptographic techniques to preserve privacy  - Network resilience with node failure handling | | | |

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| **User Story No: 24** | **Tasks:** 5 | | **Priority:** Medium |
| **Value Statement:**  AS A DATA SCIENTIST  I WANT THE SYSTEM TO CONTINUOUSLY LEARN FROM NEW TREATMENT OUTCOMES  SO THAT PREDICTION ACCURACY IMPROVES OVER TIME WITH MINIMAL MANUAL INTERVENTION. | | | |
| **BV:** Rs. 300 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Automated ingestion of new outcome data  - Scheduled retraining cycles with performance thresholds  - Anomaly detection for data quality issues  - Drift detection to identify changing patterns  - Notification system for significant performance changes | | | |

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| **User Story No: 25** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS AN ETHICS OFFICER  I WANT TO DETECT AND MITIGATE ALGORITHMIC BIAS ACROSS DEMOGRAPHIC GROUPS  SO THAT WE PROVIDE EQUITABLE CARE RECOMMENDATIONS REGARDLESS OF BACKGROUND. | | | |
| **BV:** Rs. 400 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Automated analysis of predictions across demographic dimensions  - Statistical tests for significant performance differences  - Bias mitigation techniques with measurable impact  - Transparent reporting of performance across populations  - Documentation of mitigation strategies employed | | | |

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| **User Story No: 26** | **Tasks:** 3 | | **Priority:** Medium |
| **Value Statement:**  AS A CARDIOLOGIST  I WANT GENETIC-BASED PREDICTIONS FOR CARDIOVASCULAR TREATMENT RESPONSES  SO THAT I CAN PERSONALIZE HEART DISEASE MANAGEMENT FOR MY PATIENTS. | | | |
| **BV:** Rs. 600 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Model incorporates cardiovascular-specific genetic markers  - Predictions for at least 15 common cardiac medications  - Integration with cardiac diagnostic results (EKG, echo, stress tests)  - Validation against cardiovascular outcome databases  - Cardiologist-specific interface elements and terminology | | | |

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| **User Story No: 27** | **Tasks:** 4 | | **Priority:** Medium |
| **Value Statement:**  AS A PSYCHIATRIST  I WANT TO PREDICT PATIENT RESPONSES TO PSYCHIATRIC MEDICATIONS BASED ON GENETIC MARKERS  SO THAT I CAN REDUCE THE TRIAL-AND-ERROR APPROACH TO MENTAL HEALTH TREATMENT. | | | |
| **BV:** Rs. 300 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Pharmacogenomic predictions for major antidepressant and antipsychotic medications  - Consideration of CYP450 and other metabolism-related genetic variants  - Integration with standardized psychiatric assessments  - Specialized reporting for psychiatric side effect profiles  - Interface designed with mental health privacy considerations | | | |

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| **User Story No: 28** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A PAEDIATRICIAN  I WANT TREATMENT PREDICTIONS CALIBRATED FOR CHILDREN AND ADOLESCENTS  SO THAT I CAN ACCOUNT FOR DEVELOPMENTAL DIFFERENCES IN PHARMACOKINETICS. | | | |
| **BV:** Rs. 100 | | **CP:** 13 | |
| **Acceptance Criteria:**  - Age-adjusted models for different developmental stages  - Weight-based dosing recommendations  - Paediatric-specific adverse effect profiling  - Family history integration for hereditary conditions  - Simplified reports for adolescent patient education | | | |

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| **User Story No: 29** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS A CLINICAL GENETICIST  I WANT TO IDENTIFY TREATMENT OPTIONS FOR PATIENTS WITH RARE GENETIC DISORDERS  SO THAT I CAN PROVIDE EVIDENCE-BASED CARE FOR CONDITIONS WITH LIMITED CLINICAL GUIDELINES. | | | |
| **BV:** Rs. 150 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Integration with OMIM and Orphanet rare disease databases  - Case-matching algorithm to find similar rare disease patients  - Literature mining for emerging treatment approaches  - Community-based knowledge sharing with appropriate privacy controls  - Clear indication of evidence quality for recommendations | | | |

