# Aprima

**Healthcare FHIR RESTful API’s**

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## Abstract

Medical records are mandated to be stored in databases to modernize healthcare information systems. Databases of electronic medical records (EMRs) need to be accessed easily from applications and must provide interoperability across healthcare information systems. **FHIR (Fast Healthcare Interoperability Resources)** is a new standard that is being developed for EMR databases. This project is aimed to assist our sponsor, **Aprima**, in implementing their RESTful API using the new FHIR standard; thus, helping to create a more user friendly applications for end users to interact with their medical providers.

## Results

FHIR endpoints were implemented in C# using the .NET framework, which are hosted on the Microsoft Azure for the clients to login to generate their token. Token is then used with the GET request's header to send the request to the endpoint with the resource type and resource id which gets the FHIR resource in JSON format.

Validator console application parses in the files containing the FHIR resource endpoints in JSON and validates them using the DSTU3 context with the Schemetron library provided by the HAPI validation which checks them against standard schema definitions.

## Architecture

Implemented using C# through the .NET Framework.

### Additional Tools:
- Visual Studio
- MS SQL Server 2016
- Git
- SourceTree
- Postman
- OneNote
- Trello
- Slack

## Impact

Implementing RESTful API endpoints using the FHIR structure dramatically innovates the way healthcare industry exchanges data. API functionality supported by FHIR with various different resource types includes import and export of data from vendors utilizing the standard. For example FHIR provides resource endpoints for lab results, procedures, medications, organizations, practitioners, etc.

- Mobile healthcare applications and the cloud
- Medical device integration
- More flexible custom workflow

## Metric

Our team decided to implement a software testing metric system. We created a validator that validates the out of the FHIR points to assure that they output the correct information in a standard layout.

## Summary

Throughout the semester, our team worked on implementing FHIR endpoints. These FHIR implementations will be integrated into our sponsor’s backend RESTful API.

All of our work will be kept with Aprima which will eventually have these FHIR implementations being used by a front-end of an application. This application is used by the customers of our sponsor.

Additionally, we were able to create a validator that can validate current and future FHIR implementations.