JGI JAIN DEEMED-TO-BE UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND IT

# Mini Project

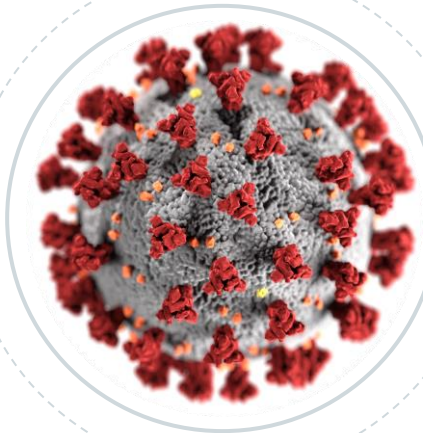

Under the guidance of

**Dr. Ganesh D**

Dept. of Computer Science

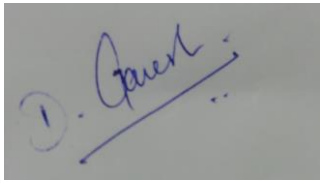

## Academic Year 2021 – 22

# *Forecasting Novel Coronavirus Phase III Using **Time-Series Analysis***



**Dr. Ganesh D** PHD
PROJECT GUIDE

ASSOCIATE PROFESSOR
Dept. of Computer Science
Jain (Deemed to be University)



**Y Suresh Kumar Reddy** MCA
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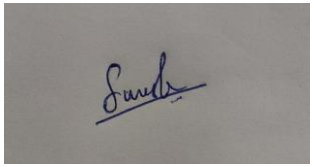


# Introduction

The COVID-19 **pandemic** has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to public health, food systems, and the world of work.

It is one of the prevalent **challenges** mankind has ever faced and there is a lot of **uncertainty** prevailing over the future with respect to COVID-19.

COVID-19 is **Co**rona **Vi**rus **D**isease-2019; it is caused by a coronavirus named **SARS-CoV-2.**

# Research Problem

People have refused to understand that following COVID guidelines will prevent forthcoming waves with different variants.

Factors of the coronavirus,

**Second wave**

- Complacency
- Super spreader events
- More infectious variants
- Insufficient vaccine coverage

**Third wave**

- Individual choices
- Vaccination coverage
- Variants

# Objective

To analyze and predict trends of COVID-19 with the help of **Time-series** models.

To extend a new **interactive web app** that visually represents the spread of the COVID-19 pandemic and its **forecast** across the different regions in India.

To support the government in making an **extensive decision** against possible threats and consequences with the help of accurate prediction of phase III.

# Functionality

Statistically, we are projecting the forecast information with the actual record.

Filters are enabled for an interactive experience for the end-user by providing state-wise, district-wise, and date-wise customization.

