

Integrating the Healthcare Enterprise



IHE International

IHE Certified Professional Program (IHE-CPP)

IHE Foundations Exam - Syllabus

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Foreword

This is the Syllabus for the

IHE Foundations Exam,

being part of the

IHE Certified Professional Program (IHE-CPP)

under the governance of the IHE Education Committee.

Together with the *IHE Certified Professional (IHE-CPP) – Process Definition* and the *IHE Foundations Exam* it constitutes the scheme for the

IHE Certified Professional – IHE Foundations

certification.

General information about IHE can be found at: www.ihe.net.

Information about the IHE Education Committee domain can be found at:
https://wiki.ihe.net/index.php/IHE_Education_Committee.

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0 Introduction

This document, the IHE Certified Professional Program (IHE-CPP) Foundation Level Exam - Syllabus describes the foundation level of the certification “IHE Certified Professional” established by the Integrating the Healthcare Enterprise (IHE).

The purpose of this syllabus is twofold:

- It provides Training Providers with the basis for creating their course materials.
- It allows Students to prepare themselves for the examination.

The IHE-CPP is sponsored by IHE International and operates under the IHE-CPP Scheme which is defined in a companion document. It is expected in the future that other Exam Syllabus may be added under the same IHE-CPP Scheme.

0.1 Purpose of the IHE Foundations Exam - Syllabus

This syllabus is designed to ensure a fair and impartial understanding between the instructor and students, setting clear expectations of material to be learned, and providing a roadmap of course organization/direction. It provides a marketing angle of the exam such that students may choose this exam and whether the subject material is relevant to their professional activities.

This syllabus also contains a reading list of relevant material that expected to be familiar or professional taking this examination.

0.2 Intended Audience and prerequisite skills for the IHE-CPP Foundation exam

The intended audience is a person with a health IT background with a requirement or an intention to use products based on IHE profiles, either someone (contracted) to work for a healthcare provider organization, or someone employed by a software development company.

A competent IHE Certified Professional - IHE Foundations will be able to apply the IHE methodology (ISO/TR 28380) for developing interoperability specifications for an existing healthcare environment. He or she will have the skills to identify and use the appropriate existing IHE profiles when faced with a healthcare interoperability project.

0.3 Educational Objectives / Cognitive Knowledge Levels

Each module of the syllabus is assigned a cognitive level. A higher level includes the lower levels. The levels used here are based on Bloom’s Taxonomy and include:

K1 “Remember”, K2 “Understand” and K3 “Apply”.

All terms defined in the glossary have to be known (K1), even if they are not explicitly mentioned in the educational objectives.

0.4 Structure of the Syllabus

The content of the syllabus is structured in 6 main chapters:

:

- The IHE Organization: Governance, Roles and IP
- Developing IHE Technical Frameworks and Profiles
- IHE Testing: Connectathon, Integration Statements, CAS
- Finding and Using IHE Resources
- Example Profiles, Base Standards, Technologies and Security Profiles
- Deployment

Each chapter contains learning objectives, also listing the cognitive level.

0.5 History, sources used, review process

The initial Version 1.0 of the IHE Certified Professional Program (IHE-CPP) IHE Foundations Exam – Syllabus was released on March 27, 2019. The goal of this review was to substantially update this Syllabus to reflect the many substantial changes that have occurred since then, both within IHE as well as in the environment. These changes demanded to re-write the document completely.

New in this version are Business Objectives, to further clarify the benefits that arise from certification. This version also uses Bloom's Taxonomy to define Cognitive Knowledge Levels. Profile development and testing were found to be too large for one section. These are now represented in two separate sections.

The following sources were considered:

- IHE Homepage: <https://www.ihe.net/>
- IHE Europe Homepage: <https://www.ihe-europe.net/>
- IHE Wiki: <https://wiki.ihe.net/>
- IHE Principles of Governance, of May 8, 2025:
<https://www.ihe.net/wp-content/uploads/IHE-Intl-Governance.pdf>
- IHE International Strategic Plan, 2022:
<https://www.ihe.net/wp-content/uploads/IHE-Strategic-Plan-2022.pdf>
- IHE PRISM EHDS - A new program to advance and prioritize Interoperability in support of the European Health Data Space (EHDS) regulation:
<https://www.ihe-europe.net/node/265>
- European Union, New European Interoperability Framework EIF, 2017:
https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/eif_brochure_final.pdf

In addition to this material an initial set of comments on Version 1.0 of the Syllabus was considered. This version of the Syllabus this was created by a team of editors, using AI tool support. It is now open for commenting both within the IHE Education Committee and publicly.

The comments will be considered in the review within the IHE Education Committee. It is planned to ballot and release a revised version of the Syllabus early in 2027.

0.6 The Exam

This syllabus is the basis for the examination for the IHE-CPP Foundation Level Exam. A question in the exam can cover material from several chapters of the syllabus. All chapters of the syllabus can be examined. The format of the exam is a multiple-choice. Exams can be held immediately after a training course, but also independently from courses (e.g. in an examination center or remotely with proctoring).

0.7 Business objectives

The following business objectives are expected to be achieved by a candidate who has passed the IHE-CPP Foundation Level Exam:

1. Orient yourself in the IHE organisation, know its vision and mission, the structure, the types of membership, the roles of users and vendors, within the governance.
2. Understand the IHE methodology of developing Technical Frameworks, consisting of Profiles that define and describe actors and transactions. Describe the IHE annual cycle, and how the Trial Implementation and Final Text Profiles are developed.
3. Describe the testing approach of IHE, especially the IHE Connectathon and the roles of Monitors. Describe the content of IHE Product Integration Statements and IHE Conformity Assessment.
4. Locate and navigate the available IHE resources, especially the IHE Domains with the IHE Technical Frameworks and IHE White Papers, the IHE Wiki and the IHE Google Drive. Draw knowledge from the Connectathon Results, and the product registry.
5. Describe the most important IHE Profiles and determine if they are useful to address specific user requirements. Describe the base standards that are used in these profiles, and the basic technical concepts in these standards.
6. Describe how IHE resources help to accelerate health information exchange deployments, referencing the European Interoperability Framework (EIF) and examples from Europe, USA and other regions, so that professionals can leverage IHE profiles, testing strategies and deployment guidance to support efficient, interoperable procurement and implementation of health IT systems within their organisation.

1 The IHE Organization: Governance, Roles and IP

Before you can use IHE profiles, testing services or resources with confidence, you need to know *who* produces them, *under what rules*, and *on whose behalf*. This chapter orients you in IHE International as a non-profit, consensus-driven organisation: its vision and mission, its guiding principles, the committee structure that turns stakeholder needs into published specifications, the categories of membership open to users and vendors, and the intellectual property and anti-trust commitments that every participant accepts.

A useful first distinction is that all IHE work falls into two complementary streams, governed and staffed differently:

Aspect	Development activities	Deployment activities
Scope	International, organised by clinical and operational domain	National and regional, organised by geography
Main bodies	Domain Planning and Technical Committees, Domain Coordination Committee	National and Regional Deployment Committees, Global Deployment Coordination Committee
Typical output	Technical Frameworks and supplements	Testing events, demonstrations, education, National Extensions

By the end of the chapter you will be able to name the principal IHE bodies and their remits, classify an organisation into the correct membership category, and explain what rights and obligations flow from the IHE Intellectual Property Agreement.

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Technical Frameworks
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1.1 Vision, Mission and Guiding Principles of IHE International

1.1.1 IHE's Vision and Mission Statements

Learning objective: State the vision and mission of IHE International as described in its Strategic Plan and Principles of Governance.

K-level: K1

IHE International's Strategic Plan states its **vision** as: to *"enable seamless and secure access to health information whenever and wherever needed."*

Its **mission** is to enable health systems and care delivery networks to adopt interoperable digital workflows supporting evidence- and value-based health services, by developing workflow-based interoperability specifications and providing testing and validation capabilities.

The Principles of Governance restate the goal more operationally: improving the ability of computer systems in healthcare to share information, so that all information relevant to a patient's care is available to the patient and care provider when required. Driving needs behind this goal include seamless information exchange, supporting electronic health records, enabling health information networks, addressing security and privacy, and improving workflow efficiency.

1.1.2 The Guiding Principles Behind IHE's Work

Learning objective: Explain the guiding principles of IHE, such as transparency, consensus, competition and harmonization, and how they shape the organization's activities.

K-level: K2

IHE's Principles of Governance list fourteen guiding principles that shape how every committee operates, from domain planning to Connectathon testing. Four of them deserve particular attention because they explain recurring features of the organization's daily practice.

- **Transparency** means that governance information, decisions and activities of committees are made accessible to all parties on a timely basis — for example, meeting minutes and profile drafts are published rather than kept internal.
- **Consensus** means unanimous consent is the goal for every decision; a recorded vote is used only as a last resort when time runs out and disagreement persists. This is why profile development can involve lengthy discussion before a Technical Committee finalizes text.

- **Competition** acknowledges that IHE membership includes companies that are direct commercial rivals, so all activities must respect legal boundaries such as antitrust law — committees discuss technical interoperability, never pricing or market allocation.
- **Harmonization** requires that specifications resolve overlaps and conflicts between the standards they reference, so that, say, a profile combining DICOM and HL7 elements does not leave implementers with contradictory instructions.

Other principles reinforce these: openness and stakeholder representation ensure no single interest dominates, while relevance and effectiveness keep work scoped to real, time-bound needs. Together these principles explain why IHE outputs are trusted, broadly adopted specifications rather than the product of a single vendor's preferences.

1.1.3 Two Streams of IHE Work: Developing Specifications versus Deploying Them

Learning objective: Distinguish between development activities and deployment activities within IHE, identifying which committees and outputs belong to each stream.

K-level: K2

Every activity inside IHE belongs to one of two streams, and recognising which one you are looking at tells you who is responsible and what comes out of the work.

- **Development activities** are international in scope and organised by clinical or operational domain. A *Domain Planning Committee* selects and prioritises use cases each year; a *Domain Technical Committee* turns them into detailed specifications; a *Domain Coordination Committee* keeps processes consistent across domains. The output is the **IHE Technical Framework** and its supplements.
- **Deployment activities** are national or regional in scope and organised geographically. *National and Regional Deployment Committees*, coordinated globally by the *Global Deployment Coordination Committee*, run Connectathons, demonstrations and education, develop testing tools with the Testing and Tools Committee, and draft **National Extensions** to address local care traditions — extensions that must not contradict the published Profiles and are only final once approved by the relevant Domain Technical Committee.

A concrete example: a cardiology use case identified by a national health ministry is first turned into a work item by a Domain Planning Committee and specified by a Domain Technical Committee (development). Once published, a National Deployment Committee then organises a local Connectathon to test vendor systems against that specification, and may add a National Extension for a country-specific coding requirement (deployment).

1.2 Organisational Structure: Board, General Committees and Domain Committees

1.2.1 Development Stream and Deployment Stream: Two Complementary Structures

Learning objective: Describe the overall organisational structure of IHE International, distinguishing development activities (Domain Committees, Domain Coordination Committee) from deployment activities (National/Regional Deployment Committees, Global Deployment Coordination Committee).

K-level: K2

IHE's organisational chart separates two families of committees that pursue different goals but rely on one another. On the **development** side, each clinical or operational Domain runs a Domain Planning Committee, which selects and prioritises use cases, and a Domain Technical Committee, which specifies the use of standards for those use cases in the Technical Framework. A Domain Coordination Committee sits above all Domains to keep their processes and technical directions consistent, for example ensuring that two Domains do not define conflicting actors for the same transaction.

On the **deployment** side, National and Regional Deployment Committees are separate legal entities, empowered by the Board, that run Connectathons, demonstrations and education in their own geography, and that draft National Extensions to adapt Technical Frameworks to local care practices. A Global Deployment Coordination Committee performs for the deployment world the same coordinating role that the Domain Coordination Committee performs for development: it promotes consistent use of profiles, tools and processes across all regions, shares best practice among deployment committees, and feeds market needs back into Domain work.

- **Domain Committees:** produce the specifications
- **Domain Coordination Committee:** keeps development consistent across Domains
- **National/Regional Deployment Committees:** test and promote the specifications locally
- **Global Deployment Coordination Committee:** keeps deployment consistent across regions

1.2.2 Board and General Committees: Who Governs What

Learning objective: Identify the scope and responsibilities of the Board, Board Operations Committee, Testing and Tools Committee, Marketing and Communication Committee, and Advisory Panel within IHE governance.

K-level: K1

IHE International's **Board** is the broadest oversight body, responsible for overall management, direction and governance, including mission-setting, budget approval, resolving inter-committee conflicts, and hiring the Managing Director through its **Board Operations Committee**. Several general committees support this work at international level.

Body	Scope and responsibilities
------	----------------------------

Board Operations Committee	Advises on budget, strategic planning; appoints and evaluates the Managing Director
Testing and Tools Committee	Coordinates testing activities (e.g. Connectathons) and testing software/tools across Deployment Committees
Marketing and Communication Committee	Coordinates IHE marketing, communication activities and resources
Advisory Panel	Invited healthcare IT leaders who provide guidance to the Board

1.2.3 Classifying Committees: A Worked Procedure

Learning objective: Classify a given IHE committee or body according to its role and place in the governance hierarchy, in order to determine which body is responsible for a specific organisational decision or activity.

K-level: K3

Given a real decision or activity, you can locate the responsible body by asking three questions in sequence: (1) Is this a *development* or *deployment* matter? (2) Does it concern one domain, coordination across domains, or the whole organisation? (3) Within a domain, is it about selecting/prioritising a use case (Planning) or specifying/publishing the technical solution (Technical)?

1.2.3.1 Worked example

Suppose a Cardiology Domain Technical Committee has just finished a supplement and wants it released as Final Text. Who decides? Apply the questions: it is a development matter, confined to one domain, and it concerns approval of technical output — so responsibility sits with the **Domain Planning Committee**, which formally approves supplements proposed for Final Text release by the Technical Committee. Compare that with a proposal to merge two domains: this is still development, but it spans domains and changes IHE's structure, so it escalates to the **Board**.

Decision or activity	Responsible body
Selecting work items for the annual cycle	Domain Planning Committee
Assessing feasibility and drafting the Technical Framework text	Domain Technical Committee
Approving supplements for Final Text release	Domain Planning Committee
Ensuring consistent processes and communication across domains	Domain Coordination Committee
Creating, changing the scope of, or dissolving a domain	Board

Notice the pattern: as scope widens from a single use case to cross-domain consistency to organisational structure, responsibility moves up the hierarchy — Technical Committee, to Planning Committee, to Domain Coordination Committee, to Board. Applying this stepwise check consistently lets you route any given decision to the correct committee rather than guessing from its title alone.

1.3 National, Regional and Global Deployment Governance

1.3.1 Deployment Governance from Nation to Globe

Learning objective: Distinguish between the roles and responsibilities of National Deployment Committees, Regional Deployment Committees and the Global Deployment Coordination Committee within IHE governance.

K-level: K2

Deployment activities are carried out by a three-tier structure that mirrors the geography of IHE's user community rather than its clinical domains. Each tier is empowered by the IHE Board but operates as a distinct organisation with its own governance rules and business model.

Body	Geographic scope	Core responsibilities
National Deployment Committee	A single country	Recruit national participants, run Connectathons and educational events, develop National Extensions, feed national requirements to Domain Committees
Regional Deployment Committee	A defined group of nations	Coordinate participating National Committees, organise regional Connectathons and demonstrations, retain technical project management for testing
Global Deployment Coordination Committee (GDC)	Worldwide	Align deployment activities across regions, share best practices, gather market needs to guide Domain work, support committees in learning from one another

For example, a national society in one country would establish a National Deployment Committee to run local Connectathons, while several neighbouring countries might jointly form

a Regional Deployment Committee to pool resources for shared testing events. The GDC does not run testing itself; instead it channels representatives designated by each Regional Committee (one user, one vendor) and each National Committee (one representative), meeting at least four times a year to align the international deployment agenda and report annually to the IHE Board.

1.3.2 Developing and Approving National Extensions

Learning objective: Describe the process by which National Extensions to the IHE Technical Frameworks are developed, submitted and approved.

K-level: K1

National Extensions are documents that address unique national requirements for healthcare information and workflow. They must be based on final text IHE Profiles already published in the international Technical Frameworks, and they may extend but never contradict Profile requirements.

- A **National Deployment Committee** initiates and drafts the extension.
- The draft is submitted, in **English** (national-language translations may be included), to the **Domain Technical Committee** responsible for the affected Profile(s).
- The Domain Technical Committee reviews the draft and may return comments or suggestions.
- Once **both** the Domain Technical Committee and the National Deployment Committee approve it, the extension is **published** as part of the Domain Technical Framework.

1.3.3 Choosing the Right Deployment Body for an Initiative

Learning objective: Apply the governance structure of deployment committees to determine which body should be engaged for a given national or regional interoperability initiative.

K-level: K3

Given a concrete interoperability initiative, you can work out which committee to approach by matching its geographic scope and nature against the deployment governance structure. The procedure below turns the structural knowledge from this chapter into a repeatable check.

- **Step 1 — Identify the geographic footprint.** Is the initiative confined to one country, does it span a defined group of nations, or does it need coordination across multiple IHE regions worldwide?
- **Step 2 — Check whether a Committee already exists there.** National and Regional Deployment Committees are sponsor-created, so absence of a Committee may mean you first need to identify prospective sponsors rather than an existing body.
- **Step 3 — Match the activity type to the body's remit.** A single-country demonstration, translation effort, or National Extension proposal belongs with the National Deployment Committee; a shared Connectathon or testing infrastructure spanning several countries belongs with the Regional Deployment Committee; a need to align tools, share best practice, or feed market requirements into Domain Committees across regions belongs with the Global Deployment Coordination Committee (GDC).

