



D2Middleware App

A great example of DHIS2 Interoperability

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Major functionalities of the interoperability

Creates interoperability between Human Resource Management and DHIS2

Supports single source and multiple destinations (S: HRIS, des: Central & Community ser.)

Supports interoperability between Multiple DHIS2(DHIS2 as Source & Destination)

Automatic and manual mode message exchanges, *here messages are org unit info*

Org unit review, approve, delete and update by Facility Registry Interoperability App

Can preview org unit location, compare updated facilities and assign datasets

Notification center(SMS, Email, Message exchange summary)

Supports Queuing, Publisher acknowledgement & Translator Elements Mapping

Multiple cron job setup and run according to the settings

Major functionalities of the interoperability

Creates interoperability between community and central server (Bangladesh)

Users and org units synchronization between two servers in manual process

Org Units information extract for any external interoperability with DHIS2

Automatic Org Unit sync between DHIS2 community and central server

Automatic new users information sync between community and central server

Users Role Monitor and Access the users info in a particular role

Rabbit MQ integration and Testing with real server

Direct benefits from the apps

Minimizing the work load of different level managers

Improving the quality and accuracy of metadata utilization

Great impacts on providing facilities service to the patients

Stop duplicate facilities in DHIS2

Cross checking opportunity for the managers before approval in DHIS2

Decreases errors like facility name, code, lat, lng and other general information

Helps the MOHFW to foster efficiency, data transparency, utilization, and accountability

Creating a stronger digital health system in Bangladesh

Org. unit management current practice in Bangladesh

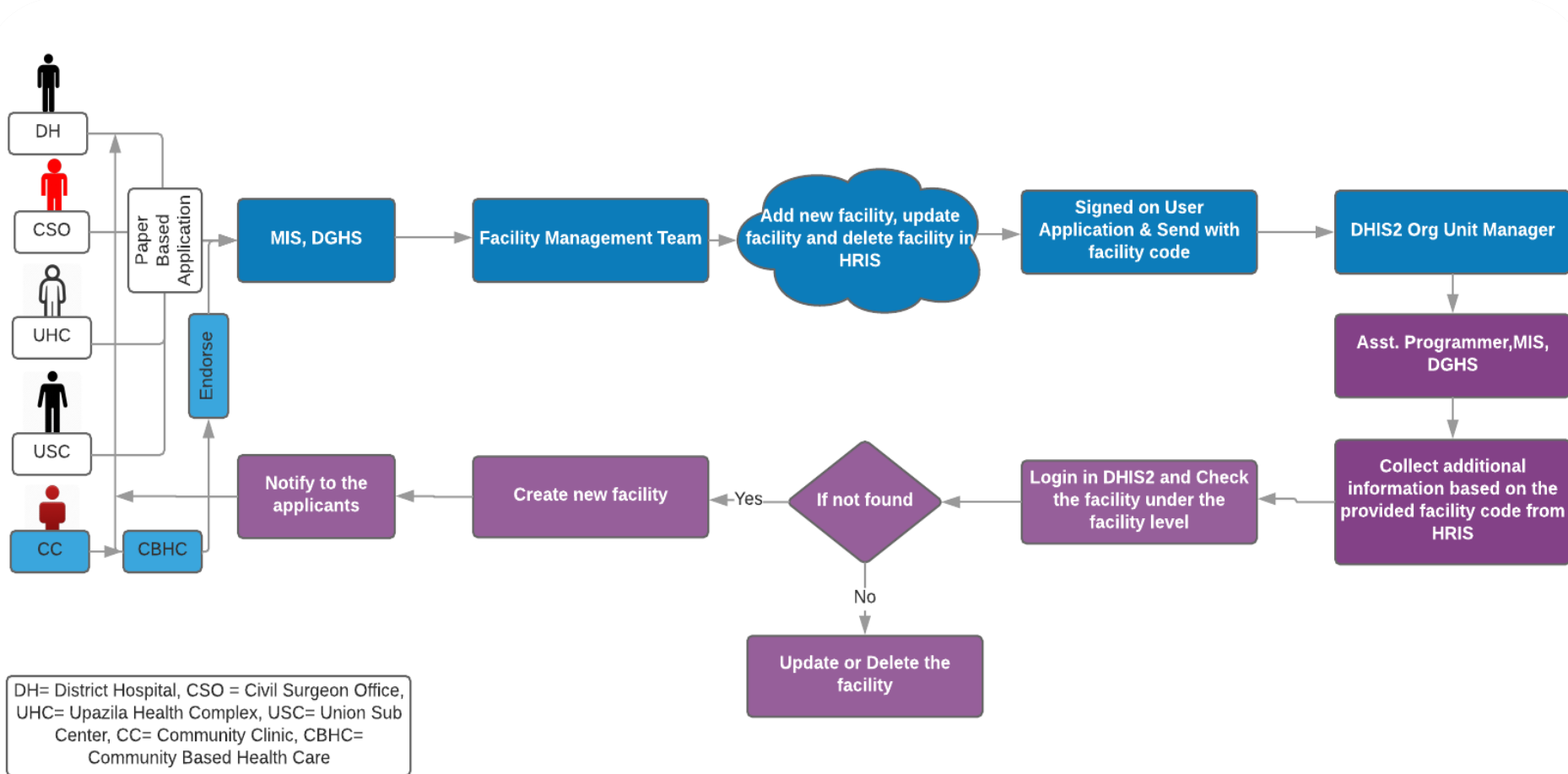


Figure: MIS, DGHS facility management work flow

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Org unit management work flow between HRIS and DHIS2