### Daily Pulse

- Forecast
- Actual
- Growth Rate
- Comparisons

### Vaccination

- Vaccine types
- Age-wise
- Gender-wise
- Dose-wise

### Awareness

- Campaigns
- Posters
- Videos
- Press releases

### Blog

- Blogs
- Articles
- Related sites

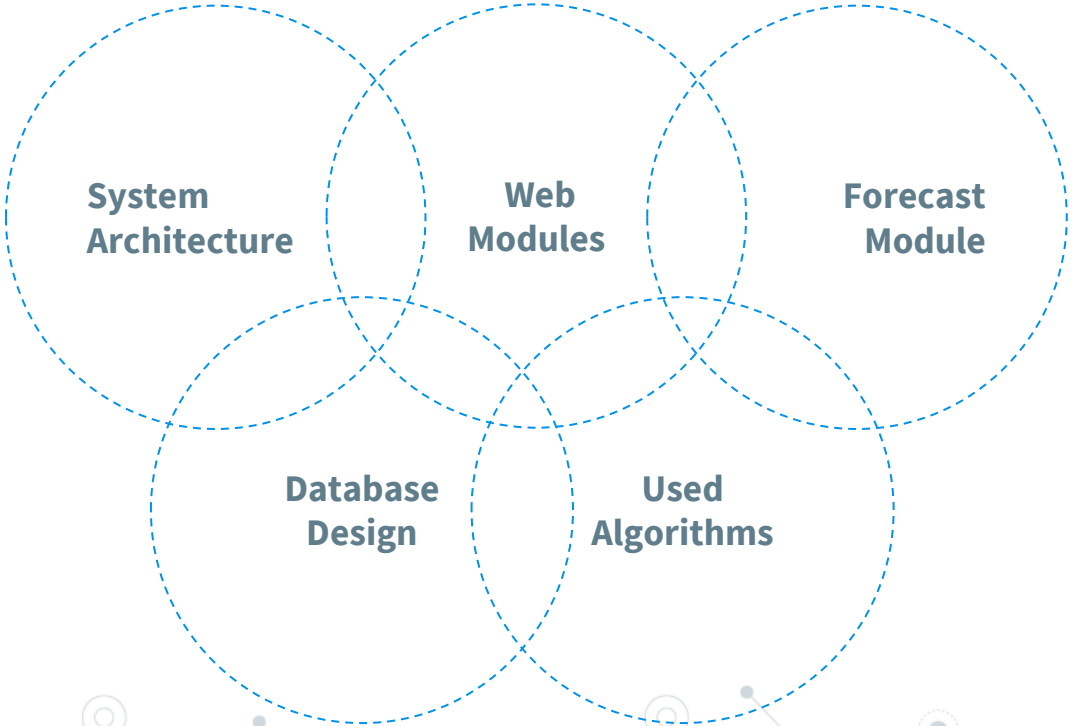
### Research Model

- Details of model used for forecasting
- Validation metric

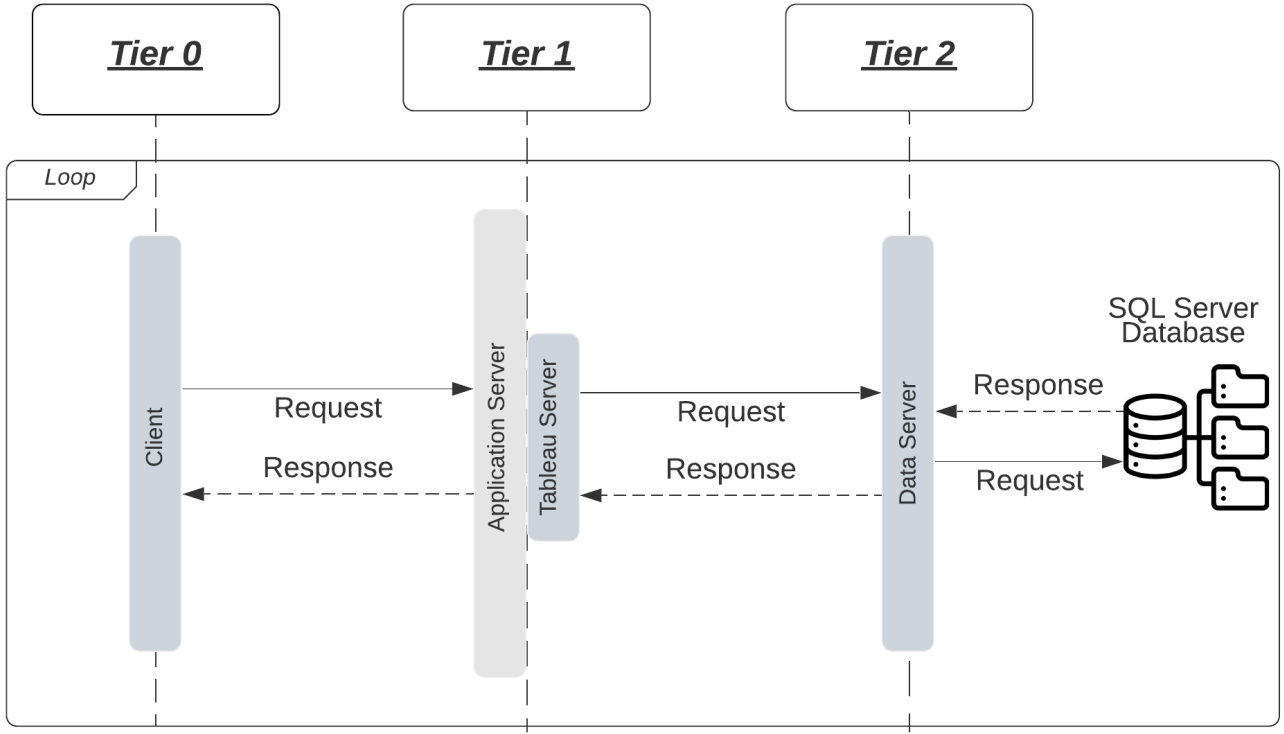
# System Requirements

| Hardware & Software | Configuration |
|---|---|
| RAM | **4 GB or above** |
| Processor | **i5, i7, or above** |
| OS | **Windows 10** |
| Storage | **5 GB free space** |
| IDE | **Jupyter Notebook, VS Code** |
| Tableau Desktop | **Tableau 2021.1 or later** |
| Cloud Services | **Amazon Simple Storage Service (S3)** |
| Browser | **Chrome / Safari / Edge latest version.** |