Initiative scenario	Body to engage	Why
A hospital network in one country wants a local translation of a Technical Framework section	National Deployment Committee	National-level education and translation is a National Committee activity
Several neighbouring countries want to run one shared Connectathon	Regional Deployment Committee	Regional Committees plan and support interoperability testing spanning multiple nations
Deployment leaders want to compare business models used in different regions worldwide	Global Deployment Coordination Committee	The GDC facilitates sharing of best practices and organizational models across regions

Worked example: a national ministry wants to pilot a profile locally but also wants its testing tool development to stay aligned with efforts elsewhere — this requires engaging both the National Deployment Committee (for the pilot) and, through it, the GDC (for tool alignment across regions).

1.4 1.4 Membership Categories, Sponsors and the Roles of Users and Vendors

1.4.1 IHE Membership Categories at a Glance

Learning objective: Identify the different IHE membership categories (Sponsors, Domain Sponsors, National/Regional Deployment Sponsors, Associate Organizations, Benefactors) and their interest categories.

K-level: K1

IHE International recognizes several categories of Member Organization, each tied to specific interest categories (User, Developer, General Interest):

- **IHE International Sponsors** — support general committees such as the Board, Advisory Panel, Marketing and Communications Committee and Testing and Tools Committee (e.g., HIMSS and RSNA).
- **Domain Sponsors** — belong to the User category; typically healthcare professional or governmental organizations.
- **National/Regional Deployment Sponsors** — belong to User, Developer or General Interest categories; support deployment in a nation or region.
- **Associate Organizations** — no development or deployment duties; help communicate IHE's goals and share its logo.
- **Benefactors** — any member type distinguished by financial support, gaining a non-voting Board representative.

1.4.2 Responsibilities and Privileges Across Membership Categories

Learning objective: Explain the responsibilities and privileges associated with each membership category and how they support IHE development and deployment activities.

K-level: K2

Each membership category carries a distinct bundle of obligations and rewards, and understanding this pairing explains how IHE keeps its two work streams — development and deployment — funded, staffed and accountable.

- **IHE International Sponsors** (currently HIMSS and RSNA) shoulder the heaviest load: they act as Secretariat for the Board and general committees, carry significant financial responsibility, and provide legal support. In return they hold permanent influence over strategic direction and budget approval.
- **Domain Sponsors** commit financial and organizational resources to a specific clinical domain, appointing a Domain Committee Secretary; their privilege is direct control over that domain's Technical Framework content.
- **National/Regional Deployment Sponsors** fund and staff local Connectathons, translations and National Extensions; their reward is authority over deployment activities in their territory.
- **Associate Organizations** take on no development or deployment duties — only communication and recruitment support — and receive the lighter privilege of using the IHE logo and sharing updates with their membership.
- **Benefactors** add financial support on top of whatever type they already are, gaining a non-voting Board representative and public recognition, without replacing their existing obligations.

For example, a national radiology society that becomes a Domain Sponsor funds Technical Framework work, while the same society acting only as an Associate Organization would simply promote IHE to its members without technical responsibility.

1.4.3 Applying the User/Developer Classification: A Worked Procedure

Learning objective: Classify a given organization into the appropriate IHE membership and interest category based on its role as a user or vendor within the governance structure.

K-level: K3

Classifying an organization is not just a definitional exercise—it determines which interest category it registers under and how its votes are weighted on committees. The Principles of Governance define a **User** as a Member Organization that is (or whose members are) actively involved in *using* healthcare IT systems, while a **Developer** builds, markets, installs, services or supports those products. Many organization types can legitimately claim either role, so IHE ties each organization type to a default interest category, letting the organization pick a single affiliation when it straddles both.

To classify a candidate organization, follow this sequence:

- **Step 1 — Identify the primary activity.** Does the organization sell, install or support IT products, or does it deliver care, conduct research, or represent a constituency that consumes IT?
- **Step 2 — Check whether it fits a defined organization type.** Compare it against the categories below.
- **Step 3 — Resolve dual interests.** If it plausibly fits more than one type, it must choose a single affiliation for membership and voting.

Organization type	Typical role	Interest category
Health IT / consulting company	Vendor: develops, markets, installs or supports IT products	Developer
Government agency or not-for-profit	Represents public or humanitarian interest in health IT	User and General Interest
Provider or research organization	Delivers care or performs clinical/technology research	User and General Interest
Standards Development Organization	Develops standards usable in healthcare, may liaise with IHE	Developer (free reciprocal membership)

Applying this: a hospital IT department that only deploys and operates systems classifies as a User; a company selling an EHR module classifies as a Developer; a national health ministry with a humanitarian mandate classifies as User/General Interest, potentially qualifying for a reduced-dues tier if it operates in a low- or middle-income country.

1.4.4 Users and Vendors: Two Complementary Roles in the IHE Ecosystem

Learning objective: Explain the difference in the roles of Users and Vendors and their specific contribution to the IHE ecosystem

K-level: K2

IHE deliberately brings together two kinds of stakeholders whose interests must both be satisfied for a profile to succeed: the people who *use* healthcare IT and the organizations that *build* it. IHE's guiding principles make this explicit, calling for **Healthcare Leadership** to define clinically useful problems and **Industry Engagement** to ensure that solutions are actually built and shipped in working products.

A **User** is a Member Organization that is, or whose members are, actively involved in using healthcare information technology systems -- for example a hospital IT department, a nursing association, or a public health agency. Users contribute lived operational needs: they identify the workflow problems (such as a clinician needing lab results to follow a referral automatically) that Domain Planning Committees turn into use cases. Notably, Domain Sponsors -- the

organizations that fund and steer Technical Framework development in a domain -- must come from the User category, reflecting IHE's insistence that clinical need drives the agenda.

A **Vendor** (Developer) is a healthcare IT company that designs, markets, installs or supports products. Vendors translate abstract profiles into interoperable software, test that software at Connectathons, and bring it to market, without which the profiles would remain paper exercises.

Because Users and Vendors sometimes compete or have divergent interests, IHE's principles of Impartiality, Balance and Competition ensure neither role dominates decision-making.

1.5 Intellectual Property, Copyright and Anti-Trust Obligations

1.5.1 Ownership and Copyright Licenses of IHE Artifacts

Learning objective: Identify the copyright licenses applied to IHE Technical Frameworks, testing tools and test plans, and the ownership rights of IHE International over IHE artifacts.

K-level: K1

Member Organizations agree that **IHE International owns the copyright** in all IHE artifacts, even though each Member Organization keeps ownership of the parts it contributed. IHE International may also grant extra rights to specific parties through the CC+ protocol.

Artifact type	License
Technical documents (Technical Frameworks, supplements, specifications)	Creative Commons CC-BY 4.0
Software testing tools and components (e.g., Gazelle)	Creative Commons CC-BY-SA-NC 4.0
Test plans	Creative Commons CC-BY-SA-NC 4.0

Technical documents may reference base standards owned by other standards bodies; copyright in those base standards remains reserved by their respective organizations and is unaffected by IHE's agreement. **IHE**, its logo, *Connectathon*, and the IHE Conformity Assessment logo are registered trademarks usable only with written consent.

1.5.2 Patent Disclosure and the Duty to License on Reasonable and Non-Discriminatory Terms

Learning objective: Explain the patent disclosure obligations of Member Organizations, including the concept of Necessary Claims and the duty to license on reasonable and non-discriminatory terms.

K-level: K2

Because IHE Technical Frameworks are meant to be freely implementable, the IHE Intellectual Property Agreement asks each Member Organization to act in good faith about patents that could block adoption of its Profiles. Through its Committee Representatives, a Member Organization must disclose any patent or patent application it (or a parent, subsidiary or affiliate) owns or controls that it believes would be **necessarily infringed** by implementing an IHE Technical

Document under development on a committee where it participates. There is no duty to actively search patent portfolios — only to disclose what the representative is aware of, as soon as practicable and at least 10 days before the affected document is published for public comment, in writing to the IHE Board Secretariat.

Central to this duty is the concept of a **Necessary Claim**: a patent claim is

1.5.3 Applying Anti-Trust Rules During Committee Work

Learning objective: Apply the IHE anti-trust and competition principles to determine appropriate conduct for vendor representatives collaborating within IHE committees.

K-level: K3

IHE explicitly recognises that its Member Organizations include business competitors, so the Competition principle requires every participant to observe normal legal boundaries, including antitrust law, throughout committee activity. For a vendor representative, this is not an abstract policy statement but a concrete filter to apply before speaking, emailing, or voting in any IHE forum.

A practical procedure a vendor representative can follow before and during a committee meeting:

- **Check the agenda item against the prohibited-topics list** before the meeting starts; if an item risks straying into commercial territory, flag it to the co-chair or Secretary in advance.
- **During discussion**, redirect any conversation that drifts toward pricing, discounts, credit terms, sales quotas, territory or customer allocation, boycotts, or company-specific market data back to the technical scope of the profile.
- **Insist everything stays on the record**: if a comment is not fit for the minutes, it should not be raised at all, and no side discussions should occur in informal subgroup meetings that bypass the Committee's record-keeping.
- **Escalate** to the Committee Secretary, who is responsible for monitoring adherence to these guidelines, if another participant persists in raising excluded topics.

2 Developing IHE Technical Frameworks and Profiles

IHE does not write new standards; it selects, constrains and combines existing ones (e.g. HL7 FHIR, HL7 CDA, HL7 v2, DICOM, LOINC, OASIS, ISO) into **Profiles** that solve a clearly defined clinical or operational use case. This chapter opens up the machinery behind those Profiles: how a use case proposed by a Domain Planning Committee becomes a technical specification written by a Domain Technical Committee, structured as *actors*, *transactions*, options and groupings, and published as part of a Domain's Technical Framework. You will follow the annual development cycle and learn to recognise what a document's maturity status tells an implementer or a procurer.

Publication stage	What it means	Typical use
Public Comment	Draft supplement released for open review; content may change substantially	Submit comments, assess direction
Trial Implementation	Stable enough to build and test; refined through Connectathon experience and change proposals	Early implementation, testing
Final Text	Proven and stable; integrated into the Technical Framework, maintained via change proposals	Procurement, national extensions

By the end of the chapter you should be able to navigate a Technical Framework's volumes, read a Profile's actor/transaction diagram, and explain how the cycle keeps specifications both current and stable.

2.1 Anatomy of an IHE Technical Framework: Volumes and Supplements for Trial Implementation

2.1.1 2.1.1 The Volumes of a Domain's Technical Framework

Learning objective: Describe the volume structure of an IHE Technical Framework and identify the purpose of each volume within a Domain's set of documents.

K-level: K2

A Domain's Technical Framework is not one document but a set of coordinated volumes, each answering a different question an implementer might ask. This layered structure lets a reader move from the big picture down to the exact bytes on the wire without wading through everything at once.

- **Volume 1** describes the use cases, actors and transactions at a conceptual level -- the

2.1.2 The Role of Trial Implementation Supplements

Learning objective: Explain the role of Technical Framework Supplements in introducing new or revised Profiles at Trial Implementation status.

K-level: K2

Before a new or revised Profile becomes part of a Domain's stable Technical Framework, it is published separately as a **Technical Framework Supplement**. This is the vehicle a Domain Technical Committee uses to introduce a candidate Profile without disturbing the already-approved Final Text volumes. Release of a supplement for public comment, and later for Trial Implementation, are both actions that require formal approval by the Domain Technical Committee, since they commit the community to test and build against that content.

Once released at *Trial Implementation* status, a supplement is considered stable enough for vendors to implement and for testers to exercise, typically at an IHE Connectathon. Real-world testing and vendor experience feed back into the Profile through change proposals, which the Technical Committee reviews and may incorporate directly into the Trial Implementation text. This iterative refinement is the whole point of the status: it lets a Profile be exercised against real products before its specification is frozen.

For example, a new interoperability use case selected by a Domain Planning Committee is drafted by the Technical Committee, published as a standalone Trial Implementation supplement, tested at successive Connectathons, and only later folded into the main Technical Framework as Final Text once it has proven stable — at which point the supplement's content is merged in and maintained through ordinary change management rather than as a separate document.

2.1.3 Finding a Profile's Specification in Practice

Learning objective: Locate a specific Profile's specification within the appropriate volume and supplement of a given Domain's Technical Framework.

K-level: K3

Suppose you need the exact transaction requirements for a Profile that a vendor claims to support, or that a tender document references by name. The Domain's Technical Framework and its Supplements are large, so a systematic search saves time and avoids reading the wrong maturity level.

- **Identify the Domain.** Each Domain (e.g. IT Infrastructure, Radiology, Pharmacy, PaLM) publishes its own Technical Framework; a Profile belongs to exactly one Domain's document set, even if it is referenced from another Domain.
- **Check whether the Profile is Final Text or Trial Implementation.** Final Text Profiles are integrated into the numbered Technical Framework volumes; Profiles still at Trial Implementation live in a separate Supplement document carrying the Profile's name and a Trial Implementation label.
- **Read the actor/transaction description first**, typically the shortest part of the specification, to confirm you have the right Profile before digging into the detailed transaction volume.

- **Follow cross-references.** A Profile's transactions are frequently detailed in a separate volume from the one listing options and groupings, so the Profile entry itself will point you to the exact volume and section to consult.
- **Check for a National Extension.** If the requirement is jurisdiction-specific, a National Deployment Committee may have published an extension to that Profile; these are submitted in English, reviewed by the Domain Technical Committee, and once approved are published as part of the Domain Technical Framework, so they should appear alongside the base Profile rather than in a separate unrelated document.

This sequence — Domain, maturity status, actor/transaction summary, detailed volume, National Extension — is the same regardless of which Domain's Technical Framework you are working with, because the Domain Coordination Committee is responsible for keeping content and format consistent across Domains.

2.2 Profiles as Building Blocks: Use Cases, Actors, Transactions, Options and Groupings

2.2.1 The Building Blocks of a Profile: Actors, Transactions, Options and Groupings

Learning objective: Explain how IHE Profiles use actors, transactions, options and groupings as building blocks to describe how existing standards are combined to address a specific clinical or operational use case.

K-level: K2

A Profile is best understood as a small set of building blocks that together describe how existing standards solve one clinical or operational use case, without inventing anything new.

- **Actors** represent roles played by systems, such as a system that creates a document or one that stores and retrieves it. An actor is a function, not a specific product; one product may implement several actors.
- **Transactions** are the standards-based interactions between actors, for example a query-and-retrieve exchange built on an existing standard such as HL7 FHIR or DICOM. Transactions are what make interoperability testable, since each one specifies exactly what messages are exchanged and how.
- **Options** let an actor support additional, clearly defined behaviour beyond the required baseline, so implementers can offer richer functionality while remaining conformant to the same Profile.
- **Groupings** combine actors from the same or different Profiles onto one system, allowing several use cases to be addressed together in a real deployment rather than as isolated specifications.

For example, a document-sharing use case might define a Document Source actor, a Document Repository actor, and a transaction between them for submitting documents; an option could add

support for a richer document format, while a grouping could combine the Document Repository actor with a security actor from another Profile so that access control is enforced at the same time.

Together, these building blocks let Technical Committees describe precisely how a use case is satisfied using existing standards, rather than describing a standard from scratch.

2.2.2 Two Committees, Two Roles: Planning and Technical

Learning objective: Describe the roles of Domain Planning and Technical Committees in selecting use cases and profiling standards into actors and transactions within a Technical Framework.

K-level: K2

Each IHE Domain usually splits its work between two committees with distinct jobs, so that deciding *what* problem to solve is kept separate from deciding *how* to solve it with standards.

- The **Domain Planning Committee** gathers interoperability problems reported by users and Regional/National Deployment Committees, turns them into work item proposals, and prioritises which use cases the Domain will tackle in the coming annual cycle, based on scope fit and feasibility advice from the Technical Committee.
- The **Domain Technical Committee** takes the selected use cases and does the profiling work: it assesses feasibility, selects and harmonises the appropriate standards, and writes them up as detailed specifications defining actors and transactions, published in the Domain's Technical Framework.

For example, if users report difficulty exchanging laboratory results across systems, the Planning Committee would define and prioritise that use case, while the Technical Committee would decide which messaging standard to constrain, which systems become actors (such as an Order Placer and an Order Filler), and which transactions connect them.

Some smaller Domains combine both functions into a single committee, but even then the two phases — use case selection and technical profiling — remain distinct steps in the same workflow, coordinated across all Domains by the Domain Coordination Committee.

2.2.3 From a User Requirement to a Profile's Building Blocks

Learning objective: Identify, for a given user requirement, the actors, transactions and options that a relevant IHE Profile would need to group together to satisfy it.

K-level: K3

Turning a stated need into a workable Profile means decomposing it into the four elements a Technical Framework actually specifies: **actors** (system roles), **transactions** (standards-based exchanges between actors), **options** (optional behaviours an actor may support) and **groupings** (actors that must be combined in one system to make sense). A practical way to work through a requirement is a short procedure.

- State the requirement precisely: who needs what information, from where, and at what point in the workflow.
- Identify the minimum set of actors required to move that information: a system that holds or produces it, a system that requests or consumes it, and any intermediary needed for discovery.
- Assign a transaction to each information exchange between two actors, choosing the standard it should carry.
- Check whether any behaviour is conditional (e.g. only needed for a subset of deployments) — if so, mark it as an option rather than baseline behaviour.
- Check whether any actor must be paired with another actor from a different Profile in the same product to be useful in practice — that pairing is a grouping.

2.2.3.1 Worked example

Requirement: a clinician needs to retrieve a patient's prior imaging report from another facility before ordering a new test.

Building block

What it covers in this case

Actors

a system that consumes documents, a registry that indexes them, a repository that stores them

Transactions

query the registry for matching documents; retrieve the selected document from the repository

Option

support for retrieving only a subset of document types, if the deployment does not need the full set

Grouping

the consuming actor must be grouped with a patient identity actor, since the query needs a correctly matched patient identifier from another Profile

Applying this procedure consistently is what lets a Technical Committee, or an implementer reading the specification, confirm that a Profile's actor/transaction diagram genuinely satisfies the use case it was written for.