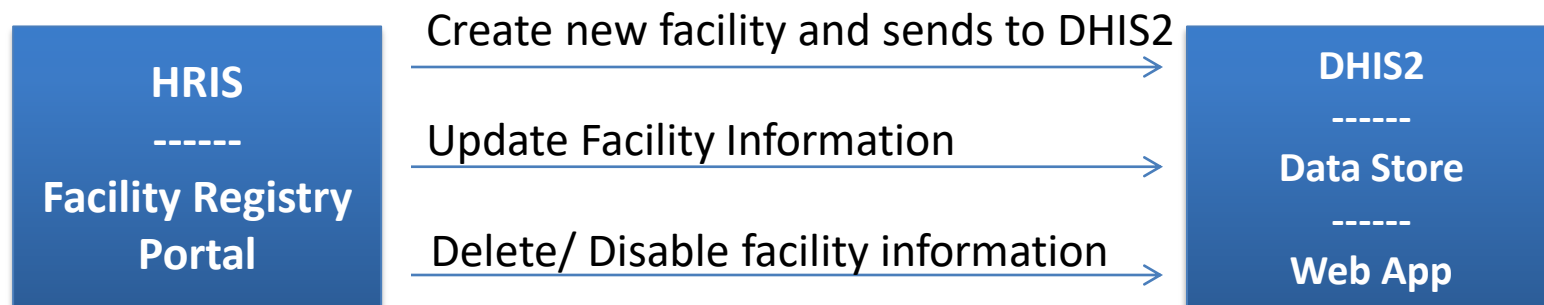


Figure: DHIS2 and HRIS Interoperability High Level Architecture

Single source and multiple destinations

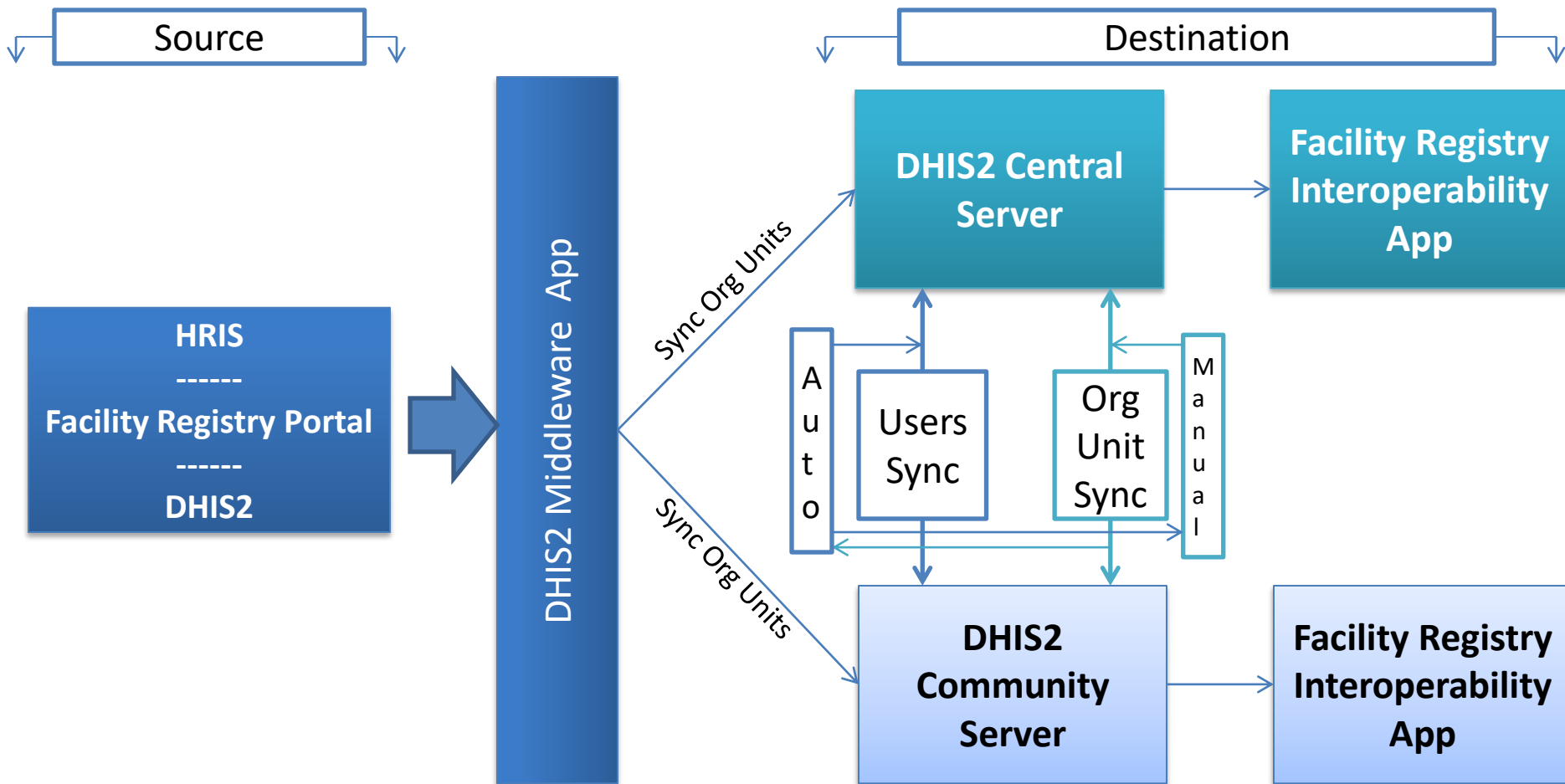


