

第44回医療情報学連合大会

第25回日本医療情報学会学術大会

第91回HL7セミナー

## 初学者向けFHIR入門

※HL7 Internationalが開催したチュートリアル「HL7 FHIR 101」の内容を一部流用しています。

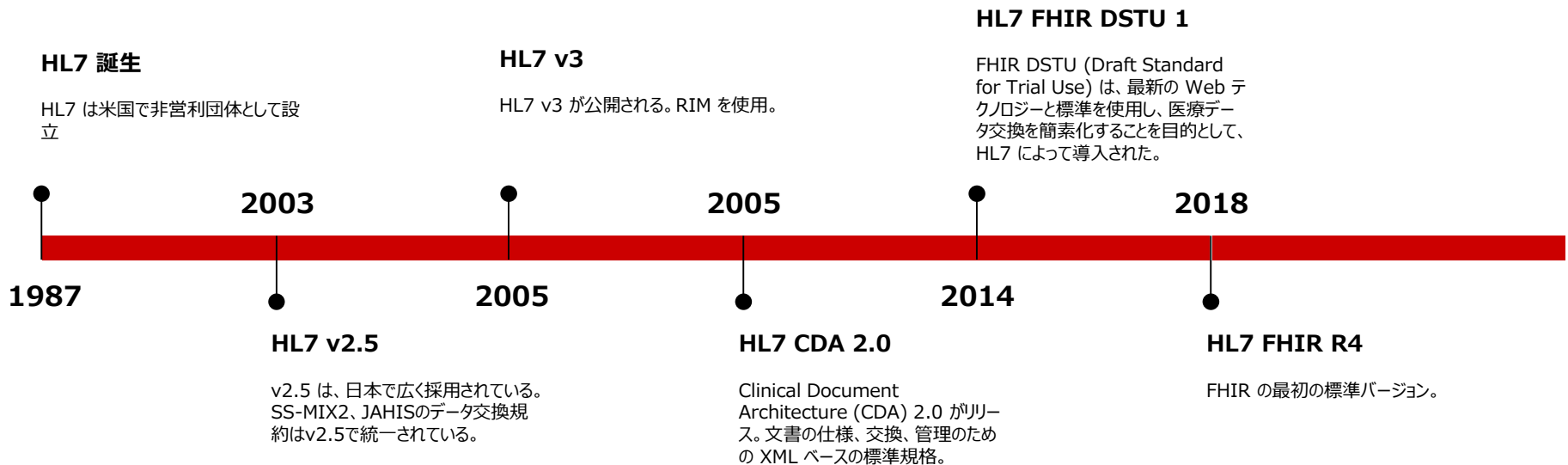
日本HL7協会 情報教育委員会委員長

檀原 一之

2024年11月21日

1. HL7の歴史
2. FHIRとは
3. Implementation Guides（実装ガイド）
4. リソースとプロファイルを理解する
5. FHIRの4つのパラダイム
6. プロファイルを作る
7. HL7コミュニティへの参加方法

# HL7の歴史



```
MSH|^~\&|SendingApp|Some Hospital|ReceivingApp|ReceivingFac|202405191234||ADT^A01|MSG00002|P|2.5
EVN|A01|202405191234
PID|1||123456^^^Some Hospital^MR||Oliver^Ben^||20200502|M|||123 Main St^^Toronto^ON^M5G
1X8|| (123) 456-7890|||S||123456789|987654321
NK1|1|Oliver^Jane|MTH|456 Other St^^Toronto^ON^M5G 2X9|| (987) 654-3210
PV1|1|I|W^389^1^A^^^Some Hospital|||12345^Malcolmson^Caroline^^^Dr.|||||||A0
Z01|CustomField1^CustomValue1|CustomField2^CustomValue2
```

- パイプ “|” が主な区切り文字。
  - ただし、必ずしもパイプ “|” である必要はない
  - たとえば、セミコロン “;” でも構成できる
- メッセージタイプ – “ADT^A01” (Admission Discharge Transfer ^ Admitted)
- セグメント – MSH, EVN, PID, NK1, PV1, Z01
- 成分とサブ成分の区切り文字 – “^”, “&”, “~”, “¥”



```
<PRPA_IN201305UV02 xmlns="urn:hl7-org:v3" ITSVersion="XML_1.0">
  <id root="1.2.3.4"/>
  <creationTime value="20230911143411"/>
  <receiver typeCode="RCV">...</receiver>
  <sender typeCode="SND">...</sender>
  <controlActProcess classCode="CACT" moodCode="EVN">
    <code code="PRPA_TE201305UV02" codeSystem="2.16.840.1.113883.1.6"/>
    <queryByParameter>
      <parameterList>
        <livingSubjectId>
          <value extension="08242eb8-dd47-4298-8d2f-25d60114f137" root="1.1.1.2.2"/>
          <semanticsText>LivingSubject.id</semanticsText>
        </livingSubjectId>
      </parameterList>
    </queryByParameter>
  </controlActProcess>
</PRPA_IN201305UV02>
```

Patient Demographic Query (PDQ)

```
<ClinicalDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:hl7-org:v3">
```

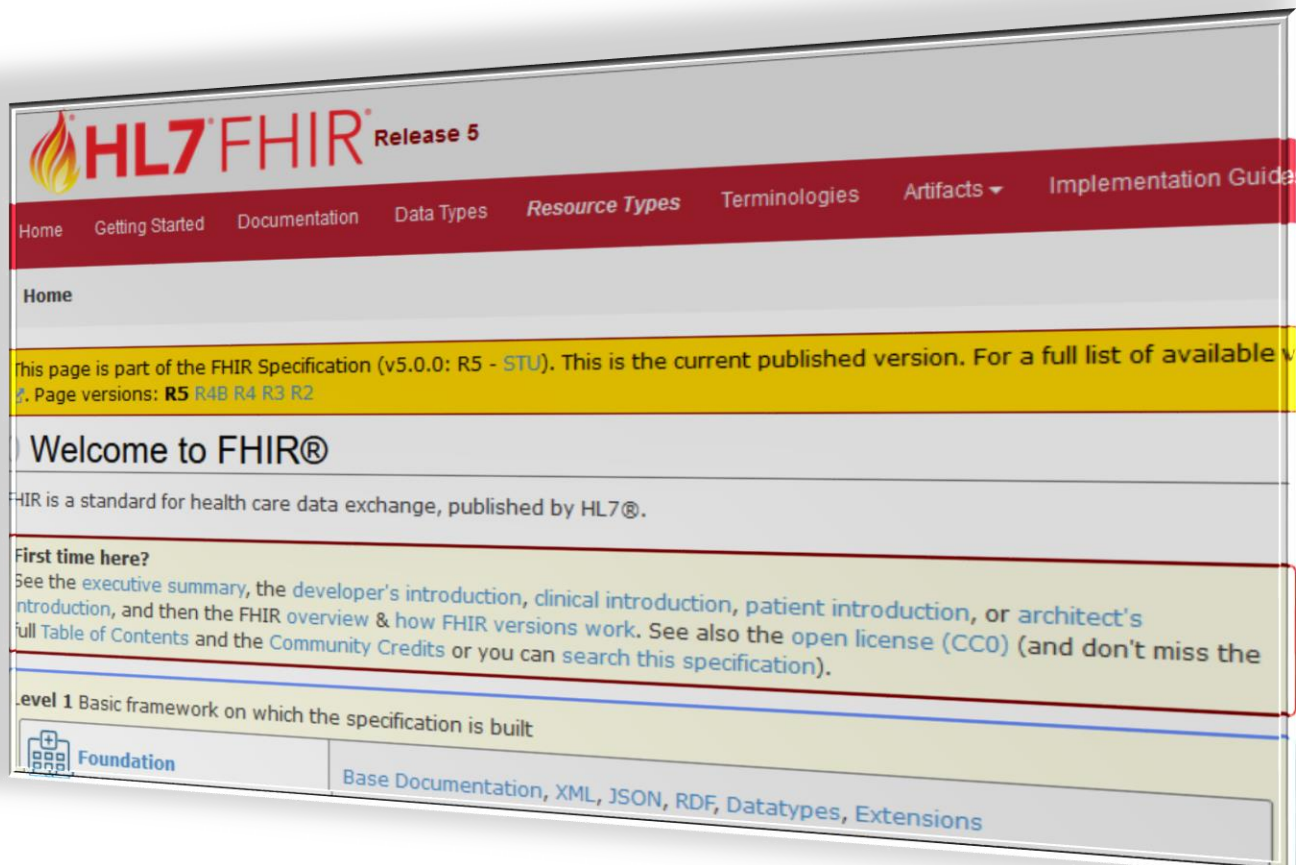
退院サマリレポート

```
  <realmCode code="US"/>
  <typeId root="2.16.840.1.113883.1.3" extension="POCD_HD000040"/>
  <!-- US General Header Template -->
  <templateId root="2.16.840.1.113883.10.20.22.1.1" extension="2014-06-09"/>
  <!-- Discharge Summary Template -->
  <templateId root="2.16.840.1.113883.10.20.22.1.8" extension="2014-06-09"/>
  <id extension="TT988" root="2.16.840.1.113883.19.5.99999.1"/>
  <code codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" code="18842-5"
displayName="Discharge summary"/>
  <title>Community Health and Hospitals: Discharge Summary</title>
  <effectiveTime value="201409171904-0500"/>
  <recordTarget>
    <patientRole>
      <patient>...</patient>
      <providerOrganization>...</providerOrganization>
    </patientRole>
  </recordTarget>
  ...
```



# FHIRとは

# Fast Healthcare Interoperability Resources



The screenshot shows the HL7 FHIR Release 5 website. The header includes the HL7 FHIR logo and the text "Release 5". A navigation bar contains links for Home, Getting Started, Documentation, Data Types, Resource Types, Terminologies, Artifacts, and Implementation Guides. The main content area starts with a "Home" heading, followed by a yellow banner stating: "This page is part of the FHIR Specification (v5.0.0: R5 - STU). This is the current published version. For a full list of available versions, see the [Page versions: R5 R4B R4 R3 R2](#)". Below this is a "Welcome to FHIR®" section, followed by a paragraph: "FHIR is a standard for health care data exchange, published by HL7®." A "First time here?" section provides links to the [executive summary](#), [developer's introduction](#), [clinical introduction](#), [patient introduction](#), or [architect's introduction](#), and then the [FHIR overview & how FHIR versions work](#). It also mentions the [open license \(CC0\)](#) and the [full Table of Contents](#) and [Community Credits](#). At the bottom, there is a "Level 1 Basic framework on which the specification is built" section with a "Foundation" link and a list of topics: "Base Documentation, XML, JSON, RDF, Datatypes, Extensions".

- 医療情報交換のための最新の HL7 標準規格。
- 基本的な構成要素として「リソース」を定義。
- FHIR は HL7によって、© かつ ®。
- ©は、著作権（Copyright）を意味する。FHIRに関連するドキュメントやリソースの著作権は、HL7に帰属していることを示している。
- ®は、登録商標（Registered Trademark）を意味する。FHIRの名称やロゴがHL7によって商標登録されていることを示しており、商標の保護対象であることを意味する。
- <https://hl7.org/fhir/license.html>

<https://hl7.org/fhir/>



[Home](#) [Getting Started](#) [Documentation](#) [Data Types](#) [Resource Types](#) [Terminologies](#) [Artifacts](#) [Implementation Guides](#)

Home

This page is part of the FHIR Specification (v5.0.0: R5 - STU). This is the current published version. For a full list of available versions, see the [Directory of published versions](#).  
Page versions: [R5](#) [R4B](#) [R4](#) [R3](#) [R2](#)

## 0 Welcome to FHIR®

FHIR is a standard for health care data exchange, published by HL7®.

### First time here?

See the [executive summary](#), the [developer's introduction](#), [clinical introduction](#), [patient introduction](#), or [architect's introduction](#), and then the [FHIR overview & how FHIR versions work](#). See also the [open license \(CC0\)](#) (and don't miss the full [Table of Contents](#) and the [Community Credits](#) or you can [search this specification](#)).

### Level 1 Basic framework on which the specification is built



Foundation

Base Documentation, XML, JSON, RDF, Datatypes, Extensions

<https://jpfhir.jp/fhir/clins/igv1/>

## 1 電子カルテ情報共有サービス2文書5情報・患者サマリー FHIR仕様 JP-CLINS

項目	内容
定義URL	<a href="http://jpfhir.jp/fhir/clins/ImplementationGuide/clinical-information-sharing">http://jpfhir.jp/fhir/clins/ImplementationGuide/clinical-information-sharing</a>
Version	1.5.4
Name	JP_CLINS_FHIR_IG
Title	電子カルテ情報共有サービス2文書5情報+患者サマリー FHIR実装ガイド JP-CLINS (Clinical Information Sharing ImplementationGuide) v1.5.4
Status	Active ( 2024-11-10 )
Copyright	(一社) 日本医療情報学会. CC BY-ND 4.0 (クリエイティブ・コモンズ 表示-改変禁止 4.0 国際 パブリック・ライセンス)

### 1.1 留意事項

本実装ガイドに関する質問やコメント(要望等を含む)は、以下のGoogleフォームから投稿してください。投稿にあたっては、Googleフォーム冒頭の説明をお読みいただき、了解された場合のみ投稿くださるようお願いいたします。質問・コメント投稿フォームへ [パッケージ \(tgzファイル\)](#) のダウンロードは上部メニューから可能です。

本実装ガイドでは、「電子カルテ情報共有サービス」を略してCLINSと記載する。CLINSへのデータ送信のこともCLINSと記載することがある。

本実装ガイドのバージョンと、対応する内容の2文書のPDF版仕様書のバ

本実装ガイド(IG)は、HL7 FHIR R4.0.1に従い、JP-Core V1.1.xからの派生プロファイルの実装ガイドとして作成されている、と書かれている。  
(Release 5 ではないことに注意)

### 1.2 CLINSのためのFHIR実装ガイド

#### 1.2.1 本実装ガイド(IG)の目的:

厚生労働省が定めるいわゆる「3文書6情報」のうち健診結果報告書を除く、2文書5情報。また、5情報をCLINSに送信する際のBundleリソースの仕様や、送信した情報を同一のFHIR実装ガイドも含まれる。

- [FHIR厚生労働省標準規格の2文書](#)
  - HS038 診療情報提供書HL7FHIR記述仕様
  - HS039 退院時サマリーHL7FHIR記述仕様

本実装ガイド(IG)は、[HL7 FHIR R4.0.1](#)に従い、[JP-Core V1.1.x](#)からの派生プロファイルの実装ガイドとして作成されている。従って、本IGに記述されていないことについては、[JP-Core V1.1.x](#)を参照していただきたい。




































<https://hl7.org/fhir/directory.html>



## Publication (Version) History

This table provides a list of all the versions of FHIR (Fast Health Interoperability Resources) that are available for download. For more information, see the [Publication Guides](#).

