Andy’s Measures Engine using Pophealth Measures

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What is popHealth

- Office of the National Coordinator for Health Information Technology (ONC) sponsored initiative.
- popHealth is an open source reference implementation software service that automates the reporting of Meaningful Use quality measures. popHealth integrates with a healthcare provider's electronic health record (EHR) system using continuity of care records. popHealth streamlines the automated generation of summary quality measure reports on the provider's patient population.

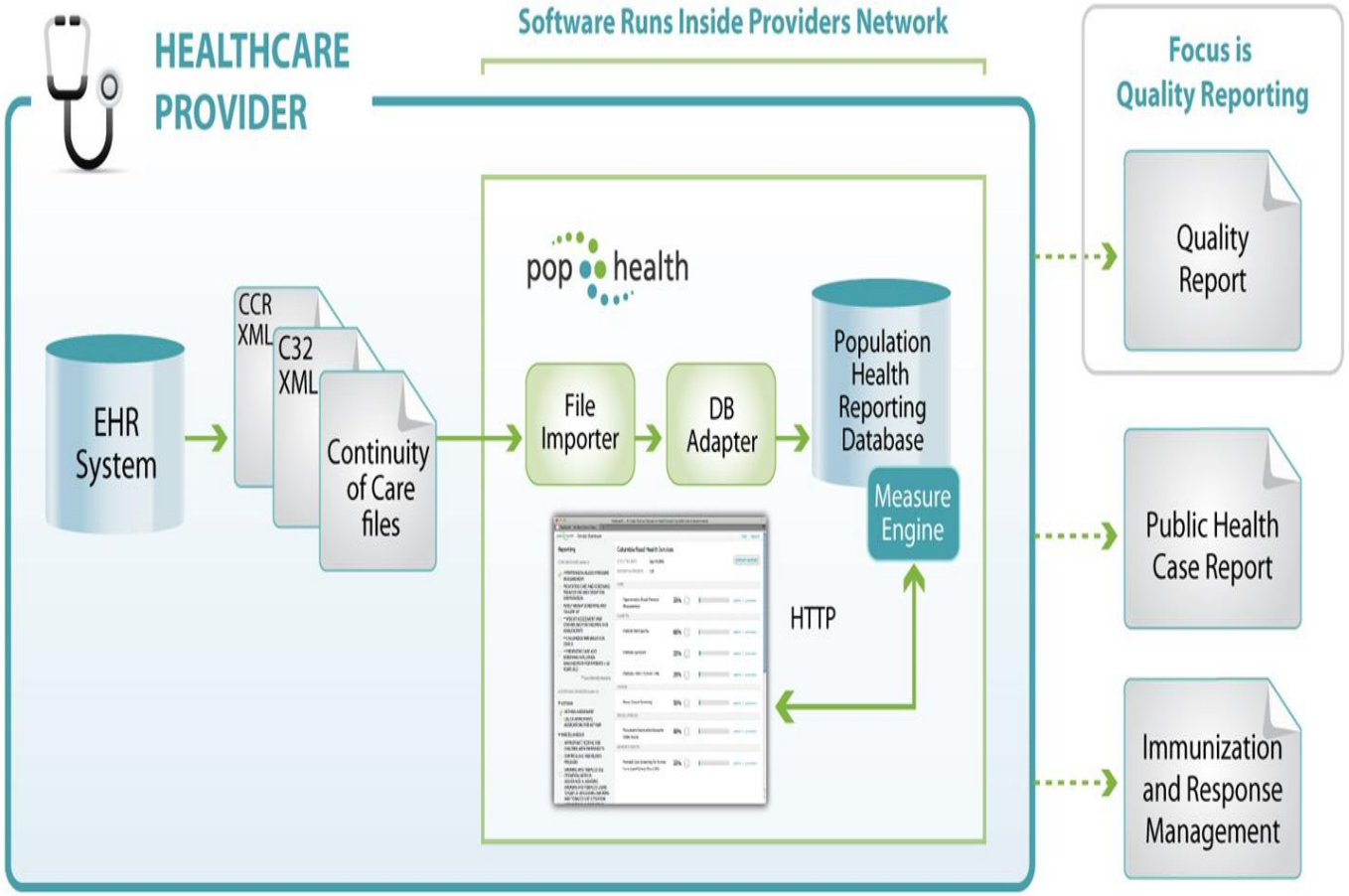
popHealth
Project Objective

- popHealth is designed to simplify the reporting of summary quality measures, and streamline the exchange of summary quality data. Demonstration of Meaningful Use requires the reporting of quality measure data.
- This reference implementation open source software demonstrates how providers can rapidly produce and submit Meaningful Use clinical quality measures. Further, popHealth provides EHR vendors with a reference implementation software package to guide the development of further Meaningful Use quality measures.

popHealth Intended Users

- popHealth supports healthcare providers and EHR vendors by reporting clinical quality measures from electronic health record continuity of care files. Providers are empowered to better understand, and analyze the health of their patient population, and meet Meaningful Use reporting objectives, through reports of clinical quality measures. EHR vendors and healthcare providers are free to download, use, and integrate the popHealth software in their systems.

Architecture



Pophealth
Development Platform

- Built using Mongodb , JavaScript , Ruby on Rails, Java , ….
- http://projectpophealth.org/

Andy's ME

- Pophealth is a great implementation.
- If you want to use traditional architecture (Java , SQL) and would like to leverage "Pophealth" then Andy's ME comes into picture.
- I use Pophealth Measures. What I developed is a façade around Pophealth Measures. **I only need measures from PopHealth, I do not need anything else.**
- **This ME can be easily integrated into any existing Java code or you will be able to create a service very easily.**
- I process & calculate patient Measure Results as I process patient records .
