

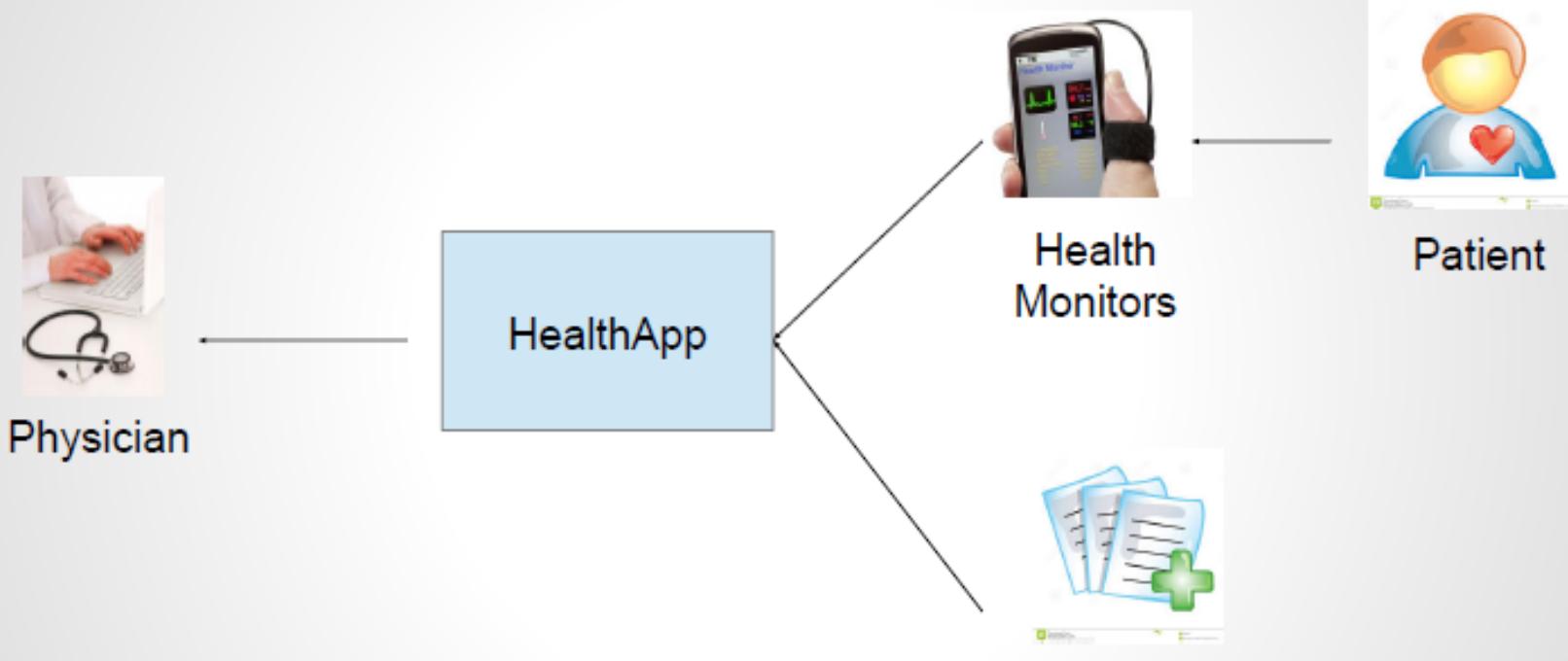
# **Health Information Exchange**

Prabu Shyam M M  
Shunmugam Murugan

# Objective

- Develop a transparent health information exchange system between providers and patients
- On-demand and scalable