2.3 The IHE Annual Development Cycle: From Proposal to Work Item to Publication

2.3.1 Two Committees, Two Roles: Planning the Work, Building the Profiles

Learning objective: Describe the roles of Domain Planning Committees and Domain Technical Committees in selecting work items and developing Profiles during the annual IHE development cycle.

K-level: K2

Each IHE Domain generally splits its work between two committees so that deciding what to build is kept separate from deciding how to build it. This separation lets clinical and operational priorities be weighed on their own merits before the technical detail work begins.

- **Domain Planning Committee (DPC):** gathers use cases and interoperability problems from users and Deployment Committees, analyses and prioritises them, and selects the work items for the annual cycle based on Domain scope, fit with existing Profiles, and feasibility input from the Technical Committee. It also advises the Technical Committee and coordinates education and marketing materials for new Profiles.
- **Domain Technical Committee (DTC):** assesses whether proposed work items are feasible, then selects and harmonises the actual standards (e.g. FHIR, DICOM, LOINC) needed to satisfy them. It writes the detailed implementation specifications — the actors, transactions and options — and documents testing requirements, ultimately producing and maintaining the Domain's Technical Framework.

For example, a Planning Committee might identify a recurring problem in patient identity matching across regional systems and select it as a work item; the Technical Committee then works out which transactions and standards actually solve that problem and drafts the Profile text. Some smaller Domains combine both roles into a single committee that still follows this two-phase logic.

2.3.2 From Work Item to Final Text: The Approval Chain of the Annual Cycle

Learning objective: Explain how a Profile progresses from work item selection through Public Comment, Trial Implementation and Final Text within the annual cycle, including the approvals required at each stage.

K-level: K2

Each year, a Domain moves a candidate use case through a sequence of formal gates before it becomes a stable specification. The Domain Planning Committee first selects the work item, based on need and feasibility. The Domain Technical Committee then drafts the Profile and must approve, by consensus or recorded vote, its release for **Public Comment**: a draft supplement opened to the wider community, whose content may still change substantially in response to feedback.

After comments are addressed, the Technical Committee approves release for **Trial Implementation**. This version is considered stable enough to build and test, typically at an IHE Connectathon, and is refined through change proposals arising from that real-world experience. Once proven, the Technical Committee approves inclusion of the accumulated change proposals into the **Final Text**, which is then approved as part of a Domain Technical Framework revision — the version suitable for procurement and national extension.

For example, a new patient-summary exchange Profile might be proposed one year, go to Public Comment the same or following cycle, reach Trial Implementation after committee approval, get

exercised at a Connectathon, and only then be folded into Final Text — each transition requiring an explicit Committee decision, not just technical readiness.

2.3.3 Diagnosing a Supplement's Stage and Deciding the Next Move

Learning objective: Determine the maturity stage of a given IHE supplement based on its publication status and identify the appropriate development actions for advancing it within the annual cycle.

K-level: K3

Given a supplement, the fastest way to determine its maturity stage is to check its cover page and any change-proposal log: a document marked as released for comment, not yet stable, signals **Public Comment**; a document that has passed comment and is being exercised through implementation and Connectathon testing signals **Trial Implementation**; a document folded into the Technical Framework proper, revised only through logged change proposals, signals **Final Text**. Each stage change is not automatic — it requires an explicit approval action by the Domain Technical Committee (DTC), by expressed consensus or recorded vote.

2.3.3.1 Worked example

Suppose you are handed a supplement titled with a Trial Implementation marker and a visible list of open Connectathon findings and pending change proposals. The correct next actions are:

- Confirm the finding/change-proposal backlog is being tracked against the DTC's decision points, not left informal.
- Check whether enough implementation and testing evidence exists to justify a vote for inclusion of change proposals and release as Final Text.
- If evidence is insufficient, the appropriate action is continued Trial Implementation use and further Connectathon testing cycles rather than premature Final Text release.

The table below summarises the diagnostic logic.

Observed status	Stage	Required DTC action to advance
Draft, open for review comments	Public Comment	Approve release for Trial Implementation once comments are resolved
Being implemented/tested, findings logged	Trial Implementation	Approve inclusion of change proposals; vote to release as Final Text when stable
Part of the Technical Framework revision	Final Text	Approve each Technical Framework revision incorporating further change proposals

2.4 Maturity Stages: Public Comment, Trial Implementation and Final Text

2.4.1 Three Maturity Stages of a Technical Framework Document

Learning objective: Describe the purpose and distinguishing characteristics of the three maturity stages of an IHE Technical Framework document: Public Comment, Trial Implementation and Final Text.

K-level: K1

Every IHE supplement moves through three named maturity stages, each marking a different degree of stability and a different purpose for readers.

- **Public Comment:** a draft supplement released for open review; its content may still change substantially before further development.
- **Trial Implementation:** a supplement considered stable enough for vendors to build and test, refined through Connectathon testing and change proposals.
- **Final Text:** a supplement proven through implementation and integrated into the Domain's Technical Framework, thereafter maintained through change proposals rather than substantial rewrites.

These three terms are the standard vocabulary used across all IHE Domains to label a document's status on its cover page and in its title.

2.4.2 Committee Approvals as Gatekeepers of Maturity

Learning objective: Explain how governance approvals by the Domain Technical Committee and Domain Coordination Committee drive the progression of a supplement from public comment through trial implementation to final text.

K-level: K2

A supplement does not advance from one maturity stage to the next automatically — each transition is a formal decision point requiring committee approval. The **Domain Technical Committee (DTC)**, which drafts the specification, must approve by expressed consensus or recorded vote the release of a supplement for public comment, then again its release for trial implementation, and later the inclusion of change proposals into trial implementation supplements or final text. This means the same body that writes the Profile also formally gates each step of its maturation.

Final text publication adds a second layer of governance: the **Domain Coordination Committee (DCC)**, composed of the co-chairs of all Domains' Planning and Technical Committees, must review and approve IHE Profiles before they are published as final text. This cross-Domain check exists precisely because the DCC's mission is to ensure consistent processes and technical direction across all Domains — a Profile cannot quietly become

2.4.3 Choosing the Right Maturity Stage for a Given Task

Learning objective: Determine which maturity stage of a Profile is appropriate to rely on for a given scenario, such as early implementation testing versus procurement or national extension development.

K-level: K3

Once you can identify the three maturity stages, the practical skill is to match a scenario to the correct one — and to justify that match by pointing to what each stage actually guarantees. Two features drive the decision: how *stable* the specification needs to be, and how *enforceable* it needs to be as a reference point.

2.4.3.1 A simple decision procedure

- **Step 1 — Ask why you need the Profile.** Are you evaluating direction, building a prototype, or writing contractual requirements?
- **Step 2 — Check stability requirements.** If the work tolerates content changing after Connectathon feedback, Trial Implementation is sufficient and even expected, since these supplements are explicitly refined through Connectathon experience and change proposals.
- **Step 3 — Check governance constraints.** National Extensions must, by governance rule, be based on Final Text Profiles as published in the international Technical Framework — they may extend but never contradict them. A draft still at Public Comment or Trial Implementation cannot legally anchor a National Extension.
- **Step 4 — Confirm with the relevant committee approval.** Only Domain Technical Committee-approved releases for a given stage should be treated as authoritative for that stage's use.

2.4.3.2 Worked scenarios

Scenario	Appropriate stage	Reasoning
A vendor building and testing a first implementation ahead of a Connectathon	Trial Implementation	Stable enough to build against; testing is the mechanism that further refines it
A procurement officer drafting an RFP requirement	Final Text	Proven and stable; safe as a contractual reference
A National Deployment Committee drafting a National Extension	Final Text	Governance requires extensions to be based on Final Text Profiles, never contradicting them

A reviewer commenting on proposed direction of a new supplement

Public Comment

Content may still change substantially; appropriate only for feedback, not reliance

2.5 Maintaining the Frameworks: Change Proposals, National Extensions and Deprecation

2.5.1 Change Proposals: Keeping a Published Profile Alive

Learning objective: Explain the process by which Change Proposals are submitted, reviewed and incorporated into Trial Implementation or Final Text versions of an IHE Technical Framework.

K-level: K2

Once a Profile has been released for Trial Implementation, it is not frozen — real-world testing and deployment inevitably surface gaps, ambiguities or errors. The mechanism for correcting these without starting a new development cycle from scratch is the **Change Proposal (CP)**. A CP is a formally documented request to modify text already published in a Technical Framework or supplement.

Change Proposals typically originate from experience gained during Connectathon testing, from implementers building against the specification, or from National Deployment Committees encountering unclear requirements. The proposal is submitted to the responsible **Domain Technical Committee**, which evaluates its rationale and technical impact. Crucially, the Governance rules identify *inclusion of change proposals in trial implementation supplements or in the final text of the Domain Technical Framework* as an action requiring formal committee approval — by expressed consensus or a recorded vote, not a unilateral editorial decision.

For example, if vendors at a Connectathon discover that a transaction's error-handling behaviour is described ambiguously, they can raise a CP; once the Technical Committee approves it, the correction is folded into the next revision of the Trial Implementation text, or, for material already at Final Text, into the maintained Final Text version. This is how IHE keeps specifications both stable enough to build products against and current enough to reflect field experience.

2.5.2 National Extensions: Local Requirements on a Common Base

Learning objective: Describe how National Deployment Committees develop National Extensions to address local requirements without contradicting the base Final Text Profile requirements.

K-level: K2

National Deployment Committees exist to promote and adapt IHE specifications within their own healthcare systems. When a country's policies or traditions of care create a requirement that the international Technical Framework does not address, the National Deployment Committee

can develop a **National Extension** rather than waiting for or forcing a change to the global specification.

A National Extension must be built on top of a *Final Text* Profile — the stable, published version of a Profile — and it may *extend* that Profile's requirements but must never *contradict* them. For example, a country might require an additional patient identifier field or a locally mandated coded value set within a Patient Identification transaction; this can be added as a National Extension without altering how the base transaction behaves for systems outside that country.

The development follows a defined path: the National Deployment Committee drafts the extension in English (national-language translations may be included), then submits it to the Domain Technical Committee responsible for the affected Profile. That committee reviews the draft, may send back comments or suggested changes, and the extension is only published as part of the Domain Technical Framework once **both** the Domain Technical Committee and the National Deployment Committee approve it.

2.5.3 Choosing the Right Maintenance Path for a Local Requirement

Learning objective: Determine whether a specific national or local requirement should be addressed through a Change Proposal, a National Extension, or awaits deprecation of an existing Profile element.

K-level: K3

When a national or local requirement surfaces, the practical question is not whether the Technical Framework should change, but *which maintenance mechanism* is appropriate. A useful procedure is to work through three diagnostic questions in order.

- **Does the requirement expose an error, ambiguity or gap that affects everyone using the Profile?** If yes, it belongs in the international change management process, not in a local workaround: submit a **Change Proposal** to the Domain Technical Committee responsible for the affected Profile, so the correction is incorporated into the Trial Implementation supplement or the Final Text of the Domain Technical Framework for all adopters.
- **Is the requirement specific to national policy, language or care traditions, and can it be met without contradicting the published Final Text Profile?** If yes, this is the domain of a **National Extension**, initiated by the National Deployment Committee, drafted in English (with optional national-language translation), and submitted to the Domain Committee, which reviews it before joint publication with the National Deployment Committee.
- **Does meeting the requirement require actually removing or replacing an existing actor, transaction or option that the current Profile still mandates?** If the base specification itself must retreat from a requirement, this cannot be forced through an extension (which may only extend, not contradict) or an ordinary Change Proposal; it signals that the element should be flagged for **deprecation** in a future cycle.

Situation

Mechanism

Who initiates

Global defect or missing option applicable everywhere	Change Proposal	Any implementer, routed via Domain Technical Committee
National-only need, compatible with Final Text	National Extension	National Deployment Committee
Requirement conflicts with a still-mandated Profile element	Await/propose deprecation	Domain Technical Committee

Applying this sequence prevents two common mistakes: writing a National Extension that quietly contradicts base requirements, and pushing a purely local preference into the international Change Proposal queue.

3 IHE Testing: Connectathon, Integration Statements, CAS

Writing a profile is only half of IHE's work; the other half is proving that implementations of it actually interoperate. This chapter follows the IHE **testing continuum**, from preparatory pre-Connectathon testing with the Gazelle tools, through the supervised, peer-to-peer testing of the Connectathon itself and the role of the *Monitors* who judge each test, to the published Connectathon Results. It then turns to the two claims a vendor can make about a product afterwards: the self-declared **IHE Integration Statement** and the formally audited **IHE Conformity Assessment Scheme (IHE-CAS)**, tested by authorised laboratories.

Understanding the difference between these levels of evidence is a practical skill: it determines what a procurement department may reasonably demand and what a supplier's documentation really guarantees.

Form of evidence	Who asserts it	What it demonstrates
Connectathon result	Monitors at a supervised event	A product version interoperated with peer systems on specific actor/profile/option combinations, at that event
Integration Statement	The vendor (self-declaration)	Which profiles, actors and options a named product release claims to support
IHE-CAS certificate	An authorised testing laboratory	Internationally recognised, audited conformity of a product to one or more profiles

3.1 The IHE Testing Continuum: From Pre-Connectathon Testing to Projectathons

3.1.1 Stages of the IHE Testing Continuum

Learning objective: Describe the stages of the IHE testing continuum, from pre-Connectathon validation tools through Connectathon and Projectathon events to Conformity Assessment.

K-level: K2

Before any live testing event, developers use validation tools such as **Gazelle** to check that a system's messages conform to the relevant IHE specification. This early, self-paced validation catches basic errors cheaply, before they can waste time in a supervised event.

The continuum then moves through several structured milestones, each raising the bar on realism and rigor:

- **Plugathon:** an early, lower-stakes gathering where implementers of a new or draft specification test peer-to-peer connections, mature the specification itself, and surface ambiguities before it is frozen for formal testing.

- **Connectathon:** the flagship annual event where vendors bring finished products and test them against other vendors' systems under a rigorous, supervised process, with independent Monitors verifying each result against defined test cases.
- **Projectathon:** a testing event aligned to a specific national, regional, or programmatic initiative (for example, one supporting the European Health Data Space), often run alongside a Connectathon, focusing testing on the workflows that a particular deployment actually needs.

Beyond these events, **Conformity Assessment** represents the final stage: an internationally recognized, audited certification that a product conforms to one or more IHE profiles, offered by authorized testing laboratories rather than judged informally at an event.

Together, these stages let a specification and its implementations mature progressively: from private validation, to peer testing of drafts, to full multi-vendor Connectathon testing, to deployment-focused Projectathons, and finally to formally certified conformity.

3.1.2 Plugathons, Connectathons and Projectathons: Maturing Specifications Toward Deployment

Learning objective: Explain the purpose and role of Plugathons, Connectathons and Projectathons in maturing interoperability specifications toward deployment readiness.

K-level: K2

IHE's testing continuum is not a single event but a series of gatherings, each suited to a different stage of a specification's maturity. A newly drafted profile is rarely ready for full-scale peer testing; it first needs an informal setting where implementers can try it out, find rough edges, and iterate quickly.

- **Plugathons** are early, lightweight testing sessions used to rapidly mature interoperability guidance into structured, testable profiles before they are stable enough for formal Connectathon testing. They let implementers validate a draft specification's basic feasibility and fix obvious problems early.
- **Connectathons** are the established, rigorous annual events where vendors bring products built to published IHE profiles and test them against other vendors' systems, validating conformance to the Technical Frameworks and the interoperability of systems with complementary partners.
- **Projectathons** extend this testing model to specific regional or policy-driven initiatives. For example, an IHE Deployment Committee may host a Projectathon alongside its annual Connectathon to support a targeted programme such as a national or European data-space initiative, testing how profiles perform against concrete real-world requirements rather than generic conformance.

Together these three event types form a progression: Plugathons stabilize a profile's design, Connectathons prove broad multi-vendor interoperability, and Projectathons validate readiness

for a specific deployment context, moving specifications step by step from draft guidance toward products that are genuinely deployment-ready.

3.1.3 Matching Testing Evidence to a Procurement or Deployment Decision

Learning objective: Distinguish between the different forms of testing evidence produced along the continuum and determine which is appropriate for a given procurement or deployment scenario.

K-level: K3

The testing continuum produces several distinct artefacts, and a buyer or implementer who treats them as interchangeable risks either demanding evidence that does not exist or accepting evidence that proves less than it seems to. The skill is to work backwards from the decision at hand to the strength of evidence it actually requires.

3.1.3.1 A worked procedure

- **Step 1 — Identify the risk being managed.** Is this an early pilot, a live clinical deployment, or a regulated cross-border exchange?
- **Step 2 — Check what evidence exists for the candidate product.** Ask the vendor for the specific artefact (Connectathon report, Integration Statement, or IHE-CAS certificate), not just a general claim of "IHE compliance".
- **Step 3 — Verify the scope matches your use case.** Confirm the actor, profile, option and product version named in the document are the ones you will actually deploy — evidence for one release or option does not transfer to another.
- **Step 4 — Escalate the requirement if the stakes are high.** For critical or regulated deployments, require the audited IHE-CAS certificate rather than a self-declared Integration Statement.

Scenario	Minimum appropriate evidence	Why
Early pilot with a friendly partner vendor	Connectathon result for the relevant actor/profile	Confirms peer-tested interoperability at a specific event, sufficient for exploratory work
Standard procurement tender	Integration Statement for the exact product release	Gives a documented, checkable claim of supported profiles and options
Regulated or safety-critical national deployment	IHE-CAS certificate	Independently audited by an authorised laboratory, offering internationally recognised assurance

Applying this procedure consistently prevents both under-specification and unnecessary over-testing demands.