# System Design

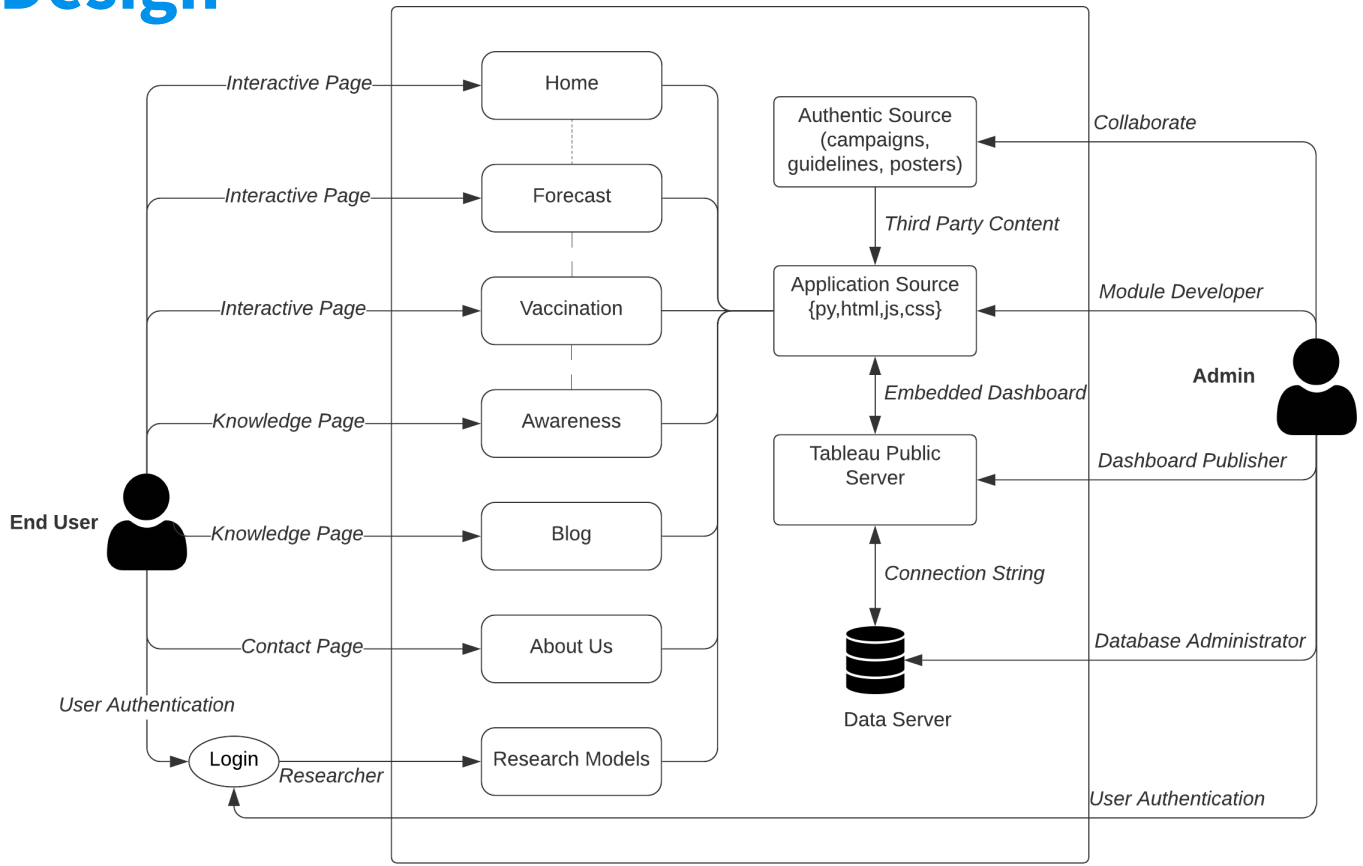


# System Architecture



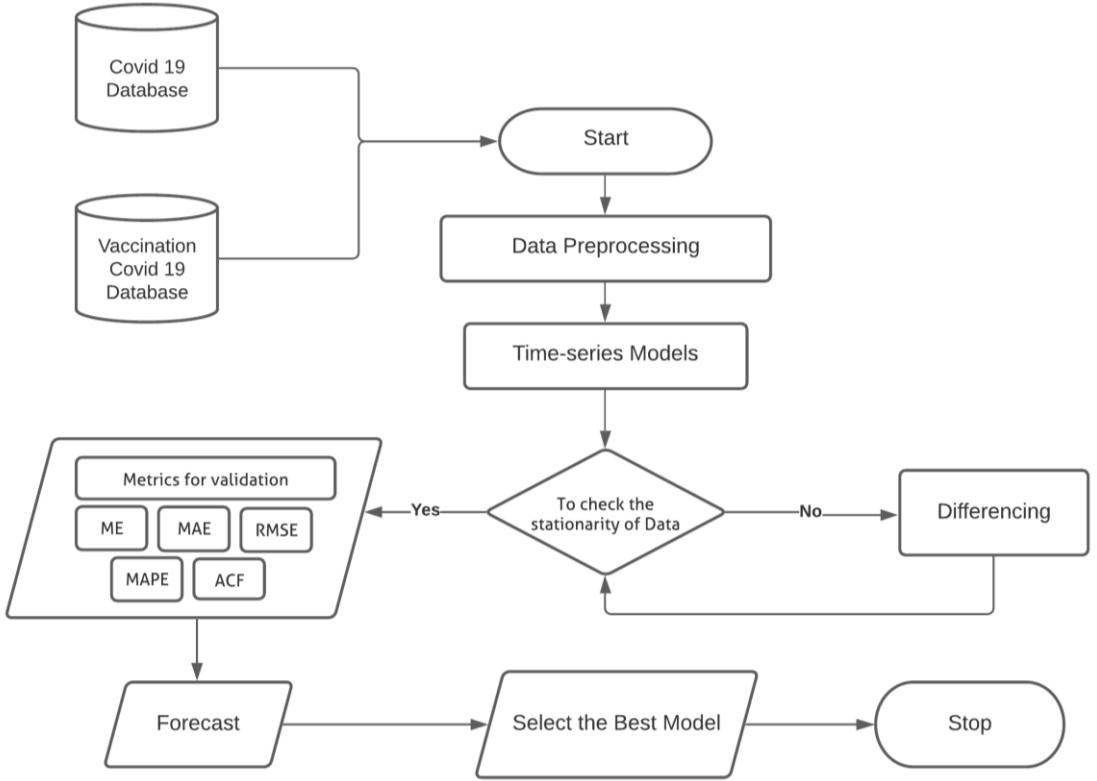
# Module Design

## WEB MODULE



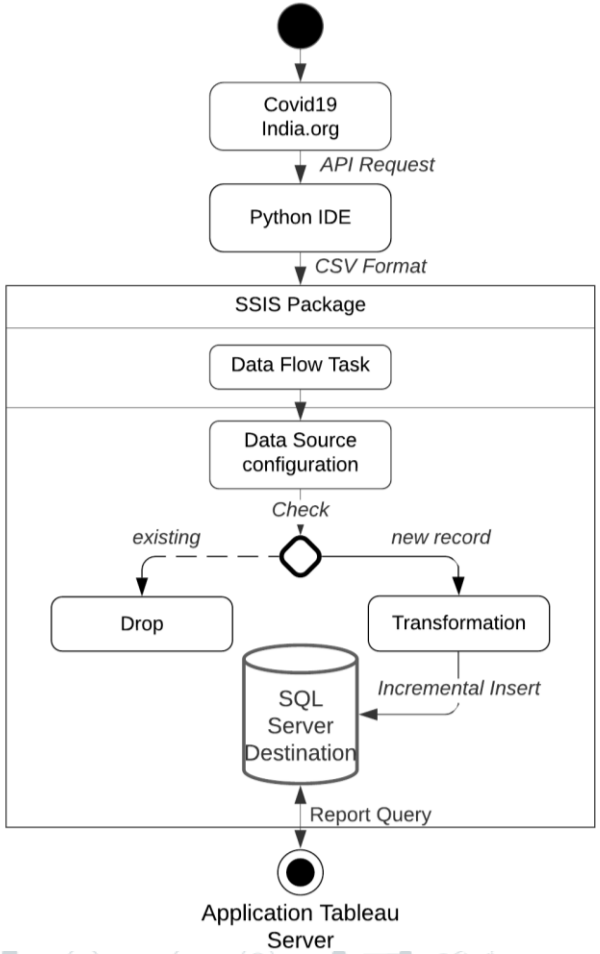
# Module Design

## FORECAST MODULE

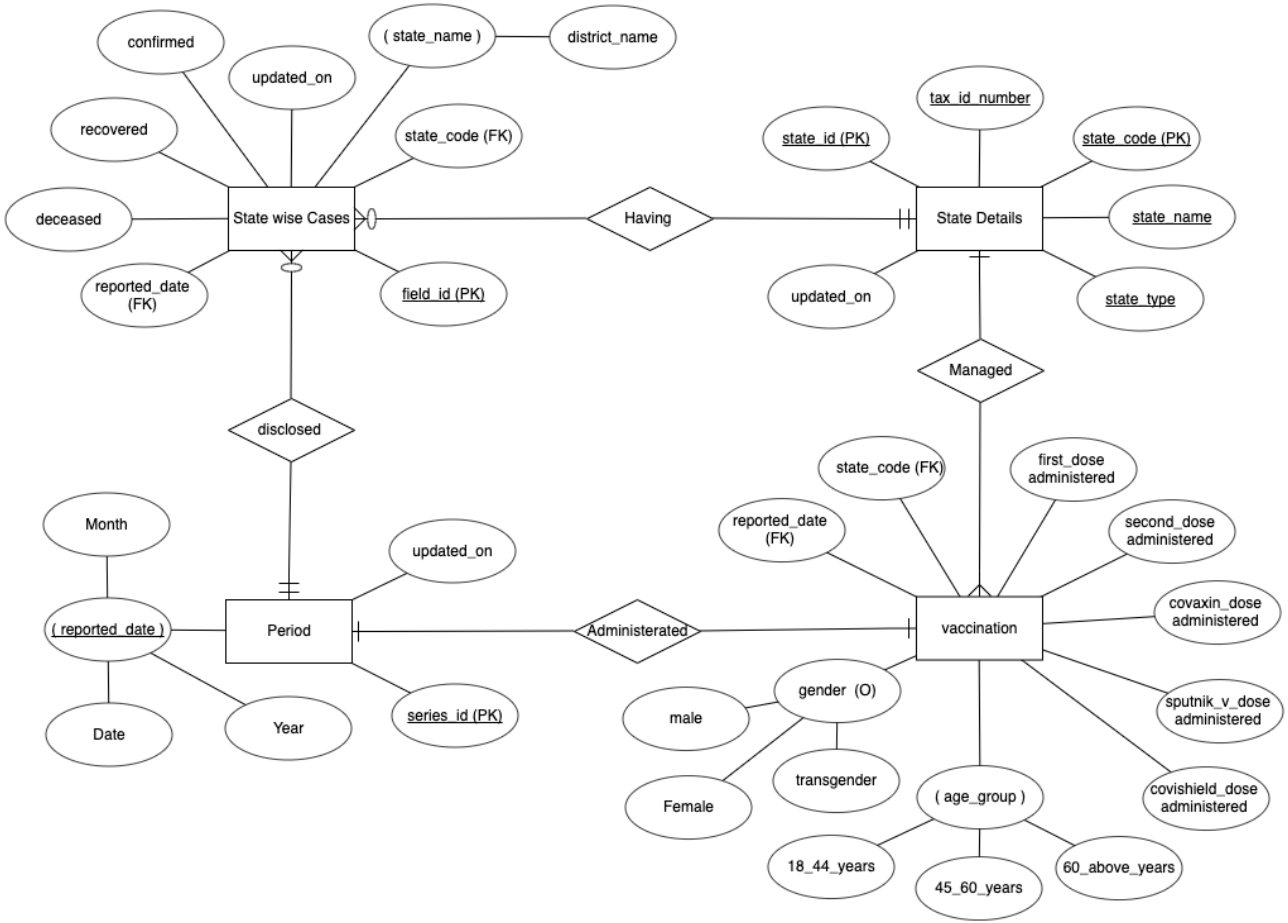


# Module Design

## DATABASE MODULE



# ER-Diagram


confirmed
updated_on
( state_name )
district_name
recovered
state_code (FK)
deceased
State wise Cases
Having
State Details
reported_date (FK)
field_id (PK)
tax_id_number
state_id (PK)
state_code (PK)
state_name
updated_on
state_type
Managed
disclosed
Month
updated_on
state_code (FK)
first_dose administered
reported_date (FK)
second_dose administered
( reported_date )
Period
Administerated
vaccination
covaxin_dose administered
gender (O)
male
sputnik_v_dose administered
Date
Year
series_id (PK)
transgender
Female
( age_group )
covishield_dose administered
18_44_years
45_60_years
60_above_years