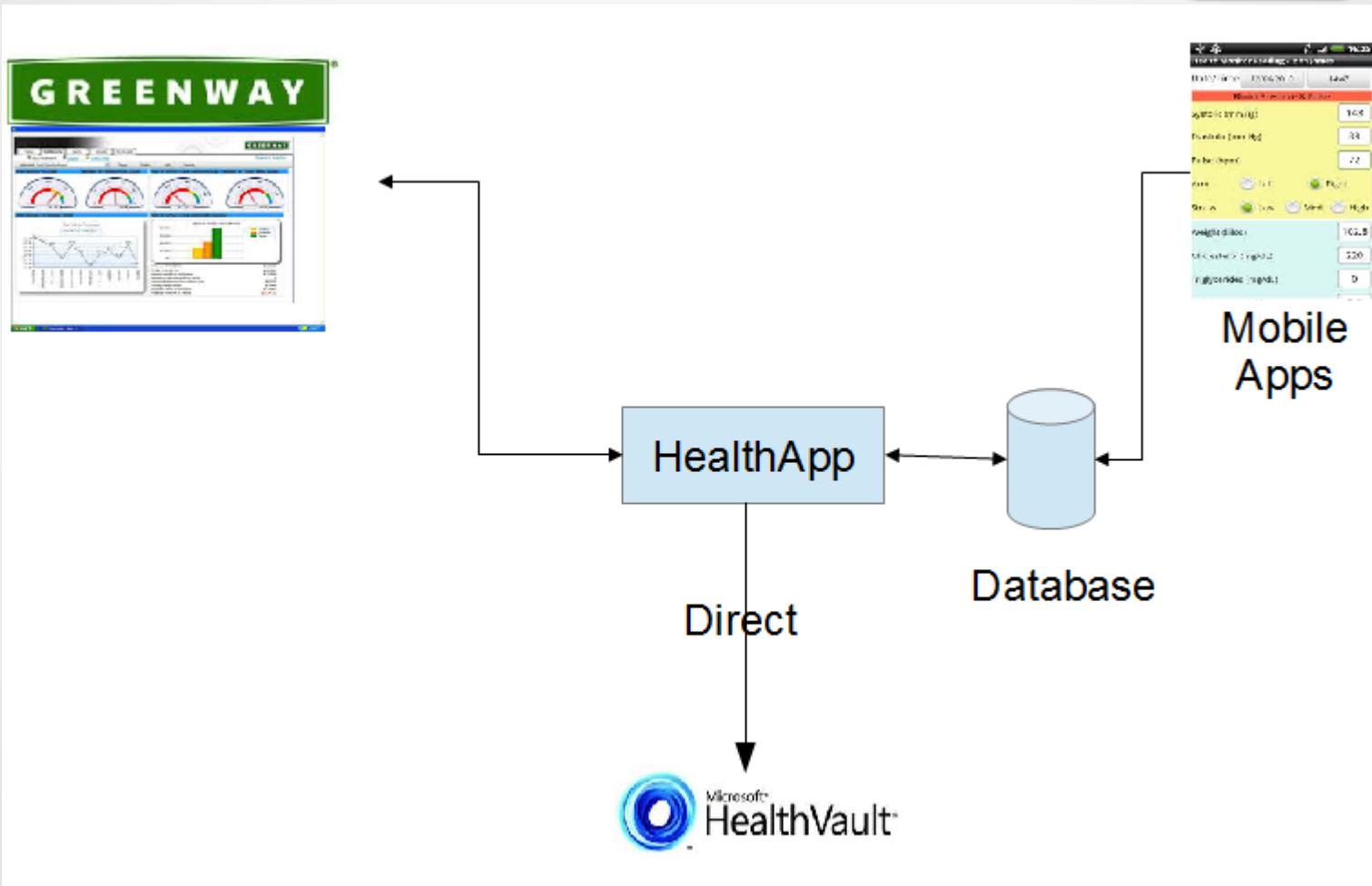
# Use Cases



# Health Information Exchange

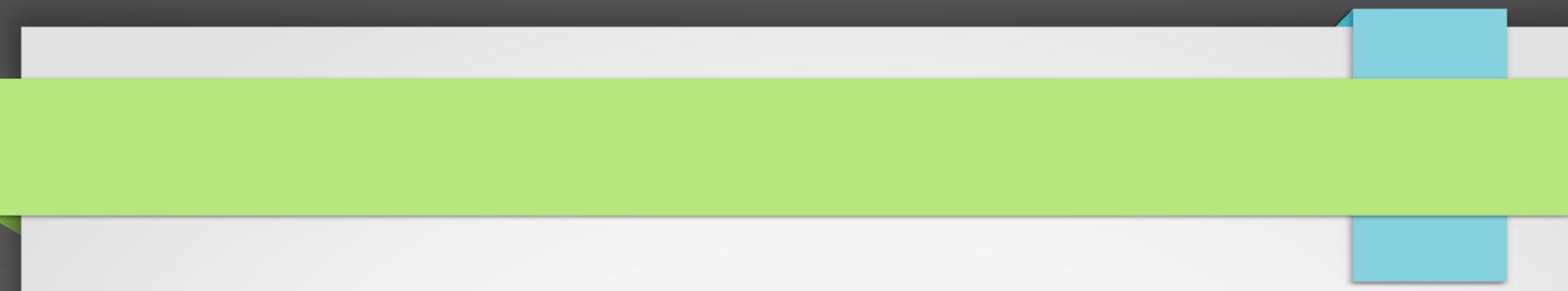
- Allow a physician to securely access a patient's health records
- Allow patients to securely share the data from health monitoring apps with the physician
- Allow a physician to query patients' health records

# System Design



# Options considered:

- Using Greenway API to send message/reports to the greenway system
- Use Direct Messaging to send to the physician/providers as HIE