3.2 Running a Connectathon: Preparation, Test Execution and the Role of Monitors

3.2.1 From Registration to the Test Floor: the Connectathon Timeline

Learning objective: Describe the sequence of activities involved in preparing for and running an IHE Connectathon, from vendor registration and pre-testing to on-site peer-to-peer test execution.

K-level: K2

An IHE Connectathon does not begin with the on-site testing; it is the visible peak of a process that starts months earlier. Vendors first register their systems, declaring which actors, profiles and options they intend to test, so that National or Regional Deployment Committees — who plan and organize these events — can build the test plan and schedule.

Before travelling to the event, vendors carry out **pre-Connectathon testing** using shared tooling such as Gazelle, validating their messages against test scripts and synthetic data sets before ever meeting a peer system. This remote phase catches basic conformance errors early, so that on-site time is spent on genuine interoperability rather than debugging.

On site, testing is *peer-to-peer*: two vendors connect their systems directly and exchange the transactions required by a given actor/profile/option combination, following a predefined test definition. This is where the process differs from typical certification testing, since it depends on pairing with another real implementation rather than a reference simulator alone.

Each test attempt is observed and judged by a **Monitor**, an independent technical expert who checks the exchange against the test's requirements and records whether it passed. Across the days of the event, a vendor works through the full list of required test combinations for its declared profiles, building up the record that will later feed into the published Connectathon Results.

3.2.2 The Role of Monitors in Validating Test Results

Learning objective: Explain the role and responsibilities of Monitors in validating test results during a Connectathon.

K-level: K2

Connectathon testing is not simply vendors declaring success to each other; it is **supervised** peer-to-peer testing, and the supervision is provided by *Monitors*. A Monitor is a trained, impartial expert assigned to observe a specific test between two or more systems and judge, against the test's defined assertions, whether the exchange actually satisfies the requirements of the profile, actor and option being tested.

In practice, a Monitor sits with the participating vendors while they run a transaction — for example, a query and retrieve exchange between a Document Consumer and a Document

Repository — and checks that the messages exchanged match the expected structure, content and sequence defined in the Technical Framework, not merely that

3.2.3 What a Connectathon Result Can and Cannot Confirm

Learning objective: Determine which test results a Connectathon can legitimately produce for a given actor/profile/option combination, based on the supervised testing process.

K-level: K3

A Connectathon does not award a single pass/fail grade to a company; it produces a set of narrowly scoped results, one for each actor/profile/option combination a vendor registered and actually tested against peer systems under Monitor supervision. To determine what a given result legitimately means, work through the same combination the Monitors used when they signed it off.

- **Identify the exact combination tested:** the specific actor, the specific profile, and any option, as registered before the event — not the product family in general.
- **Check which peer systems were involved:** a result only certifies interoperability with the peer actors actually exercised in the required transactions, not with every implementation on the market.
- **Confirm Monitor validation:** the transaction must have been observed and judged conformant by a Monitor during the supervised session, not simply attempted by the vendor alone.
- **Note the product version:** the result applies to the exact build tested that week, not to later releases.

3.2.3.1 Legitimate versus illegitimate conclusions

Claim	Legitimate from a Connectathon result?
"This actor/profile/option combination interoperated with the tested peers at this event"	Yes — this is exactly what supervised testing establishes
"This product conforms to the profile in general"	No — conformance to specifications and interoperability with untested peers is not established
"Every option of this profile is supported"	No — only the options actually registered and tested
"Future releases will behave the same way"	No — the result is tied to the version tested

Applying this checklist before quoting a Connectathon result — in a tender evaluation, for instance — prevents overstating what supervised peer-to-peer testing actually proves.

3.3 Reading and Using Connectathon Results

3.3.1 Where Connectathon Results Live and What They Show

Learning objective: Describe where Connectathon results are published and what information they contain about tested actor, profile and option combinations.

K-level: K1

After a Connectathon closes, Monitors' verdicts are compiled into a public **Connectathon Results** record, published through the organising Deployment Committee's testing tools (built on the Gazelle platform) and referenced from the IHE and IHE-Europe websites. These results are tied to a specific event, year and product version — they are not a permanent certificate.

- **Vendor and product** — the company and the named system that was tested.
- **Actor** — the functional role the system played (for example, Document Source or Document Consumer).
- **Profile** — the IHE Integration Profile under which the actor was tested.
- **Option** — any optional capability within the profile that was included in the test.
- **Peer(s) tested with** — which other vendors' systems successfully exchanged transactions.
- **Test outcome** — pass/fail status recorded by a Monitor for each required transaction.

Results are searchable by profile, actor, domain or vendor, letting readers see exactly which combinations were demonstrated.

3.3.2 From Event Result to Product Claim

Learning objective: Explain how published Connectathon results relate to Integration Statements and IHE-CAS certificates as different levels of evidence of conformance.

K-level: K2

A published Connectathon result is a snapshot: it records that a specific product version, tested by Monitors at a specific event, successfully exchanged messages with peer systems for particular actor/profile/option combinations. It says nothing directly about any other release of the product, and it is not itself a certification — it is evidence generated under supervision at one moment in time.

That evidence feeds into two very different downstream claims. A vendor can point to a favourable Connectathon result to support the profiles, actors and options it lists in its self-declared **Integration Statement** for a named product release — but the Integration Statement remains the vendor's own assertion, not an independent audit. For example, a vendor whose PACS passed Connectathon testing for an imaging profile may then publish an Integration Statement claiming support for that profile in its next commercial release, even though that release itself was never tested.

By contrast, an **IHE-CAS certificate** is issued only after formal, audited testing by an authorised laboratory, giving it a stronger, internationally recognised status than either a Connectathon result or a self-declaration.

Reading these three together lets a procurement team understand what is actually guaranteed: a positive Connectathon result shows demonstrated interoperability at one event; an Integration Statement shows a vendor's own claim, which may or may not rest on tested evidence; an IHE-CAS certificate shows independently audited conformity.

3.3.3 Checking a Vendor's Claim Against Connectathon Evidence

Learning objective: Use Connectathon results and the product registry to assess whether a specific vendor product has demonstrated interoperability for a given profile relevant to a procurement need.

K-level: K3

A procurement team rarely needs to read a Connectathon report cover to cover; it needs to answer one question: *has this vendor's product, in this version, actually been tested for the profile we require?* The following procedure applies the published results and the IHE product registry to answer that question systematically.

- **Step 1 — Fix the requirement.** Write down the exact profile, actor role and options your procurement needs (for example, a Document Consumer actor in a Patient Demographics Query for Mobile profile, with the PDF option).
- **Step 2 — Locate the vendor's registry entry.** Search the IHE product registry for the vendor and product line, and confirm the entry corresponds to the release actually offered in the tender, not an older or newer version.
- **Step 3 — Match actor, profile and option.** Check whether the registry entry and the underlying Connectathon results list the exact actor/profile/option combination required — a product tested only as a Document Source, or only with a different option set, has not demonstrated what your requirement asks for.
- **Step 4 — Check recency and event.** Note the Connectathon year and location; a result from several years ago on an unrelated deployment region is weaker evidence than a recent, relevant event.
- **Step 5 — Decide what the evidence permits.** A passed Connectathon test tells you the product interoperated with peer systems on that occasion; it does not certify ongoing conformance the way an audited scheme would.

If any step fails — wrong version, missing option, no matching actor — the procurement team should ask the vendor for supplementary evidence (an Integration Statement or, where available, an IHE-CAS certificate) rather than assume the profile is supported.

3.4 IHE Integration Statements: Content, Meaning and Limits

3.4.1 What an IHE Integration Statement Contains

Learning objective: Describe the content and purpose of an IHE Integration Statement, including the profiles, actors and options a vendor declares its product release to support.

K-level: K1

An **IHE Integration Statement** is a document a vendor publishes to describe, for a specific named product release, which parts of the IHE Technical Frameworks it claims to support. It tells customers, in a standard structured form, exactly which **IHE Profiles** the release implements.

- **Profiles:** the Integration Profiles the product supports (e.g. specific ITI, RAD or PCC profiles).
- **Actors:** which system roles defined in those profiles the product performs.
- **Options:** which optional transactions or behaviours within each actor/profile combination are supported.

Because it names a specific product and release, an Integration Statement lets a healthcare provider match purchasing requirements, expressed as needed profiles and actors, directly against a vendor's documented claims.

3.4.2 Who Speaks, and How Much Weight the Claim Carries

Learning objective: Explain how an Integration Statement differs from Connectathon results and an IHE-CAS certificate in terms of who asserts the claim and what level of evidence it provides.

K-level: K2

The same product can be described by three different kinds of statement, and the key question at K2 level is: who is speaking, and how strong is the evidence behind what they say?

- **Connectathon results** are asserted by the *Monitors*, independent testers who directly observed a specific product version exchange messages with peer systems at a given event, for specific actor/profile/option combinations.
- An **Integration Statement** is asserted by the **vendor itself**. It is a self-declaration listing which profiles, actors and options a named product release claims to support; no external party verifies it before publication.
- An **IHE-CAS certificate** is asserted by an **authorised testing laboratory**, operating under a formal Conformity Assessment Scheme coordinated internationally, which audits the product against defined test methods before issuing certification.

The practical consequence is a gradient of evidentiary strength: a Connectathon result shows interoperability was actually observed, but only at one event, with the partners present there; an Integration Statement shows only what the vendor claims, with no independent check; an IHE-CAS certificate shows an audited, internationally recognised conformity claim. For example, a hospital procurement team reading a vendor's Integration Statement learns what the vendor says its product does, but cannot conclude from that document alone that the claim was ever independently tested — that stronger assurance comes only from Connectathon participation or, more formally, from an IHE-CAS certificate.

3.4.3 What an Integration Statement Can and Cannot Tell a Buyer

Learning objective: Determine what a procurement department can reasonably conclude about a product's interoperability based solely on its Integration Statement, recognising the limits of self-declared conformance.

K-level: K3

A procurement department reading an Integration Statement can reasonably conclude which profiles, actors and options a specific, named product release claims to support — nothing more, because the document is a *self-declaration* by the vendor rather than an outcome verified by Monitors or an accredited laboratory. Treating it as proof of tested interoperability is the most common procurement error.

A practical way to work through a submitted Integration Statement is:

- Check that the product name and **release/version number** in the statement match exactly the version being procured; a statement for an earlier release says nothing about the current one.
- List the profiles, actors and options claimed, and cross-check each against the actual clinical workflow requirements in the tender, since a supported profile with the wrong actor role or a missing option will not meet the need.
- Ask whether the vendor can also produce Connectathon results or an IHE-CAS certificate for the same release; these add independently verified evidence that the self-declared claims were actually exercised against peer systems or audited by a lab.
- Where no such evidence exists, treat the Integration Statement as a starting point for further questions and, where feasible, contractual acceptance testing, not as a substitute for it.

3.4.3.1 Reasonable conclusions vs. overreach

Procurement question	Can the Integration Statement answer it alone?
Which profiles/actors/options does this release claim?	Yes — that is its exact purpose
Was this actually tested with other vendors' systems?	No — requires Connectathon results
Was conformance independently audited?	No — requires an IHE-CAS certificate
Will it interoperate with our specific existing systems?	No — requires site-specific verification

3.5 IHE Conformity Assessment (IHE-CAS): Scheme, Testing Labs and Certification

3.5.1 Governing Formal Conformity Assessment: the CAsC and Authorised Labs

Learning objective: Describe the purpose and governance of the IHE Conformity Assessment Scheme (IHE-CAS), including the role of the Conformity Assessment Coordination Committee and authorised testing laboratories.

K-level: K2

Unlike a Connectathon or an Integration Statement, the IHE Conformity Assessment Scheme (IHE-CAS) offers an internationally recognised, audited certification that a product conforms to one or more IHE profiles. This scheme is not run informally: it is coordinated by the **Conformity Assessment Coordination Committee (CAsC)**, the IHE International body responsible for maintaining the IHE-CAS itself, authorising (and, if needed, suspending or revoking) testing laboratories worldwide, coordinating the test tools, scripts and cases those labs use, and resolving disputes about the scheme's content or interpretation.

The CAsC's membership reflects who invests in Conformity Assessment: Founding Members (IHE-USA, IHE-Europe, IHE-Japan) sit alongside other member organisations grouped into tiers according to how much they support tool development and whether they operate an active CA programme. Voting rights on specific topics, such as lab authorisation or financial commitments, are scaled to a member's tier.

3.5.1.1 Why this matters in practice

- A vendor cannot simply declare IHE-CAS conformity, as with an Integration Statement; a product must be assessed by a **laboratory formally authorised by the CAsC**.
- Because the CAsC centrally coordinates test methods and licensing, a certificate issued by one authorised lab is meant to carry the same recognised weight internationally, wherever the testing took place.

3.5.2 Three Claims, Three Levels of Assurance

Learning objective: Distinguish an IHE-CAS certificate from a Connectathon result and an Integration Statement in terms of who asserts the claim and what level of assurance it provides.

K-level: K2

Once a product exists, three quite different statements can be made about its interoperability, and they must not be confused because each rests on a different authority and a different amount of scrutiny.

- A **Connectathon result** is asserted by *Monitors* at a supervised event: it shows that a specific product version successfully exchanged the required transactions with peer systems, for the specific actor/profile/option combinations tested, on that occasion. It is peer-reviewed and witnessed, but time-bound and not independently repeated afterwards.

- An **Integration Statement** is a *self-declaration by the vendor*: the company itself lists which profiles, actors and options a named product release claims to support. Nobody external verifies this document before publication, so it carries the least independent assurance, even though it is often based on genuine Connectathon participation.
- An **IHE-CAS certificate** is issued by an *authorised testing laboratory* operating under the IHE Conformity Assessment Scheme. Because it results from formal, audited testing against agreed methods, it offers internationally recognised assurance that goes beyond a single event or a vendor's own word.

For example, a hospital comparing two order-entry systems might find that both vendors publish similar Integration Statements, yet only one has an IHE-CAS certificate for the profile in question — a meaningful difference in the strength of the guarantee behind the claim.

3.5.3 Choosing the Right Evidence in a Procurement Scenario

Learning objective: Determine which form of conformity evidence (Connectathon result, Integration Statement, or IHE-CAS certificate) is appropriate to require in a given procurement scenario.

K-level: K3

Procurement staff rarely need to understand the full testing continuum; they need to know which document to write into a tender and what it actually commits the supplier to. The three forms of evidence differ in who stands behind the claim, so the choice depends on how much assurance the purchase justifies and how the claim will be checked later.

3.5.3.1 A simple decision procedure

- **Step 1 — Identify the risk level.** Is this a low-value pilot, a mainstream departmental system, or a national/critical infrastructure deployment?
- **Step 2 — Match the evidence to the risk.** For exploratory or low-stakes purchases, a recent Connectathon result for the exact product version and actor/profile/option combination may be sufficient, since it shows real peer-to-peer testing occurred, even if only once, at one event.
- **Step 3 — For routine procurement,** require an Integration Statement naming the specific release, profiles, actors and options; this is the normal minimum because it is explicit, product-specific and publicly checkable, even though it is vendor self-declared.
- **Step 4 — For high-assurance or regulated contexts** (e.g. national infrastructure, cross-border data exchange), require an IHE-CAS certificate, since it is issued by an authorised testing laboratory rather than asserted by the vendor, giving internationally recognised, audited conformity.
- **Step 5 — Verify traceability.** Whatever is required, check that it names the exact product version and the specific profiles/actors/options needed for the use case — a generic claim of

4 Finding and Using IHE Resources

IHE publishes a very large body of material — thousands of pages of Technical Frameworks, supplements, white papers, wiki pages, committee working documents and testing records — and its value depends entirely on your ability to find the right item quickly. This chapter turns you from a reader of IHE documents into a confident *navigator* of the IHE information landscape: you will learn where each class of resource lives, what it is authoritative for, and how current it is. Rather than memorising content, you will practise a repeatable lookup routine: start from a question, choose the right resource, and follow it to a citable answer.

Where to look for what

Resource	What you find there	Typical use
ihe.net publications (Technical Frameworks, supplements, white papers, national extensions)	Official, versioned specification text	Citing normative requirements in specifications and tenders
IHE Wiki	Work in progress, profile overviews, FAQs, event pages	Orientation and understanding current activity
IHE Google Drive / committee spaces	Drafts, meeting minutes, change proposals, templates	Following or contributing to committee work
Connectathon results and product registry	Which vendors tested or declared which profiles and actors	Market evidence and supplier shortlisting

By the end of the chapter you will be able to locate a named profile in its domain, distinguish official publications from collaborative drafts, and use testing and product data as supporting evidence.

4.1 The IHE Publications Library: Domains, Technical Frameworks, Supplements and National Extensions

4.1.1 IHE Domains and the Publications Library

Learning objective: Identify the IHE Domains and describe the structure of the IHE Publications Library, including Technical Frameworks, supplements, white papers and National Extensions.

K-level: K1

IHE organizes its interoperability work into **Domains**, each covering a distinct clinical or operational area. The table below lists the active and dormant Domains.

Status	Domain	Abbreviation
Active	Devices	DEV

Active	Endoscopy	ENDO
Active	IT Infrastructure	ITI
Active	Pathology and Laboratory Medicine	PaLM
Active	Patient Care Coordination	PCC
Active	Pharmacy	PHARM
Active	Quality, Research and Public Health	QRPH
Active	Radiation Oncology	RO
Active	Radiology	RAD
Dormant	Cardiology	CARD
Dormant	Dental	DENT
Dormant	Eye Care	EYECARE
Dormant	Surgery	SURG

Each Domain publishes its work as **Technical Documents** in the IHE Publications Library. These include:

- **Technical Frameworks** — the core specifications defining Profiles, actors and transactions
- **Supplements** — new or revised Profiles, in Trial Implementation or Final Text form
- **White papers** — explanatory material produced by Domain Committees
- **National Extensions** — local additions, based on Final Text Profiles, published as part of the Domain Technical Framework

4.1.2 How Domains Produce Technical Frameworks and National Extensions

Learning objective: Explain how Domain Planning and Technical Committees develop and publish Technical Frameworks and how National Extensions relate to international profiles.

