

Use Cases for Integration - Complete Documentation

Innowell Platform - EHR/EMR Integration

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1. OVERVIEW

This document consolidates all Use Cases for Integration between the Innowell CARE Platform and external Electronic Medical Records (EMR) / Electronic Health Records (EHR) systems.

The integration leverages FHIR (Fast Healthcare Interoperability Resources) standards to enable bidirectional data exchange between systems.

Key Integration Components:

- FHIR Service: Centralized FHIR-compliant data store
- FHIR Filter: Validates incoming payloads
- FHIR Event Processor: Processes events and synchronizes data
- Innowell API: Platform endpoints for data integration

USE CASES SUMMARY

Name	Initiating System	Description
01. <u>Common</u>	-	
02. <u>Create Patient</u>	EMR	<p>Precondition: EMR masters patient data</p> <p>Patient is created in EMR and is sent an Invitation by the Innowell platform</p>
03. <u>Update Patient</u>	EMR	Patient details are updated in EMR and User record is updated in Innowell platform.
09. <u>Create Practitioner</u>	EMR	A practitioner is given access in the EMR to manage patient(s) and assign assessments within the Innowell platform
10. <u>Update Practitioner</u>	EMR	A practitioner is updated in the EMR and changes should be reflected within the Innowell platform

00.Common

Validations

Validate User Email

- Uniqueness across Innowell Platform
- Meets type ContactPoint (Constraint cpt-2)
 - ContactPoint.system is required
 - ContactPoint.use is required

Validate User

- Passes Validate User Email
- Email is associated with EMR submitting request
- User associated with email is active for EMR submitting request
- Payload contains EMR ID
- Requesting system is primary source for updating record.
 - Separate flag for each User role_type.

API Responses

- Success
HTTP status code 200 with no payload
- Failure
HTTP status code 400 with JSON payload:

```
// Wrong tenant specified in payload, either not found or does not exist
{
  "code": "forbidden",
  "message": "Tenant not associated with this EMR",
  "field": "Patient.managingOrganization"
}
```

```
// Email address already exists
{
  "code": "duplicate",
  "message": "Email is already in use",
  "field": "Patient.telecom"
}
```

