

Digital Infrastructure for Verifiable Open Credentialing

#### DIVOC

## **SHARED VISION**

Enable countries to digitally orchestrate large scale vaccination and certification programs using open source digital infrastructure as a public good.



# **UNDERSTANDING DIVOC**

## WHAT IS DIVOC?

DIVOC is a flexible & extendable software that helps countries to digitally orchestrate large scale vaccination & certification using open source technologies and a scalable, data driven architecture

# Digital Infrastructure for Verifiable Open Credentialing



VACCINE TESTING, APPROVALS, SUPPLY MANAGEMENT



TRAINING,
eLEARNING
WORKFORCE MOBILIZATION



ROLLOUT, REGISTRATION AND APPOINTMENT BOOKING, CERTIFICATE ISSUANCE, FEEDBACK MONITORING



## **Platform Details**

# **Guiding Principles**

- Versatile
- Allows for plug & play
- Trustworthy
- Citizen-centric approach

## **Architecture Principles**

- Micro-services & API based
- Interoperable
- Scalable
- Flexible & Configurable
- Observable
- Resilient
- Privacy & Security by design
- Open Standards
- Trustable
- Internationalizable

## Technologies

- Front end: AngularJS, HTML5, Go
- Framework: Spring Boot
- DB: Postgres
- Components: Opensaber, Apache Kafka, Radis
- Identity and Access
   Management: KeyClock
- Deployment: Docker



# **DIVOC** has 4 core modules

# each of which can be used independently or together and integrated with existing systems

Orchestration Module

Maintenance of program, vaccine, facility, and vaccinator registries

Registration & Appointment Module

Self registration and appointment booking for vaccination

Certificate Module

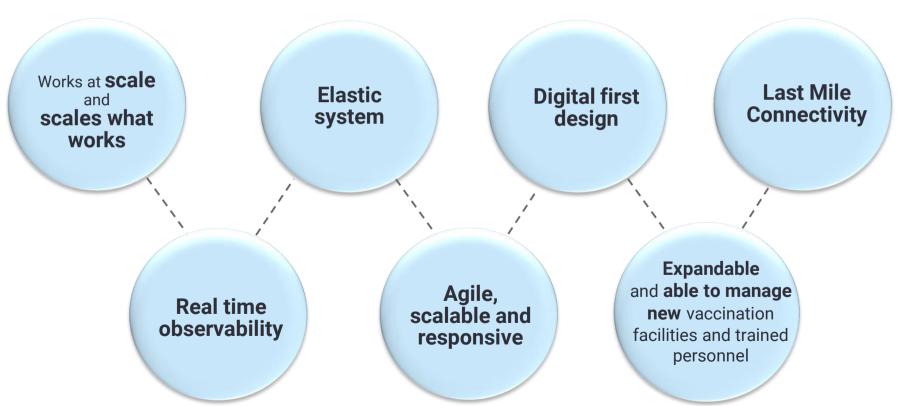
Digital credentialing to vaccinated population

Feedback Module

Digital feedback collection on AEFI

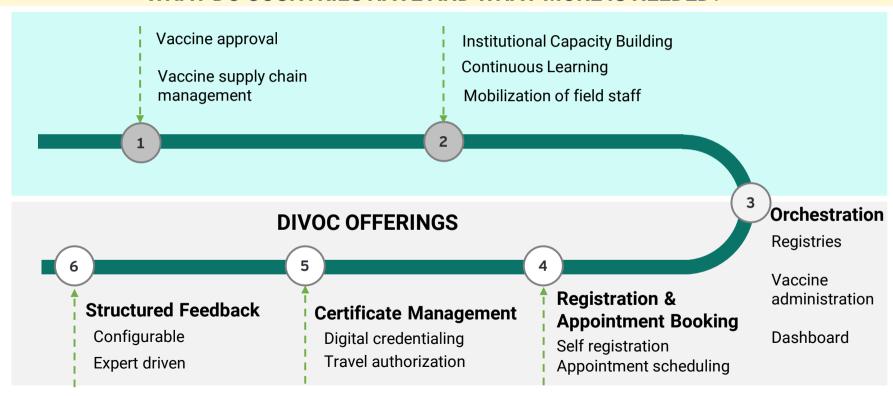
## WHY DIVOC?