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| **User Story No: 30** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A PHARMACIST  I WANT TO INTEGRATE DIRECT PHARMACOGENOMIC TEST RESULTS WITHOUT FULL GENOME SEQUENCING  SO THAT I CAN PROVIDE MEDICATION GUIDANCE EVEN WITH LIMITED GENETIC DATA. | | | |
| **BV:** Rs. 350 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Support for common panel formats (GenesightRx, etc.)  - Clear indication of recommendation confidence based on available genetic markers  - Suggestions for additional testing when beneficial  - Drug-drug interaction checking that incorporates genetic metabolism factors  - Report generation for medication therapy management (MTM) services | | | |

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| **User Story No: 31** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS A HEALTHCARE ADMINISTRATOR  I WANT POPULATION-LEVEL INSIGHTS INTO GENETIC FACTORS AFFECTING OUR PATIENT POPULATION  SO THAT I CAN DEVELOP STRATEGIC CLINICAL PROGRAMS FOR PRECISION MEDICINE. | | | |
| **BV:** Rs. 400 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Aggregate analysis of genetic variants across patient population  - Identification of high-impact opportunities for precision medicine programs  - Trend analysis of treatment outcomes over time  - Comparison benchmarks against similar institutions  - De-identified data used with appropriate statistical controls | | | |

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| **User Story No: 32** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A QUALITY IMPROVEMENT OFFICER  I WANT TO TRACK ACTUAL PATIENT OUTCOMES AGAINST SYSTEM PREDICTIONS  SO THAT I CAN MEASURE THE CLINICAL IMPACT OF USING THE SYSTEM PLATFORM. | | | |
| **BV:** Rs. 550 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Automated matching of predictions to actual recorded outcomes  - Statistical analysis of prediction accuracy by department and disease type  - ROI calculations including adverse events avoided  - Trend visualization showing improvement over time  - Export capabilities for quality reporting requirements | | | |

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| **User Story No: 33** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS A CLINICAL RESEARCHER  I WANT TO ANALYSE PATTERNS IN GENETIC MARKERS AND TREATMENT RESPONSES  SO THAT I CAN DISCOVER NEW ASSOCIATIONS AND PUBLISH FINDINGS. | | | |
| **BV:** Rs. 250 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Advanced query builder for exploring genetic-treatment associations  - Statistical analysis tools including multivariate testing  - De-identified cohort creation and management  - Export functionality for statistical software (R, SPSS)  - Citation generation for methods section of publications | | | |

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| **User Story No: 34** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS A PHARMACEUTICAL RESEARCHER  I WANT TO IDENTIFY GENETIC MARKERS ASSOCIATED WITH RESPONSE TO SPECIFIC MEDICATIONS  SO THAT I CAN DEVELOP COMPANION DIAGNOSTICS AND TARGETED THERAPIES. | | | |
| **BV:** Rs. 200 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Secure workspace for collaborative analysis  - Consent-based patient recruitment for clinical trials  - De-identified response data for specific medications  - Hypothesis testing tools for drug-gene interactions  - Intellectual property protection and attribution features | | | |

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| **User Story No: 35** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A HEALTHCARE FINANCIAL OFFICER  I WANT TO ANALYSE THE ECONOMIC IMPACT OF PRECISION MEDICINE RECOMMENDATIONS  SO THAT I CAN JUSTIFY INVESTMENT AND OPTIMIZE RESOURCE ALLOCATION. | | | |
| **BV:** Rs. 450 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Cost avoidance calculations for adverse events and ineffective treatments  - Length-of-stay impact analysis for inpatient scenarios  - Comparison of actual vs. predicted cost savings  - Specialty-specific return on investment metrics  - Integration with standard healthcare financial metrics | | | |

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| **User Story No: 36** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS AN IMPLEMENTATION SPECIALIST  I WANT A STRUCTURED PROCESS FOR DEPLOYING SYSTEM AT NEW HEALTHCARE INSTITUTIONS  SO THAT I CAN EFFICIENTLY ONBOARD CLIENTS WITH CONSISTENT QUALITY. | | | |
| **BV:** Rs. 300 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Step-by-step implementation checklist  - Technical requirements documentation  - Integration guides for common EHR systems  - Validation protocol templates  - Timeline and resource planning tools | | | |