Create Patient

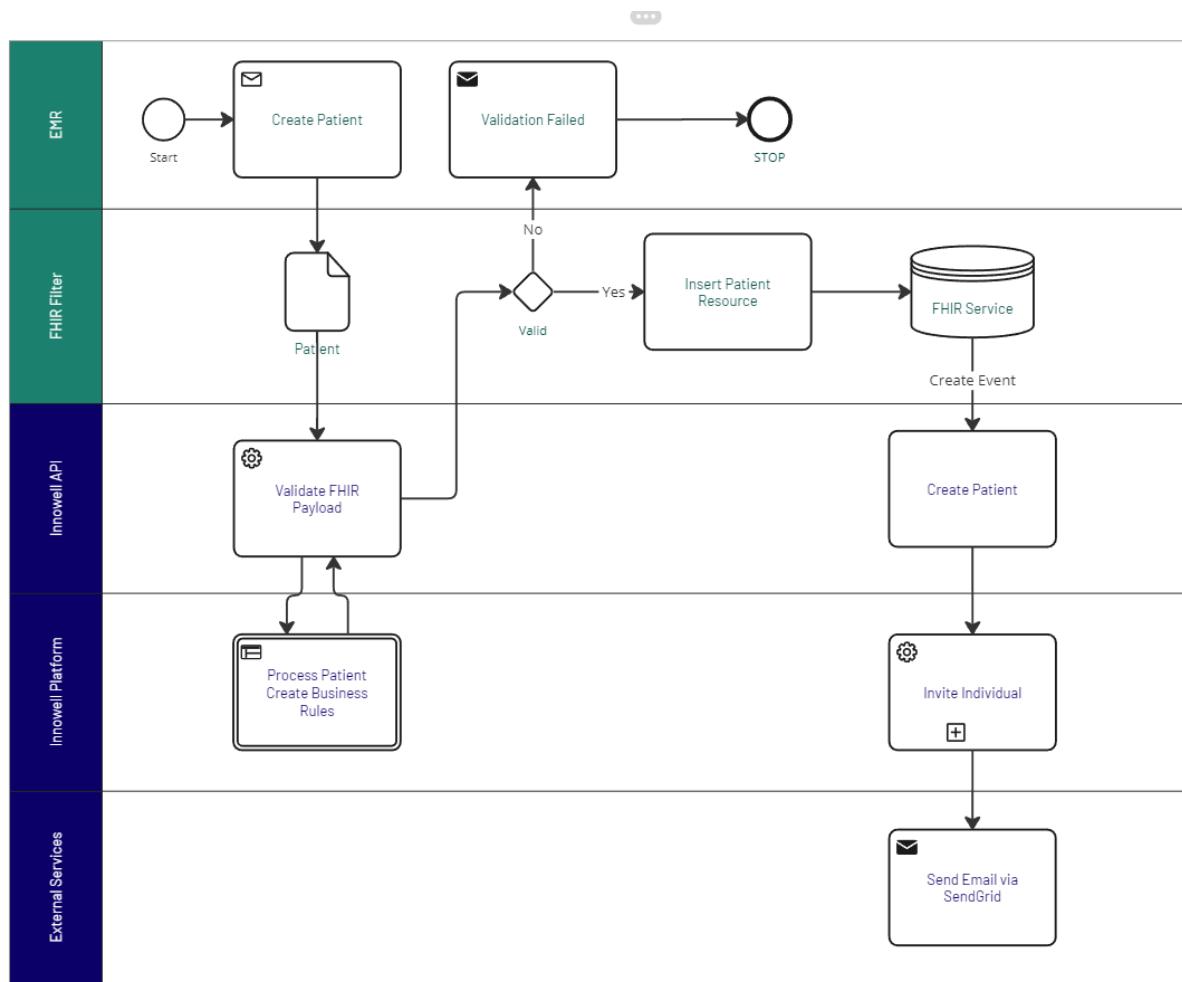
Description

Patient is created in the client's EMR and, upon validation, requires an Invitation to be sent by the Innowell platform.

Assumptions

- See common assumptions: [00. Common](#)
- Client EMR is primary source of Patient data.
- Patient Create is Initiated by client EMR.
- Platform cannot initiate the creation of new Patient records

Process Flow



Detailed Process Steps

- EMR creates a payload with a new patient
- EMR Submits create patient payload
- FHIR Filter performs validation on the payload
 - Calls Innowell API to do the validation
 - when valid, return true
- Create patient payload is accepted by FHIR Server
- Patient is created in FHIR, event grid triggered
- FHIR Event Processor traps event for created patient
- FHIR Event Processor loads relevant patient data from FHIR Server
- FHIR Event Processor submits create patient payload to Innowell API
- Existing Innowell Platform invites Patient
- Innowell system sends email notification to the newly created Patient

Acceptance Criteria

- Patient created in FHIR Service, with an acceptance payload containing information of the newly created Patient.
- Patient sent an invitation email from the Innowell Platform.

Sample Payload

```
{  
  "resourceType": "Patient",  
  "meta": {  
    "versionId": "1",  
    "lastUpdated": "2024-11-07T04:08:59.18+00:00",  
    "source": "2a385024-7352-4570-970f-2cd0f4955316"  
  },  
  "identifier": [  
    {  
      "system": "http://myorg.com/patients",  
      "value": "patient_id_1"  
    }  
  ],  
  "active": true,  
  "name": [  
    {  
      "use": "official",  
      "family": "Doe",  
      "given": [  
        "John"  
      ]  
    },  
    {  
      "use": "official",  
      "family": "Doe",  
      "given": [  
        "John"  
      ]  
    },  
    {  
      "use": "official",  
      "family": "Doe",  
      "given": [  
        "John"  
      ]  
    }  
  ]  
}
```

```
        "use": "nickname",
        "given": [
            "John"
        ]
    }
],
"telecom": [
    {
        "system": "email",
        "value": "email4@myorg.com"
    },
    {
        "system": "phone",
        "value": "+61444444445",
        "use": "mobile"
    },
    {
        "system": "sms",
        "value": "+61444444445",
        "use": "mobile"
    }
],
"gender": "male",
"birthDate": "2010-12-15",
"address": [
    {
        "use": "home",
        "type": "physical",
        "text": "address line 1, address line 2, State, Pin",
        "line": [
            "address line 1"
        ],
        "city": "city",
        "state": "state",
        "postalCode": "1111",
        "period": {
            "start": "1990-12-25"
        }
    }
],
"maritalStatus": {
    "coding": [
        {
            "system": "http://terminology.hl7.org/CodeSystem/v3-MaritalStatus",
            "code": "M"
        }
    ]
}
```

```
        "code": "S",
        "display": "Never Married"
    },
],
"text": "Never Married"
},
"communication": [
{
    "language": {
        "coding": [
            {
                "system": "http://hl7.org/fhir/ValueSet/languages",
                "code": "en",
                "display": "English"
            }
        ],
        "text": "English"
    },
    "preferred": true
}
],
"managingOrganization": {
    "identifier": {
        "system": "http://innowell.org/care",
        "value": "myorg"
    }
}
}
```

