



Interoperability testing in Finland

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Kanta

NATIONAL ARCHIVE OF HEALTH INFORMATION

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Overview of the Finnish national eHealth infrastructure



Kanta services

Citizens (> 5 000 000)

Aged 18 and older

My Kanta pages

ePrescription service

Renewals Prescriptions Dispensations

Logs

IHE XDS-I

Pharmacies (~800)

Hospital districts (20)

Primary care org. (192)

Private healthcare providers (4000)

Kanta messaging layer

Patient data repository

Radiology studies Metadata

Health records (legacy) Health records (CDA)

Patient data management service

Patient summary management

Diagnoses Vaccinations Radiology
Procedures Lab Physical findings
Risks Health and care plan Medications

Consent and will management

Organ donation wills Living wills Opt-ins and opt-outs

Swedish epSOS NCP

Other NCPs not yet connected

IHE

epSOS NCP

Main standards

- HL7 V3: CDA R2 Level 3 and Medical Records
- IHE IT-I Profiles
- W3C XML DSig
- WS Addressing, WS-I
- TLS, X.509

Other national services

National code server
Code lists and terminologies
Healthcare and social care organizations register
Form and document structures
Pharmacies register
Certification services
HCP register
Pharmaceutical database

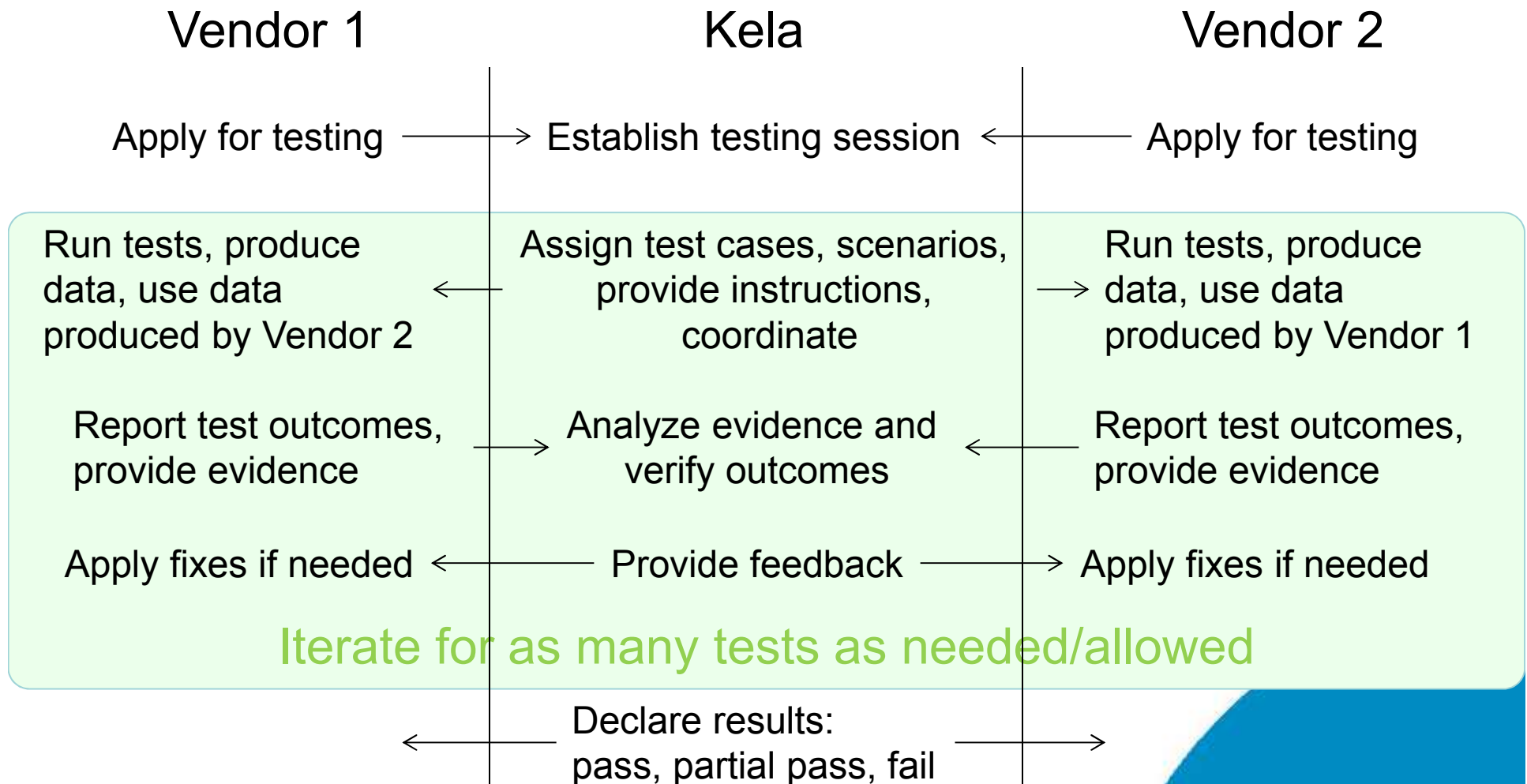


Interoperability testing requirements and procedures

Testing requirements

- Interoperability testing is a prerequisite for using Kanta services in EHR and pharmacy systems
 - Testing is mandatory
- In addition to testing, systems must pass audits
 - National audit criteria defined
 - Audits focus on data security and privacy protection
 - Criteria different for EHR and for pharmacy systems.
- Kela is responsible for organizing interoperability testing (incl. organization expenses)
- Software vendors are responsible for participating to the testing (incl. own participation expenses)

Testing process



What is tested (examples)

- Ability to communicate with national services
- Correctness of messages on the messaging level (HL7 MR)
- Validity of document structures produced by the system
- Ability to correctly interpret document structures produced by test partners and by systems tested previously (documents are available in the test environment)
- Support for all required use cases

What is tested (examples)

- Examples of functionality that is tested (ePrescription, pharmacy systems):
 - Fetch the list of available prescriptions, take prescription status, potential locks and reservations into account
 - Fetch prescriptions (documents) to be dispensed