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| **User Story No: 37** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A CLINICAL EDUCATOR  I WANT TRAINING MATERIALS ON USING GENETIC INFORMATION IN CLINICAL DECISIONS  SO THAT I CAN PREPARE HEALTHCARE PROVIDERS TO EFFECTIVELY USE THE PLATFORM. | | | |
| **BV:** Rs. 200 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Role-specific training modules (physician, pharmacist, nurse)  - Basic genetics and pharmacogenomics principles  - System usage tutorials with interactive elements  - Case-based learning scenarios  - Continuing education credit eligibility | | | |

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| **User Story No: 38** | **Tasks:** 2 | | **Priority:** Low |
| **Value Statement:**  AS AN END USER  I WANT ACCESS TO SUPPORT RESOURCES AND ABILITY TO REPORT ISSUES  SO THAT I CAN RESOLVE PROBLEMS QUICKLY AND MAXIMIZE SYSTEM BENEFITS. | | | |
| **BV:** Rs. 150 | | **CP:** 5 | |
| **Acceptance Criteria:**  - Integrated help system with contextual assistance  - Searchable knowledge base of common questions  - Ticket submission with severity classification  - Screenshot and log attachment capabilities  - Response time tracking and SLA management | | | |

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| **User Story No: 39** | **Tasks:** 2 | | **Priority:** Medium |
| **Value Statement:**  AS A SYSTEM ADMINISTRATOR  I WANT COMPREHENSIVE MONITORING OF SYSTEM HEALTH AND PERFORMANCE  SO THAT I CAN PROACTIVELY ADDRESS ISSUES BEFORE THEY AFFECT USERS. | | | |
| **BV:** Rs. 300 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Real-time monitoring dashboard  - Performance metrics for all system components  - Automated alerting for threshold violations  - Predictive analytics for capacity planning  - Integration with enterprise monitoring systems | | | |

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| **User Story No: 40** | **Tasks:** 2 | | **Priority:** High |
| **Value Statement:**  AS A DATA CUSTODIAN  I WANT COMPREHENSIVE BACKUP AND RECOVERY CAPABILITIES  SO THAT I CAN ENSURE BUSINESS CONTINUITY AND DATA PRESERVATION. | | | |
| **BV:** Rs. 450 | | **CP:** 8 | |
| **Acceptance Criteria:**  - Automated backup schedule with configurable frequency  - Point-in-time recovery capabilities  - Geographic redundancy for disaster scenarios  - Recovery time objective (RTO) under 4 hours  - Regular recovery testing and validation protocol | | | |

**Document 4- Agile PO Experience**

**Answer**

As Product Owner for the personalized medicine prediction tool, my journey began with comprehensive market analysis. I identified a significant gap in the healthcare technology landscape - while genomic sequencing costs had dropped dramatically, healthcare providers lacked effective tools to translate this genetic data into actionable treatment decisions.

*Our market research revealed that:*

- 87% of clinicians reported insufficient tools to interpret genetic data

- 2.2 million hospitalized patients annually suffered adverse drug reactions

- Medication non-response rates ranged from 38-75% across major disease categories

- The personalized medicine market was projected to reach ₹17.9 trillion by 2028

*Competitive analysis showed existing solutions fell into three categories:*

1. Academic research tools - powerful but not clinically integrated or user-friendly

2. Single-disease prediction tools - limited in scope and scalability

3. General genomic interpretation platforms - lacking specific treatment recommendations

This analysis confirmed a significant market opportunity for an AI-driven, clinically-integrated solution spanning multiple disease domains with an emphasis on actionable recommendations.

Enterprise Analysis

Our enterprise analysis focused on validating the market opportunity and building the business case. I worked with financial analysts to develop:

- Cost-benefit models showing an estimated ₹1M reduction in healthcare costs per patient annually

- Implementation cost projections for different types of healthcare institutions

- Revenue forecasts based on tiered SaaS subscription pricing

- Resource requirements for a cross-functional team of bioinformaticians, ML specialists, and clinical experts

*The due diligence process included:*

- Interviews with 35+ stakeholders including clinicians, hospital administrators, and patients

- Technical feasibility assessment for AI model development with available genomic datasets

- Regulatory pathway analysis for clinical decision support tools

- Risk assessment focusing on data privacy, model accuracy, and clinical adoption

This analysis validated the business opportunity while identifying key risk factors we needed to address throughout development.