02. Update Patient

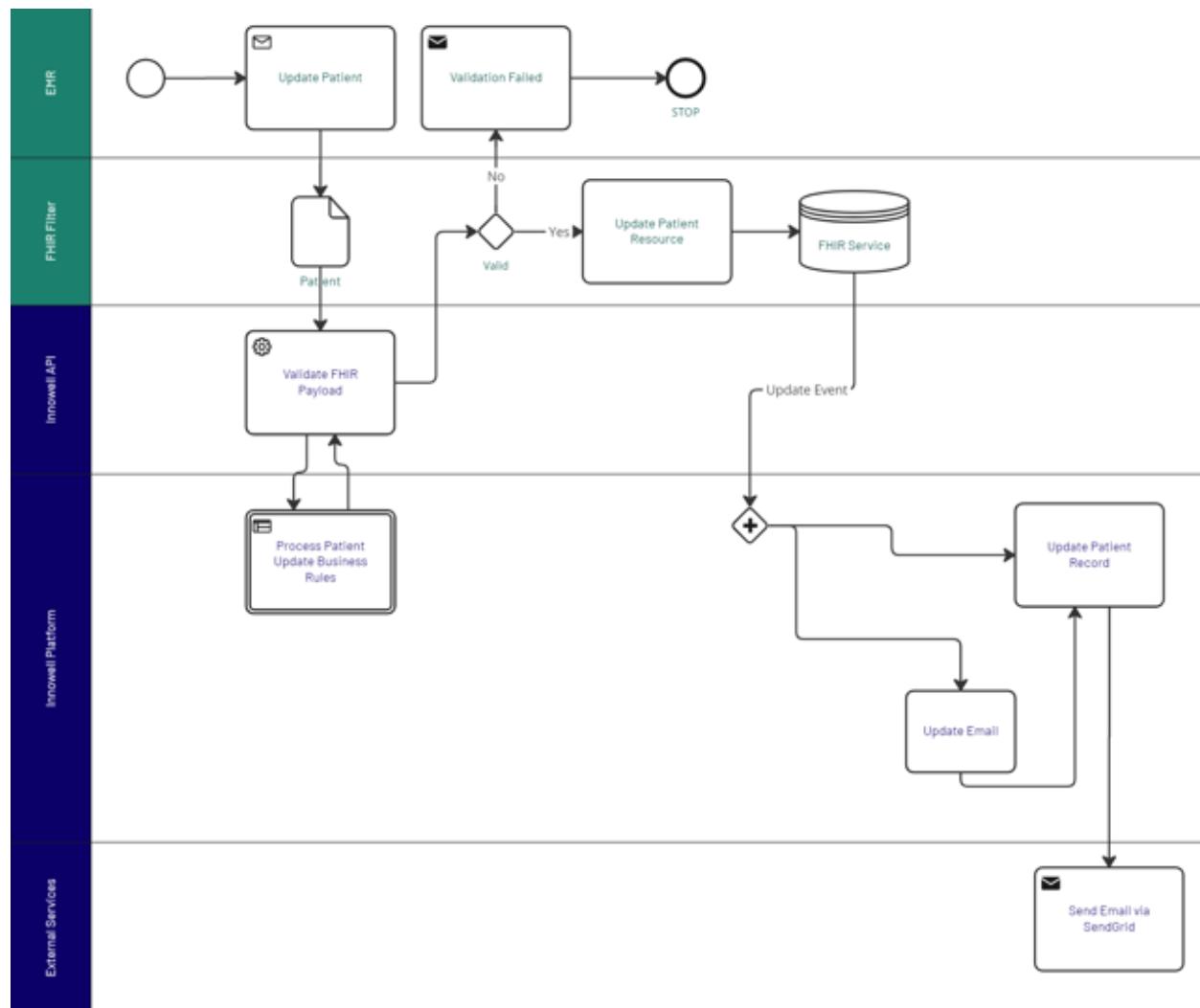
Description

Patient is updated in client's EMR and, upon validation, updates both the existing FHIR Patient resource and patient record in the Innowell platform.