Figure: Multiple DHIS2 and HRIS Interoperability High Level Architecture

Internal Architecture of Interoperability Apps

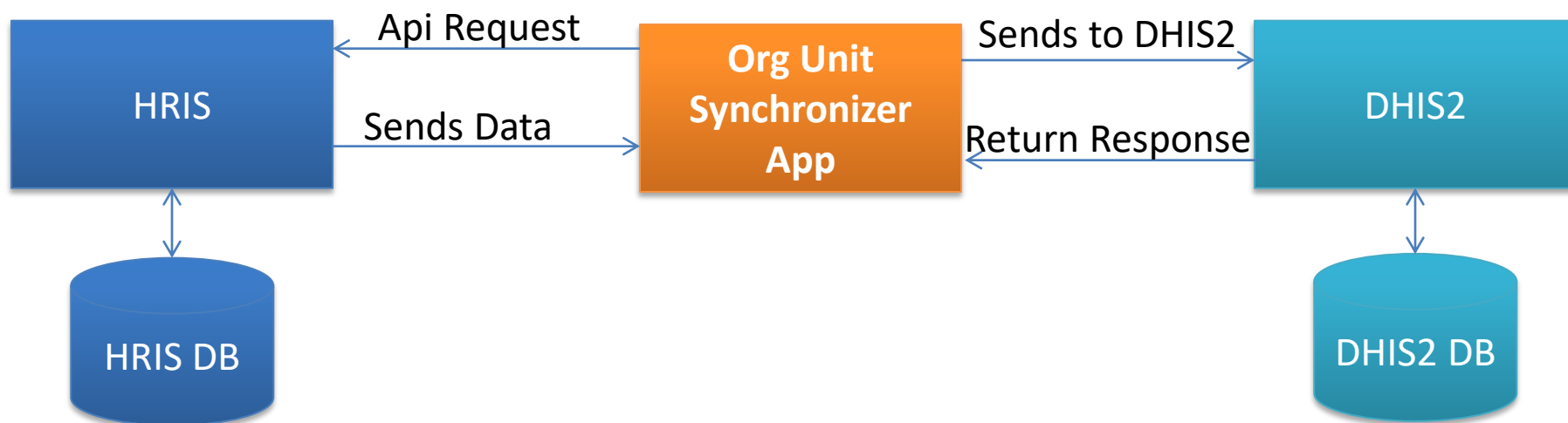
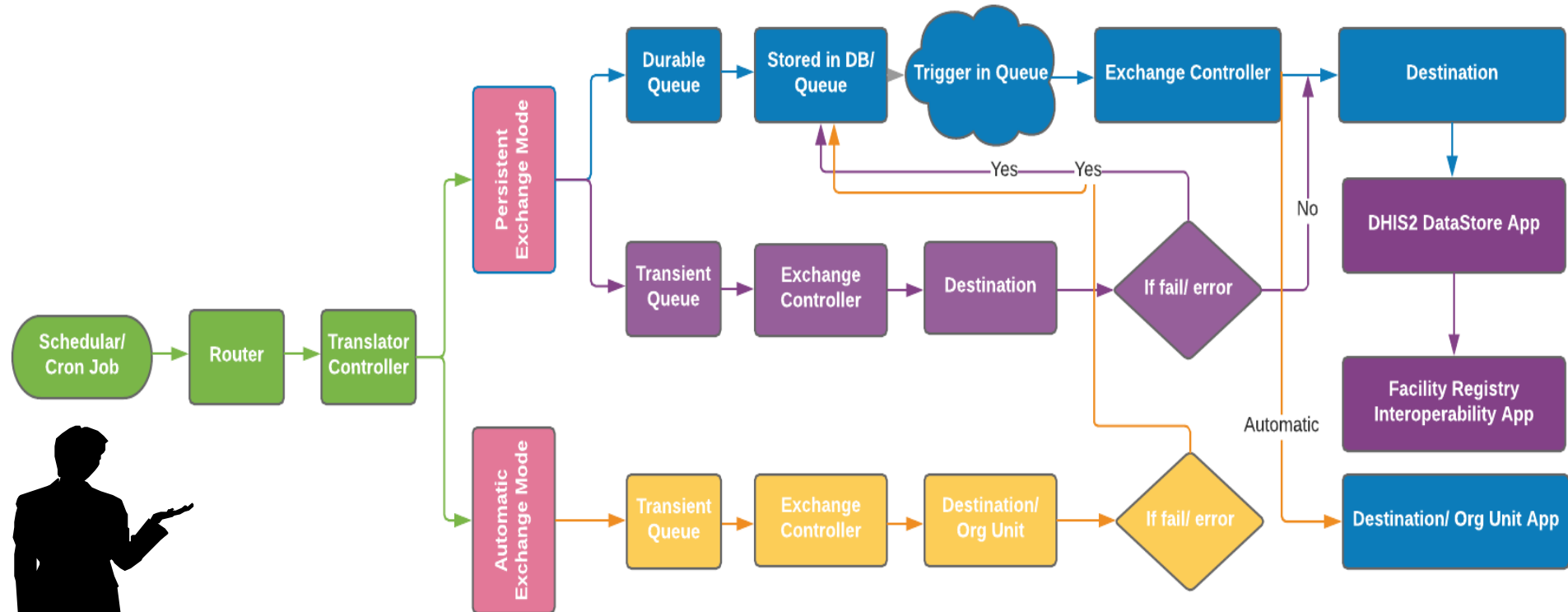