Product Vision and Roadmap

Based on our market and enterprise analysis, I crafted a product vision centred on transforming healthcare delivery through AI-powered personalized medicine, enabling clinicians to prescribe the right treatment to the right patient at the right time based on their unique genetic profile.

*I developed a product roadmap with four major releases over 18 months:*

*Release 1 (Month 6): Foundation*

- Core genetic data ingestion and processing

- Initial oncology prediction model

- Basic clinical interface with explanation features

- Security and compliance framework

*Release 2 (Month 10): Clinical Integration*

- EHR integration and clinical workflow embedding

- Expanded oncology coverage

- Adverse reaction prediction

- Mobile accessibility

*Release 3 (Month 14): Expanded Domains*

- Cardiovascular disease models

- Psychiatric medication prediction

- Population health analytics

- Federated learning capabilities

*Release 4 (Month 18): Enterprise Scale*

- Multi-institution deployment capability

- Advanced research and analytics tools

- Pharmaceutical collaboration framework

- Full regulatory documentation package

This roadmap prioritized early clinical value while establishing the technical foundation for expansion.

Managing Product Features

Managing stakeholder expectations proved one of my most challenging responsibilities. Our diverse stakeholders included:

- Clinicians demanding accuracy and workflow integration

- Hospital administrators focused on ROI and implementation costs

- Patients concerned about data privacy and improved outcomes

- Regulatory affairs requiring compliance documentation

- Technical teams balancing innovation with reliable delivery

*I developed a structured prioritization framework based on:*

1. Clinical impact - potential to improve patient outcomes

2. Technical feasibility - implementation complexity and dependencies

3. Market differentiation - competitive advantage

4. Regulatory risk - compliance requirements and potential barriers

5. Revenue potential - contribution to business objectives

This framework helped me make transparent decisions when prioritizing epics and features, allowing me to explain to stakeholders why certain capabilities were prioritized over others.

Managing Product Backlog

Maintaining an effective product backlog required continuous refinement. I established a weekly backlog grooming session where I:

1. Reviewed and adjusted story priorities based on emerging information

2. Ensured acceptance criteria remained clear and testable

3. Confirmed business value (BV) and complexity point (CP) estimates

4. Organized stories into logical epics for planning purposes

5. Identified dependencies between stories and addressed potential blockers

I found that storytelling was powerful for communicating the "why" behind features. For example, when prioritizing the "adverse reaction prediction" story, I shared an actual case where a patient experienced a severe reaction that genetic screening could have prevented, making the feature's importance visceral rather than abstract.

My approach to epic planning evolved to include:

- Epic-level success metrics tied to product KPIs

- Clear definition of minimal viable functionality

- Explicit technical debt considerations

- User experience continuity planning

Managing Overall Iteration Progress

Managing sprint progress required careful balance between accountability and team empowerment. For each sprint, I:

1. Sprint Planning: Clearly communicated sprint goals and acceptance criteria, ensuring the team understood not just what to build but why it mattered

2. Daily Scrums: Maintained focus on sprint goals while identifying blockers requiring my intervention

3. Sprint Reviews: Facilitated meaningful stakeholder feedback, managing expectations while showcasing progress

4. Sprint Retrospectives: Created a safe environment for honest reflection, implementing process improvements based on team input

5. Backlog Refinement: Continuously adjusted upcoming priorities based on sprint outcomes and changing requirements

The most valuable lesson I learned was the importance of being decisive. When our federated learning feature encountered technical challenges that threatened the sprint, I made the difficult decision to reduce scope rather than compromise quality or delay other critical features. This preserved team momentum while still delivering value.