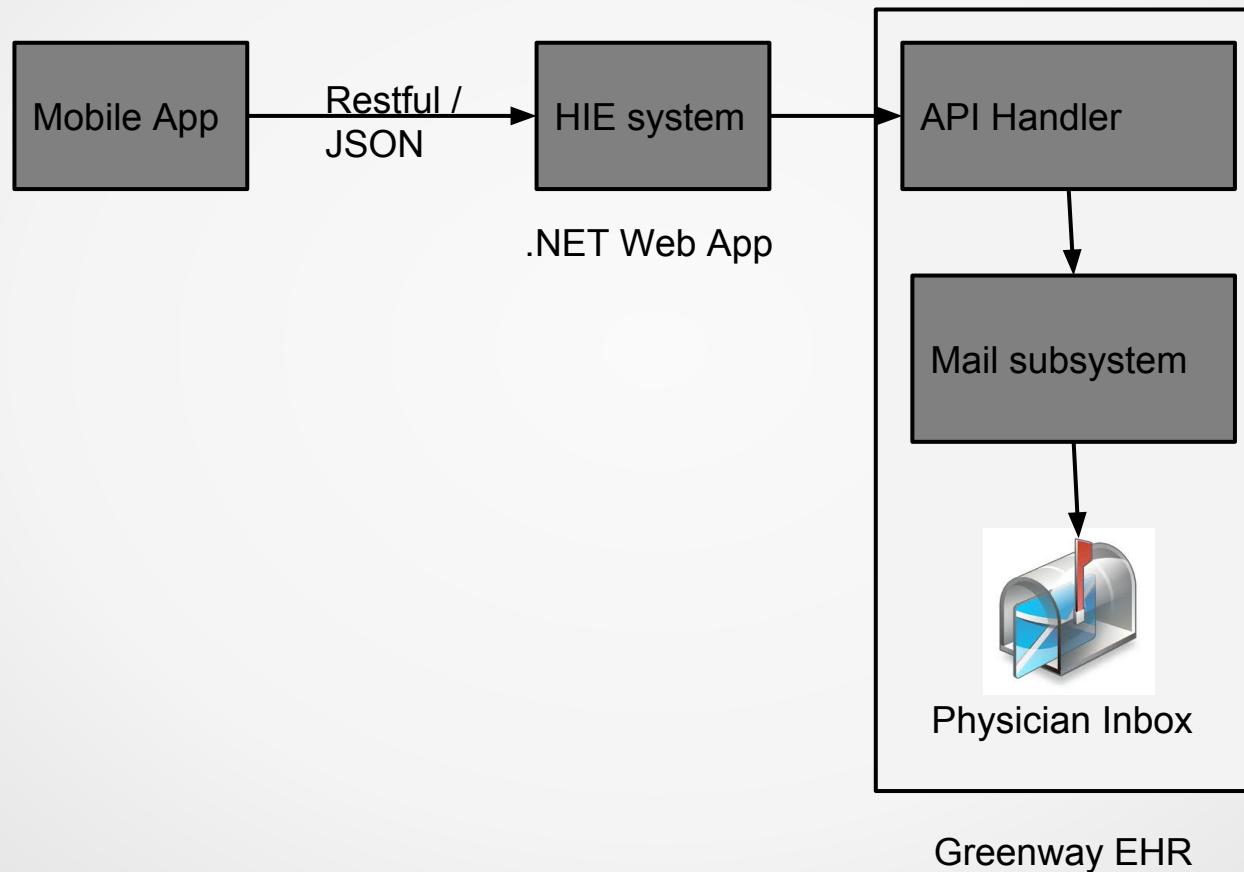


**Relay the requests to Greenway through  
Greenway API**

# API #1: Send Alert to Physician

- Used to send an alert to a physician regarding a patient's health condition
- *Implementation*  
The API constructs a message and uses the Greenway API “SendMessage” to forward the message to the appropriate physician’s inbox