#### WHAT DO COUNTRIES NEED FOR LARGE SCALE VACCINATION ROLL OUT?



## **DIVOC'S ROLE IN COUNTRY ROLL OUT**

#### WHAT DO COUNTRIES HAVE AND WHAT MORE IS NEEDED?\*



\*Countries need underlying IT infrastructure to support the vaccination roll out



Orchestration Module

Registration & Appointment Module

Certificate Module

Feedback Module

Maintenance of program, vaccine, facility, and vaccinator registries

Self registration and appointment scheduling for vaccination

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Digital feedback collection on AEFI



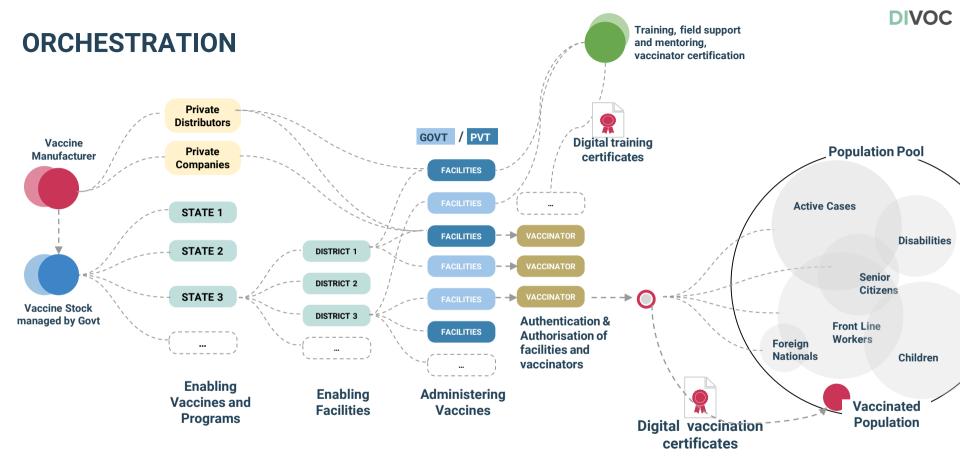
# **ORCHESTRATION MODULE**



# **REGISTRIES**

# DIVOC can create registries or configure the existing ones

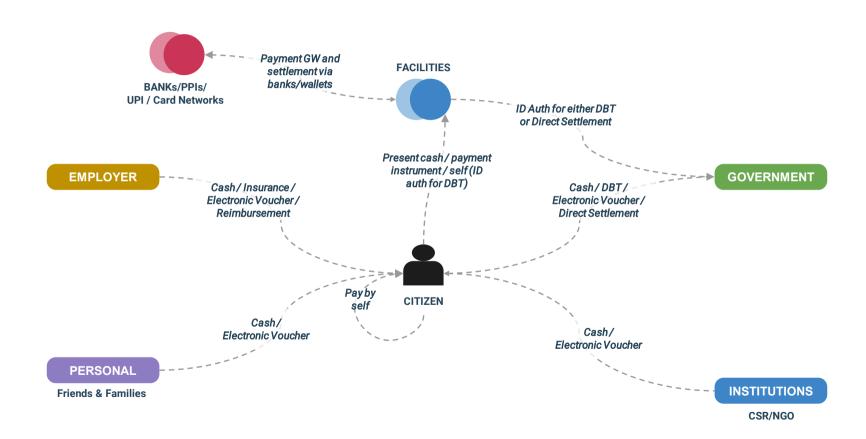
PROGRAM REGISTRY	VACCINE REGISTRY	FACILITY REGISTRY	VACCINATOR REGISTRY	PRE-ENROLMENT REGISTRY
Vaccination programs	Approved vaccines	Approved facilities	Trained vaccinators	Identified population
Active status	Active status	Location	Active status	National ID
Allowed vaccines	Vaccination schedule	Active status	Training certificate	Secondary identifiers
Start and End dates	Vaccination method	Vaccination daily rate	Associated facilities	



A platform to orchestrate the complexity within an ecosystem of diverse players to administer a vaccine program across the country successfully.