- Actual measures calculations happens in the end, which is a SQL query. Use the power of SQL to calculate measures. I have created service surrounding measures calculations. For this measures calculation to work you will need to enable storing patient results to the database.

Andy's ME engine.

- Three API's are provided
- ME Engine API

  Direct ME Engine API
- ProcessProviderMeasures

  Provides higher level functionality.
- MEPool

  Offers Pool of "ProcessProviderMeasures" resources.

ME API

- void initialize(String propertiesFile)
- ArrayList<HashMap>calculatePatientMeasure(
  - String patientId,
  - String patientJSON,
  - Date effDate)

ProcessProviderMeasures

- Provides lot of higher level functionality.
- Create output file.
- Insert Records in the database.
- Consume files.
- Can use JDBC driver or DataSource
- Also provides debugging functionality
  - Process Only One measure
  - Process Only specific patient

Continue ….

- ProcessProviderMeasures(
  - String propertiesFile)
- ArrayList<HashMap>processPatientFiles(
  - String measurePeriod,
  - String providerId)
- ArrayList<HashMap> processPatientRecords(
  - String measurePeriod
  - ,String providerId,
  - ArrayList<String> patientList)

ME Pool

- ME is very fast but initialization i.e. Measures loading takes time.
- Pool is initialized with pool of ME engines. Engines inside Pool are initialized with Rules.
- Client can get() / release() engine’s from the ME Pool.

Continue ….

- MEPool(String poolName,
  - int size,
  - String propertiesFile)
- ProcessProviderMeasures get()
- Boolean release(ProcessProviderMeasures me)

ME Demo

- Bin directory contains all the scripts.

  RunMEAPI , RunMEBatch , RunMEPool, RunMEReport
- Presently configuration file is configured not to insert records in the database.
- Please change directory to bin and execute appropriate scripts.
- Input Patient JSON are stored in data/input directory.
- Output files are generated and stored in data/output directory

What I do not have

- This ME accepts patient records in Pophealth JSON format.
- PopHealth has developed “CCR-Importer” functionality, that should be useful to generate Patient JSON records.
- What we need is QRDA to Patient JSON translation. So far I have not done any research to simplify this process.
- I have validated lot of patient records but not every single use case.

License

- **You will have to follow “Pophealth” License guidelines.**
- **To use Andy’s ME, You will have to say that “Your effort will use Andy’s Measures Engine component”.**

Q&A