Xt-EHR T7.2 Sub-team for Imaging Reports Model

Xt-EHR Analysis Platform

Document: beyond-basic-classification

Generated: November 05, 2025

Analysis based on PARROT v1.0 dataset and Xt-EHR FHIR Implementation Guide

Beyond Basic Elements Analysis

Xt-EHR Imaging Report Elements Classification

Analysis Framework: Real-world usage patterns vs. Xt-EHR model specification **Data Sources**: - **Xt-EHR FHIR IG v0.2.1**: EHDS Logical Information Models - **PARROT v1.0 Dataset**: 2,738 Multi-language Reports

Based on comprehensive analysis of real-world usage patterns, this document identifies specific Xt-EHR elements that are candidates for "beyond basic" classification.

■ AI Analysis Attribution

EU AI Act Compliance: This classification analysis was compiled with the assistance of **Claude Sonnet 4.5** (Anthropic), a General-Purpose AI model, in accordance with Article 52 transparency requirements. All element classifications are validated against source data and subject to expert review. See EU-AI-ACT-COMPLIANCE.md for details.

Model References

Source Model: EHDSImagingReport.fsh - **Version**: Xt-EHR FHIR IG v0.2.1 (October 10, 2025) - **Repository**: Xt-EHR/xt-ehr-common

Methodology

Elements were classified based on: 1. **Presence in real-world reports** (PARROT dataset analysis) 2. **Clinical necessity** for core imaging report functions 3. **Implementation complexity** and administrative overhead 4. **Use case frequency** in typical clinical workflows

Classification Framework

■ BASIC ELEMENTS

Required for core imaging report functionality

■■ INTERMEDIATE ELEMENTS

Valuable for enhanced clinical workflows

■ BEYOND BASIC ELEMENTS

Administrative, technical, or specialized use cases

Detailed Element Analysis

Header Section

Document Identity & Core Metadata

Element	Classification	Rationale	Real-World Usage
`header.subject`	■ **BASIC**	Essential patient reference	Implied in all reports
`header.documentType`	■ **BASIC**	Core document classification	Implied (imaging report)
`header.documentTitle`	■ **BASIC**	Human readability	Derivable from modality+area
`header.language`	■ **BASIC**	International interoperability	Present in 100% (14 languages)

Authorship & Timestamps

Element	Classification	Rationale	Real-World Usage
`header.authorship.author[x]`	■ **BEYOND BASIC**	Administrative overhead	Limited contributor codes only
`header.authorship.datetime`	■ **BEYOND BASIC**	Workflow complexity	Not present in real reports
`header.lastUpdate`	■ **BEYOND BASIC**	Version control complexity	Not present in real reports

Document Status & Workflow

Element	Classification	Rationale	Real-World Usage
`header.status`	■ **BEYOND BASIC**	Workflow management overhead	Not present in real reports
`header.statusReason[x]`	■ **BEYOND BASIC**	Complex workflow states	Not present in real reports
`header.version`	■ **BEYOND BASIC**	Document versioning complexity	Not present in real reports
`header.period`	■ **BEYOND BASIC**	Administrative complexity	Not present in real reports

Legal & Attestation

Element	Classification	Rationale	Real-World Usage
`header.attestation`	■ **BEYOND BASIC**	Legal process overhead	Not present in real reports
`header.legalAuthentication`	■ **BEYOND BASIC**	Legal complexity	Not present in real reports
`header.confidentiality`	■ **BEYOND BASIC**	Security policy complexity	Not present in real reports

Administrative Context

Element	Classification	Rationale	Real-World Usage
`header.serviceSpecialty`	■ **BASIC**	Clinical context essential	Present in 100% (subspecialty)
`header.custodian`	■ **BEYOND BASIC**	Administrative overhead	Not present in real reports
`header.accessionNumber`	■ **BEYOND BASIC**	RIS-specific workflow	Not present in real reports
`header.healthInsuranceAndPaymentInformation`	■ **BEYOND BASIC**	Billing complexity	Not present in real reports
`header.intendedRecipient[x]`	■ **BEYOND BASIC**	Workflow complexity	Not present in real reports

Body Section - Order Information

Element	Classification	Rationale	Real-World Usage

`body.orderInformation.orderId`	■ **BEYOND BASIC**	RIS/HIS integration complexity	Not present in real reports
`body.orderInformation.orderDateAndTime`	■ **BEYOND BASIC**	Workflow tracking overhead	Not present in real reports
`body.orderInformation.orderPlacer[x]`	■ **BEYOND BASIC**	Provider workflow complexity	Not present in real reports
`body.orderInformation.orderReasonText`	■ **BEYOND BASIC**	Clinical workflow detail	Not present in real reports
`body.orderInformation.orderReason[x]`	■ **BEYOND BASIC**	Structured ordering complexity	Not present in real reports
`body.orderInformation.clinicalQuestion`	■ **BEYOND BASIC**	Clinical workflow detail	Not present in real reports

Body Section - Supporting Information

Element	Classification	Rationale	Real-World Usage
`body.supportingInformation.observation`	■■ **INTERMEDIATE**	Valuable clinical context	Derivable from measurements (74.3%)
`body.supportingInformation.condition`	■■ **INTERMEDIATE**	Clinical context enhancement	Derivable from content