 - Prepare dispensations, sign them digitally and submit
 - Cancel a dispensation
 - Modify a dispensation
 - Cancel a prescription
 - Reserve a prescription for daily dosage dispensations
 - Submit a prescription renewal request
 - Check the status of submitted renewal requests

Testing methods

- **ePrescription service**
 - Systems need to produce all required types of prescriptions and be able to correctly process such prescriptions made in other systems.
 - EHR systems and pharmacy systems have different requirements.
- **Patient Data Repository service**
 - Tests are based on a number of "patient stories".
 - Systems must be able to correctly support HCPs working with the stories, produce documents with correct structures and interpret documents produced in other systems.



Test infrastructure and tools



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Patient data management service

- Patient summary management
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 - Procedures
 - Lab
 - Physical findings
 - Risks
 - Health and care plan
 - Medications

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Other NCPs not yet connected

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Consent and will management

- Organ donation wills
- Living wills
- Opt-ins and opt-outs

- Test environment of a national eHealth system
- Test data

Other national services

- National code server
 - Code lists and terminologies
 - Form and document structures
- Healthcare and social care organizations register
- Pharmacies register
- Certification services
- HCP register
- Pharmaceutical database

Test infrastructure

- All parts of the national eHealth infrastructure have test environments for interoperability testing
 - ePrescription test environment
 - Patient Data Repository test environment
 - My Kanta pages service with access to the two environments above
 - Separate code server environment for testing reasons, as access rights are handled through the code server
 - HCP register for testing reasons, maintained by National Supervisory Authority for Welfare and Health
 - Test smart cards with certificates issued under the national Test CA maintained by the Population Register Centre
 - epSOS environments for pre-pilot testing

Test infrastructure

- Software versions in the test environment are the same or slightly newer than in the operation
 - Two interoperability testing environments in the near future:
 - 1) the same version as in production and
 - 2) the version to be installed next to the production
- Access to the test environments on the need-to-use basis, vendors must apply for access