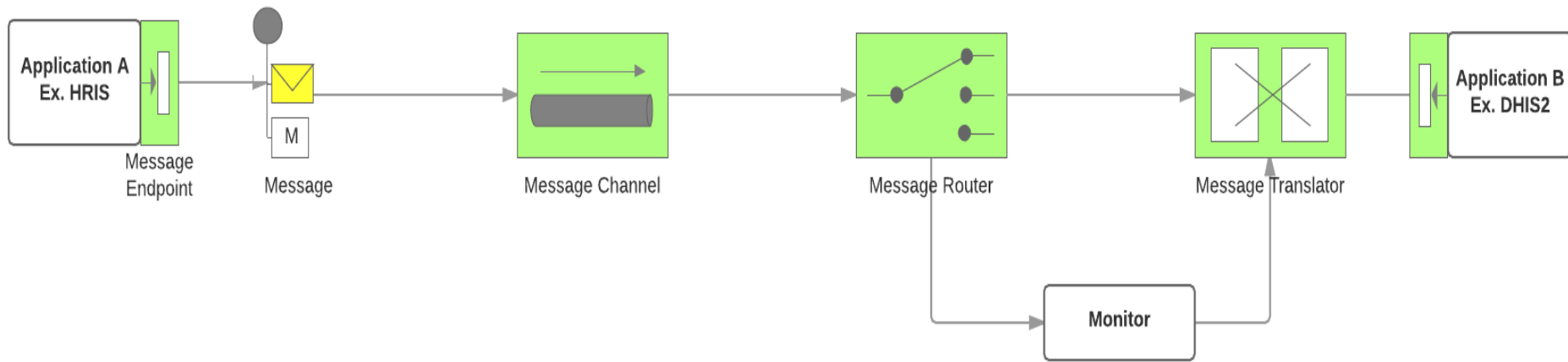
Figure: DHIS2 and HRIS Interoperability High Level Architecture

How Org Unit Synchronizer App works?



Message exchange design pattern

DHIS2 Middleware Apps



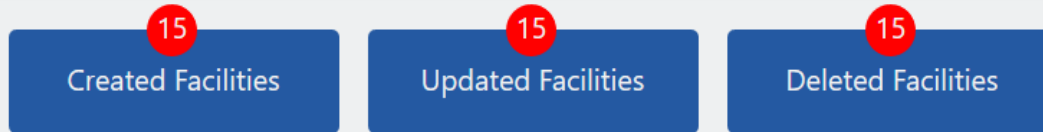
Live demo >> Org Unit Synchronizer App

**Live demo >> Facility Registry
Interoperability App**

Org. Unit Synchronizer App - Dashboard

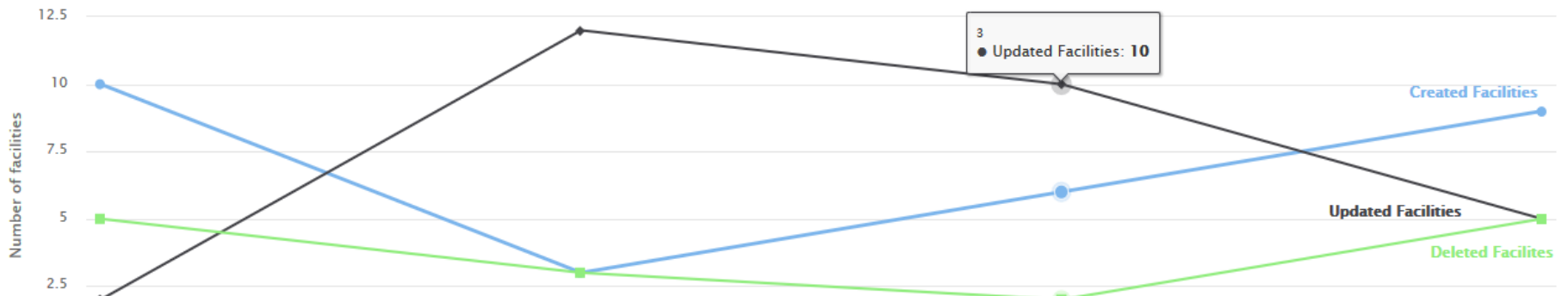


Notification Center (Daily)