Assumptions

- See common assumptions: [00. Common](#)
- Client EMR is primary source of Patient data.
 - Innowell platform cannot update any fields directly in the Patient resource.
- Patient Update is Initiated by client EMR.
- Platform cannot initiate the creation of new Patient records
- This process is only supported by a HTTP PUT request

Process Flow



Detailed Process Steps

- EMR creates a payload referencing an existing patient
- EMR Submits patient payload
- FHIR Filter performs validation on the payload
 - Calls Innowell API to do the validation
 - when valid, return true
- Update patient payload is accepted by FHIR Server
- Patient is updated in FHIR Server, event grid triggered
- FHIR Event Processor traps event for updated patient
- FHIR Event Processor loads relevant patient data from FHIR Server
- FHIR Event Processor submits update patient payload to Innowell API

FHIR Sample Payload

```
{  
  "resourceType": "Patient",  
  "id": "d42a2385-f94b-4b33-8705-68ca392b4cdd",  
  "meta": {  
    "versionId": "1",  
    "lastUpdated": "2024-11-07T04:08:59.18+00:00",  
    "source": "2a385024-7352-4570-970f-2cd0f4955316"  
  },  
  "identifier": [  
    {  
      "system": "http://myorg.com/patients",  
      "value": "patient_id_1"  
    }  
  ],  
  "active": true,  
  "name": [  
    {  
      "use": "official",  
      "family": "Doe",  
      "given": [  
        "John"  
      ]  
    },  
    {  
      "use": "nickname",  
      "given": [  
        "John"  
      ]  
    }  
  ],  
},  
]
```

```
"telecom": [
  {
    "system": "email",
    "value": "email1@myorg.com"
  },
  {
    "system": "phone",
    "value": "+61444444442",
    "use": "mobile"
  },
  {
    "system": "sms",
    "value": "+61444444442",
    "use": "mobile"
  }
],
"gender": "male",
"birthDate": "2010-09-15",
"address": [
  {
    "use": "home",
    "type": "physical",
    "text": "address line 1, address line 2, State, Pin",
    "line": [
      "address line 1"
    ],
    "city": "city",
    "state": "state",
    "postalCode": "1111",
    "period": {
      "start": "1990-12-25"
    }
  }
],
"managingOrganization": {
  "identifier": {
    "system": "http://innowell.org/care",
    "value": "myorg"
  }
}
```

