Meeting Minutes: 1upHealth (Private Sector)

Date: 07/24/2018

Time: 11:30am to 12:30pm EDT

Attendance:

Ricky Sahu = CEO & Co-Founder, 1upHeath
Joe Cosentino = Senior Leadership/Business Partner, Sprezzatura
Shane Johnson = Management Analyst, Sprezzatura
Nitin Sahai = Enterprise Cloud Architect, Sprezzatura
Thomas Holliday = Senior Manager/Microtask Lead, Sprezzatura

Interview Agenda Items/Questions:

General:

- Services that they provide?
    - Brief overview provided by Mr. Ricky Sahu, CEO of 1upHealth.
        - 1upHealth product supports about 70 companies with 160+ health systems building off of their APIs (general overview). Per their Website, 166 Supported Health Systems with over 1000 locations.
        - Website Link: https://1up.health/
    - FHIR APIs discussed briefly (I.e. FHIR in PROD and testing APIs). It was mentioned that VA is 'experimenting' with this right now. Mr. Sahu has worked with the VA on prior requirements.
    - Also, discussed briefly was meaningful use 3 health care data via API.
    - Built 1upHealth to help App DEV folks; help them connect to 166 healthcare systems across the US including Mayo Clinic, Inova, etc.; Can get data in a matter of seconds
    - Other informational elements touched upon included:
        - Medicare data
        - External data aggregation: Works directly off the APIs that they provide. Do not need to worry about security, data sources, etc.
    - Specifically, for the VA, VA patient data between Inova and VA was touched on. They can take their data and share it within seconds.
- What is your role in your organization?

- Mr. Ricky Sahu is CEO and Co-Founder of 1upHealth.
- Prior to 1upHealth, Mr. Sahu mentioned that he was the first employee and Director of Engineering at CareJourney (which, per their Website, '... analyzes claims data and publishes APIs for Accountable Care Organizations to improve care and reduce costs'). That is how they learned about this space with 1upHealth.

- How many API's do you build each year? How many are for external consumption? How many for Internal consumption? What are the security concerns for internal versus external consumption? Firewall relaxation process and procedures.
  - Question was asked as to, "What's under the hood?" (with regard to your solution offering). Mr. Sahu stated, "Aggregation and platform."
    - Aggregation = 7 total healthcare vendors
    - Tech under the pieces of aggregation = FHIR (various versions)
  - EPIC mentioned along with Cerner (need to do work to canonicalize the data); 160+ health systems behind their backs (including custom work with the data directly, enrichment of the data). Use directly off of their platform so that users do not need to use their own database (DB). Once on 1upHealth, users can use their DB (different than EPIC and Cerner, which tends to be 'Read-only' access). No need with them to build their (a customer's) own API layer on top of their App.
  - Users of their APIs/App can write back data directly to them. A provider can directly see their data through the Enterprise Health Record (EHR) system.
  - The discussion continued around enabling various Use Cases. MyHealth referenced = Wristband technology. Can be scanned by an EMS medical responder. Also, touched on was selling of data to nursing care, police, construction workers (unions). World Medical Bank also referenced (e.g. life insurance plans); using already captured data to help individuals obtain coverage without needing to get another physical check-up again.
  - Question was raised around maturing the platform (I.e. How did you decide what to build 1st, 2nd, etc?).
    - Recall from prior work experience how hard it is to get healthcare data (I.e. how to get healthcare data into 3rd party healthcare data app)?
    - Currently, the focus is on heading down the patient advocate path (I.e. enabling patients to get their own data, when they want it, need it, etc).
    - As 1upHealth, they built everything in FHIR first (I.e. all of the data is based on FHIR [querying, DBs, etc]). Once you know/figure out the healthcare system that the provider brings to the table, developers can then build off of what 1upHealth provides.

