Axway API Management Plus

An API-first, FHIR-enabled approach to digital patient engagement
An industry in transformation...

Increased regulation, changing coverage models and financial pressures

Driving shift toward value-based, outcome driven healthcare models

Requiring new approaches to clinical collaboration & patient engagement
Disruptive change coming from every direction...

RISING COSTS
Cost of Healthcare in the U.S. approaching 18% of the country’s GDP

DATA EXPLOSION
Rapid digitization of health data driving projected data growth from 2012-2020

TECHNOLOGY SHIFTS
Smartphone adoption will reach 80% in the developed world by 2020
Patients expect a more connected digital experience...
Meaningful Use has been a catalyst for change

Stage 1
Digitize Patient Data
- Basic EHR adoption
- Data gathering
- Data privacy & security

Stage 2
Improve Data Access
- Care coordination
- Exchange of patient data
- Evidence based care

Stage 3
Deliver Outcomes
- Greater data access
- Patient engagement
- Population health management

FHIR Standards-based approach helps us get there
But how do you connect data from all of these different sources in a consistent and scalable way?
INTEROPERABILITY

IT'S KIND OF A BIG DEAL

memegenerator.net
Digital Engagement Scenario
Peter
Cardiac Patient

Heart attack victim with history of high-blood pressure and diabetes

Recently had an angioplasty performed to repair a blocked artery

Follow-up care includes appointments with his Cardiologist, Primary Care Physician, Nutritional Counseling, and Cardiac Rehabilitation
Peter uses the mobile app provided by his local health system to manage different aspects of his follow-up care:

- Manage appointments
- Lab test results
- Access health records
- Patient-Physician Messaging
- Medication Adherence
- Manage Claims
Regina
Clinician

Cardio Rehabilitation Therapist currently treating Peter

Her Cardiology Rehabilitation practice recently merged with the large health system that performed Peter’s angioplasty & runs on a different EMR system

Regina sees patients at several different facilities across the health system and requires convenient access to information on the go
Regina uses the health system’s app to manage different aspects of her daily workflow on the go:

- Manage schedule
- Access patient records & orders
- Input clinical notes
- Physician-Patient Messaging
- Manage referrals
How It’s Done…

Organize and expose systems in a manageable way

Extend FHIR APIs and make data mobile-ready

Build, deploy, and manage apps
CIO of a large health system; must adapt and innovate to compete

His team must support Meaningful Use Stage 3 requirements & meet rising patient expectations to improve the digital patient experience

How do I facilitate patient access to data through restful APIs using FHIR?...and how do I connect data from a variety of sources in a consistent & scalable way?
Developers

Need to connect apps, data, devices with APIs - must have an easy way to connect to systems of record

Fuel innovation by providing easy to use APIs that can scale

How can we accelerate implementation of FHIR APIs to enable data-rich patient experiences?
What’s Needed: Full API Lifecycle Management

Axway API Management Plus

Unified App Development
API Lifecycle Management
Secure Integration Foundation

Streamline data integration
Govern & secure FHIR and other Healthcare APIs
Expose FHIR APIs to your community of internal/external developers

© 2017 Axway  |  CONFIDENTIAL
API Lifecycle Management

Streamlines the management of FHIR APIs for greater efficiency, visibility, and agility

**Orchestration**
Build APIs for app developers using internal integration APIs

**Catalog Management & API Stages**
Enable API search and support for lifecycle API stages from registration through publishing and retirement.

**DevOps**
Enables collaborative development of policies, automated continuous integration and promotion, deployment to staged environments, and continuous testing

**API First Approach**
API management APIs that enable customization of the management process

**Developer Portal**
Increase developer adoption by making it easy for developers to join an API community, and discover, consume, build and test APIs.
FHIR APIs pre-built on top of Axway’s API Management Plus platform with connectors and security protocols; OAuth Framework
<table>
<thead>
<tr>
<th>API Name</th>
<th>Description</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHIR Appointment</td>
<td>A booking of a healthcare event among patient(s), practitioner(s), related person(s) and/or device(s) for a specific date/time. This may result in one or more Encounter(s). For more information: <a href="https://www.hl7.org/fhir/">https://www.hl7.org/fhir/</a> appointment.htm ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR CarePlan</td>
<td>Describes the intention of how one or more practitioners intend to deliver care for a particular patient, group or community for a period of time, possibly limited to care for a specific condition or set of conditions. For more information ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR Condition</td>
<td>Use to record detailed information about conditions, problems or diagnoses recognized by a clinician. There are many uses including: recording a diagnosis during an encounter; populating a problem list or a summary statement such as a ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR Device</td>
<td>This resource identifies an instance of a manufactured item that is used in the provision of healthcare without being substantially changed through that activity. The device may be a medical or non-medical device. Medical devices include ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR Encounter</td>
<td>An interaction between a patient and healthcare provider(s) for the purpose of providing healthcare service(s) or assessing the health status of a patient. For more information: <a href="https://www.hl7.org/fhir/encounter.html">https://www.hl7.org/fhir/encounter.html</a> ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR Observation</td>
<td>Measurements and simple assertions made about a patient, device or other subject. For more information: <a href="https://www.hl7.org/fhir/observation.html">https://www.hl7.org/fhir/observation.html</a> ...</td>
<td>Actions</td>
</tr>
</tbody>
</table>
FHIR-enabled API Management powers many different use cases...