K-level: K2

Each IHE Domain splits its work between two committees that hand off to one another in a repeating cycle. The **Domain Planning Committee** gathers interoperability problems from users and deployment committees, prioritises them into work items, and advises the technical side — but it does not write specification text itself. The **Domain Technical Committee** takes selected work items, chooses and harmonises standards to solve them, and drafts the actual implementation documentation: the Technical Framework and its supplements. It also maintains the Framework over time through a change-management process and answers requests for interpretation of its Profiles.

National Extensions sit downstream of this international work. A National or Regional Deployment Committee identifies a local requirement — for example, a country-specific patient identifier format or a national workflow rule — and drafts an extension based on an already *final*

text Profile. Crucially, an extension may add detail but must never contradict the international Profile it extends. The draft is submitted in English (optionally with a translation) to the responsible Domain Technical Committee, which reviews it, may return comments, and only publishes it as part of the Domain Technical Framework once both the Domain Technical Committee and the submitting National Deployment Committee approve it. This keeps national variation compatible with the global specification rather than fragmenting it.

4.1.3 Tracing a Profile to the Right Document

Learning objective: Locate a specific IHE Profile within its Domain's Technical Framework and determine which published document (Technical Framework, supplement, or National Extension) applies to a given requirement.

K-level: K3

Once you know a profile's Domain, the next skill is pinning down exactly which published document governs a given requirement. A Domain's *Technical Framework* is not a single static file: it is a base set of volumes covering established profiles, extended over time by *supplements* that introduce new profiles or trial-implementation content, and further refined by *National Extensions* that adapt international profiles to local rules without contradicting them. Knowing which of these three applies to your question is the practical outcome of this lookup skill.

4.1.3.1 A worked lookup procedure

- **Identify the Domain.** Match the profile's clinical or operational area to one of the Domains (for example ITI, RAD, PCC, PHARM) to find the correct Technical Framework family.
- **Check the profile's maturity status.** A profile still labelled Trial Implementation typically lives only in a supplement, not yet folded into the base Technical Framework; a Final Text profile has been incorporated into the Domain Technical Framework itself by the Domain Technical Committee.
- **Ask whether a national rule is involved.** If the requirement concerns country-specific workflow, terminology or policy, look for a National Extension submitted by a National Deployment Committee and approved by the Domain Technical Committee; National Extensions may only extend, never contradict, the international profile.
- **Confirm currency.** Because Technical Frameworks are maintained through a change management process, verify you are citing the latest approved revision rather than a superseded supplement.

For example, to answer

4.2 White Papers and Handbooks: Locating Explanatory and Guidance Material

4.2.1 What White Papers and Handbooks Are For

Learning objective: Identify the purpose and typical content of IHE white papers and handbooks as explanatory and guidance material distinct from normative Technical Framework specifications.

K-level: K1

IHE **white papers** are Technical Documents developed by Domain Planning Committees to explore emerging interoperability needs, use cases, or issues before they become formal specifications. Unlike the *Technical Framework* and its supplements, white papers and handbooks are **explanatory and guidance material**, not normative — they do not define conformant actor or transaction behaviour that products must implement.

- **Purpose:** explain a problem area, market driver, or emerging technology, and describe how IHE work could address it
- **Typical content:** background analysis, use cases, terminology, options considered, and recommendations
- **Handbooks:** practical guidance for readers applying IHE concepts, distinct from binding specification text
- **Status:** published as Technical Documents, but not part of the normative Technical Framework itself

4.2.2 White Papers as Precursors to Technical Framework Work

Learning objective: Explain how white papers, developed by Domain Planning Committees, relate to and support the Technical Frameworks in addressing emerging interoperability needs.

K-level: K2

White papers occupy a specific place in the governance of a Domain: they are one of the responsibilities explicitly assigned to **Domain Planning Committees**, alongside soliciting input on current problems, prioritizing work items, and advising the Technical Committee. When a Planning Committee identifies an emerging interoperability issue that is not yet mature enough to become a formal work item — perhaps the use case is still being clarified, or the standards landscape is still shifting — it can commission a white paper to analyse the problem, describe the context, and lay out options before any specification work begins.

This makes white papers a kind of *bridge* between raw user needs and the normative work of the Domain Technical Committee. A white paper does not define actors or transactions; it explains a problem space and points toward possible solutions. If the analysis matures, the Planning Committee can select it as a work item, and the Technical Committee then develops the corresponding Profile or supplement inside the Technical Framework.

For example, a Planning Committee noticing growing demand around a new data-sharing scenario might publish a white paper describing the workflow and stakeholders involved, well

before any Profile addressing it appears in the Technical Framework. Both white papers and Technical Frameworks are formally recognised as **Technical Documents** of a Domain Committee, but only the Technical Framework and its supplements carry normative, testable requirements.

4.2.3 A Worked Lookup: From Question to White Paper to Technical Framework

Learning objective: Locate a relevant IHE white paper or handbook to clarify a specific interoperability question or use case before consulting the formal Technical Framework.

K-level: K3

Suppose you are asked how IHE could help a project align with the European Health Data Space, before anyone has picked a specific profile. This is exactly the situation where a white paper, not the Technical Framework, is the right first stop.

4.2.3.1 A repeatable procedure

- **State the question narrowly.** Not "how does IHE support interoperability" but "what use cases and profiles are relevant to EHDS data sharing".
- **Identify the likely domain or initiative.** EHDS work is coordinated through IHE-Europe and the IHE PRISM programme, which explicitly develops guidance ahead of, and in coordination with, formal profiles.
- **Search the publications area for explanatory material first.** On ihe-europe.net, the EHDS white paper is listed directly alongside Connectathon and event announcements — this is guidance material, produced to explain the use case and rationale rather than to specify transactions.
- **Read the white paper's scope and rationale sections** to confirm it addresses your question and to see which existing or emerging Profiles it references.
- **Only then open the Technical Framework volumes** for the Profiles the white paper points to, to get the normative actor and transaction detail.

This mirrors how white papers are produced: Domain Planning Committees develop them specifically to analyse use cases and interoperability problems before, or alongside, detailed profile work. Treating the white paper as the entry point saves you from searching hundreds of pages of Technical Framework text for background that the white paper already explains in plain language.

If a topic is very new — such as a just-launched initiative like IHE PRISM EHDS — a white paper or handbook may be the only citable IHE material available at all, since formal profiles have not yet been published.

4.3 Collaborative Resources: Navigating the IHE Wiki and the IHE Google Drive

4.3.1 What the Wiki and the Google Drive Are For

Learning objective: Describe the purpose and typical contents of the IHE Wiki and the IHE Google Drive, distinguishing them from official ihe.net publications.

K-level: K1

The **IHE Wiki** (wiki.ihe.net) is a collaborative site for ongoing IHE activity. It hosts domain overviews, FAQs, event pages and work-in-progress notes describing what committees are currently doing — content that is informative but not authoritative.

The **IHE Google Drive** and related committee spaces hold working documents used inside committees: drafts, meeting minutes, change proposals and templates.

Both differ fundamentally from **ihe.net publications**, which are the official, versioned Technical Frameworks, supplements and white papers — the only citable, normative sources.

Resource	Nature	Authority
ihe.net	Official, versioned publications	Normative, citable
IHE Wiki	Orientation, FAQs, event pages	Informal, not authoritative
Google Drive	Drafts, minutes, proposals	Working material, not final

4.3.2 Getting Oriented with Wiki Domain Pages, FAQs and Event Pages

Learning objective: Explain how the IHE Wiki's domain pages, FAQs and event pages support orientation and understanding of ongoing IHE activity.

K-level: K2

The IHE Wiki is where you go to understand what is currently happening, rather than what has already been finalised and published. Its Main Page organises content by **Domain** — such as ITI, RAD, PCC, PaLM, PHARM or QRPH — so your first orientation move is to find the domain page for the clinical or operational area you care about. A domain page typically links to the Domain Committee's current work items, giving you a sense of which profiles are active, being revised, or newly proposed, well before that work appears in a formal Technical Framework supplement.

FAQs on the wiki answer recurring questions about how IHE works — for example clarifying what an Integration Statement is, or how Connectathon testing relates to Conformity Assessment — which helps newcomers build understanding without re-reading full governance documents.

Event pages track ongoing activity such as upcoming Connectathons, webinars or committee meetings, showing you what is scheduled and who is involved. For instance, a user wanting to know whether a particular profile will be tested at the next Connectathon would check the

relevant event page rather than searching ihe.net publications, which only describe finished specifications, not upcoming activity.

Together, domain pages, FAQs and event pages let you situate yourself: which domain a topic belongs to, what commonly confuses people about it, and what is happening right now.

4.3.3 A Worked Routine for Locating Collaborative Material

Learning objective: Navigate the IHE Wiki and Google Drive to locate collaborative material such as drafts, meeting minutes and change proposals relevant to a specific profile or domain.

K-level: K3

Suppose you need to check whether a change proposal has been raised against a profile you are implementing, or you want to read the minutes of the committee meeting where a work item was prioritised. Neither of these lives on ihe.net: they are collaborative, in-progress materials, and finding them means moving deliberately between the Wiki and the Google Drive rather than searching at random.

4.3.3.1 A repeatable procedure

- **Identify the domain.** Confirm which Domain your profile belongs to (for example ITI, PCC, PHARM, PaLM) — the Wiki's main page lists all active domains and separates them from dormant ones such as Cardiology or Dental.
- **Open the domain's Wiki page.** Domain pages typically link onward to the relevant Planning and Technical Committee spaces, since each domain runs its own committees responsible for selecting work items and developing the Technical Framework.
- **Follow the link to the committee's shared drive folder.** This is where drafts of supplements, in-progress white papers, and committee templates are kept while work is underway, before anything is released for public comment or trial implementation.
- **Locate meeting minutes.** Committee Secretaries are responsible for recording participation and decisions in the minutes of every committee meeting, so a dated minutes file is the authoritative record of when a change proposal was discussed or a work item selected.
- **Locate the change proposal itself.** Change proposals are tracked as committee actions requiring approval before being included in a trial implementation supplement or the final text of the Technical Framework — so a decision to accept one should be traceable back to minutes or a vote record in the same folder structure.

Applying this procedure consistently — domain, committee page, shared folder, minutes, proposal — turns an open-ended search into a short, verifiable trail you can cite to a colleague or a national deployment committee.

4.4 Evidence Sources: Connectathon Results and the Product Registry

4.4.1 What Connectathon Results and the Product Registry Tell You

Learning objective: Describe what information Connectathon results and the IHE Product Registry provide, such as which vendors tested or declared support for specific profiles and actors.

K-level: K1

A **Connectathon** is an annual, rigorous testing event where vendors bring products to test their IHE Profile implementations against other vendors' systems, under the oversight of Monitors. Connectathon results record which vendor products were actually tested, for which profiles and actors, and with what outcome.

The **IHE Product Registry** is a separate, complementary source: it holds vendor-declared *Integration Statements*, telling you which IHE Profiles and actors a specific release of a specific product supports, independent of whether it was tested at a Connectathon.

- **Connectathon results:** evidence of actual peer-to-peer testing
- **Product Registry:** vendor declarations of supported profiles and actors

4.4.2 Turning Test Records into Procurement Evidence

Learning objective: Explain how Connectathon results and product registry entries can serve as market evidence to support procurement decisions and supplier shortlisting.

K-level: K2

Connectathon results and product registry entries are not just historical records of testing events — they function as independent, third-party evidence that a supplier's claims about interoperability actually hold up. Because Connectathons are organised under a rigorous, monitored process, a positive result carries more weight than a vendor's own marketing statement. This is why the European Commission itself has pointed to a defined set of IHE Profiles as ready references for public procurement, and why healthcare and government representatives describe Connectathon participation as a practical way to reduce integration risk before a contract is signed.

For someone drafting or evaluating a tender, this evidence supports two related decisions:

- **Setting requirements:** citing an IHE Profile as a purchasing requirement is meaningful because it points to something concretely testable, not just a design intention.
- **Shortlisting suppliers:** evidence that a vendor tested a given actor and transaction at a Connectathon, or declared it in the product registry, gives buyers a documented basis for narrowing a supplier list, rather than relying solely on vendor self-declaration.

For example, a hospital IT department preparing a tender for a radiology system can require bidders to demonstrate Connectathon participation for the relevant imaging profile, using that record as objective, comparable evidence across competing vendors.

4.4.3 A Worked Procedure: From Requirement to Vendor Shortlist

Learning objective: Use Connectathon results and the product registry to identify vendors and products that support a given IHE profile relevant to a specific project requirement.

K-level: K3

Suppose a project requirement states that a new departmental system must exchange patient identity data with the hospital's existing infrastructure using *PIX* (Patient Identifier Cross-Referencing) and must have been demonstrated working with other vendors, not just claimed on paper. Rather than reading the Technical Framework cover to cover, you can work backwards from the requirement to concrete supplier evidence using Connectathon results and the IHE Product Registry.

- **Step 1 — Fix the profile and actor.** Translate the requirement into IHE vocabulary: profile = PIX, actor = Patient Identifier Cross-reference Consumer or Source, depending on which side your project needs.
- **Step 2 — Search the product registry.** Filter registry entries by that profile and actor to obtain a list of vendors who have declared, and typically tested, support for exactly that role.
- **Step 3 — Cross-check against Connectathon results.** For each candidate vendor, look up their Connectathon participation to confirm they actually tested the actor against other systems in a recent event, rather than only submitting a paper declaration.
- **Step 4 — Note domain and regional context.** Since Connectathons are organised regularly by national and regional Deployment Committees, check which event and year the results come from, as this affects how current and locally relevant the evidence is.
- **Step 5 — Compile a shortlist.** Record vendor name, product, actor tested, and event reference as citable evidence to support the procurement requirement.

This procedure is repeatable for any profile: identify the profile and actor from the requirement, consult the registry for declared support, and consult Connectathon results for tested evidence, before compiling a defensible shortlist.

4.5 A Practical Lookup Routine: From a Question to a Citable IHE Source

4.5.1 A Repeatable Routine: From Question to Citable Source

Learning objective: Describe a step-by-step lookup routine that moves from a specific interoperability question to a citable IHE source, selecting among ihe.net publications, the IHE Wiki, the IHE Google Drive and Connectathon/product registry data.

K-level: K2

Once you know what each resource is for, the real skill is turning a specific interoperability question into a sequence of choices that ends in a citable answer. The routine follows a consistent order of reasoning, moving from clarifying the question to confirming the answer with evidence.

- **Frame the question:** identify the domain (e.g. ITI, RAD, PCC) and whether you need normative text, background understanding, or market evidence.
- **Check for a named profile:** if the question names or implies a specific profile, go to the relevant domain's Technical Framework on ihe.net for the authoritative actor and transaction definitions.
- **Fill gaps in understanding:** if the question is about current activity, rationale, or an unfamiliar acronym, consult the IHE Wiki for overviews and FAQs before returning to the formal text.
- **Follow work in progress:** if the profile is still evolving, check the Google Drive committee space for drafts, change proposals or minutes explaining the current state.
- **Confirm with evidence:** for questions about vendor readiness or real-world adoption, check Connectathon results and the product registry to see who has tested or declared support.

For example, a question like

4.5.2 Worked Example: Locating a Named Profile and Its Authoritative Text

Learning objective: Apply the lookup routine to locate a named IHE profile within its domain and identify which resource type provides authoritative normative text versus supporting evidence.

K-level: K3

Suppose a colleague asks: *"Where is Patient Identifier Cross-referencing (PIX) actually defined, and how do I know which vendors have tested it?"* Apply the routine in a fixed order.

- **Step 1 — Identify the domain.** PIX is a patient identity transaction, so it sits in the IHE IT Infrastructure (ITI) domain rather than, for example, PaLM or Radiology. Naming the domain narrows the search immediately, since each domain publishes its own Technical Framework.
- **Step 2 — Go to the domain's Technical Framework on ihe.net.** This is where the actors (e.g., Patient Identity Source, Patient Identifier Cross-reference Manager) and transactions for PIX are specified in versioned, normative text. This is the only resource you would cite as the authoritative definition in a tender or specification.
- **Step 3 — Check the Wiki for orientation.** If the profile is new or you need a plain-language overview or FAQ before reading the full specification, the ITI Wiki page gives context, but it is not itself the normative source.
- **Step 4 — Consult Connectathon results and the product registry for evidence.** To answer

4.5.3 Telling Official Publications Apart from Drafts and Collaboration Spaces

Learning objective: Distinguish official, versioned IHE publications from collaborative or draft materials when determining the currency and authority of a found resource.

K-level: K2

When you land on a document, the first thing to check is not what it says but *what kind of thing it is*, because that determines whether you can cite it as authoritative. IHE Technical Documents — Technical Frameworks, their supplements, white papers and National Extensions — are the only material formally adopted and published by Domain Committees; they carry version identifiers, publication dates and a defined status such as Trial Implementation or Final Text. This is the material licensed under CC-BY 4.0 and owned by IHE International, and it is what you cite in a specification or tender.

By contrast, the Wiki and the Google Drive / committee spaces hold work in progress: profile overviews, meeting minutes, change proposals and drafts that a Domain Committee is still discussing. These are useful for understanding current thinking or an upcoming revision, but they have not been through the approval process and can change at any time.

4.5.3.1 Quick authority check

Signal	Official publication	Collaborative/draft material
Location	ihe.net publications library	IHE Wiki, Google Drive, committee folders
Status marking	Trial Implementation or Final Text, dated	Often unmarked or labelled 'draft', 'proposal'
Can it be cited normatively?	Yes	No — supporting context only

Example: a Change Proposal discussed on the Wiki is not yet binding until it is incorporated into a published supplement.

