



The Norwegian
Directorate of eHealth

Recommendation for using HL7 FHIR for data sharing



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Recommendation

The Norwegian Directorate of eHealth recommends to use HL7 FHIR for integrations based on data sharing in the healthcare sector.

The Norwegian Directorate of eHealth recommends that actors in the healthcare sector implement FHIR interfaces using national core profiles, documented best practices from HL7 Norway and the Directorate of eHealth and relate to current requirements and guidelines to ensure semantic interoperability across the sector.

The Norwegian Directorate of eHealth encourages projects establishing new FHIR interfaces to document and share their experiences

This document describes The Norwegian Directorate of eHealth's high-level recommendation to use HL7 FHIR for data sharing. The document describes guidelines for actors in the healthcare sector who are considering or have started using data sharing.

The Norwegian Directorate of eHealth has been following FHIR for several years. The basis for the recommendation is previous assessments by the Directorate, experiences from national and international projects, general adoption among suppliers and vendors, recommendations and use by ehealth authorities in other countries and other international standardization organizations.

What is data sharing?

By data sharing we mean sharing of structured data by means of common resources or services in real time. Collaboration through data sharing enables more dynamic information sharing for citizens and actors in the health care sector. A concrete example of such information sharing is when an actor requests or updates information from another actor. This allows multiple actors to collaborate on common information resources stored in one location, as opposed to message exchange where the same data is stored by senders and recipients of a message.

The current need for data sharing at a national level is especially driven by needs related to:

- More efficient sharing and update of health and personal information between health personnel
- Sharing of health and personal information between patient and health personnel (for example by use of welfare technology or patient portals)
- Need to make interfaces from national common solutions to third-party application providers

Data sharing is typically realized through an Application Programming Interface (API). The term API simply refers to an interface to a data program where specific parts of it can be activated (run) from another data program through calls to the interface.

What is FHIR?

HL7 FHIR (Fast Healthcare Interoperability Resources) is an open standard from HL7 International. FHIR was developed to meet the demands for more efficient and flexible development of standard-based integrations and better support for integration with modern technology such as mobile and cloud services. FHIR standardizes the use of REST and the information resources for data sharing between clinical systems, but there is a potential to use the resources for FHIR also for message exchange and document sharing.

FHIR for data sharing enables reuse of APIs across systems. When a clinical system expose data to common standardized APIs, it enables other clinical systems, applications, equipment or registries to relate to a standard interface, no matter which supplier they use to retrieve the information. This is independent of whether the consumer application is internal or external to the health care actor.

FHIR supports an agile standardization process which enables easier, faster and more flexible development of interfaces that also scales well. With the current pace of development, the traditional standardization processes take too long and are often not flexible enough.

One of the greatest benefits with FHIR is that it is easy for developers to use it. But to achieve interoperability in the long-term, it is necessary that FHIR is implemented correctly, and in a harmonized way across the sector.

Why is FHIR recommended for data sharing?

Data sharing as integration model

Data sharing based on open APIs has for several years been a popular integration model among the major international technology companies, but also in other sectors such as the financial industry. Data sharing is now being adopted on a broader scale also in health, and there is a need to standardize the information exchanged over these APIs.

Normative status

Version R4 of HL7 FHIR was published in January 2019, where 11 resources in the standard are normative. In order to reach normative status, several requirements are set for FHIR. Among other things, a resource must have at least five independent implementations in at least 2 countries. In addition, a certain number of ballots must have been completed. Although many resources are still at lower maturity levels, the core of the standard is now stable.

Adoption

There is great interest and increasing number of implementations with FHIR for data sharing both nationally and internationally. This is primarily because the standard is easy to use and covers new communication needs related to data sharing with for example mobile technology and cloud services.

The first FHIR interfaces in Norway went live between EHR and two clinical systems at Oslo University Hospital in 2015. At national level, helsenorge.no and The Welfare Technology program have FHIR interfaces in production and pilot production respectively. Grunndata (National masterdata) and SFM (Central Prescription Module in ePrescription solution) builds their integrations with FHIR, and Helsedataprogrammet (Health Data Program), EPJ-løftet (improvement of GP EHR systems), and Helseplattformen in Central Norway plan to use FHIR for interactions based on data sharing.

Common National Plan for next generation EHR for Helse Sør-Øst, Helse Vest and Helse Nord describes future use of FHIR for both information exchange between clinical systems and work flow. In addition, FHIR is used in several regional projects, especially in Helse Vest.

In the US and UK, the health IT industry adopted FHIR early, and has worked with the authorities to develop FHIR as a national standard for data sharing. We also see that major technology providers such as Apple, Google, Amazon, IBM, and others have gathered behind the health information exchange standard.

Standardization organizations such as PCHA (which publishes Continua Design Guidelines) and IHE have partnered to use FHIR as an exchange format in their standards. CEN defines FHIR as an exchange format in new standards such as International Patient Summary.

In "Innovation Insight for HL7 FHIR" (August 2018), Gartner states that FHIR should be a key component for healthcare companies who want to improve the interaction ability between applications and with third parties.

Previous recommendations on FHIR

This recommendation on the use of FHIR for data sharing reinforces The Norwegian Directorate of eHealth's earlier recommendations on FHIR (Assessment of International Standards (2016)).

The conclusion from 2016 was that FHIR could be considered for new applications that needed to share structured data. Due to the low maturity of many resources and limited distribution, only careful use in simple applications was recommended at that time.

In 2018, the Directorate performed an assessment of relevant standards that can be included in a framework for common information models. Here, FHIR was recommended as a representation of information models intended for exchange.

Need to coordinate implementation

FHIR is a flexible standard and represents a framework that needs to be adapted to the national context. FHIR has built-in flexibility so that the standard can be customized, and items can be added for local needs and requirements. This means that the standard can cover the necessary local needs, and at the same time represent an internationally standardized format.

To ensure semantic interoperability nationally, there is a need to coordinate the use and adaptation of the standard at the national level. Such national coordination is needed to enable the reuse of APIs. The Norwegian Directorate of eHealth hence recommends that measures are initiated to coordinate the use of FHIR in Norway. The Directorate encourages the use of national core profiles and adhering to national requirements and guidelines when needed for new data sharing interfaces.