- **Physicians offices** can enable more personalized care experiences
- **Hospitals** can reduce readmission rates and facilitate remote monitoring
- **Insurance providers** can improve loyalty and facilitate population health initiatives
- **Pharmacies/Pharmacy Benefits Administrators** can improve medication adherence
Axway accelerates FHIR API implementation to power digital patient experiences...

- Healthcare Developer portal with FHIR documentation
- Facilitate access to FHIR ready APIs
- Enable secure access with OAuth security policies
- Create, control, consume, and analyze APIs that power digital patient experiences
Thank you!
Patient wants...

- Seamless **access to health data & services** anytime, anywhere
- Simple ways to remain **engaged** in their health
- Easy ways to manage every aspect of their care experience

Clinician wants...

- Seamless **access to the right information, in the right place, at the right time** to deliver care
- Simple ways to remain **engaged** with patients
- Easy ways to manage their clinical and administrative workflows across multiple location/organizations

IT wants...

- To enable legacy and modern systems in a consistent, scalable way
- Enable secure, compliant mobile access
- Reliable infrastructure to ensure operations
- Complete visibility
API Registration

The screen shows the API Manager interface for managing frontend APIs. The table lists various APIs with columns for Name, Version, Service Type, Frontend URL, State, and Created Date. The APIs include ACME, FHIR Appointment, FHIR CarePlan, FHIR Condition, FHIR Device, FHIR Encounter, FHIR Generic Test, FHIR Location, and FHIR Observation. The statuses range from Published to Unpublished.
## User Management

### API Manager

The API Manager interface is shown with a focus on user management. The page includes a table with columns for Name, Login name, Email, Organization, Description, Role, Approval, and Disabled.

#### Table: Managing Users

<table>
<thead>
<tr>
<th>Name</th>
<th>Login name</th>
<th>Email</th>
<th>Organization</th>
<th>Description</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angel Mihail</td>
<td>angel</td>
<td><a href="mailto:angel@exxordemo.com.m">angel@exxordemo.com.m</a></td>
<td>API Developer</td>
<td>Angel is the API Admin</td>
<td>API Manager Administrator</td>
</tr>
<tr>
<td>Ana Owen</td>
<td>ana</td>
<td><a href="mailto:ana@exxordemo.com.m">ana@exxordemo.com.m</a></td>
<td>API Developer</td>
<td>Ana is the Application Owner</td>
<td>Organization Administrator</td>
</tr>
<tr>
<td>Charles Hopkins</td>
<td>charlie</td>
<td><a href="mailto:charliehopkins@exxordemo.com">charliehopkins@exxordemo.com</a></td>
<td>CEO</td>
<td>Charles Hopkins</td>
<td>Organization Administrator</td>
</tr>
<tr>
<td>Dave Dillen</td>
<td>dave</td>
<td><a href="mailto:dave@exxordemo.com.m">dave@exxordemo.com.m</a></td>
<td>Community</td>
<td>Dave is the Developer</td>
<td>User</td>
</tr>
<tr>
<td>Derek Hardy</td>
<td>derek</td>
<td><a href="mailto:derek@exxordemo.com.m">derek@exxordemo.com.m</a></td>
<td>API Developer</td>
<td>Derek is the Chief Digital Officer</td>
<td>API Manager Administrator</td>
</tr>
<tr>
<td>Joel Co</td>
<td>joel</td>
<td><a href="mailto:joel@exxordemo.com.m">joel@exxordemo.com.m</a></td>
<td>AG</td>
<td></td>
<td>User</td>
</tr>
<tr>
<td>Laura Heritage</td>
<td>lara</td>
<td><a href="mailto:lara@exxordemo.com.m">lara@exxordemo.com.m</a></td>
<td>F10R</td>
<td></td>
<td>User</td>
</tr>
<tr>
<td>Matt</td>
<td>matt</td>
<td><a href="mailto:matt@exxordemo.com.m">matt@exxordemo.com.m</a></td>
<td>F10R</td>
<td></td>
<td>User</td>
</tr>
<tr>
<td>Renee McConnell</td>
<td>renee</td>
<td><a href="mailto:renee@exxordemo.com.m">renee@exxordemo.com.m</a></td>
<td>F10R</td>
<td>Renee is the Relationship manager</td>
<td>Organization Administrator</td>
</tr>
</tbody>
</table>