Org. Unit Synchronizer Scheduler Operation Summary

Org. Unit Synchronizer Summary



Org. Unit Synchronizer App - Queue Management



List of All Queues

| Queue ID | Name | Durability | Change Durability ? | Auto Delete | Auto Expire | Max Length | Routing Key | Message Summary | Action |
|----------|------------|------------|-------------------------------------|-------------|-------------|------------|-------------|------------------------------|------------------------|
| 3 | HRIS-DHIS2 | transient | <input checked="" type="checkbox"/> | no | no | 2000 | | View Summary | Delete |

Add new queue

Add Queue

Org. Unit Synchronizer App – Channel Management



List of all Channels

| Channel Name | Short Code | Base URL | Token Type | Username | Channel Type | Instance Type | Notes | Action |
|----------------------|--------------|--|--------------|----------|--------------|---------------|-------|--------|
| DHIS2 Central Server | dhis_central | http://103.247.238.86:8081/dhis28/api/ | | julhas | destination | dhis2 | | Delete |
| DHIS2 Local Server | dhis_local | http://localhost:8080/dhis/api/ | | admin | destination1 | other | | Delete |
| HRIS | hris | https://hrm.dghs.gov.bd/api/1.0/ | X-Auth-Token | | source | other | | Delete |

Add new channel

Enter Channel Name (Ex. DHIS2 Central Server)

Enter Channel Short Name (Ex. dhis_central/ dhis_

Enter Base URL

Enter API Root/ Resource Path/ End Point

Select Token Type

Enter Token String

API Auth Username

API Auth Password

Select Channel Type

Select Source Type

Select queue

Write notes

Add New Instance

Orr Unit Synchronizer App – Translator Elements Mapping



Translator Elements Mapping

Translator Elements Mapping

| | | | |
|-------------------|-----------------------------------|---------------|----------------------|
| Source | <input type="text" value="HRIS"/> | | |
| Org. Unit Name(*) | <input type="text"/> | Short Name(*) | <input type="text"/> |
| Code(*) | <input type="text"/> | Description | <input type="text"/> |
| Opening Date(*) | <input type="text"/> | Closed Date | <input type="text"/> |
| Level-1 ID | <input type="text"/> | Level-1 Name | <input type="text"/> |
| Level-2 ID | <input type="text"/> | Level-2 Name | <input type="text"/> |
| Level-3 ID | <input type="text"/> | Level-3 Name | <input type="text"/> |
| | <input type="text"/> | | <input type="text"/> |
| Level-5 ID | <input type="text"/> | Level-5 Name | <input type="text"/> |
| Level-6 ID | <input type="text"/> | Level-6 Name | <input type="text"/> |
| Comment | <input type="text"/> | URL | <input type="text"/> |
| Contact Person | <input type="text"/> | Address | <input type="text"/> |
| Email | <input type="text"/> | Phone Number | <input type="text"/> |

Orr Unit Synchronizer App – Cron job/ Scheduler settings



Auto data synchronization settings

Scheduler On/ Off



Please enter the below information for setting the scheduler

| | |
|--|--|
| <input type="text" value="Cron Job Name"/> | <input type="text" value="Short Code"/> |
| <input type="text" value="Select Source Instance"/> | <input type="text" value="Select Scheduler Type"/> |
| <input type="text" value="Hour (range: 0-23)"/> | <input type="text" value="Minute (range: 0-59)"/> |
| <input type="text" value="Exported data limit from Source(Ex: 10)"/> | <input type="text" value="Export days from last date(max 31 days)"/> |
| <input type="text" value="Write notes"/> | |
| <input type="button" value="Create Scheduler"/> | |

| ID | Name | Short Code | Enable/Disable | Scheduler Type | Start Time | Created Date | Action |
|----|---------------------------------|------------|----------------|----------------|------------|--------------------------|---------------------------------------|
| 4 | DHIS2 and HRIS Interoperability | hris | 1 | daily | 9:21 | 2018-04-17T18:00:00.000Z | <input type="button" value="Delete"/> |

Orr Unit Synchronizer App – Message Exchange Mode setup



Data Exchange Mode (Persistent / Automatic)

Exchange Mode >> Persistent-App based operation (Off State) || Automatic(On State)

| Mode Type | Change Mode | Sync Time Every | Auto Sync Status | Action |
|------------|--------------------------|-----------------|-------------------------------------|--------|
| Persistent | <input type="checkbox"/> | 1m | <input checked="" type="checkbox"/> | Delete |

Add new exchange mode

| | |
|---------------------|--|
| Exchange Mode | <input type="text" value="Select exchange mode type"/> |
| Exchange Mode State | <input checked="" type="checkbox"/> |
| Auto Sync On/Off | <input checked="" type="checkbox"/> |
| Auto Sync Timing | <input type="text" value="Select Auto Sync Timing"/> |

Notes

Create

Org. Unit Synchronizer App – View Exchnages Message Summary

View message summary

| Response Type | Response Code | Total Message | Action |
|-----------------|---------------|---------------|----------------------|
| Conflict/Failed | 409 | 56 | View |
| Success | 201 | 242 | View |