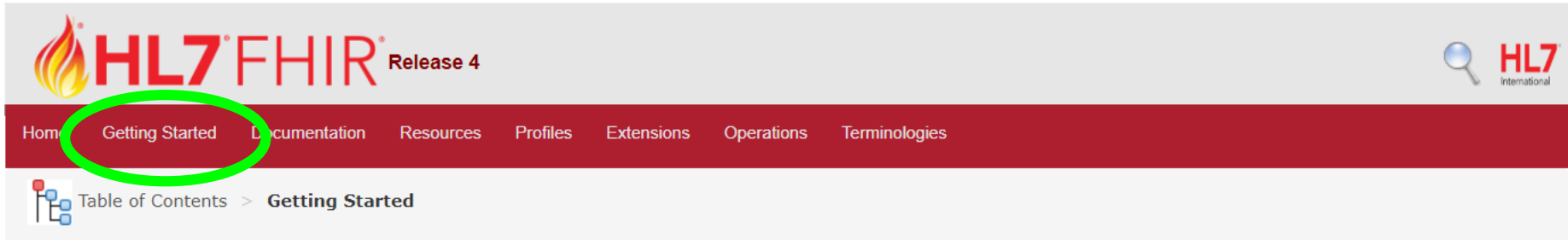
The following versions have been published:

Date	Version	Description	Links
<b>Current Versions</b>			
2023-03-26	5.0.0	FHIR Release #5	      
(current)	(last commit)	Current Development build (about 30min behind version control, may be incoherent and change rapidly)	   
<b>R6 Sequence</b> (Work in Progress)			
2024-08-13	6.0.0-ballot2	FHIR R6 Ballot (2nd Draft)	   
2023-12-19	6.0.0-ballot1	FHIR R6 Ballot (1st Draft)	   
<b>R5 Sequence</b> (Current)			
2023-03-26	5.0.0	FHIR Release #5 (Permanent Home)	      
2023-03-01	5.0.0-draft-final	FHIR Release #5 Final QA	      

公開バージョン

開発バージョン

<https://hl7.org/fhir/R4/modules.html>



HL7 FHIR Release 4

Home **Getting Started** Documentation Resources Profiles Extensions Operations Terminologies

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This page is part of the FHIR Specification (v4.0.1: R4 - Mixed [Normative](#) and [STU](#)) in its permanent home (it will always be available at this URL). The current version which supercedes this version is [5.0.0](#). For a full list of available versions, see the [Directory of published versions](#). Page versions: [R5](#) [R4B](#) [R4](#) [R3](#)

## 1.9 Getting Started with FHIR

[FHIR Infrastructure](#) Work Group

Maturity Level: N/A

Standards Status: Informative

FHIR is a platform specification that defines a set of capabilities use across the healthcare process, in all jurisdictions, and in lots of different contexts. While the basics of the FHIR specification are relatively straight-forward (see the Overviews: [General](#), [Developers](#), [Clinical](#), and [Architects](#)), it can still be difficult to know where to start when implementing a solution based on FHIR.

This page provides some guidance to help get new implementers started. Where should an implementer start? Generally, an implementer needs to know:

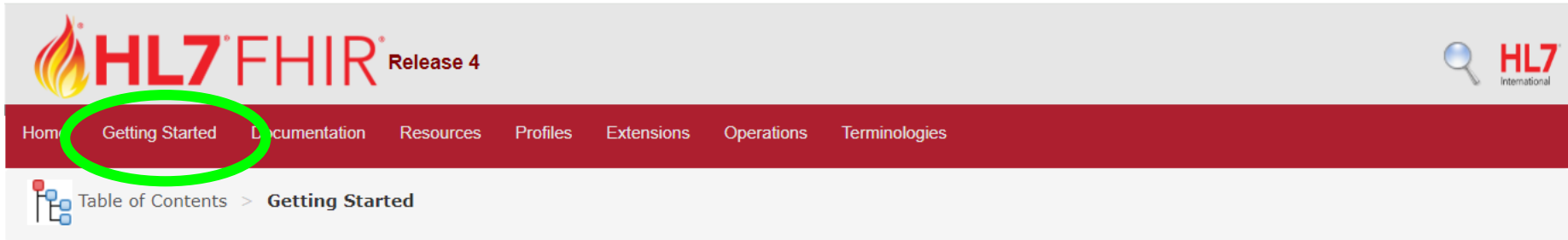
- How will information be exchanged? (see [Foundation Module](#))
- How are terminologies being used? (see [Terminology Module](#))
- How will the information be secured? (see [Security and Privacy](#))
- When is information exchanged? (See [Workflow Module](#))
- What information is going to be exchanged?

FHIR 仕様の基本は比較的わかりやすいが、FHIRに基づくソリューションを実装するときどこから始めればよいかわかりにくい

The remaining sections provide guidance on specific areas (Foundation, Implementer Support, Security and Privacy, Conformance, Terminology, Linked Data, Administration, Clinical, Diagnostics, Medications, Workflow, Financial and Clinical Reasoning).



<https://hl7.org/fhir/R4/modules.html>



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## 1.9 Getting Started with FHIR

[FHIR Infrastructure](#) Work Group

FHIR is a platform specification that defines a set of capabilities use across the specification are relatively straight-forward (see the Overviews: [General](#), [Development](#), [Implementation](#), [Solution based on FHIR](#)).

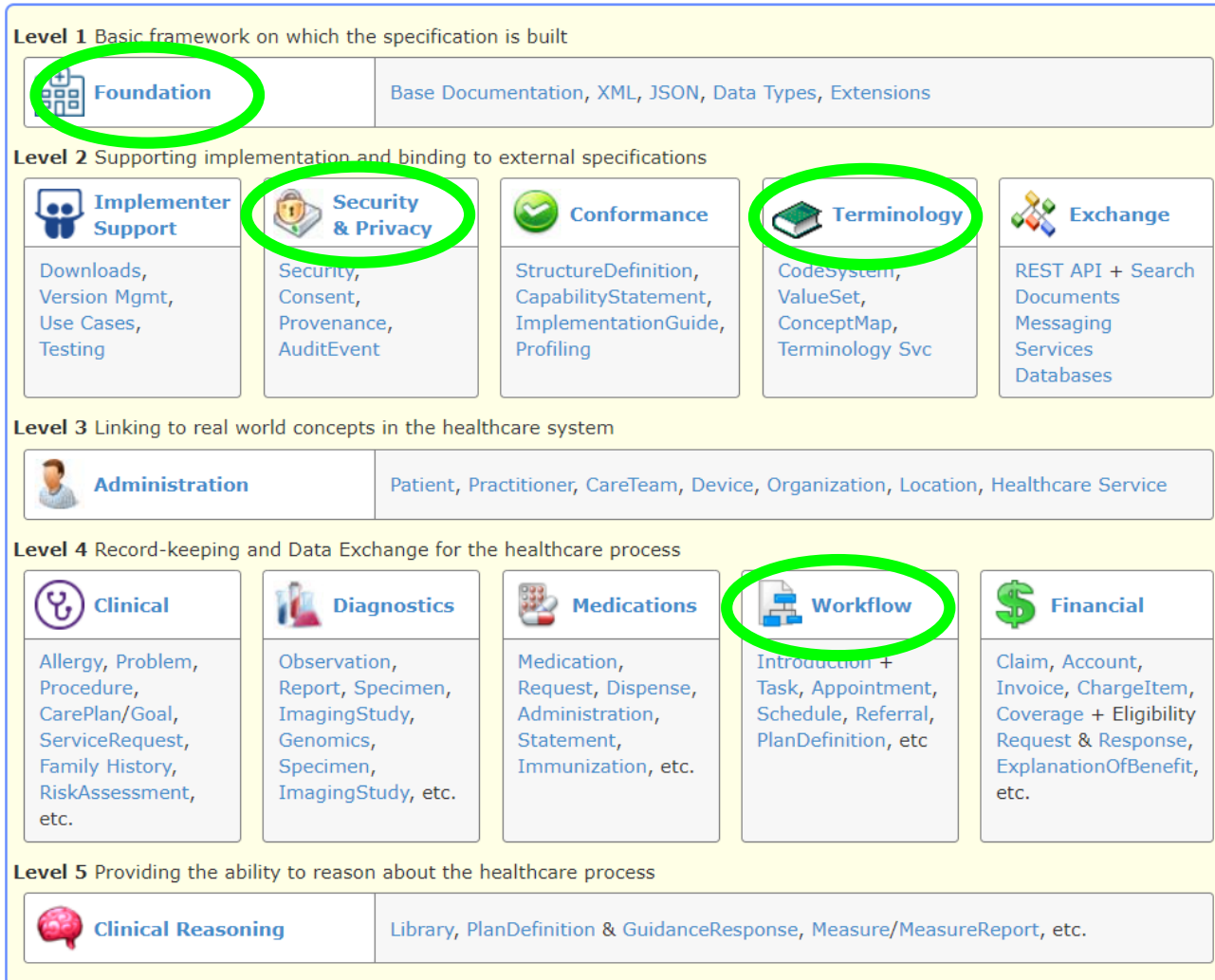
This page provides some guidance to help get new implementers started on the specification. Where should an implementer start? Generally, an implementer needs to resolve:

- How will information be exchanged? (see [Foundation Module](#))
- How are terminologies being used? (see [Terminology Module](#))
- How will the information be secured? (see [Security and Privacy Module](#))
- When is information exchanged? (See [Workflow Module](#))
- What information is going to be exchanged?

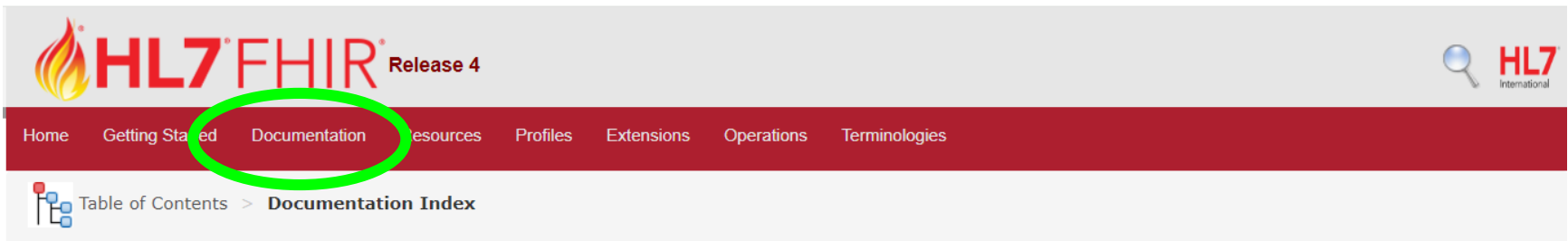
The remaining sections provide guidance on specific areas (Foundation, Implementer Support, Security and Privacy, Conformance, Terminology, Linked Data, Administration, Clinical, Diagnostics, Medications, Workflow, Financial and Clinical Reasoning).

情報はどのように交換されるか?  
(Foundation モジュールを参照)  
用語はどのように使用されるか?  
(Terminology モジュールを参照)  
情報はどのように保護されるか?  
(Security and Privacy モジュールを参照)  
情報はいつ交換されるか?  
(Workflow モジュールを参照)

<https://hl7.org/fhir/R4/modules.html>



<https://hl7.org/fhir/R4/documentation.html>



HL7 FHIR Release 4

Home Getting Started **Documentation** Resources Profiles Extensions Operations Terminologies

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This page is part of the FHIR Specification (v4.0.1: R4 - Mixed [Normative](#) and [STU](#)) in it's permanent home (it will always be available at this URL). The current version which supercedes this version is [5.0.0](#). For a full list of available versions, see the [Directory of published versions](#). Page versions: [R5](#) [R4B](#) [R4](#) [R3](#) [R2](#)

## 1.1 Documentation Index

FHIR Infrastructure <a href="#">Work Group</a>	Maturity Level: N/A	Standards Status: Informative
--	---------------------	-------------------------------

This page provides an index to the key commonly used documentation pages for FHIR.

### Framework

- [Conformance Rules](#) **N**
- [Resource Life Cycles](#)
- [References between Resources](#) **N**
- [Compartments](#)
- [Narrative](#) **N**
- [Extensibility](#) **N**
- [Formats](#): **N** [XML](#) **N**, [JSON](#) **N**, & [RDF](#)
- [Terminologies](#) **N** (Code Systems, Value Sets)
- [FHIRPath](#) **N**
- [Mappings to other standards](#)

### Version Management

- [Change Management & Versioning](#) **N**
- [Managing Multiple FHIR Versions](#)

### Exchanging Resources

- [RESTful API \(HTTP\)](#) **N**
  - [Search](#) **N** ([Search Param Registry](#))
  - [Operations](#) **N**
  - [Asynchronous Use](#)
  - [Using GraphQL](#)
- [Documents](#)
- [Messaging](#)
- [Services](#)
- [Persistence/Data bases](#)

### Base Types

- [Data Types \(Base\)](#) **N**
- [Metadata Types](#) **N**
- [Resource](#) **N**

### Adopting & Using FHIR

- [Profiling FHIR](#) **N**
- [FHIR Workflow](#)
- [Downloads - Schemas, Code, Tools](#)
- [Managing Multiple FHIR Versions](#)
- [Validating Resources](#)
- [Best Practices for Implementers](#)
- [Mapping Language \(tutorial\)](#)
- [Testing Implementations](#)

### Safety & Security

- [Security, Security Labels & Signatures](#)
- [Clinical Safety](#)

### Implementation Advice

<https://hl7.org/fhir/R4/resourcelist.html>

リソースとは、次のようなエンティティである

- ・既知の ID を持ち、アドレス指定できる URL を持つ
- ・リソース タイプの定義で説明されている構造化データ項目のセットを含む
- ・リソースの内容が変更されると、変更される識別されたバージョンを持つ



This page is part of the FHIR Specification (v4.0.1: R4 - Mixed Normative and supercedes this version is 5.0.0. For a full list of available versions, see the D

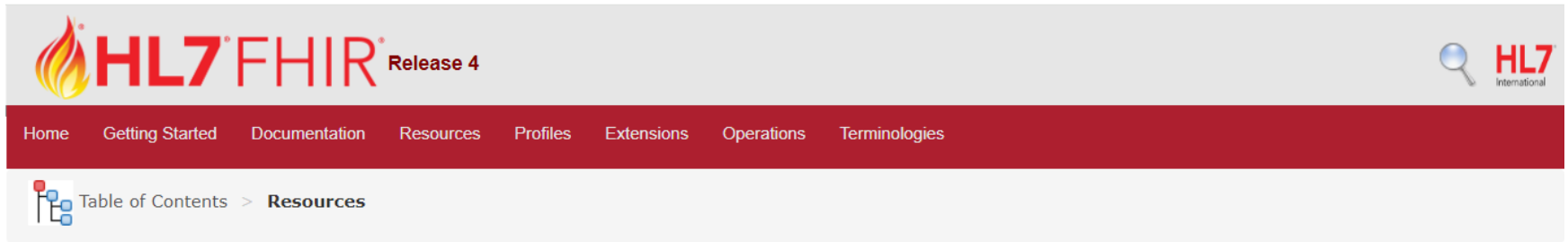
## 1.2 Resource Index

FHIR Infrastructure <a href="#">Work Group</a>	Maturity Level: N/A	Standards Status: Informative
--	---------------------	-------------------------------

This page is provided to help find resources quickly. There is also a more [detailed classification, ontology, and description](#). For background to the layout on the layers in this page, see the [Architect's Overview](#). See also the abstract Base Resources [Resource](#) and [DomainResource](#).

