New Concept / Change request proposal
Result, Lab Result

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Project	General interest	Contact	DCC
Dataset release	2024.1	Consulted expert	-

1   Rationale

The concept "Lab Result" available in SPHN Dataset 2023.2 features information on the test performed to obtain the result of a laboratory analysis, including details on sample, reporting time, test method itself, and expectations on outcome (reference ranges). This is mixing metadata related to a test and the results of that test. A result can in theory be used in other contexts and therefore should be made generic.

A generic form of Result concept would be beneficial to cover all current but also future types of results for other kinds of analysis. This change becomes even more evident with the updates done in 2024.1 to the concept Lab concepts, the Assessment concepts.

We propose a new concept "Result" to enable the annotation of outcomes of procedures, tests and other kinds of analyses.

We nevertheless keep the Lab Result as a concept to annotate Reference Value and Reference Range information only at this specific level rather than the general Result concept.

2   Comparison to other standards/data models

2.1 NCI Thesaurus

The NCI Thesaurus generally defines "outcome" as "the result of an action" and has for synonym "result".

3 Concepts:

3.1 Result (new concept)

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composed Of
concept	Result	outcome, value, or information which gives insight about something	Result	outcome, value, or information which gives insight about something					
composedOf	quantity	an amount or a number of the concept	quantitative result	quantitative amount or number of the result	Quantity				0:1
composedOf	code	coded information specifying the concept	result code	coded information specifying the result	Code	SNOMED CT or other			0:1
composedOf	string value	textual representation	string value result	textual representation specifying the result	string				0:1

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General concept name	Cardinality for concept to Administrative Case	Cardinality for concept to Data Provider	Cardinality for concept to Subject Pseudo Identifier	Cardinality for concept to Source System
Result	-	-	-	-

3.2 Lab Result (change request)

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composed Of
concept	Lab Result	outcome, value, or information which gives insight about a lab test	Lab Result	outcome, value, or information which gives insight about a lab test	Result				
inherited	quantity	an amount or a number of the concept	quantitative result	quantitative amount or number of the lab result	Quantity				0:1
inherited	code	coded information specifying the concept	result code	coded information specifying the lab result	Code	SNOMED CT or other			0:1
Inherited	string value	textual representation	string value result	textual representation specifying the lab result	string				0:1
composedOf	numerical reference	numerical reference associated to the concept	numerical reference	reference range or reference value that is associated to the lab result	Reference Range; Reference Value				0:1

General concept name	Cardinality for concept to Administrative Case	Cardinality for concept to Data Provider	Cardinality for concept to Subject Pseudo Identifier	Cardinality for concept to Source System
Lab Result	-	-	-	-

4   Pros and cons

4.1   Advantages
The new general concept Result can be reused in a wide range of concepts as is to encode results that are codes, quantities or text-based.

4.2   Disadvantages
The envisioned changes to Result also involve changes to multiple other concepts, namely Lab Test, Oncology Treatment Assessment. Consequently, backward compatibility of a new ontology is compromised and existing data extraction pipelines most likely have to be updated.

5   Impact on SPHN Dataset

The proposed changes require the creation of a new concept Lab Test Procedure. Moreover, they impact the existing concept Lab Test which will be adapted accordingly.

6   Discussion

The new concept Result is general enough to be used in multiple contexts by simply restricting codes for instance in different use cases.

The new concept Result is intended to be used in specific contexts and therefore can never be instantiated on its own.
The Lab Result enables to encode the Reference Range or Reference Value associated to a particular instance of a lab result.

7   Example

Result - example of result where the value is a numeric element with an associated unit
    quantity:
        value: 135.0
        unit: mmol/L
    code: -
    string value: -

Result 2 - example of result where the value is coded in SNOMED CT
    quantity: -

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code: 271636001 |Pulse regular (finding)|
        string value: -

Result 3 - example where the result is indicated by colors (e.g. pH Indicator Tests), thus with a string value
        quantity: -
        code: -
        string value: "red"

Lab Result 1 - example with a reference value
        quantity:
                value: 87500000
                unit: [CFU]/L
        code: -
        string value: -
        numerical reference (Reference Value):
                quantity:
                        value: 7500000
                        unit: [CFU]/L

Lab Result 2 - example with a reference range
        quantity:
                value: 149.0
                unit: mmol/L
        code: -
        string value: -
        numerical reference (Reference Range)
                lower limit:
                        value: 136.0
                        unit: mmol/L
                upper limit:
                        value: 145.0
                        unit: mmol/L