RFP Architecture Questionnaire

Please fill in your project’s details. For reference and examples from other projects, please refer to the following documents - they have different forms, but mostly the same information bits:

[פרוייקט "טופס 17"](https://30e29f3e-4f90-440e-973b-74abb374384d.filesusr.com/ugd/3ca9ed_0b93a44c91b241689247bad44ad9cacf.docx?dn=Tofes%2017%20-%20RFP%20Architecture%20Questionnaire%20%D7%9C%D7%90%D7%AA%D7%A8.docx) ו [פרוייקט "אשפוזי בית"](https://www.fhir-il-community.org/_files/ugd/3ca9ed_907fd5f2c85c45e1b5418c156d5e317e.pdf).

Also, see Appendix A for general guidance on implementation approaches.

# Basics

|  |  |
| --- | --- |
| What are the business entities involved, how many?Examples: * 1 HMO, 1-5 hospitals
* Dozens of labs, potentially hundreds of client apps
* 10-15 research facilities
 |  |
| Existing infrastructure storing/managing clinical data, if applicable.Examples: Epic EMR, Chameleon, Legacy mainframe |  |
| Existing integration platforms, if applicable.Examples: Intersystems, Tibco |  |
| FHIR architectural approach (FHIR server, Façade, Asynchronous messaging, Hybrid): |  |
| Are the components all on-prem, in cloud, hybrid? If in cloud, which one(s)? |  |
| What infrastructure/platform will be used for FHIR server/façade/messaging? Provide vendor/system names and is it already present in your organization or will be acquired/installed for the project? |  |
| Is the FHIR interface read-only (only exposing existing clinical data in FHIR) or read/write (enables adding new clinical data and/or modifying existing one)? |  |

# Diagrams

1. Overall Architecture diagram/s.
	1. Should include main components such as source, target and intermediary systems of data/command exchange, application and storage components, security components.
	2. Should indicate cloud/on-prem separation, if applicable.
	3. Should indicate vendors and platform names.
	4. Should indicate protocols/data formats where applicable.
	5. You’re welcome to add any verbal explanation for better understanding.

(See example in Appendix B)

1. Data flow diagrams for common use cases / API. Please attach a number beside each call in the sequence and add verbal explanation for each step

Example:
(See example in Appendix B)

# Data handling and sync

|  |  |
| --- | --- |
| Is the data exposed in FHIR originating from/should be copied to other organizational systems? |  |
| If the data must be synchronized with other organizational systems - what is the acceptable synchronization delay? |  |
| If FHIR façade/Server will be used - where and how data will be stored? |  |
| Will space optimization (e.g. compression, BSON) be used?  |  |

# Sizing and scale

Please provide figures you know or estimates, if exact numbers are not known at this stage.

|  |  |
| --- | --- |
| What is the total dataset size that you will be exposing via FHIR (overall size of the entire clinical data available through FHIR, in MB/GB)? |  |
| What's the average number of calls per day expected to the planned FHIR endpoint(s)? |  |
| If usage peaks are expected, please describe peak length and number of calls.Examples: - most of the working day around 100 requests an hour, but from 8am to 9am expected peak of 5k requests. - almost none during the week, but around 300 throughout the weekend. |  |
| What is the average size of a single data payload transferred via the planned FHIR endpoint(s)?  |  |
| Will the FHIR interface be exposed to multiple consumers? If yes, how many?Examples:* To all labs, potentially hundreds
* From the app side to the 4 HMOs, from the HMO side - only to the app
* Now only to one, maybe more in the future.
 |  |
| What is the expected number of concurrent requests (normally and during peak)? |  |
| Where applicable - how scalability/availability/redundancy will be addressed? |  |

# FHIR infrastructure and behavior

|  |  |
| --- | --- |
| Does the infrastructure/platform that will be used for FHIR natively support FHIR in client and/or server modes (i.e. FHIR client and/or FHIR server/facade is built into the platform) or it will require additional extensions/modules/custom development? If custom development is required, indicate runtime platform/programming language. |  |
| Is there a need for custom behavior on top of the supported FHIR specifications, which will require any customization or development (please detail which ones)? If custom development is required, indicate runtime platform/programming language. |  |
| Will FHIR profiles conformancevalidation (except for codesystems) be performed and if yes - how it'll be done (online/ batch, what tools/infrastructure will be used)? |  |
| Will codesystems validation be performed and if yes - how it'll be done (online/ batch, what tools/infrastructure will be used)? |  |

## Security

|  |  |
| --- | --- |
| Network security measures (VPN, static IPs, TLS & certificates, etc.)?  |  |
| FHIR endpoint security: what approach will be used (OAuth2, SMART on FHIR, other?) |  |
| Authorization/access control: do users have limited access rights and if yes - how those are implemented (SMART on FHIR scopes, launch context provided by EMR, other?) |  |
| Are any FHIR resources planned to have attachments in them? If yes - are any security precautions planned about them? |  |
| Are FHIR security labels used? If yes - how? |  |
| Audit: does the solution provide means to get audit trail of access to FHIR data and/or specific operations on it. If yes - how? |  |

## Miscellaneous

|  |  |
| --- | --- |
| How will the FHIR interface be monitored for quality & availability? |  |
| Will specialized security platforms/gateways be used for online/asynchronous schema validation? If yes, do they natively support FHIR? |  |

Any other additional details worth mentioning:

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# Appendix A: Implementation approaches

|  |  |  |  |
| --- | --- | --- | --- |
|  | **FHIR server** | **FHIR Façade** | **Messaging** |
| Legend:- Green: well suited- Orange: partially suited- Red - Ill suited | online request/response style communication with the data persisted in the FHIR server itself and replicated in/out to other systems as necessary | online request/response style communication without persisting the data, but rather dynamically translating online requests to/from FHIR and forwarding them to other systems | asynchronous/batch communication, exchanging FHIR payload via message bus/queue/file shares/כספות |
| Large dataset used by / originated in other organizational systems that do not support FHIR |   |   |   |
| Small dataset / dataset dedicated for specific task and not used by other systems |   |   |   |
| Business needs call for online interaction |   |   |   |
| Data must be in sync with other systems in near-real time |   |   |   |
| System must support high number of concurrent requests |   |   |   |
| Time to market & solution complexity |   |   |   |
| Business needs require advanced functionality on the server side (e.g. search) |   |   |   |
| Large volumes of data must be transferred |   |   |   |

### Implementation approaches diagrams

#### Approach #1 - using FHIR server



#### Approach #2: Using a FHIR Façade



#### Approach # 3: Using Asynchronous messaging



# Appendix B: Sample diagrams

Architectural diagram:



All the components are on-prem.

Data flow diagram:



1. Patient swipes his card in the kiosk
2. Ichilov HealthConnect system gets the call, validates card details, calls Namer
3. Namer gets patient data/services
4. HealthConnect validates data, checks the required procedure Eligibility
5. HealthConnect checks if HMO is Meuhedet, if yes - calls Meuhedet FHIR endpoint
6. Meuhedet FHIR gets patient data, returns eligibility (Tofes 17) if it is in place (in HMO)
7. HeakthConnect gets the eligibility response, validates & registers it,
8. If everything is ok, calls Namer
9. Namer prepares the labels for the procedure
10. Kiosk prints the labels