Categorized	Alphabetical	R2 Layout	By Maturity	Security Category	By Standards Status	By Committee
<p><b>Conformance</b></p> <ul style="list-style-type: none"> <li>• CapabilityStatement <b>N</b></li> <li>• StructureDefinition <b>N</b></li> <li>• ImplementationGuide 1</li> <li>• SearchParameter 3</li> <li>• MessageDefinition 1</li> <li>• OperationDefinition <b>N</b></li> <li>• CompartmentDefinition 1</li> <li>• StructureMap 2</li> <li>• GraphDefinition 1</li> <li>• ExampleScenario 0</li> </ul>	<p><b>Terminology</b></p> <ul style="list-style-type: none"> <li>• CodeSystem <b>N</b></li> <li>• ValueSet <b>N</b></li> <li>• ConceptMap 3</li> <li>• NamingSystem 1</li> <li>• TerminologyCapabilities 0</li> </ul>	<p><b>Security</b></p> <ul style="list-style-type: none"> <li>• Provenance 3</li> <li>• AuditEvent 3</li> <li>• Consent 2</li> </ul>	<p><b>Documents</b></p> <ul style="list-style-type: none"> <li>• Composition 2</li> <li>• DocumentManifest 2</li> <li>• DocumentReference 3</li> <li>• CatalogEntry 0</li> </ul>	<p><b>Other</b></p> <ul style="list-style-type: none"> <li>• Basic 1</li> <li>• Binary <b>N</b></li> <li>• Bundle <b>N</b></li> <li>• Linkage 0</li> <li>• MessageHeader 4</li> <li>• OperationOutcome <b>N</b></li> <li>• Parameters <b>N</b></li> <li>• Subscription 3</li> </ul>		

<https://hl7.org/fhir/R4/resourcelist.html>



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This page is part of the FHIR Specification (v4.0.1: R4 - Mixed Normative and STU) in its permanent home (it will always be available at this URL). The current version which supercedes this version is 5.0.0. For a full list of available versions, see the [Directory of published versions](#). Page versions: R5 R4B R4 R3 R2

## 1.2 Resource Index

FHIR Infrastructure <a href="#">Work Group</a>	Maturity Level: N/A	Standards Status: Informative
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Categorize **Alphabetical** 2 Layout By Maturity Security Category By Standards Status

**Alphabetical**

**A-D:**

- Account 2
- ActivityDefinition 2
- AdverseEvent 0
- AllergyIntolerance 3
- Appointment 3
- AppointmentResponse 3
- AuditEvent 3
- Basic 1
- Binary **N**
- BiologicallyDerivedProduct 0

**D-L:**

- DeviceMetric 1
- DeviceRequest 1
- DeviceUseStatement 0
- DiagnosticReport 3
- DocumentManifest 2
- DocumentReference 3
- EffectEvidenceSynthesis 0
- Encounter 2
- Endpoint 2
- EnrollmentRequest 0

**M-P:**

- Measure 2
- MeasureReport 2
- Media 1
- Medication 3
- MedicationAdministration 2
- MedicationDispense 2
- MedicationKnowledge 0
- MedicationRequest 3
- MedicationStatement 3
- MedicinalProduct 0

**P-Z:**

- PractitionerRole 2
- Procedure 3
- Provenance 3
- Questionnaire 3
- QuestionnaireResponse 3
- RelatedPerson 2
- RequestGroup 2
- ResearchDefinition 0
- ResearchElementDefinition 0
- ResearchStudy 1

リソースの後の数字は、Maturity Level を表す

<https://hl7.org/fhir/R4/versions.html#maturity>

## 2.7.0.2 Maturity Levels

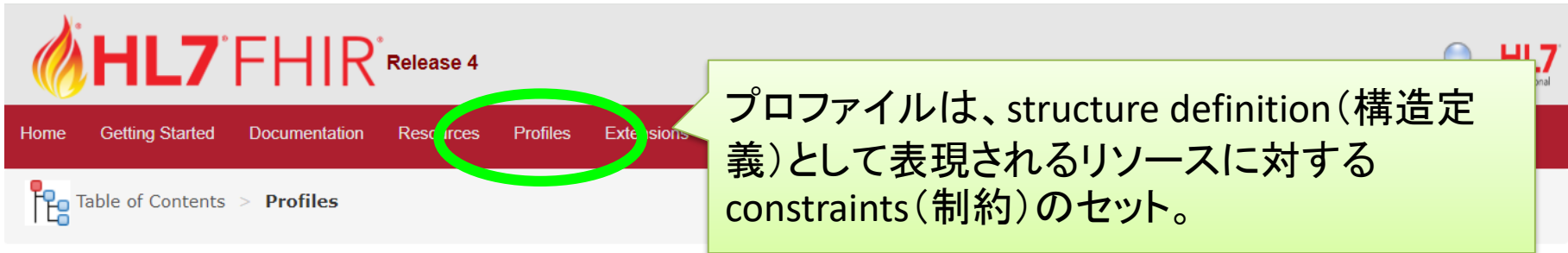
The content of this release has been subject to significant review through ballot and other HL7 processes and many aspects of it have been implemented and subjected to interoperability testing through Connectathons and early adoption. However, the degree of testing has varied. Some resources have been well tested in a variety of environments. Others have received relatively little real-world exercise. In general, the infrastructure should be considered to be more stable than the resources themselves. In some cases, there are issues on which input is specifically requested during the [Trial Use](#) period (see the [Outstanding Issue List](#), and known issues will arise after publication (refer to the [FHIR Change Request](#) tracker for details.) Guidance from early implementation will help address these areas.

All artifacts in this specification are assigned a "Maturity Level", known as FMM (after the well-known [CMM](#) grades). The FMM level can be used by implementers to judge how advanced - and therefore stable - an artifact is. The following FMM levels are defined:

- Draft (0)** The resource or profile (artifact) has been published on the current build. This level is synonymous with *Draft*
- FMM 1** PLUS the artifact produces no warnings during the build process and the responsible WG has indicated that they consider the artifact substantially complete and ready for implementation. For resources, profiles and implementation guides, the FHIR Management Group has approved the underlying resource/profile/IG proposal
- FMM 2** PLUS the artifact has been tested and successfully supports interoperability among at least three independently developed systems leveraging most of the scope (e.g. at least 80% of the core data elements) using semi-realistic data and scenarios based on at least one of the declared scopes of the artifact (e.g. at a connectathon). These interoperability results must have been reported to and accepted by the FMG
- FMM 3** PLUS + the artifact has been verified by the work group as meeting the [Conformance Resource Quality Guidelines](#); has been subject to a round of formal balloting; has at least 10 distinct implementer comments recorded in the tracker drawn from at least 3 organizations resulting in at least one substantive change
- FMM 4** PLUS the artifact has been tested across its scope (see below), published in a formal publication (e.g. [Trial-Use](#)), and implemented in multiple prototype projects. As well, the responsible work group agrees the artifact is sufficiently stable to require implementer consultation for subsequent non-backward compatible changes
- FMM 5** The artifact has been published in two formal publication release cycles at FMM1+ (i.e. [Trial-Use](#) level) and has been implemented in at least 5 independent production systems in more than one country
- Normative** The artifact is now considered stable

数字が大きいほど成熟度が高い。Normativeになると安定とみなされる。

<https://hl7.org/fhir/R4/profilelist.html>



HL7 FHIR Release 4

Home Getting Started Documentation Resources **Profiles** Extensions

Table of Contents > Profiles

プロファイルは、structure definition (構造定義)として表現されるリソースに対する constraints (制約)のセット。

This page is part of the FHIR Specification (v4.0.1: R4 - Mixed Normative and STU) in it's permanent home (it will always be available at this URL). The current version which supercedes this version is 5.0.0. For a full list of available versions, see the [Directory of published versions](#). Page versions: [R5](#) [R4B](#) **[R4](#)** [R3](#) [R2](#)

## 1.3 Profiles defined as part of FHIR

<a href="#">FHIR Infrastructure</a> Work Group	Maturity Level: N/A	Standards Status: Informative
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This specification is a common platform standard that must be [adapted to particular use cases](#). Some particular use cases are common or important enough to be described as a part of the specification itself. These are published as groups of [Structure Definitions](#) (profiles or extensions), which are often found in implementation guides, along with [Value Sets](#), newly defined [search parameters](#) and examples that are all defined with a common purpose. Additional profiles and extensions may be registered on the HL7 FHIR registry at <http://registry.fhir.org>

Name	Description	Kind	FMM
<b>General</b>			
<a href="#">EHRS FM Record Lifecycle Event - Audit Event</a>	Defines the elements to be supported within the AuditEvent resource in order to conform with the Electronic Health Record System Functional Model Record Lifecycle Event standard	profiles	
<a href="#">Clinical Reasoning Extensions</a>	Defines common extensions used by the Clinical Reasoning Module.	extensions	
<a href="#">Common extensions for Coding data type</a>	Defines "common" extensions for use with the DataElement data type	extensions	

HL7 FHIR R4.0.1 (FHIR 基底仕様)



日本で使うために、constraints (制約) を付加

JP-Core V1.1.x



電子カルテ情報共有サービスで使うために、さらに、  
constraints (制約) を付加

電子カルテ情報共有サービス2文書5情報+患者サマリー FHIR実装ガイド JP-CLINS  
(Clinical Information Sharing Implementation Guide) v1.5.4

JP-Core、JP-CLINSは、どちらも特定用途として、HL7  
FHIR R4.0.1に制約を加えたプロファイル



- JP Coreでは、Patient.identifier (患者を識別するための識別子) は必ず存在しなければならない (HL7 FHIR R4.0.1 では、必須ではない)
- 薬剤アレルギーとその他アレルギー等の情報を表すコードは、JP Core AllergyIntolerance ValueSet を使うこと (HL7 FHIR R4.0.1 では、Exampleとしてsnomedコードが例示されているだけ)

派生先のプロファイルは、派生元より  
制約を厳しくしている

<https://hl7.org/fhir/R4/extensibility.html>




extension (拡張)は、リソースに有効なデータ要件を追加するための FHIR アプローチ。

This page is part of the FHIR Specification (v4.0.1: R4 - Mixed [Normative](#) and [STU](#)) in its permanent home (it will always be available at this URL). The current version which supercedes this version is [5.0.0](#). For a full list of available versions, see the [Directory of published versions](#). Page versions: [R5](#) [R4B](#) **[R4](#)** [R3](#) [R2](#)

[Extensibility](#) | [Defining Extensions](#) | [Examples](#) | [Detailed Descriptions](#) | [Registry](#)

## 2.5.0 Extensibility

[FHIR Infrastructure](#) [Work Group](#) | [Maturity Level: Normative](#) | [Standards Status: Normative](#)

 This page has been approved as part of an [ANSI](#) standard. See the [Infrastructure](#) Package for further details.

This exchange specification is based on generally agreed common requirements across healthcare - covering many jurisdictions, domains, and different functional approaches. It is common for specific implementations to have valid requirements that are not part of these agreed common requirements. Incorporating all valid requirements would make this specification very cumbersome and difficult to implement. Instead, this specification expects that additional valid requirements will be implemented as extensions.

As such, extensibility is a fundamental part of the design of this specification. Every element in a resource can have extension child elements to represent additional information that is not part of the basic definition of the resource. Applications should not reject resources merely because they contain extensions, though they may need to reject resources because of the specific contents of the extensions.

Note that, unlike in many other specifications, there can be no stigma associated with the use of extensions by any application, project, or standard - regardless of the institution or jurisdiction that uses or defines the extensions. The use of extensions is what allows the FHIR specification to retain a core simplicity for everyone.

To make the use of extensions safe and manageable, there is strict governance applied to the definition and use of extensions. Although any implementer can define and use extensions, there is a set of requirements that must be met as part of their use and definition.