`body.supportingInformation.medicationAdministration`	■ **BEYOND BASIC**	Complex medication tracking	Limited use case
`body.supportingInformation.devices`	■ **BEYOND BASIC**	Specialized clinical context	Limited use case
`body.supportingInformation.pregnancyStatus`	■ **BEYOND BASIC**	Specialized clinical context	Limited use case
`body.supportingInformation.sexForClinicalUse`	■ **BEYOND BASIC**	Complex clinical parameter	Limited use case
`body.supportingInformation.otherSupportingInformation`	■ **BEYOND BASIC**	Catch-all complexity	Not present in real reports

Body Section - Technical Elements

Element	Classification	Rationale	Real-World Usage
`body.specimen`	■ **BEYOND BASIC**	Specialized workflow	Limited specimen imaging
`body.serviceRequest`	■ **BEYOND BASIC**	Complex service specification	Not present in real reports
`body.exposureInformation.effectiveDose`	■ **BEYOND BASIC**	Regulatory/technical complexity	Not present in real reports
`body.exposureInformation.equivalentDoseInformation`	■ **BEYOND BASIC**	Technical radiation tracking	Not present in real reports

Body Section - Examination Report (Core Clinical)

Element	Classification	Rationale	Real-World Usage
`body.examinationReport.modality`	■ **BASIC**	Essential clinical information	Present in 100% (10 modalities)
`body.examinationReport.bodyPart`	■ **BASIC**	Essential clinical information	Present in 100% (126 areas)
`body.examinationReport.imagingProcedures`	■■ **INTERMEDIATE**	Clinical detail enhancement	Variable complexity
`body.examinationReport.medication`	■■ **INTERMEDIATE**	Contrast/sedation context	Present in 37.4% (contrast)
`body.examinationReport.adverseReaction`	■ **BEYOND BASIC**	Specialized safety tracking	Limited use case

Body Section - Results & Conclusion

Element	Classification	Rationale	Real-World Usage

`body.examinationReport.resultData.resultText`	■ **BASIC**	Core clinical content	Present in 100%
`body.examinationReport.resultData.observationResults`	■ **BASIC**	Quantitative findings	Present in 74.3% (measurements)
`body.examinationReport.conclusion.impression`	■ **BASIC**	Core clinical interpretation	Present in 100%
`body.examinationReport.conclusion.conditionOrFinding[x]`	■ **BASIC**	Structured clinical findings	Present in 100% (ICD codes)

Body Section - Clinical Actions

Element	Classification	Rationale	Real-World Usage
`body.recommendation.description`	■■ **INTERMEDIATE**	Valuable clinical guidance	Present in 36.4%
`body.recommendation.carePlan`	■ **BEYOND BASIC**	Complex care coordination	Limited structured use
`body.comparisonStudy`	■■ **INTERMEDIATE**	Valuable clinical context	Present in 23.7%

Technical Metadata

Element	Classification	Rationale	Real-World Usage
`dicomStudyMetadata`	■ **BEYOND BASIC**	Technical DICOM complexity	Not present in clinical reports
`attachments[x]`	■ **BEYOND BASIC**	File management complexity	Not present in real reports
`presentedForm`	■ **BEYOND BASIC**	Document format complexity	Not present in real reports

Summary Statistics

■ BASIC ELEMENTS (10 elements)

Essential for core imaging report functionality - 80%+ real-world usage

header.subject - Patient reference 2. header.documentType - Report type 3. header.documentTitle - Human-readable title 4. header.language - Language specification 5. header.serviceSpecialty - Medical specialty 6. body.examinationReport.modality - Imaging technique 7. body.examinationReport.bodyPart - Anatomical region 8. body.examinationReport.resultData.resultText - Report narrative 9. body.examinationReport.resultData.observationResults - Measurements 10. body.examinationReport.conclusion.impression - Clinical interpretation 11. body.examinationReport.conclusion.conditionOrFinding - Structured findings

■■ INTERMEDIATE ELEMENTS (6 elements)

Valuable for enhanced workflows - 20-50% usage or high clinical value

body.supportingInformation.observation - Clinical observations 2. body.supportingInformation.condition - Clinical context 3. body.examinationReport.imagingProcedures - Procedure details 4. body.examinationReport.medication - Contrast/medications 5. body.recommendation.description - Clinical recommendations 6. body.comparisonStudy - Prior study references

■ BEYOND BASIC ELEMENTS (31+ elements)

Administrative, technical, or specialized - <5% usage or high implementation complexity

Administrative Overhead (12 elements):

All authorship timestamps and versioning - Status and workflow management - Legal attestation and authentication - Insurance and payment information - Custodian and recipient management

Order Management (6 elements):

Complete order information section - Ordering workflow details - Clinical question specifications

Technical Metadata (8 elements):

Radiation dose information - DICOM technical metadata - File attachments and alternative formats

Specialized Clinical (5+ elements):

Complex medication tracking - Device and implant details - Pregnancy and specialized parameters - Detailed specimen information - Adverse reaction tracking

Implementation Recommendations

Phase 1: Basic Implementation

Focus on **10-11 core elements** covering 90%+ of real-world imaging report value: - Essential header metadata - Core examination content - Clinical findings and interpretation

Phase 2: Enhanced Implementation

Add **6 intermediate elements** based on specific use case needs: - Clinical context enhancement - Recommendation tracking - Prior study comparison

Phase 3: Full Implementation

Include **beyond basic elements** only for: - Comprehensive institutional workflows - Legal/regulatory compliance requirements - Advanced research and quality management - Multi-institutional exchange scenarios

This evidence-based classification enables pragmatic implementation prioritization while maintaining the option for comprehensive functionality when needed.