Sprint Meeting Management

*Each sprint meeting served a distinct purpose in our development process:*

*Sprint Planning Meetings*

- Allocated 4 hours for 2-week sprints

- First half focused on selecting backlog items based on priority and capacity

- Second half focused on breaking down items into tasks and confirming understanding

- Ended with team commitment to sprint goals

*Daily Scrum Meetings*

- Strictly timeboxed to 15 minutes

- Used a simple format: what was done yesterday, what's planned today, any blockers

- Kept focus on sprint goals rather than activity reporting

- Logged potential backlog refinements for later discussion

*Sprint Review Meetings*

- Demonstrated working software to stakeholders

- Collected feedback and new requirements

- Maintained a demo script to ensure efficient use of stakeholder time

- Celebrated successes while being transparent about challenges

*Sprint Retrospective Meetings*

- Created psychologically safe environment for honest feedback

- Used varying formats to prevent monotony (What went well/What didn't/Ideas, Mad/Sad/Glad, etc.)

- Focused on actionable improvements rather than complaints

- Documented and tracked improvement actions

*Backlog Refinement Meetings*

- Reviewed upcoming stories to ensure readiness

- Refined acceptance criteria based on new information

- Re-estimated complexity when needed

- Resolved questions about implementation approach

*User Story Creation*

Crafting effective user stories became a core competency. I developed a template ensuring each story contained:

- Story Number: Unique identifier for tracking

- Tasks: Clear description of work to be done

- Priority: Critical, High, Medium, or Low designation

- Acceptance Criteria: 3-5 specific, testable requirements

- Business Value (BV): Point value representing importance to business outcomes

- Complexity Points (CP): Estimation of development effort

I found the most effective stories focused on user outcomes rather than implementation details. For example, instead of "Implement genomic data parser for VCF files," a better story was "As a bioinformatician, I want to upload genome sequence files in standard formats so I can analyse a patient's complete genetic profile for treatment recommendations."

Liaison Role

My role as liaison between stakeholders and development team required:

- Translating clinical requirements into technical specifications

- Communicating technical constraints to clinical stakeholders

- Buffering the team from changing priorities while remaining responsive to market needs

- Representing user perspectives in technical discussions

- Advocating for quality and compliance in feature implementation

The most rewarding aspect of the project was seeing how our technology directly impacted patient care. When an oncologist reported that our recommendation helped identify an effective treatment for a patient who had failed multiple previous therapies, it validated the importance of our mission and the effectiveness of our Agile approach.

**Document 5 Product and sprint backlog and product and sprint burndown charts**

**Answer**

Product Backlog is the master list of all work desired for the product containing all User Stories that need to be developed

*Key Characteristics:*

- Maintained by the Product Owner

- Dynamic and continually evolving

- Prioritized list based on business value

- Contains both high-level features (epics) and detailed user stories

- Items have assigned Business Value (BV) and Complexity Points (CP)

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| --- | --- | --- | --- | --- | --- | --- |
| **User Story ID** | **User Story** | **Tasks** | **Priority** | **BV** | **CP** | **Sprint** |
| US-06 | Create initial disease-specific prediction model for oncology | Develop ML model for oncology treatment predictions | Highest | Rs. 500 | 21 | 1 |
| US-07 | Implement prediction explainability features | Create visualization of influential genetic markers | High | Rs. 350 | 13 | 1 |
| US-01 | Create data ingestion pipeline for whole genome sequencing files | Implement parser for FASTQ, BAM, VCF formats | High | Rs. 600 | 13 | 1 |
| US-21 | Create model validation framework | Develop framework for comparing predictions to outcomes | Highest | Rs. 450 | 13 | 2 |
| US-09 | Implement adverse reaction prediction | Create genetic marker identification for adverse effects | High | Rs. 350 | 13 | 1 |
| US-16 | Implement role-based access controls | Define permission sets and access control layers | High | Rs. 200 | 8 | 1 |
| US-02 | Implement EHR integration for retrieving patient treatment outcomes | Develop FHIR API integration | High | Rs. 180 | 8 | 1 |
| US-25 | Implement bias detection and mitigation | Create system to identify and reduce algorithmic bias | High | Rs. 300 | 13 | 2 |
| US-40 | Create system backup and disaster recovery | Implement automated backup system | High | Rs. 400 | 8 | 1 |
| US-22 | Implement model versioning system | Create version control for prediction models | High | Rs. 350 | 8 | 2 |