<https://jpfhir.jp/fhir/core/1.1.2/StructureDefinition-jp-patient.html>

Differential Table
Key Elements Table
Snapshot Table
Text Summary
Terminology Bindings
Constraints
All

Name	Flags	Card.	Type	Description & Constraints
Patient		0..*	Patient	医療サービスを受けている個人または動物に関する情報
★ Slices for extension		0..*	Extension	Extension Slice: Unordered, Open by value:url
● religion		0..*	CodeableConcept	患者の宗教【詳細参照】 URL: <a href="http://hl7.org/fhir/StructureDefinition/patient-religion">http://hl7.org/fhir/StructureDefinition/patient-religion</a> Binding: ReligiousAffiliation (preferred)
● birthPlace		0..1	Address	患者の生誕地【詳細参照】 URL: <a href="http://hl7.org/fhir/StructureDefinition/patient-birthPlace">http://hl7.org/fhir/StructureDefinition/patient-birthPlace</a>
● race		0..*	CodeableConcept	患者の人種【詳細参照】 URL: <a href="http://jpfhir.jp/fhir/core/Extension/StructureDefinition/JP_Patient_Race">http://jpfhir.jp/fhir/core/Extension/StructureDefinition/JP_Patient_Race</a> Binding: Race (preferred)
Identifer		1..	Identifer	患者の識別子【詳細参照】
use		0..1	code	usual   official   temporary   secondary   old (If known)【詳細参照】
type		0..1	CodeableConcept	識別子の種別
system		0..1	uri	The namespace of the identifier
value		1..1	string	識別子のvalue
period		0..1	Period	IDが使用に有効な期間
assigner		0..1	Reference(JP Core Organization Profile)	IDを発行した組織 (be just text)
active		0..1	boolean	この患者の記録がアクティブかどうか
name		0..*	JP_HumanName	人の名前情報、漢字・カナ表記

**JP Patient リソースで使用される拡張**

- religion 患者の宗教を表す
- birthPlace 患者の生誕地を表す
- race 患者の人種に関する情報を表す
- nameRepresentationUse 患者氏名(Patient.name)の漢字表記・カナ表記識別のために使用する

<https://jpfhir.jp/fhir/core/1.1.2/StructureDefinition-jp-humanname.html>

Differential Table
Key Elements Table
Snapshot Table
Text Summary
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Constraints
All

Name	Flags	Card.	Type	Description & Constraints
HumanName		0..*	HumanName	人の名前情報、その一部分と使い方
id		0..1	string	要素間参照のための一意のID / Unique id for inter-element referencing
★ Slices for extension		0..*	Extension	実装で定義された追加のコンテンツ / Additional content defined by implementations Slice: Unordered, Open by value:url
● nameRepresentationUse		0..1	code	ABC   IDE   SYL URL: <a href="http://hl7.org/fhir/StructureDefinition/iso21090-EN-representation">http://hl7.org/fhir/StructureDefinition/iso21090-EN-representation</a> Binding: NameRepresentationUse (required)
use	! 2	0..1	code	通常 公式 一時的 ニックネーム 匿名 古い 未婚女性 / usual   official   temp   nickname   anonymous   old   maiden Binding: NameUse (required): 人間名の使用。 / The use of a human name.
text	Σ	0..1	string	フルネームのテキスト表現 / Text representation of the full name
family	Σ	0..1	string	姓【姓】と呼ばれることが多い / Family name (often called 'Surname')
given	Σ	0..*	string	指定された名前（常に「最初」ではありません）。ミドルネームが含まれています / Given names (not always 'first'). Includes middle names This repeating element order: Given Names appear in the correct order for presenting the name
prefix	Σ	0..*	string	名前の前に来るパーツ / Parts that come before the name
suffix				
period				

code	説明	text	family	given
IDE	表意文字	山田 太郎	山田	太郎
SYL	表音文字	ヤマダ タロウ	ヤマダ	タロウ
ABC	アルファベット	YAMADA TARO	YAMADA	TARO

```
"name" : [
  {
    "extension" : [
      {
        "url" : "http://hl7.org/fhir/StructureDefinition/iso21090-EN-representation",
        "valueCode" : "IDE"
      }
    ],
    "use" : "usual",
    "text" : "山田 太郎",
    "family" : "山田",
    "given" : [
      "太郎"
    ]
  },
  {
    "extension" : [
      {
        "url" : "http://hl7.org/fhir/StructureDefinition/iso21090-EN-representation",
        "valueCode" : "SYL"
      }
    ],
    "use" : "usual",
    "text" : "ヤマダ タロウ",
    "family" : "ヤマダ",
    "given" : [
      "タロウ"
    ]
  },
  {
    "extension" : [
      {
        "url" : "http://hl7.org/fhir/StructureDefinition/iso21090-EN-representation",
        "valueCode" : "ABC"
      }
    ],
    "use" : "usual",
    "text" : "YAMADA TARO",
    "family" : "YAMADA",
    "given" : [
      "TARO"
    ]
  }
]
```

## リソースでの記述例

<https://hl7.org/fhir/R4/operationslist.html>



RESTful API は、型指定されたリソースのリポジトリに対して実行されるread(読み取り)、update(更新)、search(検索)などの一般的な一連の操作を定義。

This page is part of the FHIR Specification (v4.0.1: R4 - Mixed Normative and supercedes this version is 5.0.0. For a full list of available versions, see the [Differences](#) page.

## 1.5 Defined RESTful API Operations

FHIR Infrastructure [Work Group](#) | [Maturity](#)

The [RESTful API](#) defines a set of common interactions (read, update, search, etc.) performed on a repository of typed resources. For further information concerning how operations are defined and invoked, see [Extended Operations on the RESTful API](#).

This is a full list of the operations defined by this specification:

Base Operations (All resource types)	
<a href="#">Validate a resource</a>	[base]/[Resource]/\$validate   [base]/[Resource]/[id]/\$validate
<a href="#">Access a list of profiles, tags, and security labels</a>	[base]/\$meta   [base]/[Resource]/\$meta   [base]/[Resource]/[id]/\$meta
<a href="#">Add profiles, tags, and security labels to a resource</a>	[base]/[Resource]/[id]/\$meta-add
<a href="#">Delete profiles, tags, and security labels for a resource</a>	[base]/[Resource]/[id]/\$meta-delete
<a href="#">Convert from one form to another</a>	[base]/\$convert
<a href="#">Execute a graphql statement</a>	[base]/\$graphql   [base]/[Resource]/[id]/\$graphql
<a href="#">Return a graph of resources</a>	[base]/[Resource]/[id]/\$graph

<https://hl7.org/fhir/R4/terminologies-systems.html>



HL7 FHIR Release 4

Home Getting Started Documentation Resources Profiles Extensions Operations **Terminologies**

Terminology > Code Systems

This page is part of the FHIR Specification (v4.0.1: R4 - Mixed Normative and STU) in its current state. This version is superseded by 5.0.0. For a full list of available versions, see the Directory of Versions.

Using Codes Code Systems Value Sets Concept Maps Identifier Systems

用語集は、FHIR で使用される体系化された概念の集合。

## 4.3.0 Code Systems

Vocabulary <a href="#">Work Group</a>	Maturity Level: 3	Standards Status: Trial Use
---------------------------------------	-------------------	-----------------------------

The following names (URIs) may be used in the *system* element of the [Coding](#) data type. If a URI is defined here, it SHALL be used in preference to any other identifying mechanisms. If a code system is not listed here, the correct URI may be determined by working through the following list, in order:

- the HL7 OID Registry
- the documentation associated with the code system
- consulting the owner of the code system
- asking on the HL7 vocabulary mailing list

See also the [list of known identifier systems](#) that can be used in the *system* element of the [Identifier](#) data type. Additional identifier systems may be registered on the HL7 FHIR registry at <http://hl7.org/fhir/registry>.

<https://hl7.org/fhir/R4/terminologies-systems.html>

SNOMED CT、LOINC、GS1など、HL7以外の組織で作られた用語

HL7 V3で作られた用語

HL7 V2で作られた用語

FHIRで作られた用語

External		Internal (FHIR)	External (FHIR)	HL7 v3	HL7 v2
URI					OID (for non-FHIR systems)
Externally Published code systems					
<a href="http://snomed.info/sct">http://snomed.info/sct</a>	SNOMED CT (IHTSDO <a href="#">↗</a> )				2.16.840.1.113883.6.96
<a href="http://www.nlm.nih.gov/research/umls/rxnorm">http://www.nlm.nih.gov/research/umls/rxnorm</a>	RxNorm (US NLM <a href="#">↗</a> )	See <a href="#">Using RxNorm with FHIR</a>			2.16.840.1.113883.6.88
<a href="http://loinc.org">http://loinc.org</a>	LOINC (LOINC.org <a href="#">↗</a> )	See <a href="#">Using LOINC with FHIR</a>			2.16.840.1.113883.6.1
<a href="http://unitsofmeasure.org">http://unitsofmeasure.org</a>	UCUM: (UnitsOfMeasure.org <a href="#">↗</a> ) Case Sensitive Codes	See <a href="#">Using UCUM with FHIR</a>			2.16.840.1.113883.6.8
<a href="http://ncimeta.nci.nih.gov">http://ncimeta.nci.nih.gov</a>	NCI Metathesaurus <a href="#">↗</a>	See <a href="#">Using NCI Metathesaurus with FHIR</a>			2.16.840.1.113883.3.26.1.2



# Implementation Guides (実装ガイド)

Implementation Guides（実装ガイド）は、特定の問題を解決するために FHIR リソースがどのように使用されるか（または使用されるべきか）に関する一連のルールと、使用方法をサポートおよび明確にするための関連ドキュメントが含まれる。

FHIR 実装ガイドは、FHIR Implementation Guide Publisherを使用して生成された後、Web 上で公開される。

FHIR 基底仕様は、汎用的で、国際的な範囲をカバーしている。  
この仕様は、機能の定義とエコシステムの作成に重点を置いている。  
Implementation Guides（実装ガイド）は、特定のデータ交換  
や特定の問題の解決のために、基底仕様に制約を加えたもの。

例:

National standards（JP Core、US Core、AU Base、等）

ベンダーコンソーシアム

臨床学会

# リソースとプロフィールを理解する

<https://hl7.org/fhir/R4/patient.html>

## 8.1.1 Scope and Usage

This Resource covers data about patients and animals involved in a wide range of health-related activities, including:

- Curative activities
- Psychiatric care
- Social services
- Pregnancy care
- Nursing and assisted living
- Dietary services
- Tracking of personal health and exercise data

スコープと使用方法

## 8.1.2 Resource Content

Name	Flags	Card.	Type	Description & Constraints
Patient	<b>N</b>		DomainResource	Information about an individual or animal receiving health care service Elements defined in Ancestors: <code>id</code> , <code>meta</code> , <code>implicitRules</code> , <code>language</code> , <code>text</code> , An identifier for this patient
identifier		Σ 0..*	Identifier	An identifier for this patient
active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name		Σ 0..*	HumanName	A name associated with the patient
telecom		Σ 0..*	ContactPoint	A contact detail for the individual
gender		Σ 0..1	code	male   female   other   unknown AdministrativeGender (Required)
birthDate		Σ 0..1	date	The date of birth for the individual

リソースの構造

### 8.1.2.1 Terminology Bindings

Path	Definition	Type	Reference
Patient.gender	The gender of a person used for administrative purposes.	Required	AdministrativeGender
Patient.contact.gender			
Patient.maritalStatus	The domestic partnership status of a person.	Extensible	Marital Status Codes
Patient.contact.relationship	The nature of the relationship between a patient and a contact person for that patient.	Extensible	PatientContactRelationship
Patient.communication.language	A human language.	Preferred, but limited to AllLanguages	CommonLanguages
Patient.link.type	The type of link between this patient resource and another patient resource.	Required	LinkType

使用する用語

<https://hl7.org/fhir/R4/patient.html>

## 8.1.2.2 Constraints

id	Level	Location	Description	Expression
pat-1	Rule	Patient.contact	SHALL at least contain a contact's details or a reference to an organization	<code>name.exists() or telecom.exists() or address.exists() or organization.exists()</code>

制約

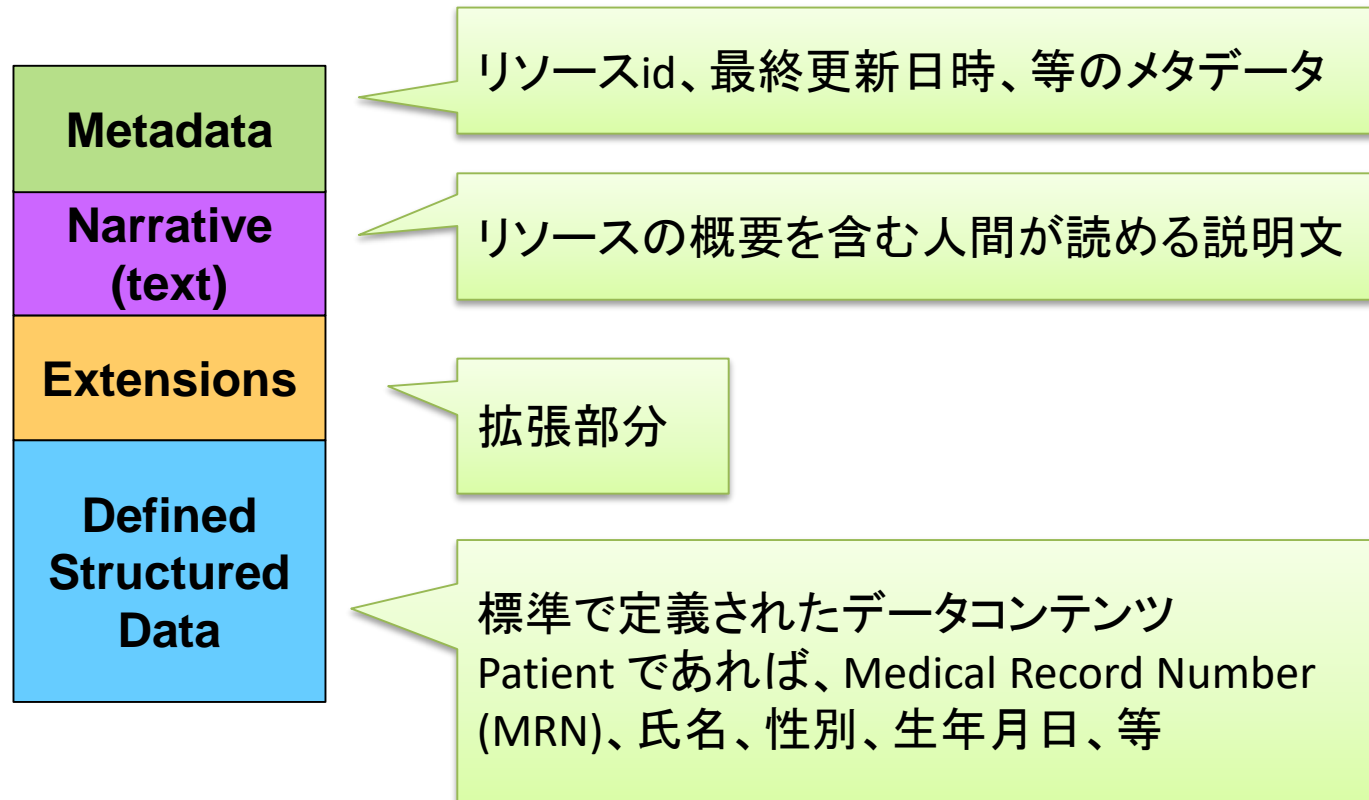
## 8.1.12 Search Parameters

Search parameters for this resource. The [common parameters](#) also apply. See [Searching](#) for more information about searching in REST, messaging, and services.