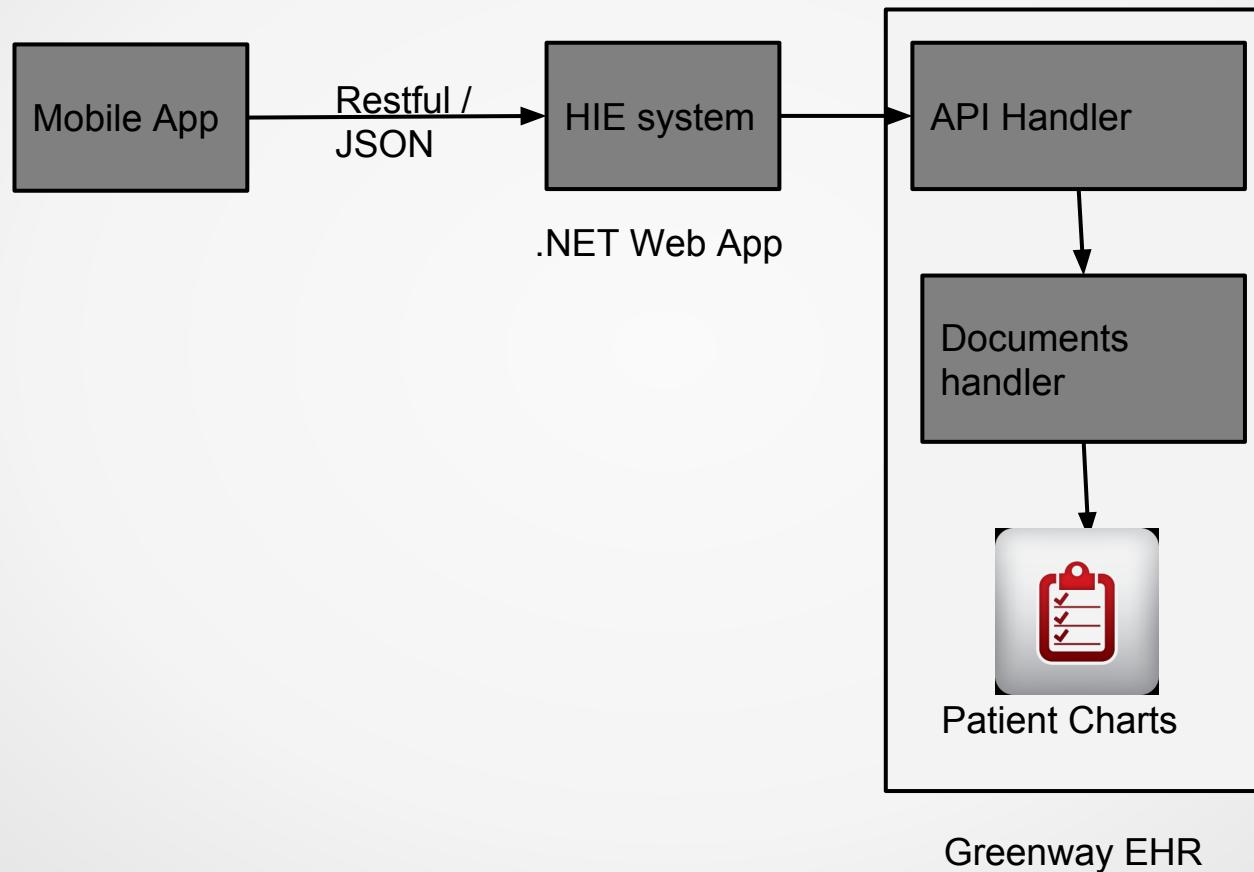
# API #1: Send Alert to Physician



## API #2: Upload patient health reports

- Used to upload a patient's health report generated from the mobile apps to a EHR
- Implementation
  - The service uses the Greenway DocumentImportChart API to upload a patient's health report to the 'Patient Charts' to be made available to the care providers.

# API #2: Upload patient health reports



# API #3: Retrieve a patient's CCD

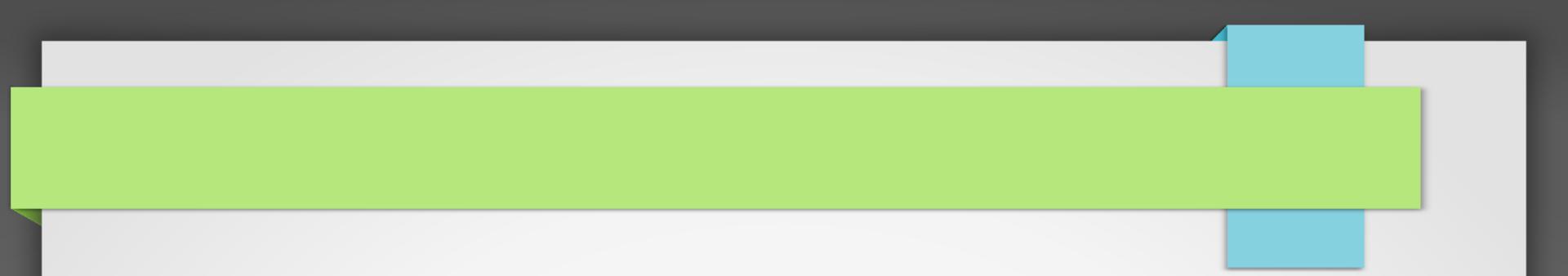
- Used to retrieve a patient's CCD from EHR
- Implementation
  - The service uses the Greenway ClinicalSummaryGet API to retrieve a patient's CCD in an XML format.

# Sending patient's CCD to HealthVault

- Snapsflow engine listens to CCD requests
- On receiving a request, use API #3 to make a call to the Greenway to retrieve the patient's EHR
- On receiving the CCD, constructs a Direct message with the CCD attachment and forwards to the patient's HealthVault account