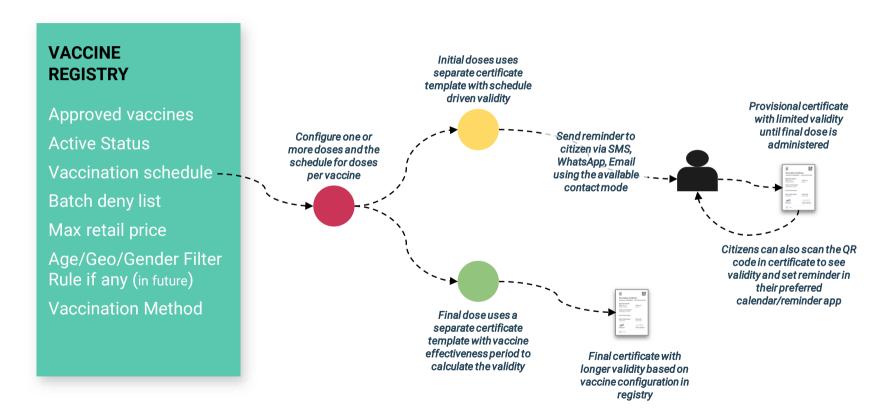


## LEVERAGING MULTIPLE PAYMENT MECHANISMS



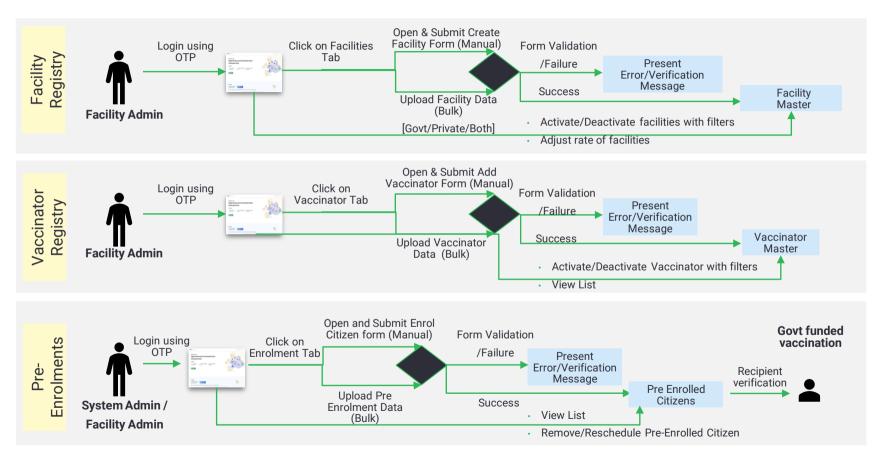


## HANDLING MULTIPLE DOSES AND REMINDERS



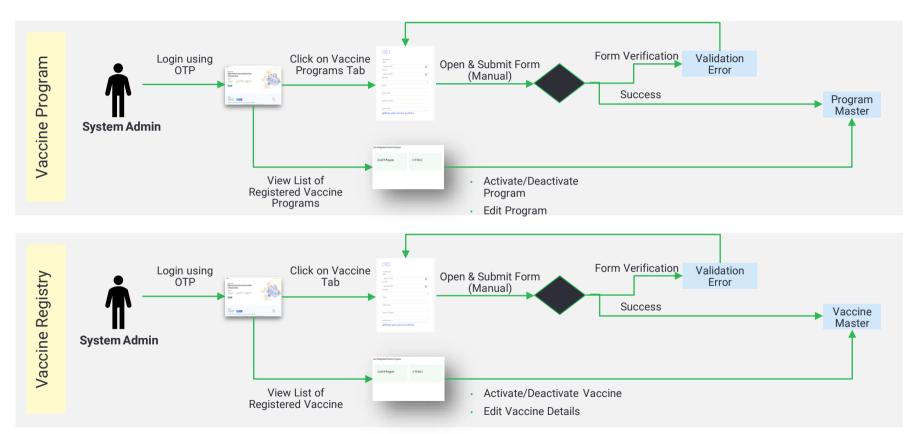


# **USER JOURNEY: Admin – Management Portal (1/2)**





# **USER JOURNEY: Admin – Management Portal (1/2)**





Orchestration Module Registration & Appointment Module

Certificate Module

Feedback Module

Maintenance of program, vaccine, facility, and vaccinator registries

Self registration and appointment scheduling for vaccination

Digital credentialing to vaccinated population

Digital feedback collection on AEFI



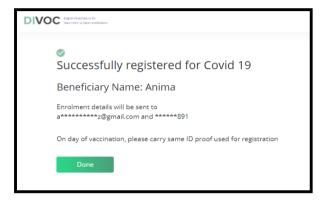
# **Registration & Appointment Module**

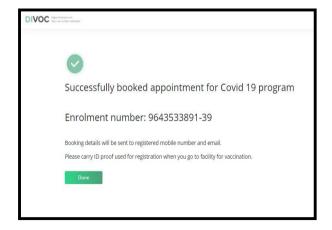


### **FEATURES**

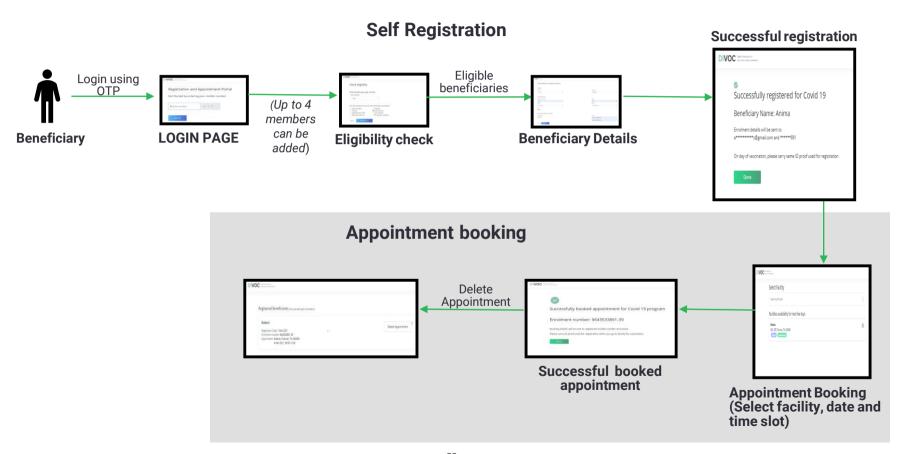
Self registration by citizens for the country's vaccination drive. Features included are:

- Selection of vaccination program
- Eligibility check