Create Practitioner

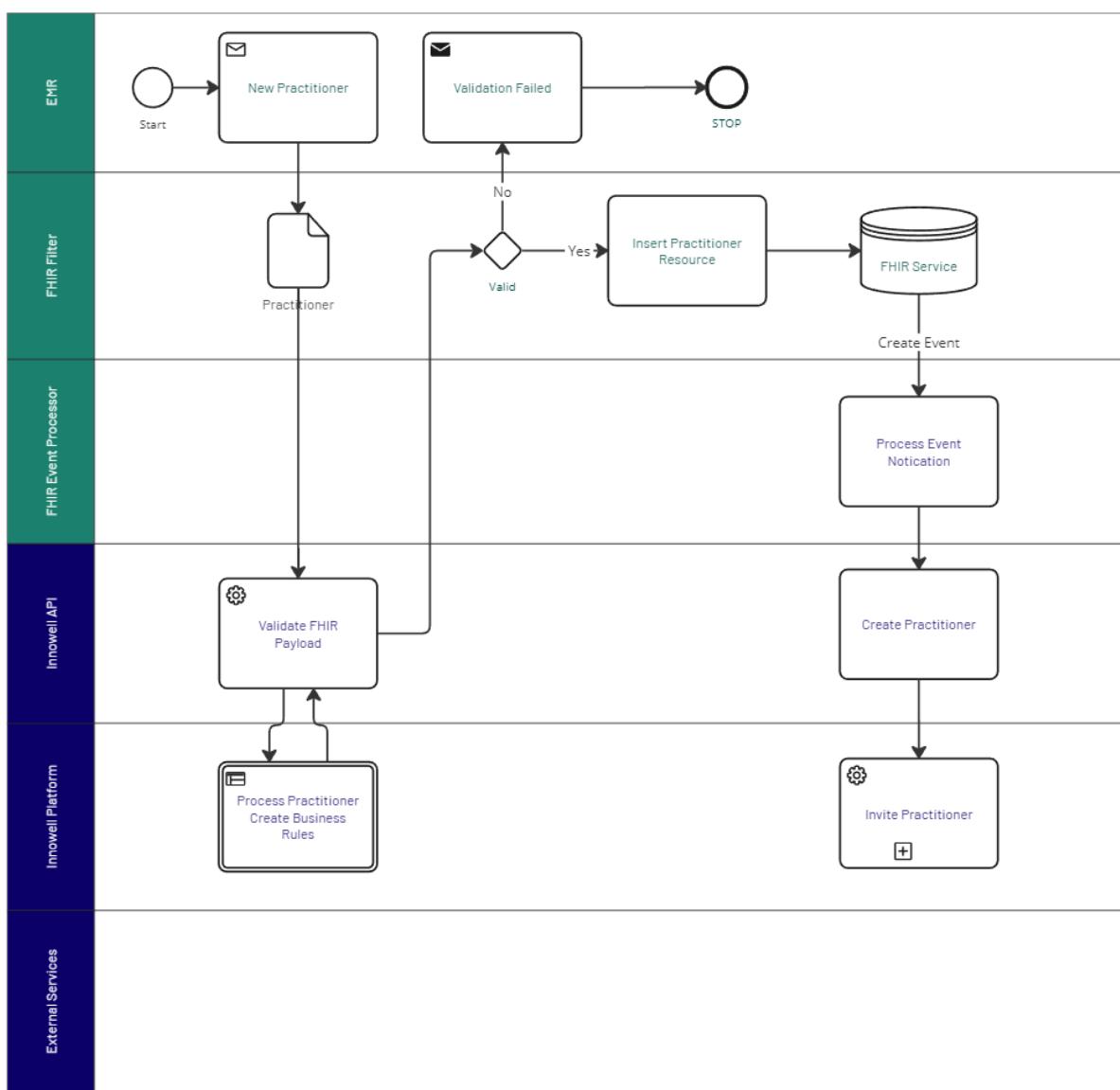
Description

A practitioner is given access in the EMR to manage patient(s) and assign assessments within the Innowell platform

Assumptions

- See common assumptions: [00. Common](#)
- A Practitioner can be created by either the Client EMR or CARE Platform.
- The FHIR Event Processor and Innowell Platform are used to validate and process Practitioner records.

Process Flow



Detailed Process Steps

A new practitioner record is triggered by the external EMR.

The FHIR payload containing the practitioner details is sent to the FHIR Filter.

The system validates the FHIR payload against the Innowell API to ensure it complies with the expected structure.

If the payload validation fails, an error notification is sent, and the process halts.

If the validation passes, the Practitioner resource is created in the FHIR service.

The system processes any business rules related to practitioner creation.

The event notification service sends an invite to the newly created practitioner.

Sample Payload

```
{
  "resourceType": "Practitioner",
  "identifier": [
    {
      "use": "official",
      "system": "http://hospital.auhealth.org.au/practitioner-ids",
      "value": "H123456789"
    }
  ],
  "extension": [
    {
      "url": "http://innowell.org/fhir/care/staff_roles",
      "valueString": "Clinician"
    }
  ],
  "active": true,
  "name": [
    {
      "family": "Smith",
      "given": ["Emily"],
      "prefix": ["Dr."]
    }
  ],
  "telecom": [
    {
      "system": "phone",
      "value": "+61 3 9123 4567",
      "use": "work"
    },
    {
      "system": "email",
      "value": "emily.smith@hospital.au",
      "use": "work"
    }
  ],
  "address": [
    {
      "use": "work",
      "line": ["456 Healthcare Rd"],
      "city": "Melbourne",
      "state": "Victoria",
      "postalCode": "3000",
      "country": "Australia"
    }
  ]
}
```

```
"state": "VIC",
"postalCode": "3000",
"country": "Australia"
}],
"qualification": [
  "code": {
    "coding": [
      {
        "system": "some_system",
        "code" : "some_code", // provided by EMR
        "display": "Display Value" // provided by EMR
      },
      "text": "Display Value" // provided by EMR
    }
  }
}]
```