5 Example Profiles, Base Standards, Technologies and Security Profiles

IHE Profiles do not invent new standards; they select, constrain and combine existing ones so that systems from different vendors can be plugged together predictably. This chapter walks through a representative set of Profiles — document and image sharing, patient identity management, clinical workflow and content, and the security and privacy building blocks — together with the base standards and technical concepts on which they rest. You will learn to read a Profile in terms of its actors, transactions and underlying standard, and to judge whether it answers a concrete user requirement.

Base standards you will meet in this chapter

Base standard / technology	Typical role in IHE Profiles	Example area of use
HL7 v2 messaging	Event-driven messages for admission, orders and results	Patient identity feeds, laboratory workflow
HL7 CDA	Structured clinical documents with sections and coded entries	Discharge summaries, referral and care documents
HL7 FHIR	RESTful resources and APIs for mobile and lightweight access	Mobile access to health documents and queries
DICOM	Imaging objects, worklists and image communication	Radiology workflow and image sharing
IETF / OASIS / W3C (TLS, SAML, OAuth, SOAP, syslog)	Transport, identity assertion, authorisation and audit	Security and privacy Profiles

Throughout, keep the practical question in view: **which Profile, with which base standard, solves the problem in front of me** — and which security Profile must be grouped with it to make the solution deployable.

5.1 Base Standards and Core Technical Concepts Behind IHE Profiles

5.1.1 The Base Standards Behind IHE Profiles

Learning objective: Describe the base standards (HL7 v2, HL7 CDA, HL7 FHIR, DICOM, and IETF/OASIS/W3C security standards) that underlie IHE Profiles and their typical role within a Technical Framework.

K-level: K1

IHE does not create new standards; it selects, constrains and combines existing ones from recognised standards development organisations. Five families of base standards recur across IHE Profiles:

- **HL7 v2 messaging** — event-driven messages for admissions, orders and results.
- **HL7 CDA** — structured clinical documents with sections and coded entries.
- **HL7 FHIR** — RESTful resources and APIs for lightweight, mobile-friendly access.
- **DICOM** — imaging objects, worklists and image communication.
- **IETF, OASIS and W3C standards** (such as TLS, SAML, OAuth, SOAP and syslog) — transport, identity assertion, authorisation and audit.

Each Profile's Technical Framework specifies exactly which base standard, and which options within it, its actors and transactions rely on, so vendors implement a shared, testable interpretation rather than the full, ambiguous standard.

5.1.2 From Standards to Profiles: Actors and Transactions

Learning objective: Explain how IHE Profiles select, constrain and combine existing base standards through actors and transactions to solve interoperability problems.

K-level: K2

A Technical Framework does not create new technology; it takes an existing base standard — HL7 v2, CDA, FHIR, DICOM, or an IETF/OASIS/W3C security standard — and narrows it down to a precise, testable set of rules that solves one interoperability problem. This narrowing happens through two building blocks: **actors** and **transactions**.

- An **actor** is a system role, such as a Document Source, a Patient Identity Source, or an Image Manager. A single product can implement one or several actors.
- A **transaction** is the standards-based exchange between two actors, for example a query message or a document submission, defined tightly enough that vendors implementing it independently still interoperate.

The Domain Technical Committee's job, as described in IHE governance documents, is precisely to *select and harmonize appropriate standards* for a given use case and document them as actors and transactions in the Technical Framework. Constraining a broad, flexible base standard — which may allow many optional fields or behaviours — into a fixed profile removes ambiguity: two conformant products no longer need custom interfaces to talk to each other.

For example, a Profile addressing patient identity management might select HL7 messaging as its base standard, then constrain it into a defined transaction between a Patient Identity Source actor and a Patient Identity Consumer actor, so that every vendor's admission feed behaves the same way. This pattern — pick a standard, constrain it, assign it to actors and transactions — repeats across every Profile you will meet in this chapter.

5.1.3 A Working Procedure for Tracing a Profile Back to Its Base Standard

Learning objective: Determine which base standard and associated technical concept underlies a given IHE Profile in order to judge its suitability for a specific user requirement.

K-level: K3

When you are handed a user requirement, you can determine the underlying base standard of a candidate IHE Profile by following a short, repeatable procedure rather than memorising a lookup table.

- **Step 1 — Restate the requirement as an interoperability task.** Ask whether it concerns a message triggered by an event (admission, order, result), a structured document to be exchanged and read, an imaging object or worklist, a lightweight mobile/API access need, or a security/audit/consent concern.
- **Step 2 — Match the task type to a base standard family.** Event-driven exchanges point to HL7 v2 messaging; document-centred needs point to HL7 CDA; mobile or RESTful access needs point to HL7 FHIR; imaging and radiology workflow points to DICOM; identity, transport security, authorisation and audit trail concerns point to IETF/OASIS/W3C standards such as TLS, SAML, OAuth or syslog.
- **Step 3 — Check the actors and transactions of the candidate Profile.** A Profile's Technical Framework section names its actors and the transactions between them; the standard referenced in those transactions confirms the base standard hypothesis from Step 2.
- **Step 4 — Judge suitability.** Confirm that the constrained use of the base standard actually fits the operational context (e.g. a mobile app cannot easily process HL7 v2 messages, so a FHIR-based Profile is the better fit; a radiology department needs DICOM-based worklist and image transactions, not a document standard).

5.1.3.1 Worked example

A hospital asks for its patient app to display recent discharge summaries on a phone. Step 1: this is a lightweight, mobile access task. Step 2: this points to HL7 FHIR rather than HL7 v2 or CDA alone. Step 3: checking the candidate Profile's transactions should show RESTful, resource-based calls. Step 4: if the Profile instead relies on SOAP messaging and batch document exchange, it is a weaker fit for the mobile scenario and a FHIR-based alternative should be preferred.

5.1.4 How IHE Profiles Use HTTP, SOAP, REST, XML and JSON

Learning objective: Understand and explain the usage of base technologies in IHE profiles: HTTP, SOAP, RESTful, JSON, XML

K-level: K2

Beyond the clinical base standards, IHE Profiles rely on a small set of generic web technologies to carry transactions between actors. Understanding these lets you read a transaction diagram and know, in practice, what kind of message is flowing across the wire.

HTTP is the underlying transport almost every transaction uses to move data between systems, whether the payload is a document, a query or a status update. On top of HTTP, IHE Profiles historically used **SOAP**, an XML-based messaging envelope that wraps a request or response with headers describing the action, addressing and security context; this style is common in older

Profiles such as document registry and repository transactions. More recent Profiles favour a **RESTful** style, where resources are addressed directly through HTTP verbs (GET, POST) and URLs, giving a lighter, more web-native way to query or retrieve information — this is the style used by mobile-friendly FHIR-based transactions.

The data exchanged is typically formatted as **XML**, which structures content into nested, labelled elements and is well suited to documents such as clinical reports, or as **JSON**, a lighter, key-value format favoured by REST/FHIR interfaces, especially where mobile devices or simpler parsing are involved.

Technology	Role	Typical use
HTTP	Transport	Carries requests/responses for nearly all transactions
SOAP	XML-based messaging envelope	Registry/repository queries and submissions
REST	Resource-oriented access via HTTP verbs	Lightweight mobile and FHIR queries
XML	Structured document format	Clinical documents, SOAP payloads
JSON	Lightweight data format	REST/FHIR responses

5.2 Patient Identity, Document Sharing and Imaging Profiles

5.2.1 Representative Profiles for Patient Identity, Documents and Images

Learning objective: Describe the purpose and key actors of representative Patient Identity, Document Sharing and Imaging Profiles within IHE Technical Frameworks.

K-level: K2

Three families of Profiles recur across IHE deployments because they solve the most common integration problems: knowing who the patient is, finding and retrieving their documents, and sharing images across systems.

- **Patient Identifier Cross-referencing (PIX)** and **Patient Demographics Query (PDQ)** let separate systems agree on which local identifiers belong to the same patient, or search for a patient's demographics. Their actors include a *Patient Identity Source* that feeds identity data and a *Patient Identifier Cross-reference Manager* or *Consumer* that resolves or queries identifiers.
- **Cross-Enterprise Document Sharing (XDS.b)** organises exchange of clinical documents among independent systems using a *Document Source* that publishes documents, a *Document Repository* that stores them, a *Document Registry* that indexes metadata, and a *Document Consumer* that queries and retrieves. **Cross-Community Access (XCA)** extends this so documents can be found across separate communities.

- **Cross-Enterprise Document Sharing for Imaging (XDS-I.b)** applies the same registry/repository pattern to radiology studies, using an *Imaging Document Source* and *Imaging Document Consumer* so studies, not just reports, can be shared between institutions.

Together these Profiles show a repeating pattern: separate the roles of supplying, storing, indexing and consuming information, so vendors can implement only the actor relevant to their product.

5.2.2 How the Profiles Are Built on Base Standards

Learning objective: Explain how these Profiles rely on underlying base standards such as HL7 v2, HL7 FHIR and DICOM to achieve interoperability.

K-level: K2

Each Profile in this family takes a base standard and constrains it into a predictable, testable pattern rather than reinventing a new message format. Patient identity feeds, for instance, rely on **HL7 v2** event-driven messages: an admission, update or merge in one system triggers a message that keeps other systems' patient records synchronised, using the same message segments hospitals already use for admissions and transfers. Document-sharing Profiles reuse the same repository-and-registry logic but express it through different transports depending on the deployment: older, SOAP-based transactions sit alongside newer **HL7 FHIR** RESTful APIs, which make it far easier for a mobile application to query and retrieve a discharge summary or referral document over the web. Imaging-related Profiles depend on **DICOM** for everything from worklists that tell a modality which patient to scan next, to the image objects themselves and the transactions that move them between systems.

Because Profiles select rather than invent, the same base standard often reappears with different constraints depending on the clinical problem: HL7 v2 for identity events, FHIR for lightweight document access, DICOM for image content and workflow. Recognising which base standard underlies a Profile explains why it behaves the way it does — for example, why a FHIR-based query returns a resource instantly while a DICOM worklist transaction is tied to modality scheduling.

5.2.3 Applying the Match: From User Requirement to Profile Family

Learning objective: Determine which Patient Identity, Document Sharing or Imaging Profile best addresses a given user requirement for exchanging patient information or images.

K-level: K3

Faced with a concrete request — “our regional network needs to find the same patient across three hospitals” or “a specialist must pull a colleague's imaging study on a tablet” — you can work through a short procedure before naming a Profile.

- **Step 1 — Identify what is being exchanged.** Is it patient identity data, a clinical document, or an imaging object/worklist?
- **Step 2 — Identify the scope.** Is this inside one enterprise, across independent affiliated organisations, or accessed from a lightweight mobile client?

- **Step 3 — Match the domain and base standard.** Patient identity and document-sharing needs sit in the IT Infrastructure (ITI) domain and typically rely on HL7 v2 messaging or HL7 FHIR resources; imaging needs sit in the Radiology (RAD) domain and rely on DICOM.
- **Step 4 — Check the actors involved.** Confirm that the systems you are integrating can play the actor roles the candidate Profile expects (a source of identity feeds, a repository, a viewer, an imaging modality, and so on).

5.2.3.1 Worked example

A hospital network wants clinicians to retrieve a discharge summary produced at another hospital, and separately wants radiologists to view prior studies from an affiliated imaging centre. Applying the steps: the first requirement is a *document*, exchanged *across enterprises* — this points to a document-sharing Profile built on HL7 CDA or FHIR content within the ITI domain. The second requirement is an *image*, exchanged *across enterprises* — this points to an imaging-sharing Profile built on DICOM within the RAD domain.

Requirement type	Relevant domain	Typical base standard
Reliable patient matching across systems	IT Infrastructure (ITI)	HL7 v2 / HL7 FHIR
Sharing clinical documents between organisations	IT Infrastructure (ITI)	HL7 CDA / HL7 FHIR
Sharing or retrieving images and studies	Radiology (RAD)	DICOM

Only after this matching should you check whether a security Profile must be grouped alongside it to make the deployment usable in practice.

5.3 Clinical Content and Workflow Profiles Across IHE Domains

5.3.1 IHE Domains as the Source of Clinical Content and Workflow Profiles

Learning objective: Identify clinical content and workflow Profiles across different IHE Domains and describe the healthcare use cases they address.

K-level: K1

IHE Profiles for clinical content and workflow are grouped by **Domain**, each addressing problems in one area of healthcare. Recognising the Domain names helps locate the right family of Profiles for a given clinical use case.

Domain	Area of healthcare addressed
Devices (DEV)	Medical device data and workflows
Endoscopy (ENDO)	Endoscopic procedure workflow

Pathology and Laboratory Medicine (PaLM)	Laboratory ordering and results
Patient Care Coordination (PCC)	Cross-provider clinical documents and care plans
Pharmacy (PHARM)	Medication prescribing and dispensing
Quality, Research and Public Health (QRPH)	Reporting for quality, research and public health
Radiation Oncology (RO)	Radiotherapy workflow
Radiology (RAD)	Imaging workflow and reporting

Some Domains, such as Cardiology, Dental, Eye Care and Surgery, are currently *dormant* but still hold published Profiles.

5.3.2 How Domain Profiles Structure Clinical Content on Base Standards

Learning objective: Explain how clinical workflow and content Profiles from different IHE Domains use existing base standards to structure and exchange clinical information.

K-level: K2

Clinical workflow and content Profiles are developed inside IHE Domains such as Patient Care Coordination, Pathology and Laboratory Medicine, Pharmacy, Radiology and Radiation Oncology. Each Domain's Technical Committee takes a real clinical workflow — for example a referral, a lab order, a medication prescription, or an imaging procedure — and profiles an existing base standard so that the workflow can be executed consistently between different vendors' systems.

Two mechanisms recur across Domains. First, **document-based content** Profiles constrain HL7 CDA (or increasingly FHIR resources) into templates with defined sections and coded entries, so that a discharge summary or a referral note produced by one system can be parsed reliably by another. Second, **message-based workflow** Profiles use HL7 v2 or DICOM to define the sequence of transactions — order placed, order acknowledged, result reported — between named actors, so that laboratory or imaging workflows progress in a predictable order regardless of which vendor supplies which step.

In every case the Profile does not redefine the standard; it selects which fields, codes and transactions are mandatory, so the same base standard can be reused for very different clinical purposes. This is why a Radiology Profile and a Laboratory Profile can both rely on HL7 v2 messaging while addressing entirely different actors and content.

5.3.2.1 Illustrative pattern

- **Content Profile:** constrains CDA/FHIR into a structured document with sections and coded entries (e.g. a care summary).
- **Workflow Profile:** constrains HL7 v2 or DICOM messages into an ordered sequence of transactions between actors (e.g. order, status, result).

5.3.3 Working Through a Clinical Requirement to Find the Right Profile

Learning objective: Determine which clinical content or workflow Profile from a given IHE Domain is appropriate to address a specific clinical interoperability requirement.

K-level: K3

When a concrete requirement lands on your desk — for example, "the emergency department needs a structured referral note that a receiving hospital's system can parse automatically" — the task is not to memorise a catalogue of Profiles but to work through a short, repeatable procedure that narrows the field down to the right one.

5.3.3.1 A procedure you can apply

- **State the requirement precisely.** Identify the clinical event (referral, admission, medication order, lab result, imaging study, public-health report), the actors involved, and what information must move between them.
- **Identify the responsible Domain.** IHE work is organised by Domain, each addressing one area of healthcare — for instance Patient Care Coordination for care summaries and referrals, Pharmacy for medication workflows, Pathology and Laboratory Medicine for lab results, Radiology or Radiation Oncology for imaging-related workflow, Quality, Research and Public Health for reporting use cases.
- **Check whether an existing Profile already covers the use case.** Technical Frameworks document Profiles as clinical information management use cases; a Profile that matches your scenario's actors and information flow is a strong candidate.
- **Confirm the base standard fits your environment.** A document-centric requirement points toward HL7 CDA content; a lightweight mobile-access requirement points toward FHIR resources; an imaging requirement points toward DICOM.
- **Check for required groupings.** A content or workflow Profile is rarely deployed alone; verify what transport, identity or security Profile it must be grouped with to be usable in production.

Applied to the referral example: the requirement sits in Patient Care Coordination, is addressed through a structured document use case, and is best expressed with HL7 CDA (or a FHIR-based equivalent for lightweight access), then paired with the appropriate document-exchange infrastructure.

5.4 Security, Privacy, Consent and Audit Profiles

5.4.1 IHE Security, Privacy, Consent and Audit Profiles

Learning objective: Describe the purpose and key mechanisms of IHE Security, Privacy, Consent and Audit Profiles, including identity assertion, authorisation, and audit trail logging.

K-level: K1

These Profiles supply the security building blocks that other IHE Profiles rely on. They do not create new security standards; they select and constrain existing ones such as TLS, SAML, OAuth and syslog.

- **Identity assertion:** a Profile such as Cross-Enterprise User Assertion (XUA) carries information about the authenticated user across systems, using a SAML assertion, so the receiving system knows who is asking.
- **Authorisation:** access-control mechanisms determine what an authenticated user or system is permitted to do with the data, based on roles or granted permissions.
- **Audit trail logging:** Audit Trail and Node Authentication (ATNA) requires systems to authenticate each other's connections and to record security-relevant events to a central audit repository using syslog messages.
- **Consent:** privacy consent Profiles record and communicate a patient's choices about who may access their information.

Together these mechanisms support confidentiality, accountability and a legal audit trail.

5.4.2 Grouping Security Profiles with Content and Workflow Profiles

Learning objective: Explain how security and privacy Profiles must be grouped with content or workflow Profiles to produce a deployable, secure health information exchange solution.