- Up to 4 members can be added using one mobile number
- Feature for selecting health facility using pin code
- Feature for scheduling appointment
- Feature to delete appointment





# **USER JOURNEY: DIVOC – Registration & Appointment Module**





Orchestration Module

Registration & Appointment Module

Certificate Module

Feedback Module

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# **CERTIFICATE MODULE**



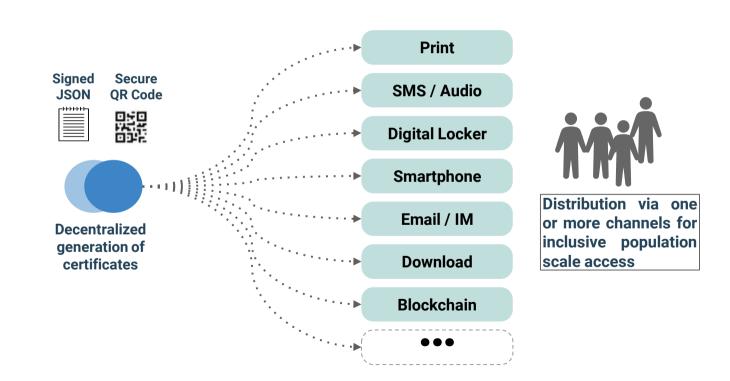
#### **FEATURES**

- Conforming to WHO/IHR guidelines\* based on W3C verifiable credential\* specifications
- Authenticity verifiable via digitally signed QR code
- Available digitally on smartphone with QR code
- Printable for non-smartphone users
- Multilingual templates (for data and layout)
- Ability for users to download/print after vaccination either at facility or from home in self/assisted modes
- Easy integration with health and certificate lockers, as well as with immunization e-registries and EHR systems