Sprint Backlog is a subset of the Product Backlog selected for current sprint containing work committed for the current sprint

*Key Characteristics:*

- Created during Sprint Planning Meeting

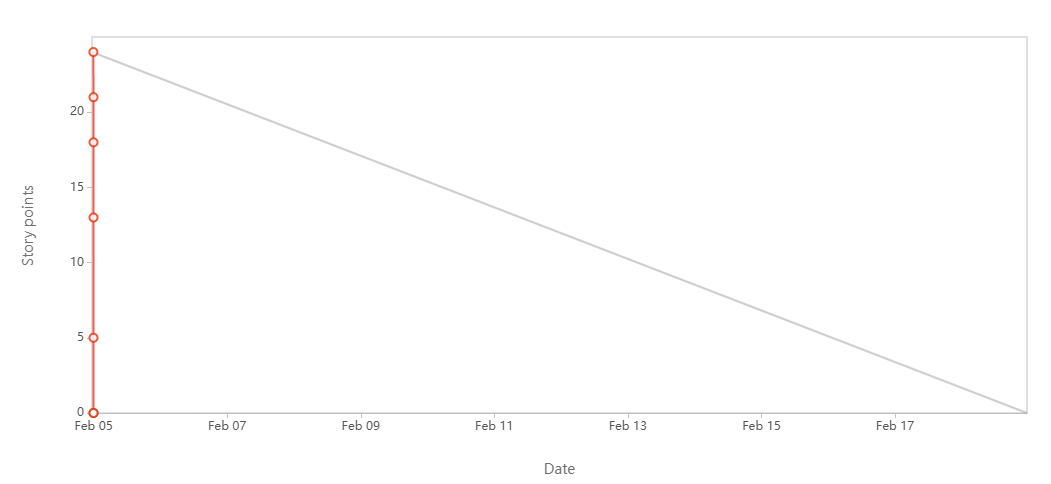
- More detailed than Product Backlog items

- Managed by Development Team

- Updated daily during Scrum meetings

- Shows real-time status of work

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| --- | --- | --- | --- | --- | --- |
| **User Story ID** | **User Story** | **Tasks** | **Owner** | **Status** | **Estimated Effort** |
| US-06 | Create initial disease-specific prediction model for oncology | Develop ML model for oncology treatment predictions |  | Completed | 21 |
| US-07 | Implement prediction explainability features | Create visualization of influential genetic markers |  | In Progress | 13 |
| US-01 | Create data ingestion pipeline for whole genome sequencing files | Implement parser for FASTQ, BAM, VCF formats |  | In Progress | 8 |
| US-16 | Implement role-based access controls | Define permission sets and access control layers |  | To Do | 8 |
| US-09 | Implement adverse reaction prediction | Create genetic marker identification for adverse effects |  | In Progress | 13 |
| US-02 | Implement EHR integration for retrieving patient treatment outcomes | Develop FHIR API integration |  | To Do | 8 |
| US-40 | Create system backup and disaster recovery | Implement automated backup system |  | To Do | 8 |
| US-11 | Create physician dashboard | Develop main clinical interface |  | To Do | 5 |



Sprint Burndown Chart

**Document 6- Sprint meetings**

**Answer**

*Meeting Type 1: Sprint Planning meeting*

|  |  |
| --- | --- |
| **Date** | March 18, 2025 |
| **Time** | 9:00 AM – 1:00 PM |
| **Location** | Biotech Lab |
| **Prepared By** | Product Owner |
| **Attendees** | Business Analyst, Product Owner, Scrum Master, Lead Bioinformatician, ML Specialist, Backend Developer, Frontend Developer, Clinical Data Scientist |

Agenda Topics

|  |  |  |
| --- | --- | --- |
| **Topic** | **Presenter** | **Time allotted** |
| Sprint Goal Review & Alignment | Product Owner | 30 min |
| Product Backlog Review & Clarification | Product Owner | 45 min |
| Team Capacity Planning | Scrum Master | 15 min |
| Sprint Backlog Selection | Team | 60 min |
| Task Breakdown & Estimation | Team | 60 min |
| Dependencies & Risk Identification | Team | 30 min |
| Sprint Planning Conclusion & Commitments | Scrum Master | 15 min |