        - One feature mentioned in particular is typing in any doctor name or specialty to find a specialty doctor.
- Do you utilize external industry publications such as Gartner?
    - N/A

Prioritizing API's to Build:

- How do you prioritize the API's you're building? Do you use an Agile Backlog, or other method? Do you evaluate based on Level of Effort and ROI, or use other metrics? Do you prioritize APIs as to their eventual utilization across the enterprise versus a single project?
    - How does 1upHealth prioritize its work?
        - Per Mr. Sahu, 1upHealth has an Agile backlog. So, the focus is on working on whatever people have requested the most. If there is something challenging to figure out, then they focus on that as the priority (I.e. subscriptions for alerts for new data not handled natively [typically] through the FHIR App; they have the ability to do what a user/customer wants for that kind of data).
        - Question was asked related to a new med being prescribed with the NCD code? Answer is that 1upHealth can cover any of those because it works off of the FHIR API (which helps with workflows, etc).
        - Question was asked if the solution pushes API alerts. The short answer is yes. A Development (DEV) person can create alerts off of the available data. A positive is that you can build any necessary system off of their platform. Tried to build it out in the best way possible.

Additional Follow-on Questions Asked [based upon the natural flow of the conversation]:

- Question raised related to API exposure, micro API model.
    - 4 major APIs discussed:
        - Admin API: Users and permissions mgmt
        - Connect API: Connect health systems and sensors
        - Open Data API: Load up info from public sources (I.e. all of the meds and their codes, other APIs, etc)
        - FHIR API: Read and write access to data. Supports Tier 2 and 3 and can create custom FHIR resources (if desired).
- Question asked about how they manage the versioning of the APIs.
    - Answer provided is that they have not had to change that much. However, 1upHealth has versioning within the URL.

    - In terms of versioning the data, version history is tracked via the FHIR API.
- Questions asked about how 1upHealth got the EPIC, Cerner, and other Apps agreements and SLAs in place.
    - Answer provided was 1upHealth set up agreements with their DEV programs, looked at Terms of Service, etc. Went through all of the checks; more of a platform versus an end user Apps (needed to do more). They interviewed the Apps, and looked at their Terms of Service, privacy policies, etc. Had to review more demos, etc.
    - Regarding SLAs, Apps Status Dashboard referenced (this is something that you have to look at when you need to look at it). Above '4 9s'; don't have anything in place for SLAs credits, etc. Looking to build more on this in the future
- Question raised about 'Whitelisting' to include what does that take, and how difficult is it to get that done.
    - Answer provided is that it is not that difficult at this point on the DEV side.
    - Patient data related items are not beholden to HIPAA, but 1upHealth follows those guidelines.
- Question raised about security of the solution set.
    - Mr. Sahu stated that their solution is a SSL and Token based model. In addition, before and after PROD, they need to flip a flag on the back end if something did not go through their check (noting that it is a manual process to flip the flag).
    - Token received before that, but do not inherently have access to health data.
- Question asked about maximizing the DEV experience for the App.
    - Overall, a good experience (had issues early on). Have worked with dozens of healthcare apps. So, things 'just work.'
    - Healthcare Apps that are working with them, they let them know what they want. For new users, they open up the API and answer questions, address expectations, etc.
- Question asked related to test environments (I.e. one test environment exposed to the consumers and one PROD environment?). Mr. Sahu answered with an affirmative. Also, one internal environment utilized. Mr. Sahu also referenced validating user experience ("fully baked"). After something is in PROD, their are automated tests every 10 minutes that show up on their dashboard.
- Question raised about the Operation and Maintenance (O&M) side of the house related to how they deal with outages?
    - Mr. Sahu stated that they are talking with Cerner (and others) to deal with that directly, to ensure that their systems are working correctly. Need a direct Account in order to