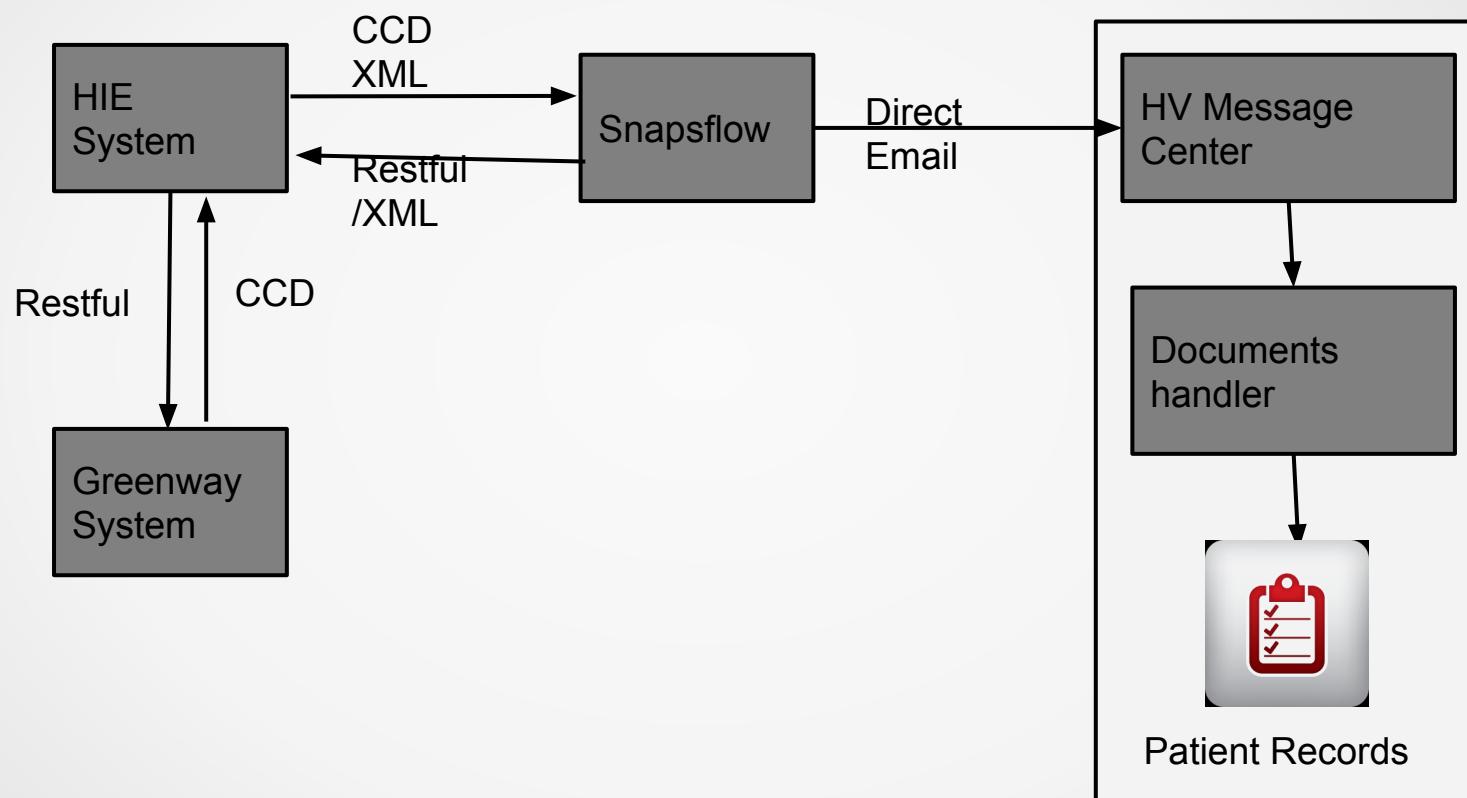
# Retrieve a patient's meds

- Retrieve a patient's medications and update them in the database to be made available to the mobile apps.
- Implementation
  - Uses Greenway API PatientMedicationGet to retrieve the patient's active medications
  - Converts JSON params into .NET objects
  - Updates the MySQL tables for the patient



**Use Direct Messaging to send CCD to  
Microsoft HealthVault as HIE**

# CCD to HealthVault



# Using Snapsflow Holon Integration Engine

- Used to query Greenway through web-service calls and send CCD to HealthVault
- Policy and tasks created to make GET and POST requests to web-services running on HIE system
- Greenway API calls are done through HIE system
- Response is stored in XML and parsed
- Parsed CCD is sent to HealthVault through Direct Messaging System using EmailSend Task in Snapsflow