Other Information

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| **Observers** | Clinical Director of Oncology, Regulatory Affairs Specialist, IT Security Officer |
| **Resources** | - Sprint 1 Candidate Stories  - Team Velocity Historical Data  - Definition of Done Document  - Technical Architecture Diagram  - System Integration Requirements |
| **Special Notes** | -This is the first sprint for the project  - Focus areas: data ingestion pipeline, initial oncology prediction model, security framework  - Team should be prepared to discuss any knowledge gaps or training needs  - Remote participants should test Zoom connection 15 minutes before meeting |

*Meeting Type 2: Sprint Review meeting*

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| **Date** | April 1, 2025 |
| **Time** | 10:00 AM – 12:00 PM |
| **Location** | Biotech Lab |
| **Prepared By** | Scrum Master |
| **Attendees** | Product Owner, Business Analyst, Scrum Master, Lead Bioinformatician, ML Specialist, Backend Developer, Frontend Developer, Clinical Data Scientist, Clinical Director of Oncology, Regulatory Affairs Specialist, IT Security Officer, Chief Medical Officer, Representatives from partner hospitals. |

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| **Sprint status** | **Things to demo** | **Quick updates** | **What’s next** |
| Completed Stories:  -001: Genomic data ingestion pipeline  -006: Initial oncology prediction model  -016: Role-based access controls  -040: Backup & recovery system  Partially Completed:  -007: Prediction explainability features  Not Started:  -002: EHR integration | 1. Genomic Data Pipeline  - Demo of file upload for FASTQ, BAM, VCF formats  - Validation process and error handling  - Performance metrics visualization  2. Oncology Prediction Model  - Demo with anonymized patient data  - Visualization of treatment response predictions  - Comparison of model results to clinical outcomes  3. Security Framework  - Role-based access control demonstration  - User permission management interface  - Audit logging functionality | Technical Achievements:  -Successfully implemented GPU acceleration for genetic marker analysis  - Established secure cloud infrastructure with HIPAA compliance  - Created robust error handling for malformed genetic data files  Challenges:  - EHR vendor API access delayed,  - More complex than expected visualization requirements for explainability features  - Training data quality issues required additional pre-processing  Feedback Incorporated:  - Simplified the file upload workflow based on mid-sprint user testing  - Added support for additional cancer subtypes based on oncologist input | Sprint 2 Focus Areas:  - Complete explainability features  - Resolve EHR integration dependencies  - Implement adverse reaction prediction  - Create physician dashboard  Risks to Address:  - EHR vendor coordination  - Data quality variability across institutions  - Performance optimization for larger datasets  Product Roadmap Updates:  - Slight adjustment to cardiovascular domain timeline  - Additional focus on user interface refinement based on clinician feedback |

*Meeting Type 3: Sprint Retrospective Meeting*

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| **Date** | April 2, 2025 |
| **Time** | 1:00 PM – 3:00 PM |
| **Location** | Biotech Lab |
| **Prepared By** | Scrum Master |
| **Attendees** | Scrum Master, Product Owner, Business Analyst, Lead Bioinformatician, ML Specialist, Backend Developer, Frontend Developer, Clinical Data Scientist |