access that/do that (not for all, but for some). Only affects NEW health connections, not existing ones (already have the data for those).
    - 95-99% of their product is built (and tested) in-house (in part, because there are not a lot of great test suites out there). FHIR is good; custom built by them in-house.
- Question raised about 1upHealth interest in working with the VA.
    - Mr. Sahu stated that yes, there is interest there. 1upHealth has already done a lot in this space. Have similar customers (Israeli customer referenced; FHIR strategy mentioned). They (the Israeli company) have 9 million patients, and are testing 1upHealth out at this point (moving forward in the upcoming year). Yes. Interested in VA external and internal DEV (APIs related).
    - Two VA champions (for APIs) are Mr. Bill James and Mr. Drew Myklegard.
        - FHIR Version 2.0 referenced. Looking to expose about a half dozen platforms/systems/data sources.
        - API Platform (prior Lighthouse project) referenced.
        - 6-12 months forward … VA moving forward
        - VA wants to create a marketplace for the private sector to speculate on (desired/needed) APIs (for industry to monetize it).
            - Mr. Sahu asked is this is Patient Access vice Institutional Access.
                - Talking with other providers regarding taking the data from FHIR, store it on 1upHealth, and then enable a governance model where healthcare Apps access data within the walls of the VA (for example), because the data is 'containerized' within the 1upHealth App.
                - Would need a FISMA 'High' (security) container to be in full compliance (just throwing out that idea).
                - Can build upon VA APIs and consume it. They like that idea; can test in their environment with fake data, etc.
                - Would be beneficial to both parties. Sprezzatura stated that they will bring up the idea/concept with their known government POCs (great idea).
            - Would like to stay on top of the proposal work (consulting vice DEV/API Dev engagements). Open to VA personnel introductions. Sprezzatura welcomes the opportunity to work with 1upHealth; will get the introduction out there.
        - Mr. Sahu asked what is the technology that the VA is using to build this all out.

        - Mulesoft platform. It does not call directly back to VistA, but rather back to the CDW/Data Warehouse (updated every 24 hours). Can expose the initial resources to the pilot.
- Mr. Sahu asked if the VA allowed to submit to the US Government grants (programs)? Guessing not since they are a US Government Agency, but willing to look into it (follow-up required).

Prioritizing API's to Build (con't):

- How much of your API backlog is defined by a Consumer's request? How much do you attempt to anticipate the needs of Consumers and build API's speculatively? Should speculative API development be more or less constrained by defined governance specifications?
    - Reference above (in part). Not addressed specifically with these questions.
- How do you make choices between building Experience layer API's vs Process layer vs System layer API's? Experience layer API's vs Process layer development could conceivably be performed by different development team – how will the governance model be enforced when there is a multi-team development environment?
    - Not addressed specifically with these questions.
- Do you allow Experience layer requirements to drive build prioritization on Process and System layer APIs? If not, why not? Or is the option of the building of "mocked" lower level API implementations (Process and System)?
    - Question asked about 'Mocks'/'Mocking.'
        - Mr. Sahu stated that testing is from an App Dev person perspective. Yes. It is completely like a 3rd party is using it.
- If you have API's/services on legacy platforms, how do you decide when port those over to a new platform? Additionally, how these legacy applications will be "ported" – re-hosted, re-factored, re-built?
    - Not addressed specifically with these questions.

Standards to Which to Build

- Do you have multiple, unrelated teams, delivering API's into the same environment? If so, what lessons have you learned about configuration management across the environment/teams? What level of maturity are your Agile, CI/CD, Dev/Ops capabilities?
    - Not addressed specifically with these questions.
- Does your organization maintain formal standards for: API Contracts, Naming Conventions; Version Control, Branching, and Merging; Testing Requirements; Exception Handling; Logging;

Security? Would you be able to share any documentation? How is this documentation presented – web pages, WIKIs, Playbook SharePoint sites etc.?
    - Reference prior feedback logged above.
- Do you experience a need to keep documentation and configuration control minimal/light? How do you ensure you're minimizing paperwork/bureaucracy and maximizing code delivery?
    - Not addressed specifically with these questions.
- How do you enforce standards across multiple development teams?
    - Reference (in part) prior feedback logged above.

Consumer Experience

- How many customers external to your organization consume your APIs?
    - From above/prior mention, 1upHealth product supports about 70 companies with 160+ health systems building off of their APIs (general overview). Per their Website, 166 Supported Health Systems with over 1000 locations.
- What have you learned about development, testing, deployment that you apply to maximizing consumer experience?
    - Reference prior feedback logged above.