## Policy: Interface to webservice

Policy Task List Monitors

- Interface to the visualisation
  - 1 - Map\_Metadata
  - 2 - Map\_Metadata
  - 3 - XML\_HTTP\_Get
  - 4 - XML\_HTTP\_Get
  - 5 - Map\_Metadata
  - 6 - Map\_Metadata
  - 7 - Map\_Metadata
  - 8 - Index\_File\_Write
  - \*\*\* Email\_Send
  - 10 - Send\_Mail
  - 11 - Policy\_Completed

### Task Properties

Step Number 10

### Task Parameters

Parameter	Setting
To	SarahBerger@direct.healthvault-ppe.com
CC	
BCC	
From	hub@hispi3l.gatech.edu
Priority	Normal
Subj	Test from I3L - CCD
Text	Test
ASCIIfile	
Attachments	C:\Users\smurugan3\Desktop\postprocess\CCD_Parsed_{PatientID}.xml
SMTPServer	hispi3l.gatech.edu
Port	465
Username	hub@hispi3l.gatech.edu
Password	[REDACTED]
SecureSSL	Yes
SMTPAuthMethod	AUTO

Servers and Logins

## Direct Message Exchange

- i3L Direct Message SMTP service is used
- CCD is sent to Patient's Direct Email address as XML attachment
- Attached CCD is parsed and imported to Patient's healthrecords
- Mail Request is raised from Snapsflow and sent through i3L direct mail SMTP

# CCD Imported in MS HealthVault

Sarah

The screenshot shows the Microsoft HealthVault interface. On the left, there's a sidebar with a blue header "Sarah" containing a placeholder user icon, "Edit", "Add a person" with a plus sign, and "Switch person" with a dropdown arrow. Below this is a "HEALTH VIEWS" section with "Emergency profile" and "Weight management". At the bottom are icons for "Home" (house), "Health information" (person head), and "Apps & Devices" (tablet).

Home > Health information > Continuity of Care Document (CCD)

## Continuity of Care Document (CCD)

Add: Continuity of Care Document (CCD)

Delete Export See sharing Change date range

Date Added	Description	From	Items added to HealthVault?	Details
10/12/2013 16:59:35	Referral Summary	Best Practices USA Family Practice	No	Add items

Download Print Mark as Personal

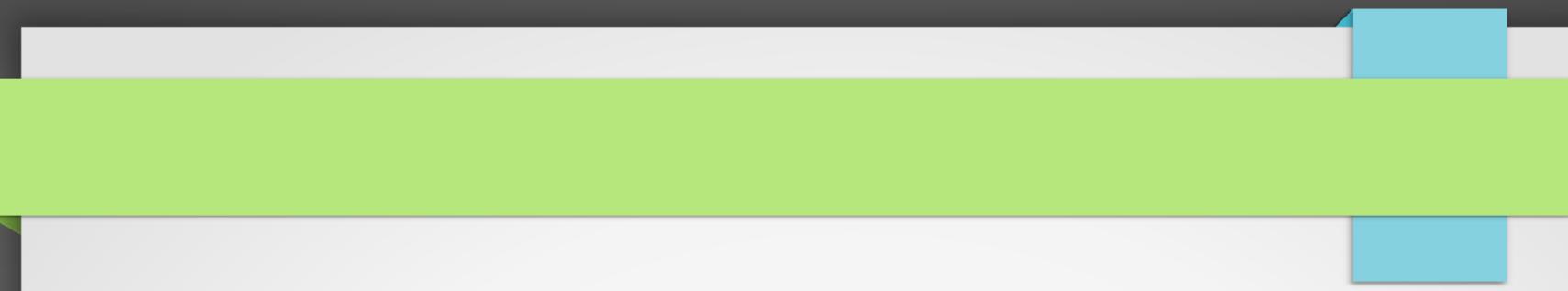
Details History Related

**Title:** Referral Summary  
**Created On:** December 10, 2013

Patient Information

Patient:	Dana O'Brien , 1496 Cumberland Way  Coalmont TN 37313 US 323-998-1923	MRN: Sex: Race: Ethnicity: Language: Next of Kin:	1392 Female American Indian/Alaska  English
Birthdate: Guardian:	February 19, 1985		

Discharge Information



**THANK YOU**