

Quantifying the Use of HL7[®] FHIR[®] to Promote Healthcare App Interoperability

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Background

The Substitutable Medical Applications, Reusable Technologies (**SMART**) on Fast Healthcare Interoperability Resources (**FHIR**) allows deployment of interoperable health apps.

FHIR is continuously being modified to maximize interoperability.

The development of **US Core profiles** facilitates interoperability by further defining minimum mandatory elements, extensions, and terminologies in FHIR resources.

Understanding **priority development areas** for the standard are crucial to promoting interoperability.

Objective

To assist in identifying priority areas for FHIR resource and US Core profile development by surveying FHIR use among existing healthcare apps.

Methods

FHIR apps were sampled from two sources: the SMART App Gallery¹ and the yearly AMIA/HL7 FHIR Applications Competition (2018-2021).

This sampling was done to ensure the apps:

1. Were of high quality;
2. Included varying purposes and clinical foci, and;
3. Could be used with multiple EHRs

To gather information regarding resource use:

- App authors were contacted directly
- Analyzed when open-source code was available
- If the above options were unsuccessful, app demos were assessed for data requirements which were subsequently mapped to the appropriate FHIR resource

Results

SMART Gallery: 99 apps available
FHIR App Competitions: 36 apps available

52 apps were included in the analysis

Apps were excluded if:

- Resources could not be acquired from open-source coding or app demos
- App authors did not respond and resources could not otherwise be found

RESOURCE	FHIR MATURITY LEVEL	NUMBER OF APPS	FREQUENCY	US CORE PROFILE?
PATIENT	Normative	41	78.8%	✓
OBSERVATION	Normative	39	75.0%	✓ *
CONDITION	3	22	42.3%	✓
MEDICATION	3	17	32.7%	✓
ALLERGYINTOLERANCE	3	15	28.8%	✓
PROCEDURE	3	12	23.1%	✓
DIAGNOSTICREPORT (RESULTSSECTION)	3	10	19.2%	✓ *
MEDICATIONSTATEMENT	3	8	15.4%	
FAMILYMEMBERHISTORY	2	7	13.5%	
QUESTIONNAIRE	3	6	11.5%	
QUESTIONNAIRERESPONSE	3	6	11.5%	
CAREPLAN	2	5	9.6%	✓

*Some observations/data within the Resource have associated US Core profiles

Discussion

Condition was the most frequently used **non-normative** resource, which may be a priority area for development.

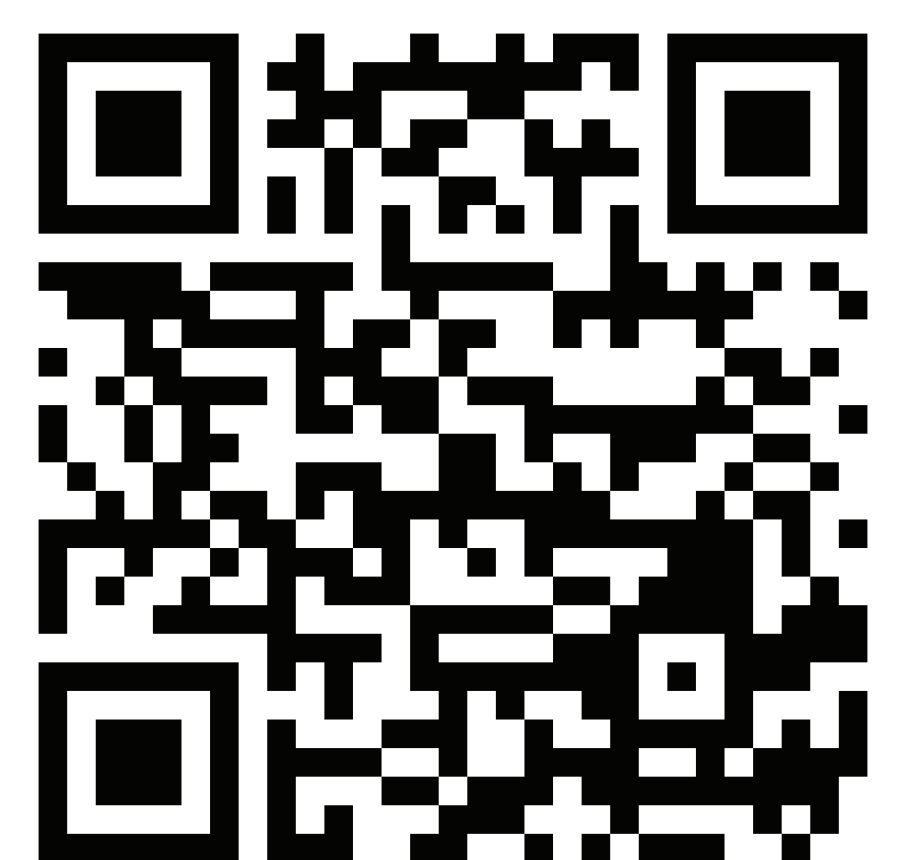
MedicationStatement, FamilyMemberHistory, Questionnaire, and QuestionnaireResponse were among the top 12 most used resources without associated **US Core profiles**.

Continual assessment of FHIR resource use could help to inform the development of the standard and facilitate the development of US Core profiles.

References

1. Boston Children's Hospital. (n.d.). SMART Health IT. Retrieved from <https://smarthealthit.org/>

Contact



Poster copies available upon request

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