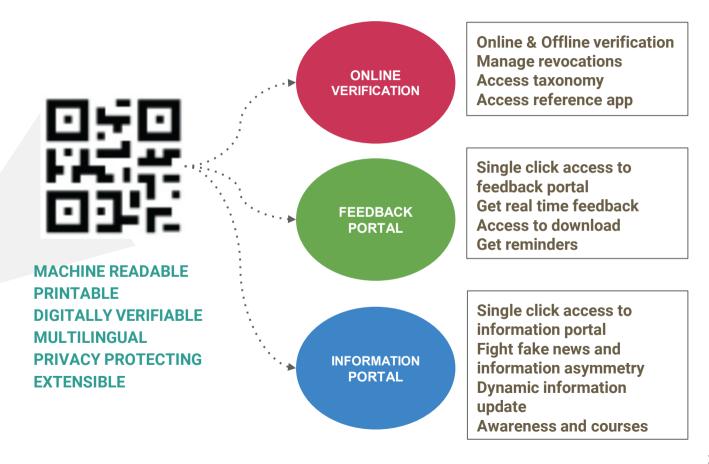




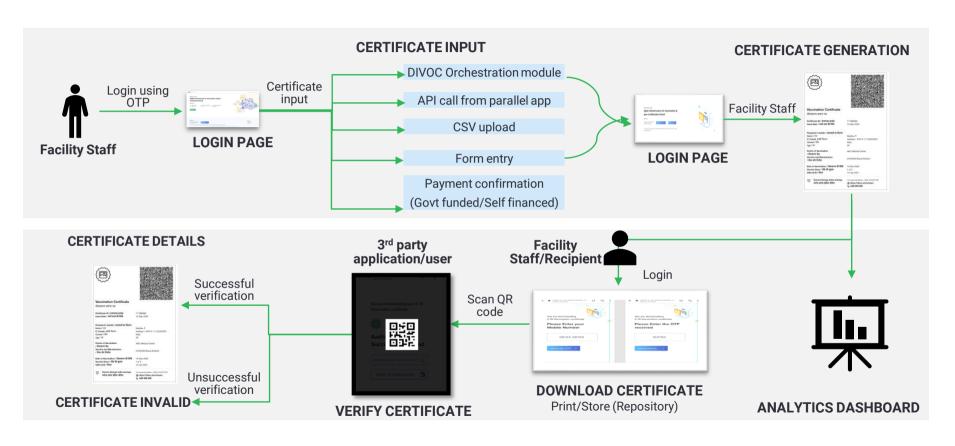
# ONCE THE CERTIFICATE IS ISSUED, MULTI-CHANNEL DISTRIBUTION AND PRINT SCHEMES SHOULD WORK TO ENSURE COUNTRIES AND USERS HAVE A CHOICE



### **ENERGIZED VACCINATION CERTIFICATE**



# **User Journey DIVOC: Certificate Module**





Orchestration Module Registration & Appointment Module

Certificate Module

Feedback Module

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# **FEEDBACK MODULE**



## **FEATURES**

#### Structured feedback

Configurable and expert driven

#### Various types

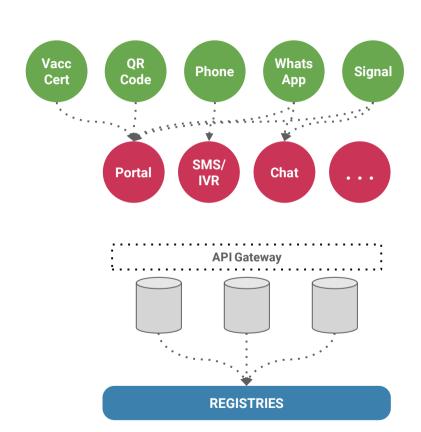
- Facility rating & feedback
- Vaccinator rating & feedback
- Vaccination response feedback

#### Multi channel/lingual

- Public portal, inbound SMS, IVR, WhatsApp, other apps via API
- Multiple languages