[Sync All](#)

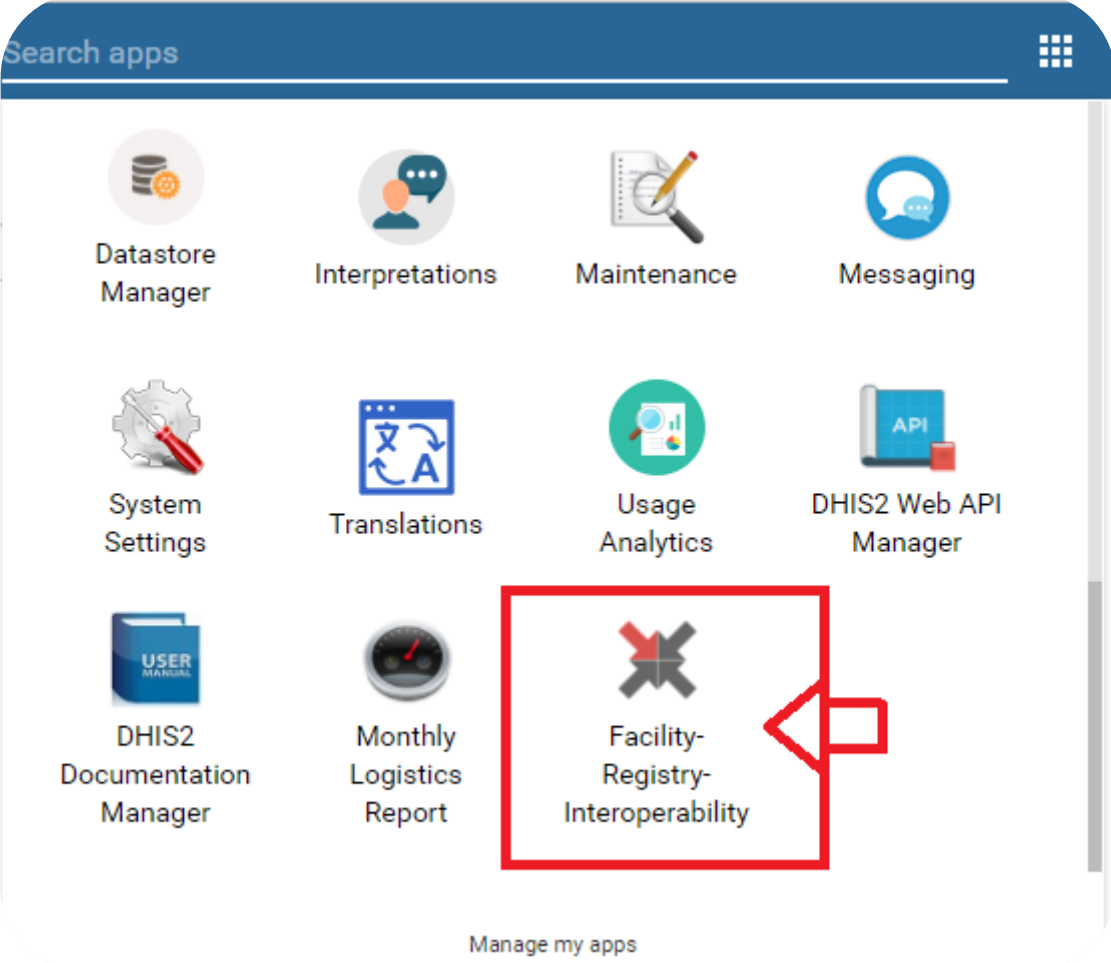
| ID | Name | Durability | Exchange Mode | Response Code | Destination | Action |
|------|------------|------------|---------------|---------------|----------------------|--------------------------|
| 1850 | HRIS-DHIS2 | transient | persistent | 201 | DHIS2 Central Server | Sync Now |












JSON Payload: {"code":"10000218","name":"Melandaha Upazila Health Complex","shortName":"Melandaha Upazila Health","displayName":"Melandaha Upazila Health Complex","displayShortName":"Melandaha Upazila Health Complex","openingDate":"2014-09-01","level2Id":"45","level2Name":"Mymensingh","level3Id":"39","level3Name":"Jamalpur","level4Id":"61","level4Name":"Melandaha","level5Id":"","level5Name":"","latitude":"24.9278603","longitude":"89.8317729","phoneNumber":"01712138396","contactPerson":"","address":"","email":"melandah@uhfpo.dghs.gov.bd","created":"2014-09-01","facilitytypeCode":"1029","facilitytypeName":"Upazila Health Complex","status":"update","parent":{"code":"453961","name":"","level":5,"parent":{"code":"453961","name":"Melandaha","level":4,"parent":{"code":"4539","name":"Jamalpur","level":3,"parent":{"code":"45","name":"Mymensingh","level":2}}}}, "parentCode":"453961"}

Snapshots: Facility Registry Interoperability App

Go > Apps > Facility Registry Interoperability

Search apps 



-  Datastore Manager
-  Interpretations
-  Maintenance
-  Messaging
-  System Settings
-  Translations
-  Usage Analytics
-  DHIS2 Web API Manager
-  DHIS2 Documentation Manager
-  Monthly Logistics Report
-  Facility-Registry-Interoperability