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| **Agenda** | **What went well** | **What didn’t go well** | **Questions** | **Reference** |
| Team Collaboration | - Daily stand-ups were focused and effective  - Cross-functional pairing between ML and bioinformatics experts improved model quality  - Mid-sprint demo sessions helped catch issues early  - Good knowledge sharing across team domains | - Communication gaps between backend and frontend teams on API design  - Some team members were overloaded while others had capacity  - Virtual collaboration tools weren't fully utilized  - Documentation updates lagged behind code changes | - How can we better balance workloads?  - Should we establish API contracts earlier?  - What additional collaboration tools would help remote team members? | Team Charter |
| Technical Practices | - GPU acceleration implementation was smooth  - Test-driven development for data pipeline improved quality  - Code review process caught several critical issues  - Automation of deployment pipeline saved time | - Technical debt accumulated in UI components  - Test coverage for ML components below target  - Performance testing started too late in the sprint  - Some duplicate code across modules | - How should we handle technical debt in future sprints?  - Can we improve our approach to testing ML components?  - Do we need additional performance testing environments? | Engineering Standards |
| Process and Planning | - Story breakdown was effective for most items  - Daily progress tracking helped visibility  - Definition of Done was clear and followed  - Backlog refinement sessions were productive | - Story point estimation was inconsistent  - Dependencies weren't identified early enough  - EHR integration blocker wasn't escalated quickly  - Too many stories accepted into sprint given unknowns | - How can we better identify external dependencies  - Should we add buffer for integration stories?  - Do we need different estimation scales for different types of work? | Agile Playbook |
| Domain Knowledge | - Clinical input was well-integrated into model development  -Documentation of genetic markers was thorough  - Knowledge sharing sessions improved team understanding  - Domain experts were responsive to questions | - Some clinical terminology misunderstandings  - Varying understanding of regulatory requirements  - Insufficient knowledge transfer for bioinformatics pipeline  - Not all team members understood the full data flow | - How can we create a shared glossary of terms?  - Should we schedule more domain-specific training?  - Can we improve documentation of domain concepts? | Clinical Guidelines |
| Environment and Tools | - New cloud infrastructure performed well  - JIRA workflow configurations saved time  - Automated testing environment was reliable  - Data visualization tools were effective | - Development environment setup took longer than expected  - Some team members had insufficient permissions  - GPU resources were limited at peak times | - Can we create standardized environment setups?  - Should we schedule GPU resources differently?  - How do we better manage cloud costs? | DevOps Runbook |

*Meeting Type 4: Daily Stand-up meeting*

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| **Question** | **Name/Role** | **Week of 03-Apr-2025 to 09-Apr-2025** | | | | | | |
| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** | **Saturday** | **Sunday** |
| **What did you do yesterday?** | **Developer 1** | Set up core API structure and authentication framework | Implemented user management endpoints and set up database schema | Created data access layer for genetic information and implemented caching strategy | Worked on integration with ML prediction service and added error handling | Implemented API logging and monitoring endpoints for system health | Weekend | Weekend |
| **Developer 2** | Created initial wireframes for physician dashboard and set up React project structure | Implemented user authentication UI and responsive layout framework | Developed file upload component with drag-and-drop functionality | Built data visualization components for genetic profiles | Implemented role-based UI adaptation and user preference storage | Weekend | Weekend |
| **Developer 3** | Defined clinical data model and mapping to genetic markers | Created validation rules for treatment protocols based on clinical guidelines | Developed annotation system for genetic variations of clinical significance | Built reference database of treatment outcomes linked to genetic profiles | Implemented clinical significance scoring algorithm for prediction results | Weekend | Weekend |
| **What will you do today?** | **Developer 1** | Set up API structure and authentication system | Implement user management endpoints and database schema | Create data access layer and caching strategy for genetic data | Integrate with ML prediction service and implement error handling | Complete API logging and monitoring implementations | Conduct end-to-end testing of API flows | Weekend |
| **Developer 2** | Design wireframes and set up project structure | Implement authentication UI and responsive layout | Build file upload component with progress indicators | Create interactive data visualization components | Implement role-based UI features and user preferences | Conduct usability testing with internal users | Weekend |
| **Developer 3** | Define clinical data model and genetic marker relationships | Create validation rules based on treatment protocols | Develop annotation system for clinically significant variants | Build reference database linking outcomes to genetic profiles | Implement clinical significance scoring for predictions | Review system with oncology consultant | Weekend |
| **What (if any) is blocking your progress?** | **Developer 1** | Security review for authentication approach pending | Waiting for database credentials for production environment | None | Need clarification on expected load for API sizing | None | None | Weekend |
| **Developer 2** | Need finalized design guidelines from UX team | None | Need API specifications for data visualization component | None | Accessibility testing environment not yet available | None | Weekend |
| **Developer 3** | Waiting for latest oncology treatment guidelines from medical director | None | Need clarification on how to handle off-label treatment recommendations | None | None | Need clinical review of significance scoring algorithm | Weekend |