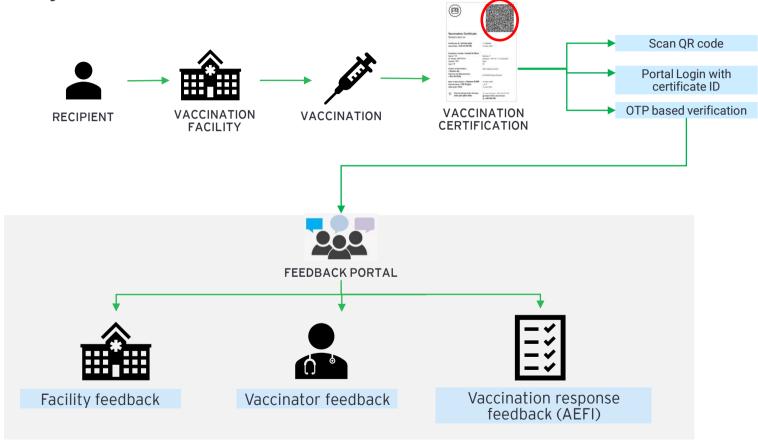
Self service and assisted modes

Can be integrated with AEFI systems and processes





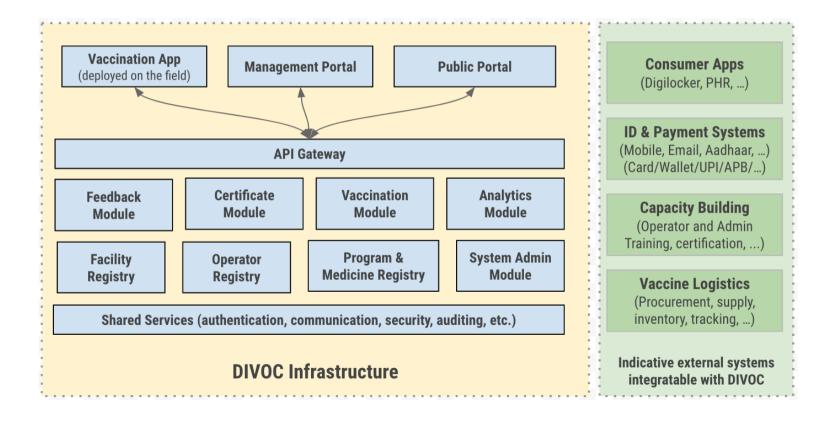
# **User Journey DIVOC: Feedback Module**



# **SYSTEM DETAILS**

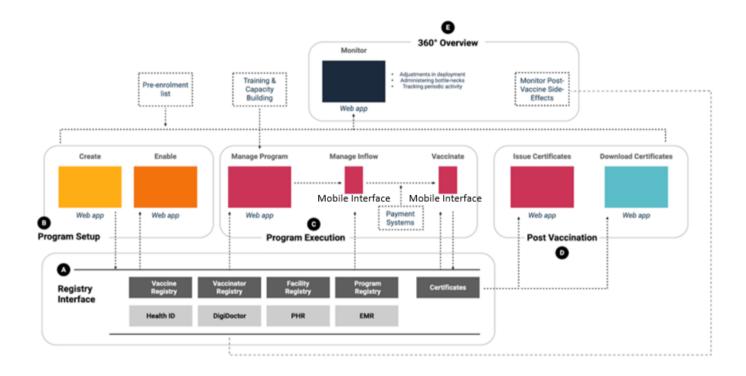


## HIGH LEVEL ARCHITECTURE





## **SYSTEM DETAILS**





#### **REGISTRY INTERFACE**

#### **Registry control parameters**

- Facility vaccination rate
- Facility enablements
- Health worker authorisation

Interacting with the DIVOC platform in 3 ways -

### Using DIVOC Frontend interface

Individuals /
Institutions or Facilities
can use the web
application to add
relevant details about
the vaccine, vaccine
administrator and the
participating facility.

# Using Existing Registries

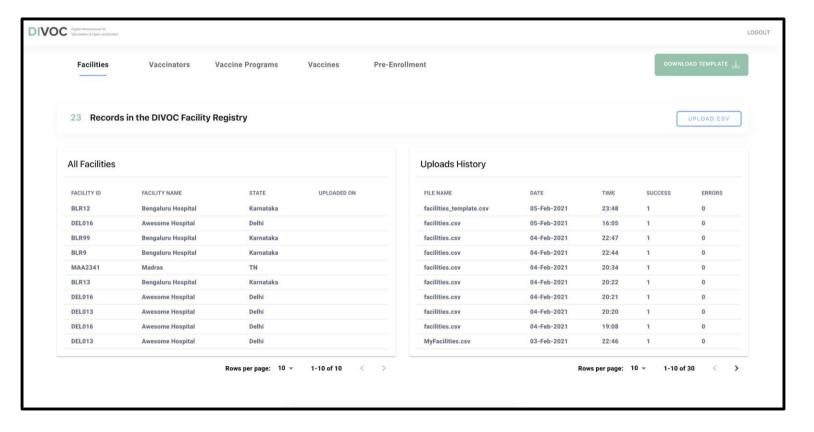
Seamless integration can be achieved using the DIVOC's open APIs.

# Backend uploads by System Admin

Data from MS Excel can be used for bulkupload of information into the registry.