Name	Type	Description	Expression	In Common
active <b>TU</b>	token	Whether the patient record is active	Patient.active	
address <b>TU</b>	string	A server defined search that may match any of the string fields in the Address, including line, city, district, state, country, postalCode, and/or text	Patient.address	3
address-city <b>TU</b>	string	A city specified in an address	Patient.address.city	
address-country <b>TU</b>	string	A country specified in an address	Patient.address.country	Resources
address-postalcode <b>TU</b>	string	A postalCode specified in an address	Patient.address.postalCode	3 Resources
address-state <b>TU</b>	string	A state specified in an address	Patient.address.state	3 Resources
address-use <b>TU</b>	token	A use code specified in an address	Patient.address.use	3 Resources
birthdate <b>TU</b>	date	The patient's date of birth	Patient.birthDate	2 Resources
death-date <b>TU</b>	date	The date of death has been provided and satisfies this search value	(Patient.deceased as dateTime)	
deceased <b>TU</b>	token	This patient has been marked as deceased, or as a death date entered	Patient.deceased.exists() and Patient.deceased != false	
email <b>TU</b>	token	A value in an email contact	Patient.telecom.where(system='email')	4 Resources

検索パラメータ

## リソースは、4つの主要な部分で構成



<https://hl7.org/fhir/R4/summary.html>

```

<Patient xmlns="http://hl7.org/fhir">
  <id value="glossy"/>
  <meta>
    <lastUpdated value="2014-11-13T11:41:00+11:00"/>
  </meta>
  <text>
    <status value="generated"/>
    <div xmlns="http://www.w3.org/1999/xhtml">
      <p>Henry Levin the 7th</p>
      <p>MRN: 123456. Male, 24-Sept 1932</p>
    </div>
  </text>
  <extension url="http://example.org/StructureDefinition/trials">
    <valueCode value="renal"/>
  </extension>
  <identifier>
    <use value="usual"/>
    <type>
      <coding>
        <system value="http://hl7.org/fhir/v2/0203"/>
        <code value="MR"/>
      </coding>
    </type>
    <system value="http://www.goodhealth.org/identifiers/mrn"/>
    <value value="123456"/>
  </identifier>
  <active value="true"/>
  <name>
    <family value="Levin"/>
    <given value="Henry"/>
    <suffix value="The 7th"/>
  </name>
  <gender value="male"/>
  <birthDate value="1932-09-24"/>
  <careProvider>
    <reference value="Organization/2"/>
    <display value="Good Health Clinic"/>
  </careProvider>
</Patient>

```

Resource Identity & Metadata

Human Readable Summary

Extension with URL to definition

Standard Data:

- MRN
- Name
- Gender
- Birth Date
- Provider



FHIR基底仕様では、Defined Structured Dataのみで、Metadata、Narrative(text)がないように見えるが、DomainResourceデータタイプの中に含まれる

<https://hl7.org/fhir/R4/patient.html>

## 8.1.2 Resource Content



Structure

Name	Flags	Card.	Type	Description & Constraints
Patient	N		DomainResource	Information about an individual or animal receiving health care services Elements defined in Ancestors: id, meta, implicitRules, language, text, contained, extension, modifierExtension
Identifier	Σ	0..*	Identifier	An identifier for this patient
active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual
gender	Σ	0..1	code	male   female   other   unknown AdministrativeGender (Required)
birthDate	Σ	0..1	date	The date of birth for the individual
deceased[x]	?! Σ	0..1		Indicates if the individual is deceased or not
deceasedBoolean			boolean	
deceasedDateTime			dateTime	
address	Σ	0..*	Address	An address for the individual
maritalStatus		0..1	CodeableConcept	Marital (civil) status of a patient MaritalStatus (Extensible)
multipleBirth[x]		0..1		Whether patient is part of a multiple birth
multipleBirthBoolean			boolean	
multipleBirthInteger			integer	

Metadata

Narrative (text)

Defined Structured Data

https://jpfhir.jp/fhir/core/1.1.2/StructureDefinition-jp-patient.html

Name	Flags	Card.	Type	Description & Constraints
Patient		0..*	Patient	医療サービスを受けている個人または動物に関する情報
id	Σ	0..1	id	このアーティファクトの論理ID / Logical id of this artifact
meta	Σ	0..1	Meta	リソースに関するメタデータ / Metadata about the resource
implicitRules	?! Σ	0..1	uri	このコンテンツが作成されたルールのセット / A set of rules under which this content was created
language		0..1	code	リソースコンテンツの言語 / Language of the resource content Binding: CommonLanguages (preferred): 人間の言語。 / A human language.
text		0..1	Narrative	人間の解釈のためのリソースのテキスト概要 / Text summary of the resource, for human interpretation
contained		0..*	Resource	インラインリソースが含まれています / Contained inline Resources
Slices for extension		0..*	Extension	Extension Slice: Unordered, Open by value:url
religion		0..*	CodeableConcept	患者の宗教【詳細参照】 URL: <a href="http://hl7.org/fhir/StructureDefinition/patient-religion">http://hl7.org/fhir/StructureDefinition/patient-religion</a> Binding: ReligiousAffiliation (preferred)
birthPlace		0..1	Address	患者の生誕地【詳細参照】 URL: <a href="http://hl7.org/fhir/StructureDefinition/patient-birthPlace">http://hl7.org/fhir/StructureDefinition/patient-birthPlace</a>
race		0..*	CodeableConcept	患者の人種【詳細参照】 URL: <a href="http://jpfhir.jp/fhir/core/Extension/StructureDefinition/jp-Patient-Race">http://jpfhir.jp/fhir/core/Extension/StructureDefinition/jp-Patient-Race</a> Binding: Race (preferred)
modifierExtension	?!	0..*	Extension	無視できない拡張機能 / Extensions that cannot be ignored
identifier	Σ	1..*	Identifier	患者の識別子【詳細参照】
id		0..1	string	要素間参照のための一意のID / Unique id for inter-element referencing
extension	*	0..*	Extension	実装で定義された追加のコンテンツ / Additional content defined by implementations Slice: Unordered, Open by value:url
use	?! Σ	0..1	code	usual   official   temp   secondary   old (If known)【詳細参照】 Binding: IdentifierUse (required): 既知の場合、この識別子の目的を識別します。 / Identifies the purpose for this identifier, if known .
type	Σ	0..1	CodeableConcept	識別子の種別【詳細参照】 Binding: Identifier Type Codes (extendable): 特定の目的に使用する識別子を決定するために使用できる識別子のコード化されたタイプ。 / A coded type for an identifier that can be used to determine which identifier to use for a specific purpose.

Metadata

Narrative (text)

Extensions

Defined Structured Data

active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual
gender	Σ	0..1	code	male   female   other   unknown AdministrativeGender (Required)
birthDate	Σ	0..1	date	The date of birth for the individual

データタイプには、大文字で始まるものと小文字で始まるものがある。

boolean、code、dateのように、小文字で始まっているデータ型を primitive型 という。

primitive型は、値が入るのみで、子を持たない。

name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual

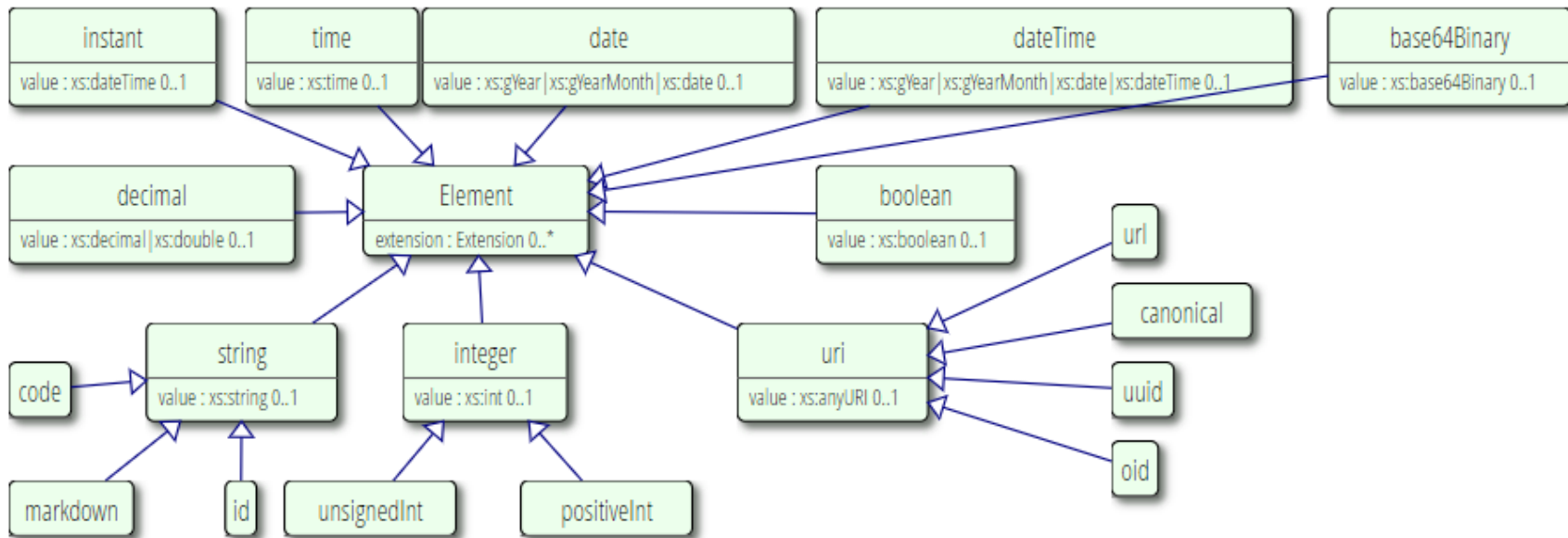
HumanName、ContactPointは、Complex型という。  
 Complex型は大文字で始まっている。Complex型は、子を持つ。  
 子のうち、Periodは、Complex型なので、さらに子を持つ。

Name	Flags	Card.	Type	Description & Constraints
ContactPoint	Σ I N		Element	Details of a Technology mediated contact point (phone, fax, email, etc.) + Rule: A system is required if a value is provided. Elements defined in Ancestors: <a href="#">id</a> , <a href="#">extension</a>
system	Σ I	0..1	code	phone   fax   email   pager   url   sms   other <a href="#">ContactPointSystem</a> (Required)
value	Σ	0..1	string	The actual contact point details
use	?! Σ	0..1	code	home   work   temp   old   mobile - purpose of this contact point <a href="#">ContactPointUse</a> (Required)
rank	Σ	0..1	positiveInt	Specify preferred order of use (1 = highest)
period	Σ	0..1	Period	Time period when the contact point was/is in use

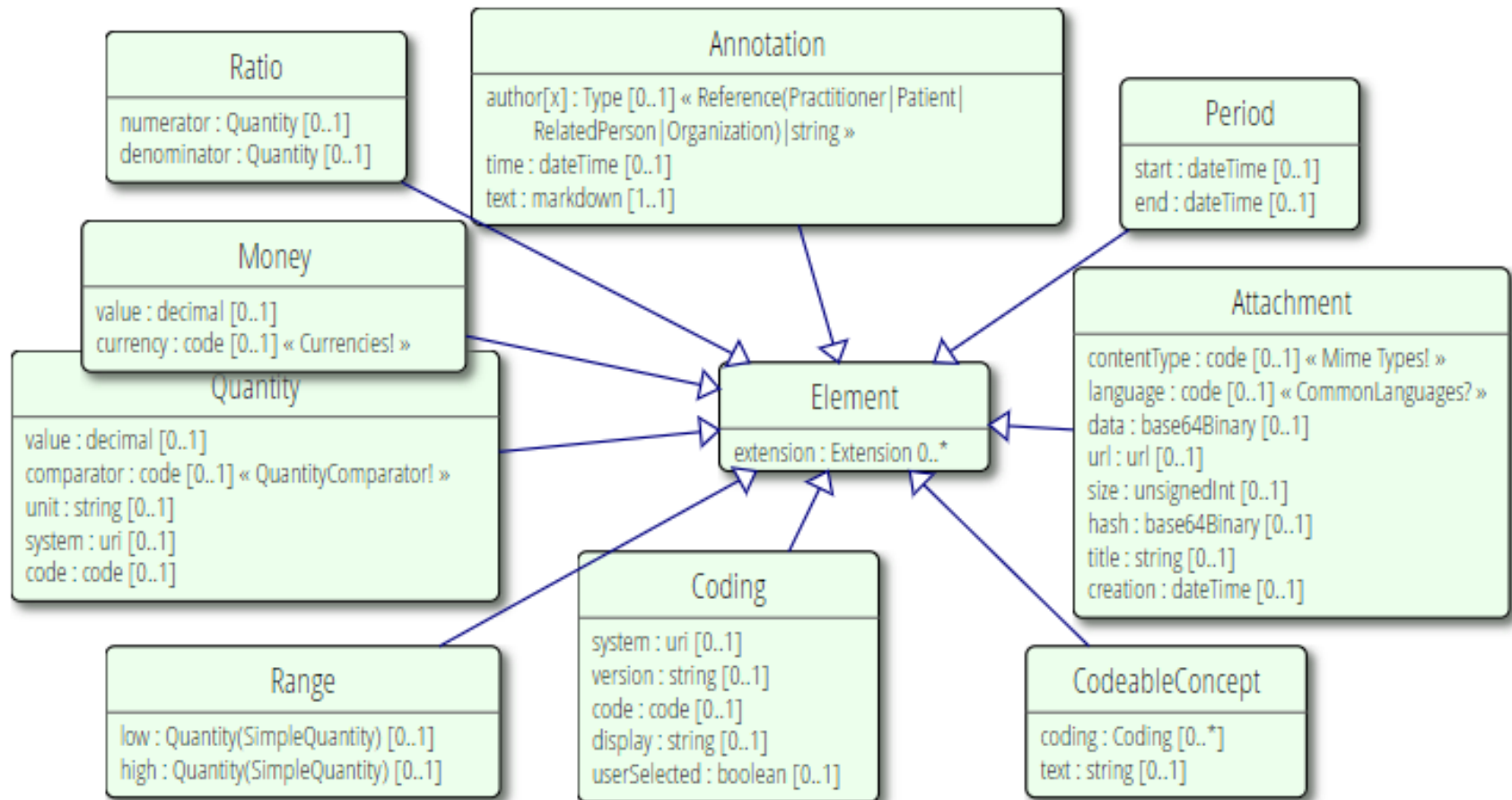
Name	Flags	Card.	Type	Description & Constraints
Period	Σ I N		Element	Time range defined by start and end date/time + Rule: If present, start SHALL have a lower value than end Elements defined in Ancestors: <a href="#">id</a> , <a href="#">extension</a>
start	Σ I	0..1	dateTime	Starting time with inclusive boundary
end	Σ I	0..1	dateTime	End time with inclusive boundary, if not ongoing