Closing Questions

- Are there any internal documents (not published on your webpage) that you could share that would show how you apply governance internally?
    - Not addressed specifically with this question.
- To whom do you look to for API governance best practices, with who else should we speak?
    - Not addressed specifically with this question.
- May we please circle back with any follow-up questions?
    - Available for additional questions and follow-up.

Additional Reference Information and Analysis

Microtask Requirement

As the VA Lighthouse (now API Platform) Product Owner seeking the appropriate Governance model, I would like to understand, with the intention to adopt, best practices from the private and public sector, specifically for prioritizing APIs to build, standards to which to build APIs, and making the APIs usable by external consumers. We would like the primary research performed to gather best practices around:

- Characteristics of effective models in the public and private sector, and who is successfully using them.

  Including the utilization of leading edge API development enabling technologies (CI/CD, Dev/OPS, Micro service, Containers etc.).
- Lessons learned from these organizations (both what is working and what isn't)
- Highlight strengths and weaknesses of selected governance models.

Interview Analysis

Dedicated User Permission API - 1upHealth created a single API "to programmatically create users and granularly manage their data permissions." This uses OAuth2 tokens and manages permissions across the rest of the API's 1upHealth exposes.

> Analysis: VA already has multiple permission schemes for its publicly facing APIs. D2D, the DVP Pilot, and Vets.gov are not coordinated on this. VA could potentially focus on building or acquiring its own dedicated User Permission API and exposing that early in its API Platform program. The requirements effort on this would likely be a complicated one given VA 6500, HIPAA, PHI, multiple business line requirements, etc. This would however likely speed adoption of all subsequent facing APIs.

Leveraging Requesting Consumers to Beta Test Functionality and Documentation - 1upHealth will not engage any developers in testing until 1upHealth as thoroughly tested their own API. They use a reference implementation model whereby they test the API's as if they were a Consumer API. Once that is complete, they will invite in the application developer that originally requested the functionality for a final check of the API and documentation before going to Production. This is more about a test of the third party's consuming API, than about testing 1upHealth's, but it does provide a final check on 1upHealth functionality.

> Analysis: This is consistent with our testing schemes in our interview process. We recommend that VA require its contracted developers to be responsible for Reference Implementation testing of their own API's prior to any final testing with a consumer.

EHR Value Creation Above Cerner, Epic, and other Provider Systems by Aggregating Provider, Patient, and Sensor Data - 1upHealth creates value for individuals and 3rd party application developers by layering above the Cerner and Epic (and other) EHR's of providers. They maintain their own record of the patient with its own canonical model mapped to popular EHR's. This record can include inputs from multiple Providers. They include in this user inputted information as well as sensor (eg wristband input).

Analysis: VA will have a challenging time deciding what API's and data it should own as well as deciding what it should share with other data owners. This has implications for choosing what API's to develop. For instance, should VA own an API (and accept data) that enables a Veteran to store information from outside provider for treatment not associated with a service disability? Or, will VA be able to ingest sensor data from a third party API? We recommend that any API Governance initiative include liaison with VHA on forward looking policy questions concerning health data sharing beyond what is maintained within the Veteran VistA and Cerner records.

Communicating System Outages in a Multilayered Orchestration - 1upHealth experiences a similar challenge to the D2D model in VA. They must be able to communicate outages in a multi-layered orchestration to a third party application consuming their services. They do this by providing a web page dashboard that system administrators of consumer applications can manually check. They are still maturing this process with the ideal being that 1upHealth makes periodic (every few minutes) calls in Production to underlying provider systems using test data. The dashboard can then me automatically updated based on these service-level calls.

Analysis: VA could follow a similar maturation path for providing consumers of its API's visibility into the overall system health. The challenging part will be staging of test data for this in VA legacy systems or establishing a protocol for testing using the Production data in a way that does not impact the Veteran record.