#### **REGISTRY INTERFACE**





#### **PROGRAM SETUP**

Part 1

#### **Vaccination Program Setup**

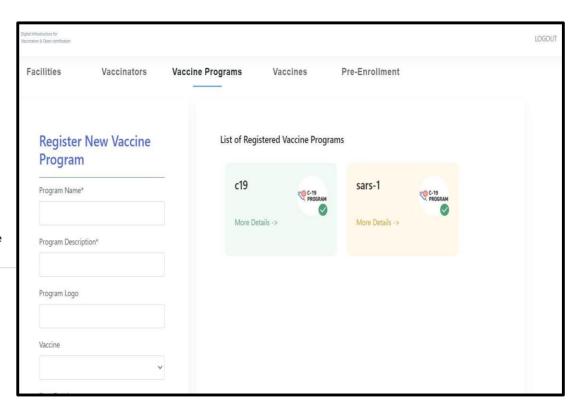
- · Approved vaccines & medicines
- · Vaccination schedule
- · Vaccination Method
- · Program Description
- · Start & End dates
- Effective until
- Price

Vaccination program setup can be done by the Ministry of Health & Welfare using the DIVOC front-end interface

Part 2

#### **Execution Plan Setup**

- Enabling approved facilities
- Enabling approved administrators
- · Enabling zones for program deployment
- Vaccine stock allocations



Execution plan setup can be done by the Central / State / District health officials



#### PROGRAM EXECUTION

#### Part 1

#### **Facility Admin Module**

- · Add / authenticate vaccinators
- · Manage and track all on-going vaccination programs at the facility
- Print digital receipts / certificates
- Communication interface with the central/state/district health offices
- Generate reports for internal audits and analytics

This web-application is used by the facility manager to manage and track the overall program at that facility.

#### Part 2

#### **Facility Vaccination Module**

- · Authenticate the inflow of recipients
- Manage the daily vaccination workloads
- · Verify recipient and create digital certificates

#### Manage Program

Used by the facility admin for managing the program at the facility

#### Manage Inflow

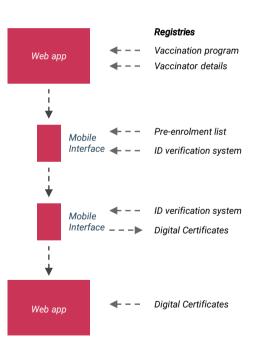
Used by the facility staff to add recipient details / authenticate pre-enrolled list of recipients

#### Vaccinate

Used by the vaccinators (Doctors/Nurses) to authenticate and issue digital certificates

#### **Issue Certificates**

Used by the facility staff to print receipts/certificates post vaccination



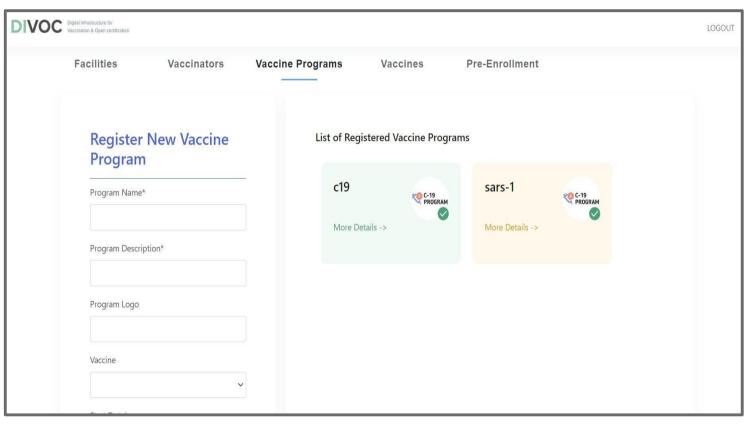
This will be used by the health worker while administering the vaccine.



#### **PROGRAM EXECUTION**

Manage Program

Used by the facility admin for managing the program at the facility

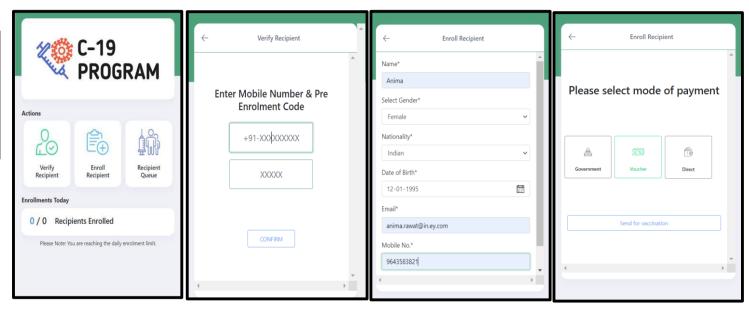




#### **VACCINATION FLOW**

#### Manage Inflow

Used by the facility staff to add recipient details / authenticate pre-enrolled list of recipients



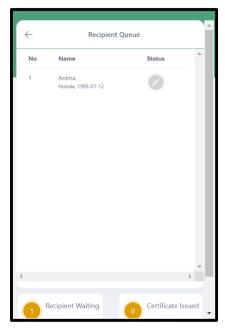
\* Only payment mode is captured. The actual payment transactions would happen on the prevalent digital payment systems present in a country.