Manage my apps

Manage my apps



-  Datastore Manager
-  Interpretations
-  Facility-Registry-Interoperability

Facility Registry Interoperability App Interface >> Dashboard

dhis2

DHIS 2

Search apps



aa

Facility Registry Interoperability App

Home | New Facility Requests | Update Requests | Delete Requests | Reports ▾ | Facility Location



New Facility Create Requests



All Existing Facility Update Requests



All Existing Facility Detele Requests



Send feedback to the facility



Facility Map Location





































































Data Sets Assignment

Facility Registry Interoperability App Interface >> New Requests

Facility Registry Interoperability App

| | | | | | | | | | | |
|------|-----------------------|-----------------|-----------------|-----------|-------------------|--|--|--|--|--|
| Home | New Facility Requests | Update Requests | Delete Requests | Reports ▾ | Facility Location | | | | | |
|------|-----------------------|-----------------|-----------------|-----------|-------------------|--|--|--|--|--|

List of all new facility create requests

| Facility Name & Code | Detail | Parent Code | Opening Date | Location | DataSets | Status | Approve | Ignore | Feedback | View |
|---|---|-------------|--------------|------------|---|--------|---|---|---|---|
| Central Drug Addiction Treatment Centre (10024644) |  | 302690 | 2018-01-09 | 📍Lat: Lng: |  | New |  |  |  |  |
| Purba Charbata CC - Subarnachar (10024733) |  | 207585 | 2018-04-09 | 📍Lat: Lng: |  | New |  |  |  |  |
| Nayapara CC - Madan (10024664) |  | 457256 | 2018-03-10 | 📍Lat: Lng: |  | New |  |  |  |  |
| Laba Para CC - Mahalchari (10024640) |  | 204665 | 2018-01-04 | 📍Lat: Lng: |  | New |  |  |  |  |
| Akbari CC - Mahalchari (10024643) |  | 204665 | 2018-01-04 | 📍Lat: Lng: |  | New |  |  |  |  |
| Hodiganj District Jail Hospital (10024651) |  | 603644 | 2018-02-04 | 📍Lat: Lng: |  | New |  |  |  |  |
| Department of Agricultural Extension (DAE), Khamarbari (10024649) |  | 302690 | 2018-01-28 | 📍Lat: Lng: |  | New |  |  |  |  |
| Pathakata CC - Mathbaria (10024637) |  | 107958 | 2018-01-04 | 📍Lat: Lng: |  | New |  |  |  |  |
| Mahmudpur CC- Kalaroa (10024647) |  | 408743 | 2018-01-11 | 📍Lat: Lng: |  | New |  |  |  |  |
| Khudrokathi CC - Babujanj (10024726) |  | 100603 | 2018-04-04 | 📍Lat: Lng: |  | New |  |  |  |  |
| Jahaimara CC - Subarnachar |  | 207585 | 2018-04-09 | 📍Lat: Lng: |  | New |  |  |  |  |

Facility Registry Interoperability App Interface >> All Update Requests

Facility Registry Interoperability App

- [Home](#)
- [New Facility Requests](#)
- [Update Requests](#)
- [Delete Requests](#)
- [Reports ▾](#)
- [Facility Location](#)

List of all update requests

| Facility Name & Code | Detail | Parent Code | Opening Date | Location | DataSets | Status | Approve | Ignore | Feedback | View |
|--|--------|-------------|--------------|---|----------|----------------|-------------------------------------|--------------------------|----------|----------------------|
| Khangonj Union Sub Center (10000528) | | 308276 | 2014-09-01 | Lat: Lng: | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Khaliajuri Upazila Health Complex (10000486) | | 457238 | 2014-09-01 | Lat: 24.6864178 Lng: 91.1161165999999 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Manikganj (sadar) Upazila Health Office (10000295) | | 305646 | 2014-09-01 | Lat: 20.661913 Lng: 88.002548 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Shibpur Upazila Health Complex (10000461) | | 306876 | 2014-09-01 | Lat: 24.037979 Lng: 90.733634 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Ghior Upazila Health Complex (10000281) | | 305622 | 2014-09-01 | Lat: 23.8703485 Lng: 89.9159784999999 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Madaripur Civil Surgeon Office (10000262) | | 305454 | 2014-09-01 | Lat: 23.16509 Lng: 90.21196 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Kishoreganj (sadar) Upazila Health Office (10000242) | | 304849 | 2014-09-01 | Lat: 24.2717 Lng: 90.4636 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |
| Belabo Upazila Health Complex (10000436) | | 306807 | 2014-09-01 | Lat: 24.082201 Lng: 90.838974 | | Update Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | View |

Facility Registry Interoperability App Interface >> All Delete Requests

Facility Registry Interoperability App

| | | | | | | |
|------|-----------------------|-----------------|-----------------|-----------|-------------------|--|
| Home | New Facility Requests | Update Requests | Delete Requests | Reports ▾ | Facility Location | |
|------|-----------------------|-----------------|-----------------|-----------|-------------------|--|