K-level: K2

A security or privacy Profile on its own does not solve a clinical problem — it does not move a document, an order or an image. Its role is to add trust, accountability or confidentiality to an exchange that a content or workflow Profile already defines. This is why IHE Profiles are almost never deployed alone: a Profile for document sharing, patient identity or clinical workflow is **grouped** with one or more security and privacy Profiles so that the resulting solution is not only functional but also auditable, authenticated and access-controlled.

For example, a document-sharing Profile that lets a clinician retrieve a discharge summary across organisations needs to be grouped with a Profile that records who accessed the record and when, and with a Profile that asserts the identity and role of the requesting user. Without that grouping, the exchange works technically but fails basic accountability and confidentiality requirements demanded by health data protection rules.

5.4.2.1 Why grouping matters

- **Functional Profile alone:** moves data (documents, orders, images) but leaves security gaps.
- **Security Profile alone:** provides identity assertion, authorisation or audit trail, but has no clinical content to protect.
- **Grouped Profiles:** produce a deployable solution that is both interoperable and compliant with confidentiality and accountability requirements.

Recognising this pairing is essential when reading an IHE Technical Framework: a workflow or content Profile's actors are often explicitly required or recommended to also implement the transactions of a security Profile before the combination is considered production-ready.

5.4.3 Choosing the Right Security or Privacy Profile for a Requirement

Learning objective: Determine which security, privacy, consent or audit Profile addresses a given user requirement for confidentiality, authentication or accountability in a healthcare IT deployment.

K-level: K3

When a deployment states a requirement such as "we must know who accessed this record" or "only the patient's chosen clinicians may open this document", the practical task is to translate that sentence into the IHE Profile that already solves it, and the base standard it rests on.

5.4.3.1 A short procedure

- **Step 1 — classify the requirement:** is it about confidentiality of the exchange, proof of who is asking, tracking access after the fact, or the patient's own choice about disclosure?
- **Step 2 — check whether the actors are systems, users, or the patient:** node-to-node trust, individual user identity, and patient consent are answered by different Profiles.
- **Step 3 — pick the Profile whose transactions match,** then verify which base standard it relies on, since that tells you what your product must already support (TLS stack, SAML library, syslog server).

User requirement	IHE Profile	Underlying mechanism / base standard
Encrypt the network link and mutually authenticate the two systems exchanging data	ATNA (Audit Trail and Node Authentication)	TLS for node authentication and transport encryption; syslog for audit records
Prove which individual user, on which device, initiated a cross-enterprise access	XUA (Cross-Enterprise User Assertion)	SAML assertions carrying user identity attributes
Record accountable, reviewable evidence of every access or disclosure	ATNA audit trail	Syslog-based audit record repository
Capture and enforce a patient's consent choices for sharing documents	BPPC / APPC (Basic / Advanced Patient Privacy Consents)	Signed consent documents linked to document-sharing transactions
Authorise a lightweight mobile or API client	IUA (Internet User Authorization)	OAuth-based token authorisation

without a full enterprise
identity provider

Applying the procedure to a case such as "a mobile app must only retrieve documents the patient agreed to share, over an authenticated connection, with a traceable log" typically points to a combination: IUA for the API access, XUA or ATNA for identity and node trust, and BPPC/APPC for the consent itself — no single Profile covers all three concerns at once.

5.5 Matching Profiles and Profile Groupings to User Requirements

5.5.1 How Profiles Combine to Meet Real Requirements

Learning objective: Explain how IHE Profiles and Profile groupings combine to address specific interoperability requirements presented by users.

K-level: K2

A single IHE Profile rarely covers everything a user needs. A hospital asking for “share discharge summaries securely across the region” is really expressing several requirements at once: a content requirement (a structured document), a transport/sharing requirement (how systems find and exchange it), an identity requirement (matching the right patient record), and a security/privacy requirement (who may access what, and how access is logged). IHE addresses this by *grouping* Profiles: an actor from one Profile is required to also implement transactions from another, so the combination — not any single Profile — answers the full requirement.

User requirement dimension	Typical Profile category	Example
Clinical content	Content or workflow Profile	A structured discharge summary document
Cross-system exchange	Document/image sharing Profile	Registry-and-repository sharing infrastructure
Correct patient matching	Patient identity Profile	Linking records across facilities
Access control, consent, audit	Security/privacy Profile	Grouped audit trail and consent enforcement

This is why IHE documentation always describes Profiles in terms of actors and transactions: it lets an implementer see exactly which Profile must be grouped with which other Profile to satisfy the whole requirement, rather than treating security as an afterthought bolted onto a sharing solution.

5.5.2 A Procedure for Selecting Profiles and Security Groupings

Learning objective: Select an appropriate IHE Profile or combination of Profiles, including necessary security groupings, to satisfy a concrete user requirement.

K-level: K3

Choosing the right Profile is a matching exercise: take the user's stated need, decide which functional area it belongs to, pick the Profile that covers that area, note the base standard it rests on, and then ask what security or privacy behaviour must be added around it. Because a single Profile rarely covers identity, content, transport and security all at once, the usual answer is a *grouping* of Profiles rather than a single one.

5.5.2.1 Worked procedure

- **Restate the requirement** in terms of actors and data: who needs what information, from where, and under what conditions.
- **Classify the need** against the functional areas covered by IHE: patient identity management, document or image sharing, clinical workflow/content, or security and privacy.
- **Select the Profile** whose actors and transactions match that classification, and identify its underlying base standard (HL7 v2, CDA, FHIR, DICOM, or the IETF/OASIS/W3C security standards).
- **Check for gaps** the base Profile does not close — consent, patient/user identity proofing, transport confidentiality, audit trail — and add the corresponding security Profile to the grouping.

For example, a requirement such as

5.6 The Top 10 Most Tested Profiles

5.6.1 The Profiles You Will See Most Often

Learning objective: List and describe the Top 10 most tested IHE Profiles, on the level of Volume 1, identifying the actors, transactions and base standards involved in each.

K-level: K2

A handful of Profiles reappear constantly at Connectathons and in procurement checklists because they solve recurring, cross-domain problems: identifying patients reliably, sharing documents and images, keeping clocks synchronised, and securing every transaction. Knowing them at Volume 1 level means being able to name, for each one, the **actors** involved, the **transactions** exchanged, and the **base standard** underlying it — for example, Cross-Enterprise Document Sharing (XDS.b) lets a Document Source register a document with a Registry so that any authorised Document Consumer can later query and retrieve it.

Profile (acronym)	Typical actors	Core transaction idea	Base standard
Cross-Enterprise Document Sharing (XDS.b)	Document Source, Repository, Registry, Consumer	Registering and retrieving shared documents	SOAP/ebXML
Consistent Time (CT)	Time Server, Time Client	Synchronising system clocks	NTP/SNTP

Audit Trail and Node Authentication (ATNA)	Secure Node, Audit Record Repository	Audit logging and mutual node authentication	TLS, syslog
Mobile access to Health Documents (MHD)	Document Source, Recipient, Consumer	Mobile access to shared documents	HL7 FHIR
Portable Data for Imaging (PDI)	Portable Media Creator, Importer	Exchanging images on removable media	DICOM
Scheduled Workflow (SWF.b)	Order Filler, Acquisition Modality, Image Manager	Managing imaging orders and procedure steps	HL7 v2, DICOM
Cross-Enterprise Document Sharing for Imaging (XDS-I.b)	Imaging Document Source, Repository, Registry, Consumer	Sharing imaging documents across enterprises	DICOM, SOAP/ebXML
Patient Identifier Cross-Reference HL7 V3 (PIXv3)	Identity Source, Cross-reference Manager, Consumer	Cross-referencing patient identifiers	HL7 v3
Patient Demographics Query for Mobile (PDQm)	Patient Demographics Supplier, Consumer	Mobile querying of demographics	HL7 FHIR
Cross-Community Access (XCA)	Initiating/Responding Gateway	Cross-community document query and retrieve	SOAP

5.6.2 Sorting the Top 10 by Domain and Use-Case Category

Learning objective: Classify each of the Top 10 Profiles according to the IHE domain and use-case category it addresses.

K-level: K2

Once you can name the Top 10 most tested Profiles, the next step is to place each one on the map: which IHE **Domain** owns it, and which **use-case category** it belongs to — patient identity, document/image sharing, clinical workflow and content, or security and privacy. Most of the heavily tested Profiles sit in IT Infrastructure (ITI), because identity, sharing and security are cross-cutting needs shared by every clinical domain, while Radiology (RAD) supplies the imaging workflow Profiles and Patient Care Coordination (PCC) supplies clinical document content.

This classification matters practically: a procurement team asking for imaging exchange should look to RAD/ITI sharing Profiles, while a request for cross-enterprise identity matching points to an ITI patient-identity Profile, and a consent or audit requirement points to a security-category Profile that must be *added alongside* a sharing Profile rather than replacing it.

Use-case category	Typical IHE Domain(s)	What the Profile is chosen for
Patient identity management	ITI	Matching and linking a patient's identity across systems
Document and image sharing	ITI, RAD	Exchanging documents or images between independent enterprises
Clinical workflow and content	RAD, PCC, PaLM, PHARM	Coordinating orders, results and structured clinical documents
Security, privacy, consent, audit	ITI	Authenticating users, asserting identity, logging access, managing consent

Classifying a Profile this way is a quick sanity check before deciding whether it answers a given requirement.

5.6.3 Matching a Procurement Requirement to a Top 10 Profile: A Worked Procedure

Learning objective: Determine which of the Top 10 Profiles best addresses a given user requirement in a concrete procurement or deployment scenario.

K-level: K3

Determining which Profile answers a user requirement is a matching exercise: translate the requirement into an interoperability need, then check that need against a Profile's stated actors, transactions and base standard. A repeatable procedure keeps this from becoming guesswork.

- **Step 1 — restate the requirement as a use case.** "We need our imaging centre to notify referring physicians" becomes a workflow question, not a product feature list.
- **Step 2 — identify the interoperability category involved:** patient identity, document/image sharing, clinical workflow, or security/privacy — as introduced in this chapter's earlier subchapters.
- **Step 3 — shortlist candidate Profiles** from the Top 10 whose actors and transactions cover the roles named in the requirement (e.g. a system that must "register" a document versus one that must "query and retrieve" it are different actors).
- **Step 4 — verify the base standard fits the deployment context** (a mobile app favours a FHIR-based Profile; a legacy HL7 v2 feed favours a messaging-based Profile).

- **Step 5 — check whether a security Profile must be grouped** with the candidate to make it deployable (audit trail, identity assertion, transport encryption).

5.6.3.1 Worked example

A hospital procurement document states: "The new radiology system must let clinicians in any affiliated clinic pull a patient's prior images and reports, correctly matched to the right patient record, over a secure connection." Applying the procedure: the requirement combines patient identity matching with document/image retrieval, so two Profile categories are shortlisted rather than one; the retrieval actor's transactions are checked against the requirement's "pull" language rather than a "push" workflow; the deployment context (affiliated clinics, likely web-based) favours a lighter, RESTful base standard; and because patient data crosses organisational boundaries, an audit-trail and secure-transport Profile is added to the group before the answer is considered complete.

Requirement clue

"pull" vs "push" wording

cross-organisation data flow

mobile or web client

What to check in the Profile

Which actor initiates the transaction

Whether a security/audit Profile must be grouped

Whether the base standard is FHIR-based

6 Deployment

Everything covered so far — the organisation, the profiles, the testing and the resources — only creates value when it is actually put to work in a national programme, a regional health information exchange or a single hospital procurement. This chapter shifts the perspective from *producing* interoperability specifications to **deploying** them: how IHE's deployment structures, policy alignment (notably the European Interoperability Framework), procurement language and deployment experience from Europe, the USA and other regions help accelerate real projects.

Aspect	Development activities	Deployment activities
Scope	International, organised by clinical and operational domain	National and regional, organised by geography
Main output	Technical Frameworks, Profiles, Supplements, White Papers	National Extensions, testing events, procurement and implementation guidance, education
Typical actors	Domain Planning and Technical Committees	National and Regional Deployment Committees, Global Deployment Coordination Committee
Success measure	Published, stable, harmonised specifications	Interoperable systems in production serving patients and care providers

By the end of the chapter you will be able to explain how deployment work is organised, and to **apply** IHE assets when specifying, procuring and rolling out health IT in your own organisation.

6.1 Deployment Activities in IHE: National and Regional Committees, National Extensions and Global Coordination

6.1.1 National and Regional Deployment Committees and National Extensions

Learning objective: Describe the responsibilities and activities of National and Regional Deployment Committees, including the development of National Extensions to IHE Technical Frameworks.

K-level: K2

National Deployment Committees promote appropriate use of the IHE Technical Frameworks within their own country. They recruit users and vendors, organize national demonstrations and educational events, and act as the local voice back into the international process by communicating national requirements and contributing work item proposals to Domain Committees. Regional Deployment Committees perform a similar role across a defined group of

nations, and are open to participation by the National Committees within that region; both are sponsored by IHE Member Organizations who provide secretariat support.

A central deployment activity is the creation of **National Extensions**: documents that adapt final text Profiles to local healthcare policy, workflow or language needs. For example, a country with a specific patient identifier scheme or a national terminology mandate might extend a Profile's transactions to accommodate it. Extensions must build on published final text Profiles and *may extend but never contradict* Profile requirements. They are drafted in English (translations may be added), submitted to the responsible Domain Technical Committee, reviewed and, once approved by both the Domain Technical Committee and the National Deployment Committee, published as part of the Domain Technical Framework.

- Recruit participants and organize national/regional Connectathons and educational events
- Feed national requirements and work item proposals to Domain Committees
- Draft, submit and revise National Extensions with the relevant Domain Technical Committee

6.1.2 The Global Deployment Coordination Committee: Aligning Deployment Worldwide

Learning objective: Explain the role of the Global Deployment Coordination Committee in facilitating consistent adoption of IHE profiles, processes, tools and services worldwide.

K-level: K2

While National and Regional Deployment Committees carry out local testing, education and National Extensions, no single one of them can guarantee that a hospital in one country and a health information exchange in another are moving toward the same interoperable outcome. The **Global Deployment Coordination Committee (GDC)** exists to close that gap: it facilitates consistent use and adoption of IHE profiles, processes, tools and services throughout the world, so that deployment work does not fragment into incompatible local practices.

Concretely, the GDC acts as a hub between deployment committees rather than a body that runs projects itself. Its activities include developing and reusing services that accelerate deployment, engaging IT vendors and researchers, identifying pilot projects for profiles that address an agreed need, and producing concise value statements for decision makers. It also gathers and shares information on deployment projects, feeds market needs back to IHE domain committees, helps deployment committees learn from one another, aligns the international agenda, and disseminates best practices, including organizational and business models.

For example, if a national committee in one region has successfully piloted a profile for cross-border patient summaries, the GDC's role is to capture that experience and make it available to other regions considering a similar deployment, rather than leaving each committee to rediscover the same lessons independently.

6.1.3 Choosing the Right Body for a Deployment Need

Learning objective: Identify the appropriate deployment committee or coordination body to address a given national, regional or global interoperability deployment need.

K-level: K3

Faced with a concrete interoperability problem, the practical skill is not memorising every committee's charter but recognising which body's scope matches the scale and nature of the need. A simple procedure helps:

- **Step 1 — Is the issue about a Profile's international content?** If the specification itself is ambiguous or missing a use case, the need belongs with a Domain Planning or Technical Committee, not a deployment body.
- **Step 2 — Is the fix a local variation of an already-published Profile?** If so, it is a candidate for a **National Extension**, drafted by the National Deployment Committee and later reviewed by the relevant Domain Technical Committee.
- **Step 3 — Does the need span several countries with shared care patterns?** Escalate to the **Regional Deployment Committee**, which coordinates national activities, regional Connectathons and cross-border requirements gathering.
- **Step 4 — Does the need concern tools, best practices or alignment that recur across many regions?** Route it to the **Global Deployment Coordination Committee (GDC)**, which develops shared services, disseminates deployment experience and aligns international agendas.

6.1.3.1 Worked example

A national eHealth agency finds that a published Patient Identity profile does not cover its legal requirement for a secondary national ID. This is a local variation of an existing Profile, so the agency works through its **National Deployment Committee** to draft a National Extension, later submitted to the Domain Technical Committee for approval. If three neighbouring countries independently hit the same gap, the matter should move to their shared **Regional Deployment Committee** so a common extension and joint testing event can be planned instead of three separate ones.

Nature of the need	Appropriate body
Ambiguity or gap in an international Profile	Domain Planning/Technical Committee
Local legal or workflow variation of a published Profile	National Deployment Committee
Need shared by several nations in the same region	Regional Deployment Committee
Need for tools, pilots, best-practice sharing across regions	Global Deployment Coordination Committee

6.2 IHE and Health Policy Frameworks: The European Interoperability Framework and Its Layers

6.2.1 The Four Layers of the European Interoperability Framework

Learning objective: Describe the four interoperability layers of the European Interoperability Framework (legal, organisational, semantic and technical) and the role of interoperability governance.

K-level: K1

The European Interoperability Framework (EIF) defines interoperability as a layered concept, applicable to any digital public service, including health IT deployments.

Layer	What it addresses
Legal	Ensuring organisations under different legal frameworks can work together; removing legislative barriers
Organisational	Aligning business processes and responsibilities between cooperating organisations
Semantic	Preserving the precise meaning and format of exchanged data so it is understood consistently
Technical	Interface specifications, interconnection and secure exchange between applications and infrastructures

A background layer, **interoperability governance**, covers decisions on frameworks, institutional arrangements, roles, responsibilities and policies needed to coordinate all four layers at national and EU level.

6.2.2 From a Common Framework to National and Domain Implementation

Learning objective: Explain how the EIF relates to National and Domain Interoperability Frameworks and how it supports the delivery of interoperable European public services.