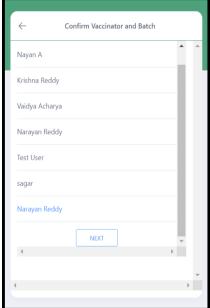


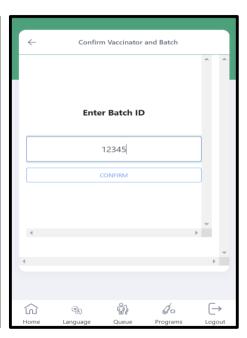
#### **VACCINATION FLOW**

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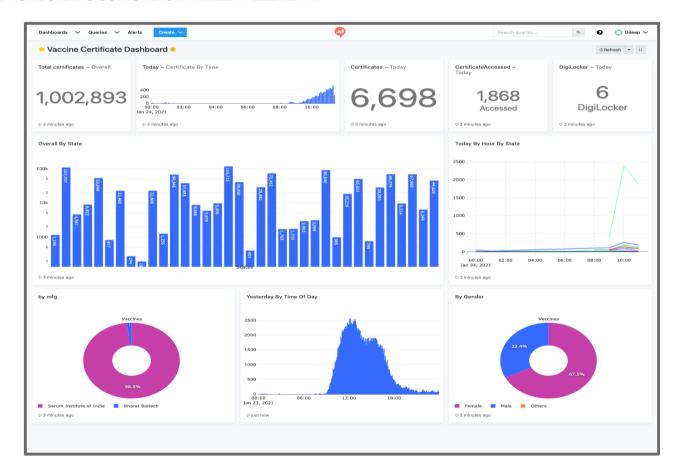






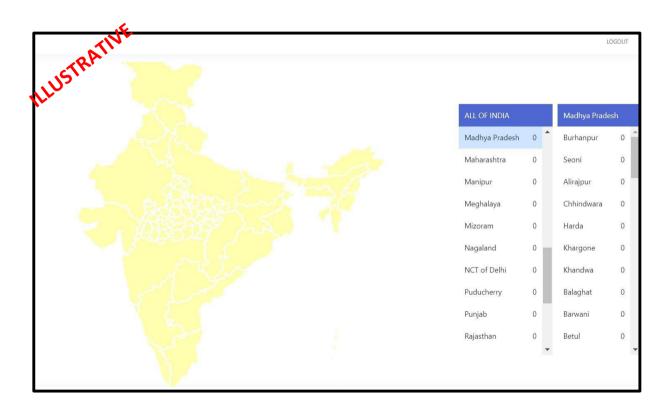
#### DIVOC

#### REAL TIME DASHBOARDS USING ANONYMIZED TELEMETRY



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#### REAL TIME DASHBOARDS USING ANONYMIZED TELEMETRY



# **IN SUMMARY**

Ability to vaccinate and certify the entire population at speed and scale in a controlled manner.

To manage the entire vaccination process by **leveraging existing ecosystems** and source of funds in a unified manner

To **control and manage** the approved medicine, its supply, facilities, operators, geographies of operation and the daily vaccination rate as per the supply of vaccines and the country's priorities.

To facilitate the above using a **digital backbone** in a seamless, efficient, auditable and a trustable manner, keeping choice, privacy and security in mind.

Issue a portable digitally verifiable certificate to citizens so that they can get back to work.

Obtain operational and post vaccination feedback in self-service and assisted modes

# DIVOC

A fully open source digital public good for any country to adopt From the team who has experience in building population scale platforms

**Digital Orchestration** 

**Digital Certification** 

**Digital Feedback** 

Adopters can choose any of the above modules or all together, integrate with existing systems, extend it, and use it freely.

DIVOC Documentation: <u>Understand DIVOC - DIVOC (egov.org.in)</u>
Project Repository: <u>GitHub - egovernments/DIVOC</u>

# **THANK YOU**