List of all delete requests

| Facility Name & Code | Detail | Parent Code | Opening Date | Location | DataSets | Status | Approve | Ignore | Feedback | Restore |
|---|---|-------------|--------------|--|---|----------------|-------------------------------------|--------------------------|---|---------|
| Bilmamudpur Union Sub Center (10000099) |  | 302947 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Dhaka Dental College (10000027) |  | 302608 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Motijheel Urban Dispensary (10000046) |  | 302654 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Palashi Barac Urban Dispensary (10000049) |  | 302663 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Birulia Union Sub Center (10000082) |  | 30267233 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Khilgoan Urban Dispensary (10000042) |  | 302636 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Sir Salimullah Medical College (10000055) |  | 3026 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |
| Gandaria Urban Dispensary (10000037) |  | 302624 | 2014-09-01 |  Lat: Lng: |  | Delete Request | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  | |

Facility Registry Interoperability App Interface >> Location in map

Facility Registry Interoperability App

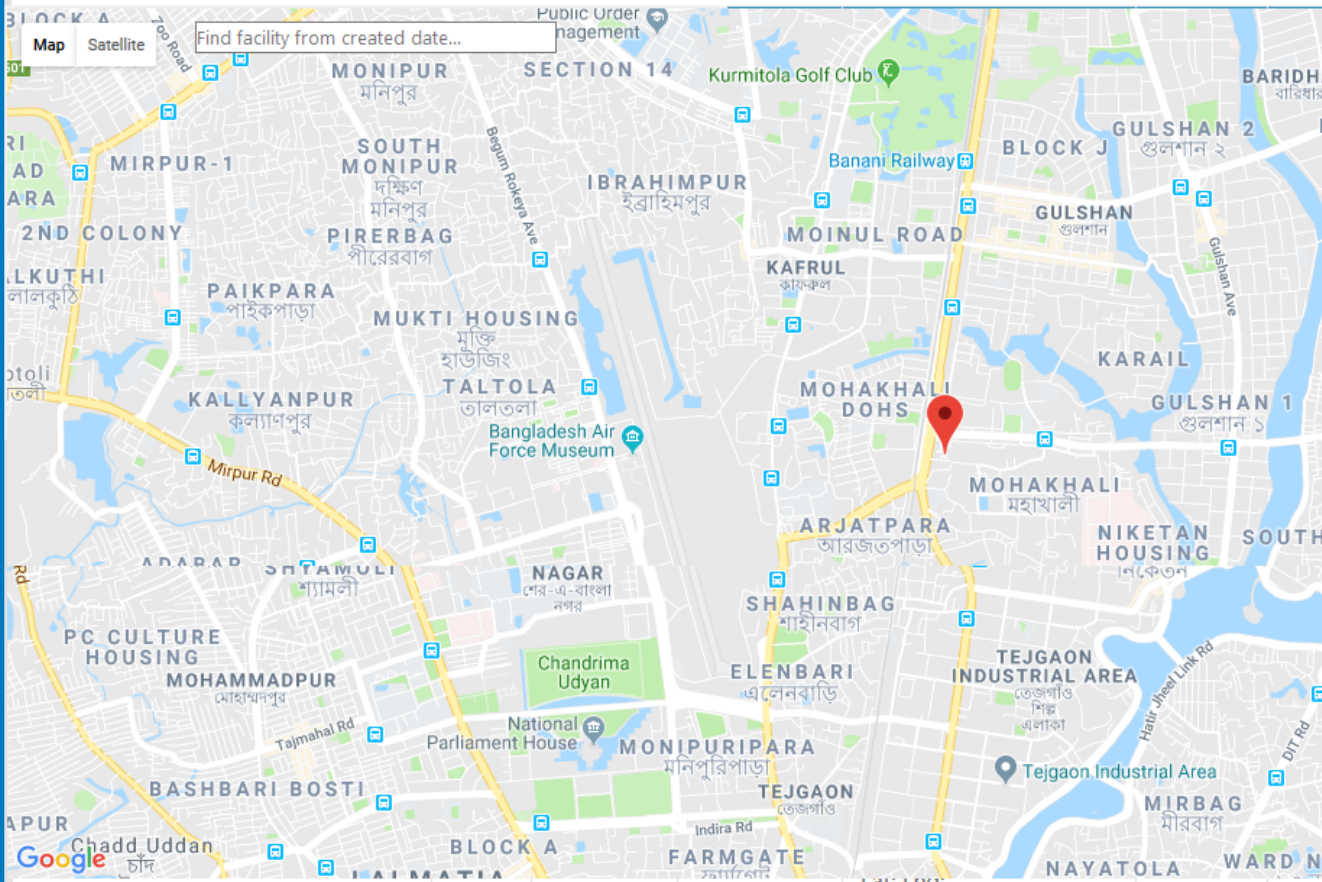
Home New Facility Requests Update Requests Delete Requests Reports Facility Location

Operation Types

Date from

Date To

Search



FACILITY INFORMATION DETAIL

Level of Info Detail

Facility Name

Short Name

Code

Description

Opening Date

FACILITY CONTACT DETAIL

Level of Info Detail

Contact Person

Address

Email

Thanks
Any questions?