<https://hl7.org/fhir/R4/datatypes.html>

## 2.24.0.1 Primitive Types

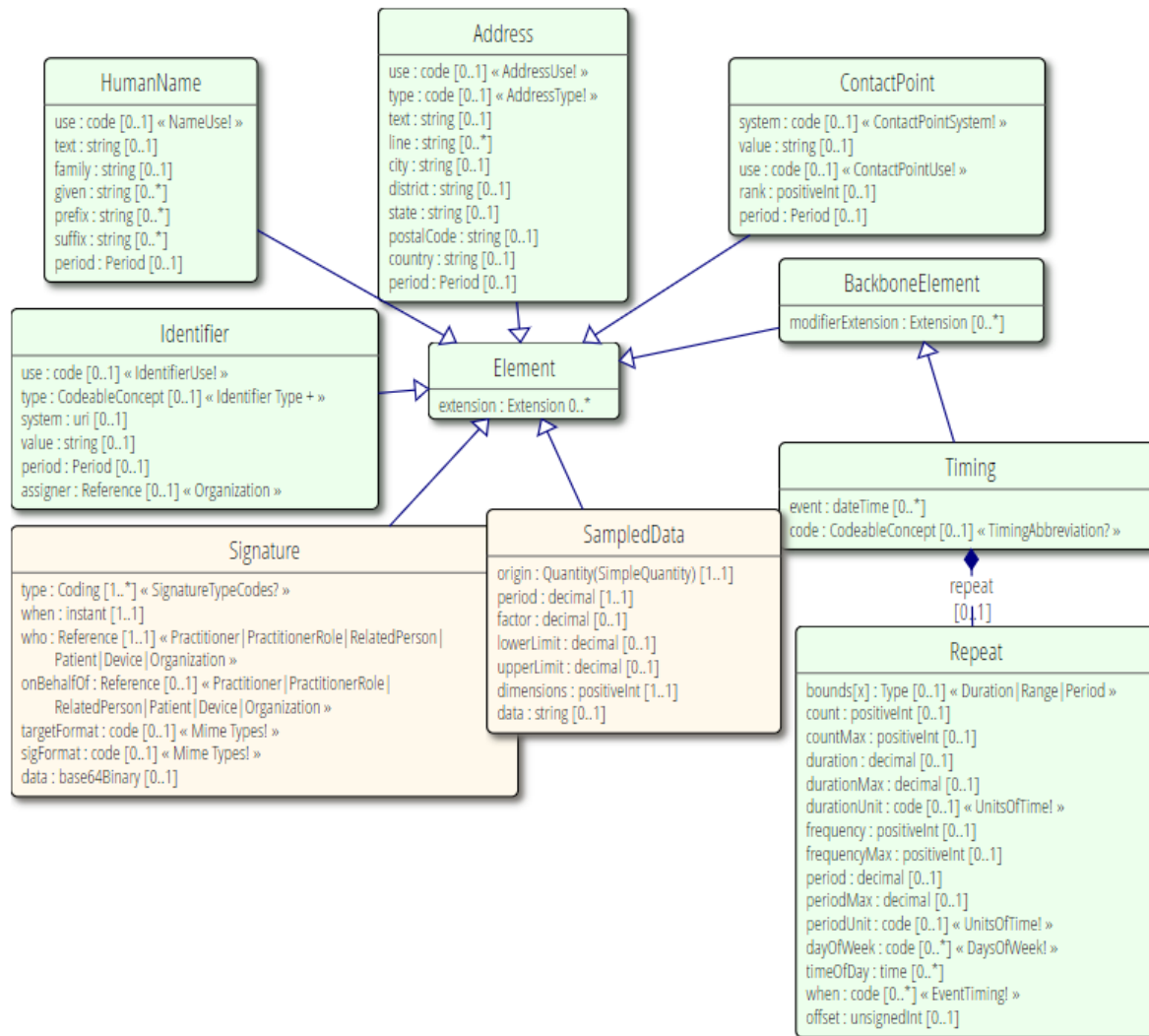


<https://hl7.org/fhir/R4/datatypes.html>



# Complex Types

<https://hl7.org/fhir/R4/datatypes.html>

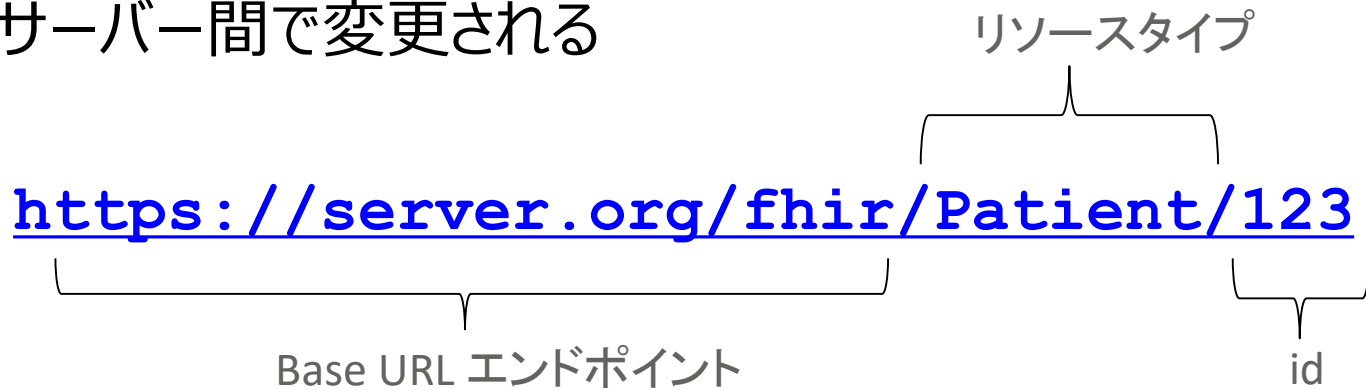


id は、サーバー上のリソースを識別するメタデータ。  
サーバー間で変わる。

Identifier は、ビジネス識別子。  
リソース内の要素。



- id –サーバー上のリソースを識別する
  - メタデータ (すべてのリソースにメタデータがある)
  - サーバー間で変更される



- identifier
  - ビジネス識別子（すべてのリソースにあるわけではない）

– **Defined Structured Data** の属性

```

<Patient xmlns="http://hl7.org/fhir">
  <id value="1234" />
  <meta>
    <versionId value="1" />
  </meta>
  <identifier>
    <system value="http://hl7.org/fhir/sid/us-ssn" />
    <value value="999-99-9999" />
  </identifier>
</Patient>
    
```



# FHIRの4つのパラダイム

FHIRは4つの相互運用性  
交換パラダイムをサポート



- シンプルですぐに使える相互運用性
- HTTPの活用：GET、POSTなど
- 定義済みのoperations
  - Create, Read, Update, Delete
  - さらに: History, Read Version, Search, Conditional Updates, Validate, Capabilities, Batch & Transaction
- 制御がクライアント側にあり、信頼関係が存在する場合に最適



- CDAに類似
- 結合されたリソースの集まり
  - ルートは“Composition”リソース
  - CDAヘッダーと同様
- Bundle (FHIRリソース) として送受信される
- 署名と認証が可能





- V2およびV3メッセージングに類似
- Bundle (FHIRリソース) 内のリソースのコレクションでもある
  - ルートは“MessageHeader”リソース
- イベント駆動型
  - 例：検査オーダーの送信、患者のリンク

## これまでのパラダイムの組み合わせ

- (SOAの原則に基づく)
- 単純なワークフローから複雑なマルチステップワークフローまで
- 各ステップは、個々のリソースまたはコレクションを処理する
  - (Bundle、containedリソース、またはその他の形式)
- HTTPプロトコルやその他のプロトコルを使用
- 唯一の制約は、何らかの方法、形態でFHIRリソースを受け渡すこと





# プロフィールを作る



CARDINALITY  
の調整



用語のバイン  
ディング



SLICING



MUST-  
SUPPORT



EXTENSIONS  
の追加

特定の要素の最小値と最大値を表す。

ほとんどの FHIR 要素はオプション。(最小値 = 0)

プロファイルでは、オプション要素を必須にすることができる。

繰り返し要素を単数にすることができる。

プロファイルでは、必須要素をオプションにすることはできない。











単数要素を繰り返すことはできない。(Extensionを除く)

制約を厳しくすることはできるが、もともとの制約を緩めることはできない













communication	0..*	BackboneElement	A language which may be used to communicate with the patient about his or her health
language	1..1	CodeableConcept	The language which can be used to communicate with the patient about his or her health Common Languages (Preferred but limited to AllLanguages)
preferred	0..1	boolean	Language preference indicator

communicationは、Cardinalityが、0..\*なので、値を入れなくてもよいが、もし入れる場合は、languageが1..1なので、languageは入力必須。

Name	Flags	Card.	Type	Description & Constraints
 Patient	<b>N</b>		DomainResource	Information about an individual or animal receiving health care. Elements defined in Ancestors: <a href="#">id</a> , <a href="#">meta</a> , <a href="#">implicit</a>
 identifier	$\Sigma$	0..*	Identifier	An identifier for this patient
 active	?! $\Sigma$	0..1	boolean	Whether this patient's record is in active use
 name	$\Sigma$	0..*	HumanName	A name associated with the patient
 telecom	$\Sigma$	0..*	ContactPoint	A contact detail for the individual
 gender	$\Sigma$	0..1	code	male   female   other   unknown <a href="#">AdministrativeGender (Required)</a>
 birthDate	$\Sigma$	0..1	date	The date of birth for the individual
 deceased[x]	?! $\Sigma$	0..1		Indicates if the individual is deceased or not
 deceasedBoolean			boolean	
 deceasedDateTime			dateTime	

- Flagsに $\Sigma$ が付いている要素は、summary set に含まれる要素。
- FHIR Serverから値を取得する際、パラメータ `_summary=true` を追加すると、 $\Sigma$ のラベルが付いた要素のみを受信する。
- $\Sigma$ の意図は、サーバ、クライアント、およびネットワークなどのそれらの間のリソースの総処理負荷を軽減すること。
- $\Sigma$ は、ユーザがリソースを素早くソートしてフィルタリングできるようにするために定義されている。

Name	Flags	Card.	Type	Description & Constraints
 Patient	<b>N</b>		DomainResource	Information about an individual or animal receiving health care. Elements defined in Ancestors: id, meta, implicit
 identifier	$\Sigma$	0..*	Identifier	An identifier for this patient
 active	?! $\Sigma$	0..1	boolean	Whether this patient's record is in active use
 name	$\Sigma$	0..*	HumanName	A name associated with the patient
 telecom	$\Sigma$	0..*	ContactPoint	A contact detail for the individual
 gender	$\Sigma$	0..1	code	male   female   other   unknown AdministrativeGender (Required)
 birthDate	$\Sigma$	0..1	date	The date of birth for the individual
 deceased[x]	?! $\Sigma$	0..1		Indicates if the individual is deceased or not
 deceasedBoolean			boolean	
 deceasedDateTime			dateTime	

- Flagsに?! (Is-modifier) が付いている要素は、これまでと値が変わったら、注意が必要であることを表す。
- deceasedの値が変わったら、患者が死亡したので、未来のオーダを中止する、等の処理が必要になる。

contact	I	0..*	BackboneElement	A contact party (e.g. guardian, partner, friend) for the patient + Rule: SHALL at least contain a contact's details or a reference to an organization
relationship		0..*	CodeableConcept	The kind of relationship Patient Contact Relationship (Extensible)
name		0..1	HumanName	A name associated with the contact person
telecom		0..*	ContactPoint	A contact detail for the person
address		0..1	Address	Address for the contact person
gender		0..1	code	male   female   other   unknown AdministrativeGender (Required)
organization	I	0..1	Reference(Organization)	Organization that is associated with the contact
period		0..1	Period	The period during which this contact person or organization is valid to be contacted relating to this patient

•Flagsに I (invariants) が付いている要素は、制約があることを表す。

•contactに付いている I の場合、「+ Rule: SHALL at least contain a contact's details or a reference to an organization」とあるので、少なくともcontactの詳細またはorganizationへの参照を含む、という意味。



active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual
gender	Σ	0..1	code	male   female   other   unknown AdministrativeGender (Required)
birthDate	Σ	0..1	date	The date of birth for the individual

codeに入る値は、AdministrativeGender (Required)で定義されている。(Required)なので、値の追加はできない。

male (男性) | female (女性) | other (その他) | unknown (不明)

定義された4種類から選択する。

maritalStatus	0..1	CodeableConcept	Marital (civil) status of a patient MaritalStatus (Extensible)
---------------	------	-----------------	---

MaritalStatus (Extensible)は、(Extensible)なので、値の追加が可能。

active	?! Σ	0..1	boolean	Whether this patient's record is in active use
name	Σ	0..*	HumanName	A name associated with the patient
telecom	Σ	0..*	ContactPoint	A contact detail for the individual
gender	Σ	0..1	code	male   female   other   unknown <b>AdministrativeGender (Required)</b>
birthDate	Σ	0..1	date	The date of birth for the individual

maritalStatus		0..1	CodeableConcept	Marital (civil) status of a patient <b>MaritalStatus (Extensible)</b>
---------------	--	------	-----------------	--

- (Required)      決められたコードを使うように
- (Extensible)    必要ならば、代替コードを使用してもよい
- (Preferred)    必ずしも使う必要はないが、これを使うべきだ
- (Example)      あくまで例、何を使うかは指定していない