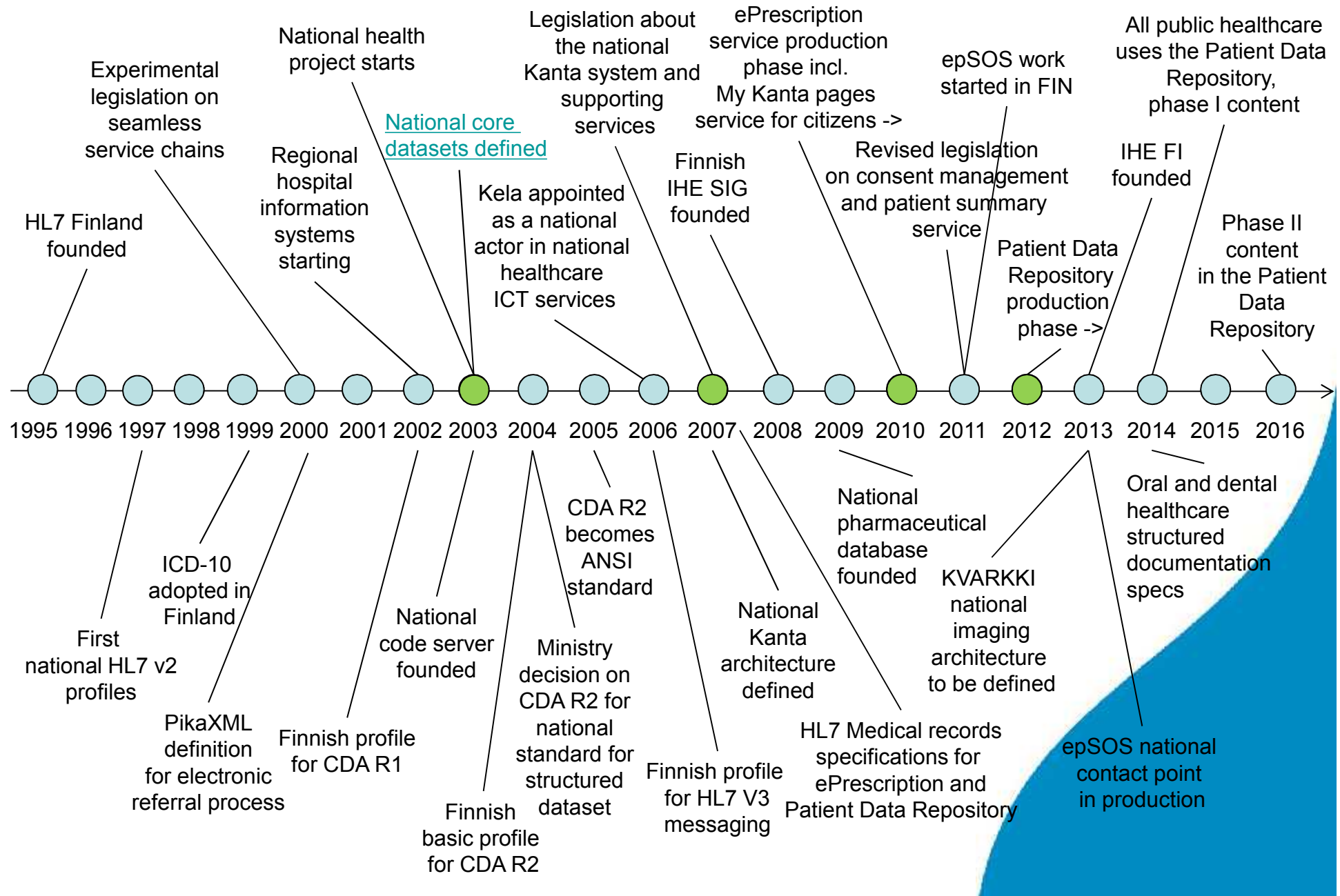
Testing tools

- Document validation service freely available
 - An instance of Gazelle EVSClient
 - Validation rules based on HL7 Finland specifications
- Kanta extranet for providing testing guidance
- Test management mostly manual (standard Office suite programs)
 - The main challenge at the moment
- SoapUI commonly used for testing national components
- Gazelle test management under consideration



Additional slides (standards)

Timeline of Finnish Healthcare ICT Standardization for Interoperability



Standards at a quick glance

- In healthcare organizations
 - HL7 v2.X (mostly 2.3)
- National services (ePrescription and Patient Data Repository)
 - HL7 CDA R2 (xx content profiles)
 - HL7 V3 MR
 - IHE XDS and related profiles (XCPD, XCA, XDR, ATNA, CT, XUA++, PCC, XDS-SD) in epSOS and radiology
- In some regional solutions
 - CDA R1 and CDA R2
- In the future
 - mHealth, personal telehealth, etc. standards will be relevant and there is interest to evaluate and start using relevant standards