Update Practitioner

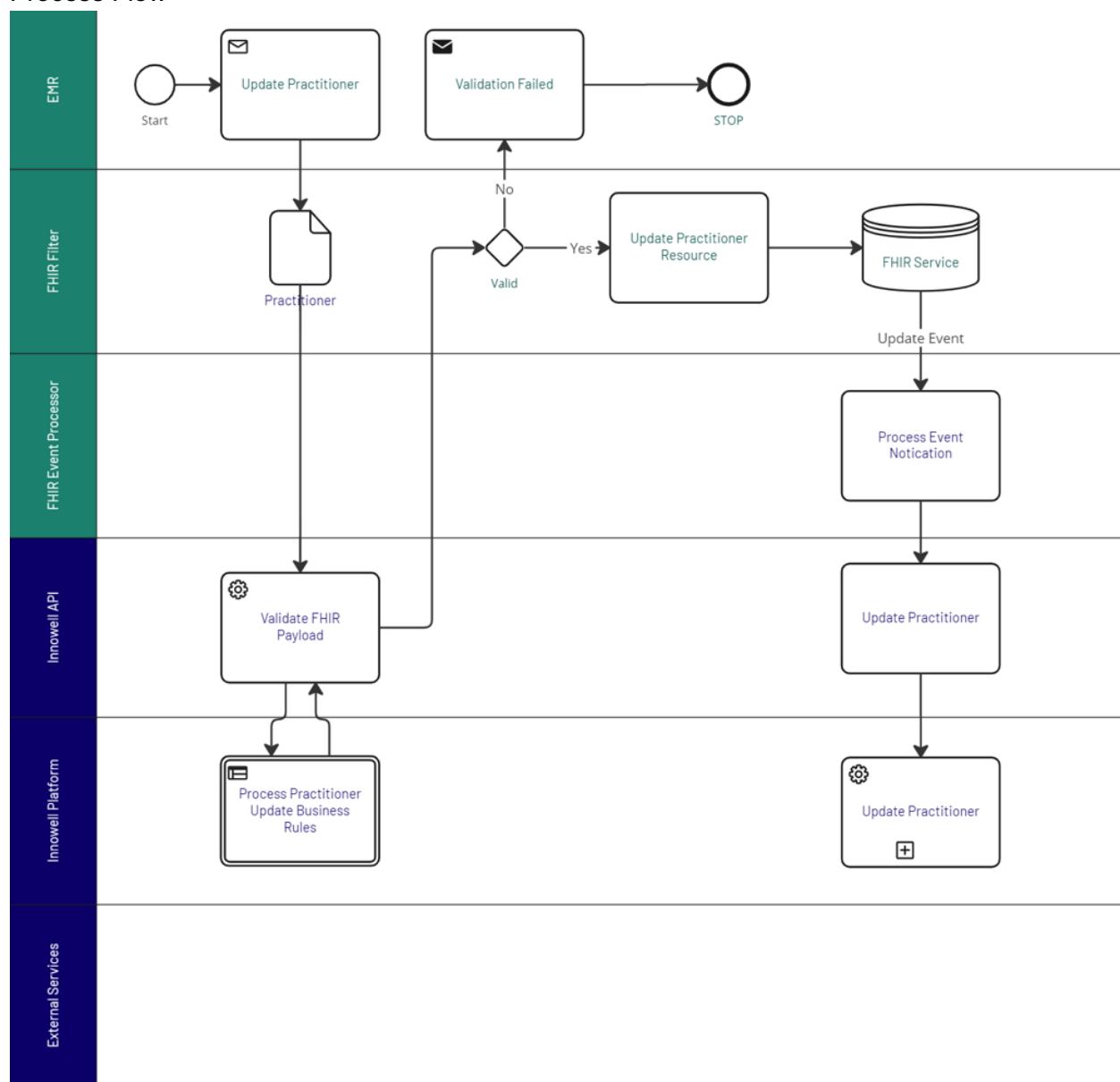
Description

A practitioner is updated in the EMR and changes should be reflected within the Innowell platform.

Assumptions

- See common assumptions: [Q0. Common](#)
- Client EMR is primary source of Practitioner data.
 - Innowell platform cannot update any fields directly in the Practitioner resource.
- Practitioner Update is Initiated by client EMR.
- Platform cannot initiate the creation of new Practitioner records
- This process is only supported by a HTTP PUT request

Process Flow



Detailed Process Steps

- EMR creates a payload referencing an existing Practitioner
- EMR Submits Practitioner payload
- FHIR Filter performs validation on the payload
 - Calls Innowell API to do the validation
 - when valid, return true
- Update Practitioner payload is accepted by FHIR Server
- Practitioner is updated in FHIR Server, event grid triggered
- FHIR Event Processor traps event for updated patient
- FHIR Event Processor loads relevant patient data from FHIR Server
- FHIR Event Processor submits update patient payload to Innowell API