繰り返し要素を、異なる制約を持つサブリストに分割すること。  
これは、ケーキを 1枚はチョコレート、もう 1枚はラズベリーなどで注文  
するようなもの。



患者氏名（漢字、カナ、アルファベット）のうち、漢字やアルファベット  
は未入力でもよいが、カナだけは必須入力にしたい、といったとき、  
Slicingを使えば実現できる。

リソースやデータ型の定義では付けられないが、プロフィールで付加できる制約。

Must Supportが付いた要素は、「サポート」する必要がある。

システムは要素を保存および取得できる必要がある。

Cardinalityとは異なる。

例えば、アレルギーは、持っていない患者もいるので、必須入力にはできない。

しかし、アレルギーを持っているならば、必ず値を入れてほしい、といった場合に、Must Support制約を付ける。

US Coreの AllergyIntoleranceは、Must Support制約が付いている。

# Must Support

<https://build.fhir.org/ig/HL7/US-Core/StructureDefinition-us-core-allergyintolerance.html>

Name	Flags	Card.	Type	Description & Constraints				
AllergyIntolerance	<b>C</b>	0..*	AllergyIntolerance	Allergy or Intolerance (generally: Risk of adverse reaction to a substance) <b>ait-1:</b> AllergyIntolerance.clinicalStatus SHALL be present if verificationStatus is not entered-in-error. <b>ait-2:</b> AllergyIntolerance.clinicalStatus SHALL NOT be present if verification Status is entered-in-error				
id	Σ	0..1	id	Logical id of this artifact				
meta	Σ	0..1	Meta	Metadata about the resource				
implicitRules	?! Σ	0..1	uri	A set of rules under which this content was created				
language		0..1	code	Language of the resource content <b>Binding:</b> <a href="#">CommonLanguages</a> (preferred): A human language.				
		<table border="1"> <thead> <tr> <th>Additional Bindings</th> <th>Purpose</th> </tr> </thead> <tbody> <tr> <td><a href="#">AllLanguages</a></td> <td>Max Binding</td> </tr> </tbody> </table>		Additional Bindings	Purpose	<a href="#">AllLanguages</a>	Max Binding	
Additional Bindings	Purpose							
<a href="#">AllLanguages</a>	Max Binding							
text		0..1	Narrative	Text summary of the resource, for human interpretation				
contained		0..*	Resource	Contained, inline Resources				
extension		0..*	Extension	Additional content defined by implementations				
modifierExtension	?!	0..*	Extension	Extensions that cannot be ignored				
identifier		0..*	Identifier	External ids for this item				
clinicalStatus	?! <b>S</b> Σ <b>C</b>	0..1	CodeableConcept	active   inactive   resolved <b>Binding:</b> <a href="#">AllergyIntoleranceClinicalStatusCodes</a> (required)				
verificationStatus	?! <b>S</b> Σ <b>C</b>	0..1	CodeableConcept	unconfirmed   confirmed   refuted   entered-in-error <b>Binding:</b> <a href="#">AllergyIntoleranceVerificationStatusCodes</a> (required)				
type	Σ	0..1	code	allergy   intolerance - Underlying mechanism (if known) <b>Binding:</b> <a href="#">AllergyIntoleranceType</a> (required): Identification of the underlying physiological mechanism for a Reaction Risk.				
category	Σ	0..*	code	food   medication   environment   biologic <b>Binding:</b> <a href="#">AllergyIntoleranceCategory</a> (required): Category of an identified substance associated with allergies or intolerances.				
criticality	Σ	0..1	code	low   high   unable-to-assess <b>Binding:</b> <a href="#">AllergyIntoleranceCriticality</a> (required): Estimate of the potential clinical harm, or seriousness, of a reaction to an identified substance.				
code	<b>S</b> Σ	1..1	CodeableConcept	Code that identifies the allergy or intolerance <b>Binding:</b> <a href="#">Common substances for allergy and intolerance documentation including refutations</a> (extensible)				
patient	<b>S</b> Σ	1..1	Reference(US Core	Who the sensitivity is for				

<https://jpfhir.jp/fhir/core/1.1.2/guide-mustSupportCardinality.html>

## 2.2 Must SupportとCardinality(多重度)のルール

### 2.2.1 CardinalityとMustSupport組み合わせ

#### 2.2.1.1 MustSupportが付与されていない要素について

この節では各CardinalityとMustSupportの状態ごとのサーバおよびクライアント動作について表形式にて記載している。JP Coreでは、日本国内で患者データにアクセスするための最小限の適合性要件を定めるという理念に基づき、いずれの要素にもMustSupportを付与しなかった。

JP Core 1.1.2では、日本国内で患者データにアクセスするための最小限の適合性要件を定めるという理念に基づき、いずれの要素にもMustSupportを付与していない。

※ JP Core 1.2では、ユースケースが定まっている場合は、付与しているものもある。

FHIR は、コア仕様に何が含まれるかを識別するために 80/20 ルールを採用。その他はすべて拡張機能として定義できる。

⇒コア仕様として80%を決め、20%を拡張で表現(80%ルール)

これにより、仕様を管理しやすくなる。

すべてのユースケースで何らかの拡張機能が必要になることが予想され、拡張機能は、プロファイルと同様に、StructureDefinition リソースで定義される。

# HL7コミュニティへの参加方法





**日本HL7協会**  
HL7 Japan

- SIG/作業グループ
- セミナー資料
- リンク集
- 事務局ご案内
- お問い合わせ
- セミナーお申込み

English
ログイン

HOME
お知らせ
HL7とは
文書
認定システム
入会のおすすめ
FAQ



医療情報交換のための  
標準規約の普及促進を目指す

## 日本HL7協会

祝 10周年

**会員専用ページ**

日本HL7協会会員向けの情報やライブラリ、セミナーの資料を公開しています。



**お知らせ** ● 一覧

- 2024.09.09 第90回HL7セミナーのご案内（10月7日開催）
- 2024.07.22 日本HL7協会 定款を改訂しました。
- 2024.07.22 HL7協会組織を改訂しました。
- 2024.06.18 第89回HL7セミナー資料を掲載しました。
- 2024.06.06 事業法人会員一覧を改訂しました。
- 2024.05.14 第89回HL7セミナーのご案内（6月13日開催）
- 2024.05.09 事業法人会員一覧を改訂しました。
- 2024.04.11 事業法人会員一覧を改訂しました。
- 2024.04.03 HL7協会組織を改訂しました。

**HL7入門書購入**

「HL7メッセージ交換 第2版」のご案内です。

**文書**

資料などをダウンロードいただけます。



**e-Learning**

HL7 FHIR eLearningを開始いたします。



**セミナーのお申込み**

各種セミナー等のお申込みをフォームより受け付けております。





IHIC 2009  
2009/5/8-9  
Kunita International



May 2009 WGM  
2009/5/10-15  
Kunita International

https://www.hl7.jp/docs/



The screenshot shows the website's navigation menu with options like HOME, お知らせ, HL7とは, 文書, 認定システム, 入会のおすすめ, and FAQ. The main content area is titled 'セミナー資料' (Seminar Materials) and includes a 'CONTENTS' button. A breadcrumb trail reads 'HOME > セミナー資料 > セミナー資料 (一覧)'. The main heading is 'セミナー資料 (一覧)'. A green callout box contains the text: 'これまでに開催した、HL7セミナーの資料を掲載' (Posting materials for HL7 seminars held so far). Below this, a list of seminars is provided with dates and locations, such as '2024.06.18 第89回HL7セミナー (木更津、6月13日 (木))'. At the bottom, there is a pagination control showing page 1 of 7, with a link to '次のページへ >>'.

<https://www.hl7.jp/info/cat5/hl7hl7-fhir-elearning.html>



The screenshot shows the website interface for the Japanese HL7 Association. At the top, there is a navigation bar with the logo and menu items like 'SIG/作業グループ', 'セミナー資料', 'リンク集', '事務局ご案内', 'お問合せ', and 'セミナーお申込み'. Below this is a main navigation bar with 'HOME', 'お知らせ', 'HL7とは', '文書', and '認定システム'. The main content area is titled 'お知らせ' (Notice) and contains a 'CONTENTS' sidebar with links to 'お知らせ', 'ご案内', 'セミナー', 'HL7 e-Learning', '会誌', and '総会'. The main text area is titled '日本HL7協会 HL7 FHIR eLearningのご案内' and contains a detailed announcement in Japanese. A green callout box points to the announcement text.

FHIR eLearning 第1部「FHIRを知る」第2部「FHIRで作る」申し込み受付中

HOME > お知らせ > <03>HL7 e-Learning > 日本HL7協会 HL7 FHIR eLearningのご案内

## 日本HL7協会 HL7 FHIR eLearningのご案内

日本HL7協会ではHL7 FHIR eLearningを開始いたします。本eLearningは第1部「FHIRを知る」、第2部「FHIRで作る」の2部から構成され、この度は第1部をリリース致します。第1部「FHIRを知る」は、いままでFHIRに関する講演など聞いたことがあるが、基礎から順序立てて学んでみたい、あるいはFHIRという言葉をよく聞か、最初から学んで理解したい、等の方々にお勧めいたします。前提知識等は特にありません。受講方法はeLearningシステム(manageable)で講演を視聴し、クイズに回答いただけます。要領は下記のとおりです。皆様の受講をお待ちしております。

なお、第2部「FHIRで作る」のリリースについては、あらためてお知らせいたします。

記

### 日本HL7協会 HL7 FHIR eLearning 第1部「FHIRを知る」

共催： 日本医療情報学会医療情報技師育成部会  
本eLearningは医療情報技師生涯研修セミナーとして位置付けられます

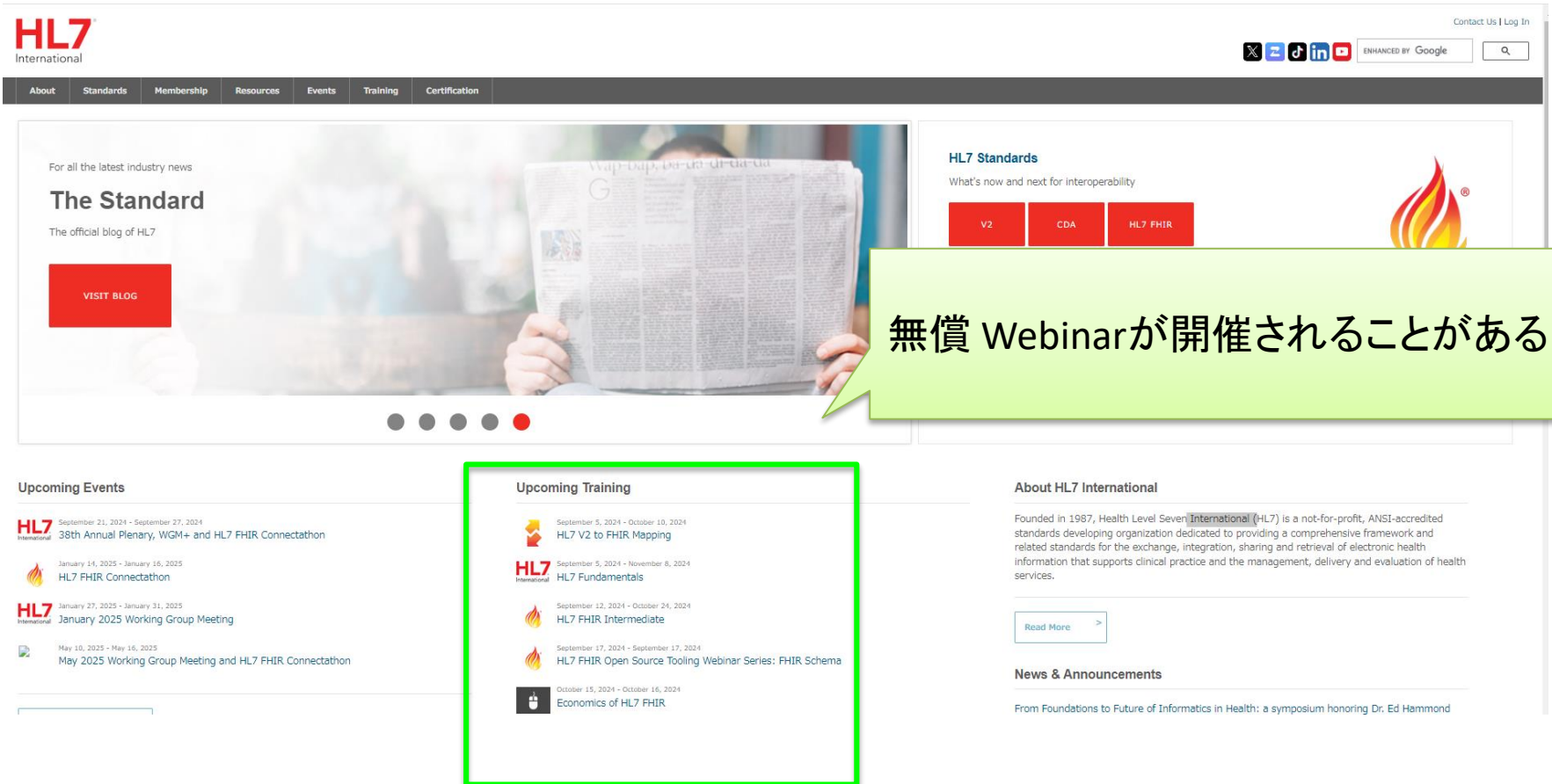
プログラム： 第1部「FHIRを知る」

1. はじめに： FHIRの基本理念 (60分)

日本HL7協会会長 木村通男先生

2. FHIRの基本用語・概念を理解する(90分) クイズ

<https://www.hl7.org/index.cfm>



The screenshot shows the HL7 International website homepage. At the top left is the HL7 International logo. A navigation menu includes links for About, Standards, Membership, Resources, Events, Training, and Certification. On the right, there are social media icons, a search bar, and a Google Analytics tag. The main content area features a large banner image of a person reading a newspaper. Below the banner, there are sections for 'The Standard' (with a 'VISIT BLOG' button), 'HL7 Standards' (with buttons for V2, CDA, and HL7 FHIR), 'Upcoming Events', 'Upcoming Training', 'About HL7 International', and 'News & Announcements'. A green callout box with a speech bubble points to the 'Upcoming Training' section, containing the text: 無償 Webinarが開催されることがある.