Use the paging arrows to navigate your list of users.
Developer Portal

APIs Catalog

Explore our APIs and see sample responses without writing a single line of code.

**FHIR Appointment**
A booking of a healthcare event among patient(s), practitioner(s), related person(s) and/or device(s) for a specific date/time. This may result in one or more Encounter(s). For more information: [https://www.hl7.org/fhir/appointment.html](https://www.hl7.org/fhir/appointment.html)

**FHIR CarePlan**
Describes the intention of how one or more practitioners intend to deliver care for a particular patient, group or community for a period of time, possibly limited to care for a specific condition or set of conditions. For more information: [https://www.hl7.org/fhir/careplan.html](https://www.hl7.org/fhir/careplan.html)

**FHIR Condition**
Use to record detailed information about conditions, problems or diagnoses recognized by a clinician. There are many uses including recording a diagnosis during an encounter, populating a problem list or a summary statement, such as a discharge summary. For more information: [https://www.hl7.org/fhir/condition.html](https://www.hl7.org/fhir/condition.html)
App Registration

View Application: Axway FHIR

GENERAL
- Name: Axway FHIR
- Description: A sample application that demonstrates the use of FHIR API
- Organization: CSOS
- Created by: Charles Happenstein
- Created on: 8 Feb 2017

SELECTED APIs

<table>
<thead>
<tr>
<th>API Name</th>
<th>Description</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHIR Appointment</td>
<td>A booking of a healthcare event among patients, practitioners, related persons and/or devices for a specific time. This may result in one or more Encounters. For more information: <a href="https://www.hl7.org/fhir/appointment.htm">https://www.hl7.org/fhir/appointment.htm</a> ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR CarePlan</td>
<td>Describes the intention of how one or more practitioners intend to deliver care for a particular patient, group or community for a period of time, possibly limited to care for a specific condition or set of conditions. For more information ...</td>
<td>Actions</td>
</tr>
<tr>
<td>FHIR Condition</td>
<td>Used to record detailed information about conditions, problems or diagnoses recognized by a clinician. There are many uses including: receiving a diagnosis during an encounter, populating a problem list or a summary statement such as ...</td>
<td>Actions</td>
</tr>
</tbody>
</table>
Real-Time Mobile Analytics
Monitoring
Monitoring

API Usage

- Messages: 66 (100.00%)
- Successes: 66 (100.00%)
- Blocked: 0
- Exceptions: 1 (100.00%)
- Processing Time (Avg ms): 269.55

<table>
<thead>
<tr>
<th>API Name</th>
<th>Method Name</th>
<th>Messages</th>
<th>Successes</th>
<th>Blocked</th>
<th>Exceptions</th>
<th>Processing Time (Avg ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHIR Appointment</td>
<td>GET/Appointment</td>
<td>23 (41%)</td>
<td>23 (42%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>228</td>
</tr>
<tr>
<td>UHN-FHIR Appointment</td>
<td>GET/Appointment</td>
<td>8 (14%)</td>
<td>7 (13%)</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>278</td>
</tr>
<tr>
<td>FHIR Encounter</td>
<td>GET/encounter_history</td>
<td>3 (5%)</td>
<td>3 (5%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>285</td>
</tr>
<tr>
<td>UHN-FHIR Appointment</td>
<td>GET/Appointment/id</td>
<td>2 (4%)</td>
<td>2 (4%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>118</td>
</tr>
<tr>
<td>FHIR Appointment</td>
<td>GET/</td>
<td>2 (4%)</td>
<td>2 (4%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>183</td>
</tr>
</tbody>
</table>
Axway Full API Lifecycle Management

IT Developers

API Builder
Builds, deploys & manages mobile app’s with single code set for all platforms

Patients, Clinicians

API Portal
Register
Enforce
Promote

API Gateway

API Builder
Builds & deploys API’s within organization standards

Internal Systems
FHIR API
EMR
Data Lake
ERP
Legacy
Clinical