K-level: K2

The EIF is not applied directly by a hospital or a national programme; it works through a chain of frameworks that translate its generic recommendations into concrete national and domain contexts. A **National Interoperability Framework (NIF)** is the document, or set of documents, through which a Member State defines its own interoperability policies, strategies and guidelines, tailoring EIF elements to its administrative and legal traditions. A **Domain Interoperability Framework (DIF)** does the same for a specific sector — health being an obvious example — capturing requirements that a generic EIF cannot anticipate, while

remaining compatible with it. Some EIF elements can be copied directly into a NIF or DIF; others need to be reworked to fit local needs.

This relationship works in two directions. **Bottom-up**, when a NIF aligned with the EIF underpins public services at every administrative level, it becomes easier to extend those services across borders. **Top-down**, when the EIF is referenced in EU legislation and policy — directly or through DIFs — it raises the interoperability potential of the national actions that transpose that legislation.

For example, a national eHealth authority publishing interoperability guidance for hospital referral systems is producing a health-domain DIF; if it stays aligned with EIF principles, the guidance also supports cross-border services such as patient summary exchange, contributing to a genuinely European public services ecosystem.

6.2.3 Mapping IHE PRISM and EHDS Work to the EIF Layers

Learning objective: Relate IHE profiles and initiatives, such as IHE PRISM and the EHDS, to the corresponding layers of the European Interoperability Framework to support health IT deployment.

K-level: K3

Once you know the four EIF layers, the practical skill is to place a given IHE initiative correctly within them, so that deployment teams can see which policy gap the profile actually closes. IHE PRISM is a good working example: launched by IHE International in 2025, it turns market and policy needs — starting with the European Health Data Space (EHDS) regulation — into structured, testable IHE Profiles and supplements, following IHE's normal profile-and-Connectathon methodology.

A simple procedure for relating any IHE asset to the EIF:

- Identify the policy driver (e.g. the EHDS regulation) — this sits at the **legal** layer, since it creates the binding obligation to exchange health data across borders.
- Identify the stakeholder coordination structure that translates the driver into requirements — IHE PRISM EHDS convenes users, implementers and policymakers together with partner SDOs such as HL7 Europe, and coordinates with initiatives like EURIDICE and Xt-EHR; this is **organisational** interoperability.
- Identify the content and terminology work — extensions such as the Manifest based Access to DICOM Objects (MADO) Profile define what information is exchanged and how it is represented, addressing **semantic** interoperability.
- Identify the tested exchange mechanisms — Connectathon and Projectathon testing (including the Projectathon hosted alongside the annual Connectathon) validate the actual transactions between systems, which is **technical** interoperability.

Applying this procedure to any IHE profile you are asked to deploy — first ask what regulation or mandate it answers, then who must agree to use it, then what data model it fixes, then how conformance is tested — lets you slot it into the right EIF layer and explain to procurement or

policy colleagues exactly what problem it solves, rather than treating it as a generic technical document.

6.3 Using IHE Profiles in Requirements, Tenders and Implementation Projects

6.3.1 Profiles and Integration Statements as a Common Language for Buyers and Vendors

Learning objective: Explain how IHE Integration Profiles and Integration Statements can be used as shorthand for integration requirements in purchasing documents and vendor product descriptions.

K-level: K2

Writing a tender from scratch means describing every message format, workflow step and security requirement in prose — slow to write, easy to misread, and hard to test against. IHE gives buyers and vendors a shared shorthand instead: an **Integration Profile** names a defined set of actors and transactions that solve a specific interoperability problem, so a purchaser can simply require support for a profile rather than reinvent its technical detail.

For example, instead of writing a paragraph specifying how a radiology viewer must retrieve prior images and reports, a tender can state that the system "shall support the *Cross-Enterprise Document Sharing* profile as a Document Consumer actor". Any vendor familiar with IHE immediately understands the scope of that requirement.

On the vendor side, an **Integration Statement** is a public declaration, tied to a specific product release, listing exactly which profiles and actor roles that release supports. This lets a purchaser compare candidate products directly against the profiles named in the requirements, and lets a vendor demonstrate conformance without a lengthy custom description.

- Profiles = shorthand for what the requirement is.
- Integration Statements = shorthand for what a product actually delivers.

Used together, they let requirements documents, tender specifications and vendor product descriptions speak the same precise, checkable language, reducing ambiguity and the risk of costly integration surprises later in a project.

6.3.2 A Worked Procedure for Drafting Requirements with IHE Assets

Learning objective: Apply IHE Profiles and related resources (Technical Frameworks, Connectathon results, product registries) to draft requirements or tender specifications for a health IT implementation project.

K-level: K3

Turning IHE knowledge into a usable specification means walking through the same resources a National Deployment Committee already relies on, but applied to a single project. A practical procedure for a requirements author or tender officer looks like this:

- **Identify the workflow needs** — describe the clinical or administrative use case in plain language (e.g. cross-institution image sharing, patient identity reconciliation).
- **Match needs to Integration Profiles** — consult the relevant Domain's Technical Framework to find the Profiles whose actors and transactions cover the use case; Integration Profiles exist precisely to describe such use cases and specify how existing standards address them.
- **Check maturity and stability** — confirm whether the Profile is Trial Implementation or Final Text, since a stable Final Text Profile is a safer basis for binding contract language.
- **Verify testability** — review Connectathon results and available test scripts or synthetic data sets for the chosen Profiles, since these show the Profile has been exercised by multiple vendors, not merely published.
- **Check market readiness** — search product registries and Integration Statements to confirm that products already support the required Profile and actor combination in a shipped release, avoiding requirements no vendor can currently meet.
- **Consider National Extensions** — check whether a National or Regional Deployment Committee has published extensions addressing local requirements, and reference these alongside the international Profile.
- **Write the requirement** — state the required actor, Profile and option, referencing the Technical Framework volume and version, rather than re-describing the transaction from scratch.

Following this sequence lets a tender reference precise, testable, internationally recognised specifications instead of vague interoperability language, and lets evaluators check vendor responses against Connectathon evidence and product registry entries.

6.3.3 How Deployment Structures and Testing Reduce Procurement Risk

Learning objective: Describe how IHE's deployment structures and testing methodology support efficient, interoperable procurement and implementation of health IT systems within an organisation.

K-level: K2

When an organisation plans a tender or implementation project, it does not have to start from scratch or trust vendor claims alone. IHE's deployment layer exists precisely to make interoperability specifications usable on the ground, and its testing methodology exists to give buyers evidence rather than promises.

6.3.3.1 Deployment structures at work

National and Regional Deployment Committees adapt international Technical Frameworks to local care practices through **National Extensions**, and they organise regional Connectathons so that products relevant to a given country or region are actually tested together. The Global Deployment Coordination Committee keeps these efforts aligned worldwide, so a hospital in one country can rely on testing conventions and tools developed elsewhere rather than reinventing them.

6.3.3.2 Testing methodology at work

Because vendors test their products annually at Connectathons under a rigorous, monitored process, and because results feed into public conformance information, a project team drafting requirements can specify support for a given IHE Profile with confidence that products claiming conformance have actually been checked against real counterpart systems, not just paper specifications.

For example, a regional health information exchange project can require, in its tender, that document-sharing systems support a specific Profile and cite recent Connectathon participation as evidence, dramatically shortening the integration testing the buyer would otherwise need to run itself. This combination of local adaptation, coordinated testing, and international consistency is what allows a single procurement to move faster while still achieving genuine interoperability.

6.4 Deployment Accelerators: Toolkits, Projectathons and National Testing Programmes

6.4.1 Deployment Accelerators: Toolkits, Testing Events and National Programmes

Learning objective: Describe the deployment accelerators IHE offers, including implementation toolkits, Connectathon and Projectathon testing, and national testing programmes, and explain how they support digital health interoperability.

K-level: K2

IHE offers concrete assets that help a country, region or vendor move faster from published specifications to running systems. Three accelerators recur across IHE's strategic guidance and governance documents.

Accelerator	What it provides	Example
Implementation toolkit	Documentation of IHE's testing capabilities and guidance for Deployment Committees on using Connectathon and Projectathon testing to advance interoperability locally	A national committee using the toolkit to plan its first conformance-testing event rather than designing one from scratch
Connectathon and Projectathon testing	Bundled testing services, testing management and validation tooling (including for FHIR-based profiles) so vendors can test interconnection of	Vendors verifying imaging or health-record exchange interoperability before deploying products in hospitals, as described by users of the IHE-Europe Connectathon

	their products against IHE Profiles	
National testing programmes	National and Regional Deployment Committees organising regional Connectathons, national product validation and certification activities, built on IHE's mature testing methodology	A Regional Deployment Committee retaining a technical project manager to coordinate a regional Connectathon aligned with approved National Extensions

These accelerators reinforce each other: the toolkit lowers the barrier to entry, testing events give vendors and implementers concrete proof of interoperability, and national programmes embed that testing into local procurement and certification practice, including in low- and middle-income countries establishing domestic digital health conformance testing for the first time.

6.4.2 The Global Deployment Coordination Committee and IHE PRISM

Learning objective: Explain the role of the Global Deployment Coordination Committee and initiatives such as IHE PRISM in facilitating consistent adoption of IHE profiles, tools and testing services across regions.

K-level: K2

While National and Regional Deployment Committees do the hands-on work of testing and rolling out profiles in their own territory, someone has to keep all these efforts pointing in the same direction. That is the job of the **Global Deployment Coordination Committee (GDC)**: it facilitates consistent use and adoption of IHE profiles, processes, tools and services worldwide, rather than running deployment activities itself.

In practice the GDC does this by acting as a hub between deployment groups: it gathers and shares information on ongoing deployment projects, helps committees learn from one another's experience, aligns the international agenda, identifies pilot projects for profiles that address an agreed need, and feeds market needs back into IHE's domain development work. It is composed of representatives nominated by regional and national deployment committees, meeting at least four times a year across time zones and regions to keep participation fair.

6.4.2.1 IHE PRISM as a concrete accelerator

A recent example of this coordinating role in action is **IHE PRISM**, launched in 2025. It takes a specific policy driver — the European Health Data Space (EHDS) — and applies IHE's usual process (use case definition, profiling, testing) to turn policy needs into testable specifications quickly, while staying aligned with existing IHE Domains and the global ecosystem, so that adoption stays consistent rather than fragmented across countries.

6.4.3 Choosing the Right Accelerator for a Deployment Initiative

Learning objective: Identify which IHE deployment accelerator (toolkit, Connectathon/Projectathon, or national testing programme) is most appropriate to support a given national or regional interoperability initiative.

K-level: K3

Once a national or regional programme has decided to build on IHE profiles, the practical question becomes which accelerator to draw on first. IHE offers three complementary types of support, and picking the wrong one wastes early momentum.

Accelerator	Best suited when...	Typical output for the initiative
Implementation toolkit	The programme team needs to understand testing capabilities and guidance before committing resources, e.g. early planning or a small Deployment Committee with limited experience	Documented guidance on how to use Connectathon/Projectathon testing to advance interoperability locally
Connectathon / Projectathon	Vendors and systems already implement specific profiles and need to prove conformance and cross-vendor interoperability before go-live, including FHIR-based specifications	Validated, tested products; test scripts and synthetic data reused across events; evidence for procurement
National testing programme (via a National/Regional Deployment Committee)	The initiative needs ongoing, locally governed conformance testing, National Extensions, or product validation/certification embedded in national policy	Recruited participants, National Extensions submitted to Domain Committees, regional Connectathons run under national rules

6.4.3.1 A worked example

Suppose a ministry of health is planning a national patient summary exchange. A practical sequence is:

- **Step 1** — consult the implementation toolkit to understand which profiles and testing options exist and how other Deployment Committees structured similar rollouts.

- **Step 2** — register vendors for an upcoming Connectathon or Projectathon to validate conformance and interoperability of candidate products against the chosen profiles.
- **Step 3** — if the country lacks an established testing structure, work with, or help establish, a National Deployment Committee to run a national testing programme, develop any needed National Extensions, and sustain conformance testing beyond the initial event.

Matching the accelerator to the initiative's maturity — awareness, product validation, or sustained governance — avoids duplicating effort already offered by IHE International or by low- and middle-income country programmes building domestic testing on IHE's mature methodologies.

6.5 Deployment Experience in Practice: Examples from Europe, the USA and Other Regions

6.5.1 Deployment in Action: Europe, the USA and Beyond

Learning objective: Describe examples of IHE deployment experience in Europe, the USA and other regions, including how the European Commission has referenced IHE Profiles for public procurements.

K-level: K2

Once IHE Profiles leave the specification stage, they show up in real health IT systems and public policy documents. In **Europe**, France's health authority has relied on IHE-based specifications such as CI-SIS for its national health information system, and hospitals like the University Medical Center Mainz have chosen imaging connectivity products validated at IHE Connectathons. Most notably, the **European Commission has identified 27 IHE Profiles as ready references for public procurements**, letting purchasers cite these profiles directly in tender documents instead of drafting bespoke technical requirements.

In the **USA**, the Interoperability Standards Advisory (ISA) — maintained by the Assistant Secretary for Technology Policy (formerly ONC) and published on HealthIT.gov — lists nationally recognised, testable interoperability standards, and it explicitly references multiple IHE Profiles (for example in imaging, document exchange and patient identity domains) as viable standards for specific interoperability needs. This mirrors the European procurement pattern: a government body pointing implementers toward IHE Profiles rather than inventing new requirements.

Beyond Europe and the USA, IHE International case studies include a state newborn screening programme, a shared medication treatment plan initiative, and a Dutch national portal for exchanging COVID-19 patient data — showing that deployment spans public health, medication management and emergency data exchange, not just imaging or laboratory domains.

Across these regions, the same pattern recurs:

- Regulatory or government bodies (the European Commission, the US ISA) formally reference IHE Profiles as trusted implementation choices.
- Vendors validate products at Connectathons before deployment.

- National and cross-border programmes reuse the same testable specifications, giving any organisation a proven path to follow.

6.5.2 Regional Accelerators in Action: Connectathons and PRISM

Learning objective: Explain how regional initiatives such as IHE-Europe Connectathons and PRISM programmes accelerate interoperability testing and adoption of standards-based specifications.

K-level: K2

Regional deployment programmes turn IHE specifications into tested, trusted products by giving vendors and implementers a structured place to try them out together. The **IHE-Europe Connectathon** is the clearest example: hundreds of vendors bring live systems to a shared venue to test interconnection against IHE-based interoperability specifications under Monitor supervision. As quoted by users of the event, it is described as a practical way to gain confidence that imaging or health-information-exchange products genuinely interoperate before they reach production, and outcomes from it have fed directly into national procurement references, such as the European Commission's list of profiles used in public tenders.

IHE PRISM programmes, launched by IHE International, apply this same proven methodology to fast-track guidance in response to specific market and policy needs. IHE PRISM EHDS, for instance, was launched to accelerate adoption of the European Health Data Space regulation. It brings together users, implementers, technical experts and policymakers to define concrete use cases, profile existing standards, and validate them through a full testing continuum — from early Plugathons to formal Connectathon testing using Gazelle tools — and it collaborates with partner organisations such as HL7 Europe and supports dedicated Projectathon testing alongside the annual Connectathon. Together, Connectathons and PRISM initiatives compress the path from policy intent to interoperable, deployable systems.

6.5.3 Turning Regional Deployment Experience into Local Action

Learning objective: Identify how deployment experience from different regions can inform and support interoperability projects within one's own organisation.

K-level: K3

Deployment experience is not just a story to admire — it is a resource you can query systematically before launching your own interoperability project. IHE's deployment governance is built precisely to make this transfer possible: National and Regional Deployment Committees publish National Extensions, run testing events and gather requirements, while the Global Deployment Coordination Committee (GDC) exists to "gather and disseminate information on deployment projects", "facilitate sharing of best practices, including organizational and business models" and "provide support to deployment committees so they can learn from one another".

A practical procedure for using this network when planning your own project:

- **Check for an existing National or Regional Deployment Committee** covering your country or region; if one exists, its governance documents, National Extensions and past

Connectathon reports are the fastest way to see how profiles were adapted to local care traditions.

- **Ask what use cases and requirements were already gathered** by that committee — Regional Deployment Committees explicitly provide regional requirements and work item proposals to Domain Committees, so this material reflects negotiated, tested needs rather than theory.
- **Look for pilot projects and value statements** curated by the GDC, which identifies pilot projects for profiles that fill an agreed-upon need and develops concise value statements for decision makers — useful evidence when justifying a business case internally.
- **Reuse organisational and business models** that other committees have already tested, rather than designing governance and funding arrangements from scratch.

6.5.3.1 What each level of experience typically offers

Source	What it typically provides	How to apply it locally
National Deployment Committee	National Extensions, translated terminology, national testing results	Adopt extensions directly; avoid re-negotiating already-solved local variations
Regional Deployment Committee	Cross-border requirements, coordinated Connectathons	Align procurement specifications with regionally tested configurations
Global Deployment Coordination Committee	Best-practice sharing, pilot projects, value statements	Borrow business models and decision-maker arguments for internal buy-in

7 IHE Glossaries

The IHE Glossary is part all Technical Frameworks as Appendix D, see the IHE Technical Frameworks General Introduction <https://profiles.ihe.net/GeneralIntro/index.html>. The IHE Glossary terms are maintained via the Standards Knowledge Management Tool (SKMT, <https://www.skmtglossary.org/>). The SKMT contains terms from Final Text and Trial Implementation IHE profiles. New terms introduced in Public Comment profiles (or terms that have been modified) are added once the profile is published for Trial Implementation. Always refer to the SKMT for the most current list of IHE Glossary terms. See the IHE Wiki for further information about accessing the SKMT ([https://wiki.ihe.net/index.php/Standards_Knowledge_Management_Tool_\(SKMT\)](https://wiki.ihe.net/index.php/Standards_Knowledge_Management_Tool_(SKMT))).

IHE Europe also provides a glossary at <https://www.ihe-europe.net/glossary-of-terms>.