無償 Webinarが開催されることがある

<https://www.hl7.org/vulcan/>

HL7 FHIR Accelerator Program の情報を掲載



Contact Us | Log In



- About
- Standards
- Membership
- Resources
- Events
- Training
- Certification

## Vulcan

### About Vulcan

Feel free to Contact Us for more information.

The vision for an Accelerator dedicated to connecting clinical research and healthcare was solidified in September 2019 by a group of invested representatives from government agencies, academia, technology companies, standards development organizations, patients, and industry consortiums. Vulcan will bring together stakeholders across the translational and clinical research community in order to bridge existing gaps between clinical care and clinical research, strategically connect industry collaborators, maximize collective resources, and deliver integrated tools and resources.

**Growing Digitization in Healthcare:** The growing digitalization in healthcare brings along modernized electronic health record standards such as HL7 FHIR. Maturity in this space varies across the markets; however, it is already happening.

Standard data elements and controlled terminology for data collection forms have been in use by many organizations for multiple decades. Common data models for regulatory decision-making and secondary use of EHR data are not new. However, the acquisition and use of EHR data for prospective clinical research has remained largely separate from routine care. This then requires manual chart review to collect data, increasing study timelines and creating opportunity for error. Through standards these processes can be modernized. All stakeholders across the research enterprise stand to benefit from accelerating further development, refinement, and use of these standards toward optimizing the design, conduct and reporting of clinical studies.

- Bridge Existing Gaps:** Work to close gap between clinical care and clinical research to improve patient lives, decrease costs and improve efficiency
- Strategically Connect Industry Collaborations:** Coordinate strategy between stakeholders and leverage existing work within HL7 and other groups
- Maximize Collective Resources:** Leverage shared community and resources to be able to communicate the return on investment and return on value that a unified network could realize to various parties, and provide comprehensive recommendations to global regulators
- Deliver Integrated Tools and Solutions:** Develop necessary FHIR Research Resources to maturity. Accelerator program will handle identified and prioritized use cases for secondary use of EHR data that meet interested parties needs and goals

### Clinical and Translational Clinical Research Community

## Current Member Organizations of Vulcan As of September 2023

<b>Academia</b>	Cedars Sinai	Duke University School of Medicine	JOHNS HOPKINS SCHOOL OF MEDICINE	国立がん研究センター 東病院 National Cancer Center Hospital East	OREGON HEALTH & SCIENCE UNIVERSITY	UAMS University of Arkansas for Medical Sciences
<b>Consortia</b>	iHD The European Institute for Innovation through Health Data	phuse	UIO University of Oslo	THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL	UT Health San Antonio	VANDERBILT UNIVERSITY
<b>Government Agencies</b>	LÆGEMIDDELSTYRELSEN DANISH MEDICINES AGENCY	FDA	National Institutes of Health (NIH) National Center for Advancing Translational Sciences (NCATS)	National Institutes of Health (NIH) U.S. National Library of Medicine (NLM)	NIHR National Institute for Health Research	



### Get Involved in Vulcan!

Achieving the Vulcan vision relies on members eager to accelerate the development, refinement, and use of the FHIR standards for clinical and translational research.

Fill out the form below to learn how you can contribute to Vulcan projects, access Vulcan events, and join the Vulcan community.

Membership Statement of Understanding: [Click here to view the SOU \(pdf\)](#)

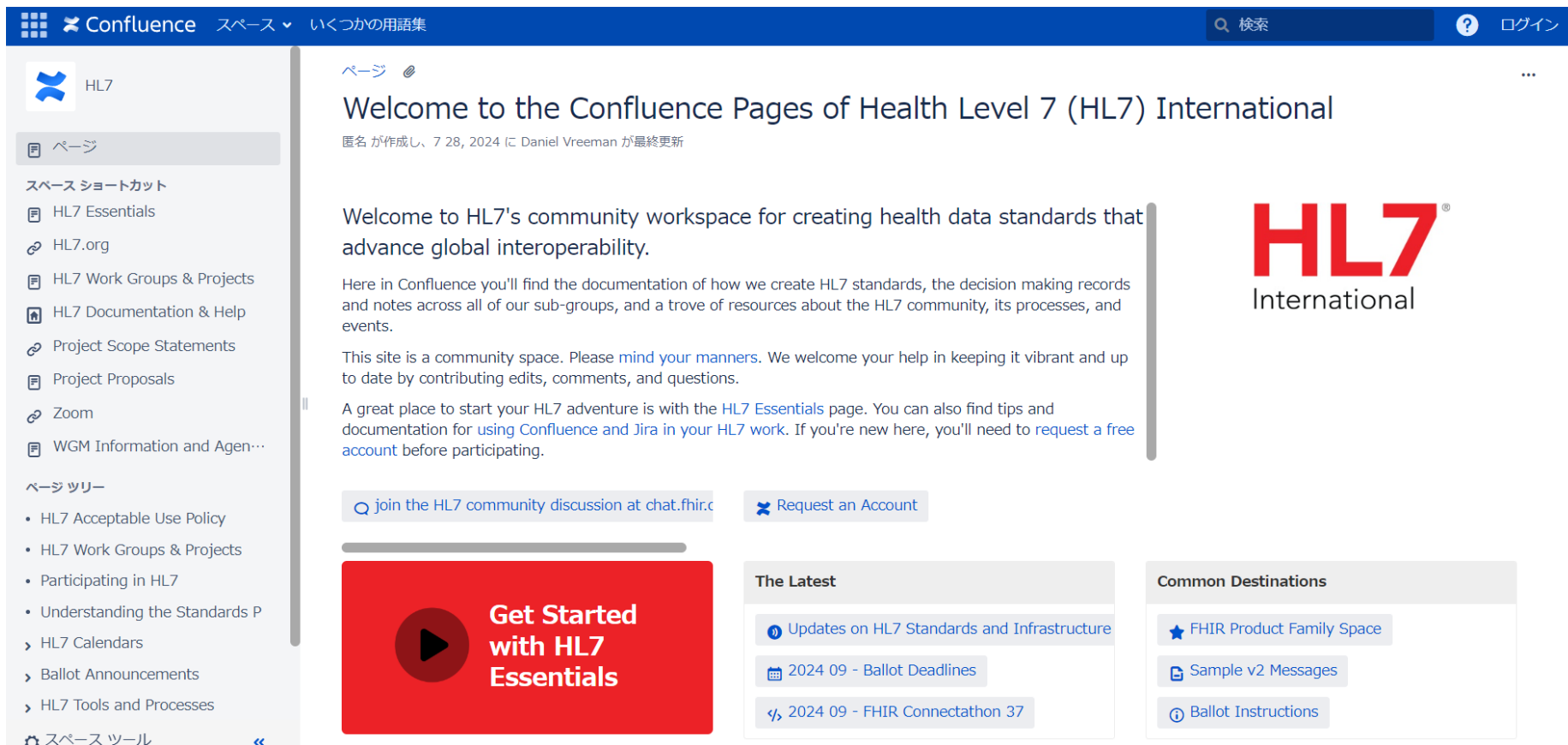
#### Vulcan in the news

- Vulcan and CodeX Accelerators collaborate to support the OSTP's Advancing Clinical Trials Readiness Initiative
- Clinical Research News: Rebecca Kush, Ph.D., Elected Chair of Vulcan Advisory Council
- Statement of collaboration to support the EU ePI Common Standard - Gravitate Health
- Vulcan FHIR Accelerator formed. See announcements from HL7, US National Center for Data to Health, healthcare innovation, EHR INTELLIGENCE xtelligent

### Suggest a Use Case for Vulcan

Have an idea for how FHIR could be utilized to optimize the design, conduct, and reporting of clinical studies? Submit it via the [Vulcan Use Case Submission Form](#).

<https://confluence.hl7.org/>



Confluence スペース ▾ いくつかの用語集 🔍 検索 ? ログイン

HL7

ページ

スペース ショートカット

- HL7 Essentials
- HL7.org
- HL7 Work Groups & Projects
- HL7 Documentation & Help
- Project Scope Statements
- Project Proposals
- Zoom
- WGM Information and Agen...

ページ ツリー

- HL7 Acceptable Use Policy
- HL7 Work Groups & Projects
- Participating in HL7
- Understanding the Standards P
- HL7 Calendars
- Ballot Announcements
- HL7 Tools and Processes
- スペース ツール

ページ

## Welcome to the Confluence Pages of Health Level 7 (HL7) International

匿名 が作成し、7 28, 2024 に Daniel Vreeman が最終更新

Welcome to HL7's community workspace for creating health data standards that advance global interoperability.

Here in Confluence you'll find the documentation of how we create HL7 standards, the decision making records and notes across all of our sub-groups, and a trove of resources about the HL7 community, its processes, and events.

This site is a community space. Please [mind your manners](#). We welcome your help in keeping it vibrant and up to date by contributing edits, comments, and questions.

A great place to start your HL7 adventure is with the [HL7 Essentials](#) page. You can also find tips and documentation for using [Confluence](#) and [Jira](#) in your HL7 work. If you're new here, you'll need to request a [free account](#) before participating.

[join the HL7 community discussion at chat.fhir.c](#) [Request an Account](#)

**Get Started with HL7 Essentials**

**The Latest**

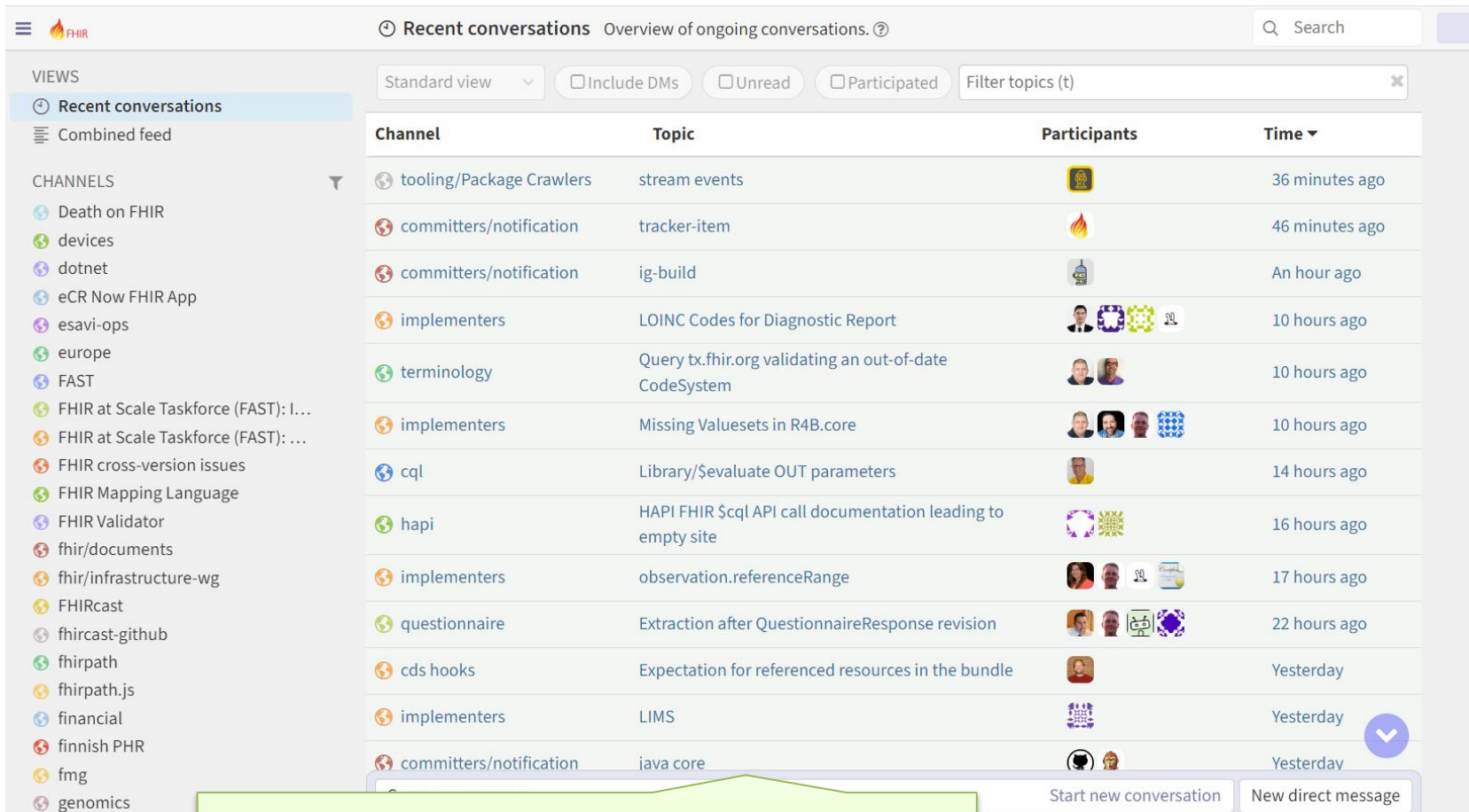
- Updates on HL7 Standards and Infrastructure
- 2024 09 - Ballot Deadlines
- 2024 09 - FHIR Connectathon 37

**Common Destinations**

- FHIR Product Family Space
- Sample v2 Messages
- Ballot Instructions

HL7 Internationalで開催されている  
Working Groupの情報を掲載

<https://chat.fhir.org/>



The screenshot shows the 'Recent conversations' page of the HL7 FHIR chat. The interface includes a sidebar with a list of channels, a main table of conversations, and a search bar. The table lists various channels and topics, such as 'stream events', 'tracker-item', and 'ig-build', along with the time since the last message.

Channel	Topic	Participants	Time
tooling/Package Crawlers	stream events		36 minutes ago
committers/notification	tracker-item		46 minutes ago
committers/notification	ig-build		An hour ago
implementers	LOINC Codes for Diagnostic Report		10 hours ago
terminology	Query tx.fhir.org validating an out-of-date CodeSystem		10 hours ago
implementers	Missing Valuesets in R4B.core		10 hours ago
cql	Library/\$evaluate OUT parameters		14 hours ago
hapi	HAPI FHIR \$cql API call documentation leading to empty site		16 hours ago
implementers	observation.referenceRange		17 hours ago
questionnaire	Extraction after QuestionnaireResponse revision		22 hours ago
cds hooks	Expectation for referenced resources in the bundle		Yesterday
implementers	LIMS		Yesterday
committers/notification	java core		Yesterday

FHIR でわからないことを、ここでチャットすれば、誰かが答えてくれるかも



ご静聴ありがとうございました