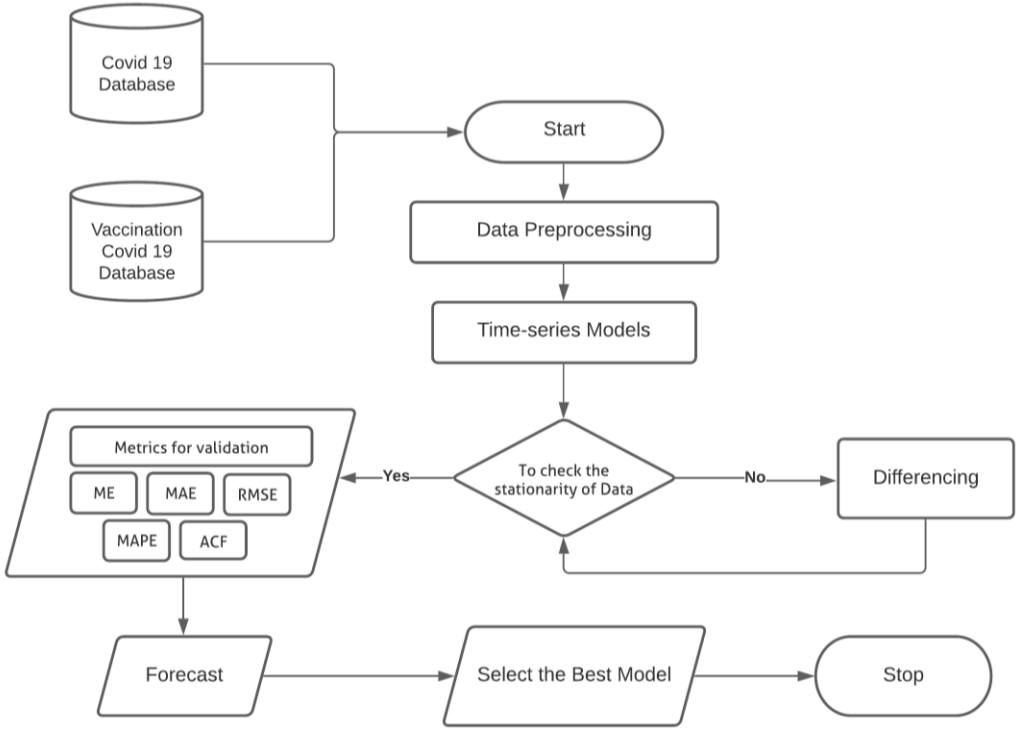
# Algorithm

## Time-series model

- ARIMA
- PROPHET
- IISc Population Balance Model
- Holt's Linear Trend
- Other Models

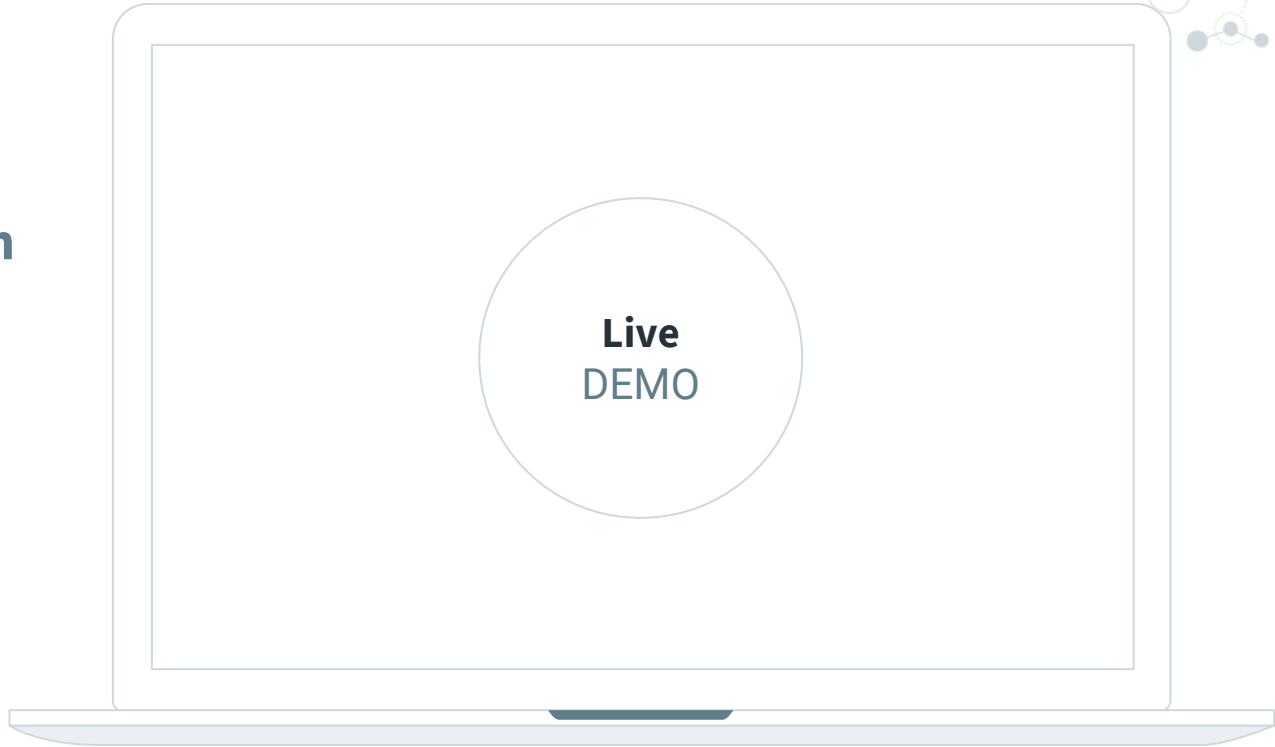
## Tableau Filters

- Extract
- Data Source
- Context
- Dimension
- Measure
- Table

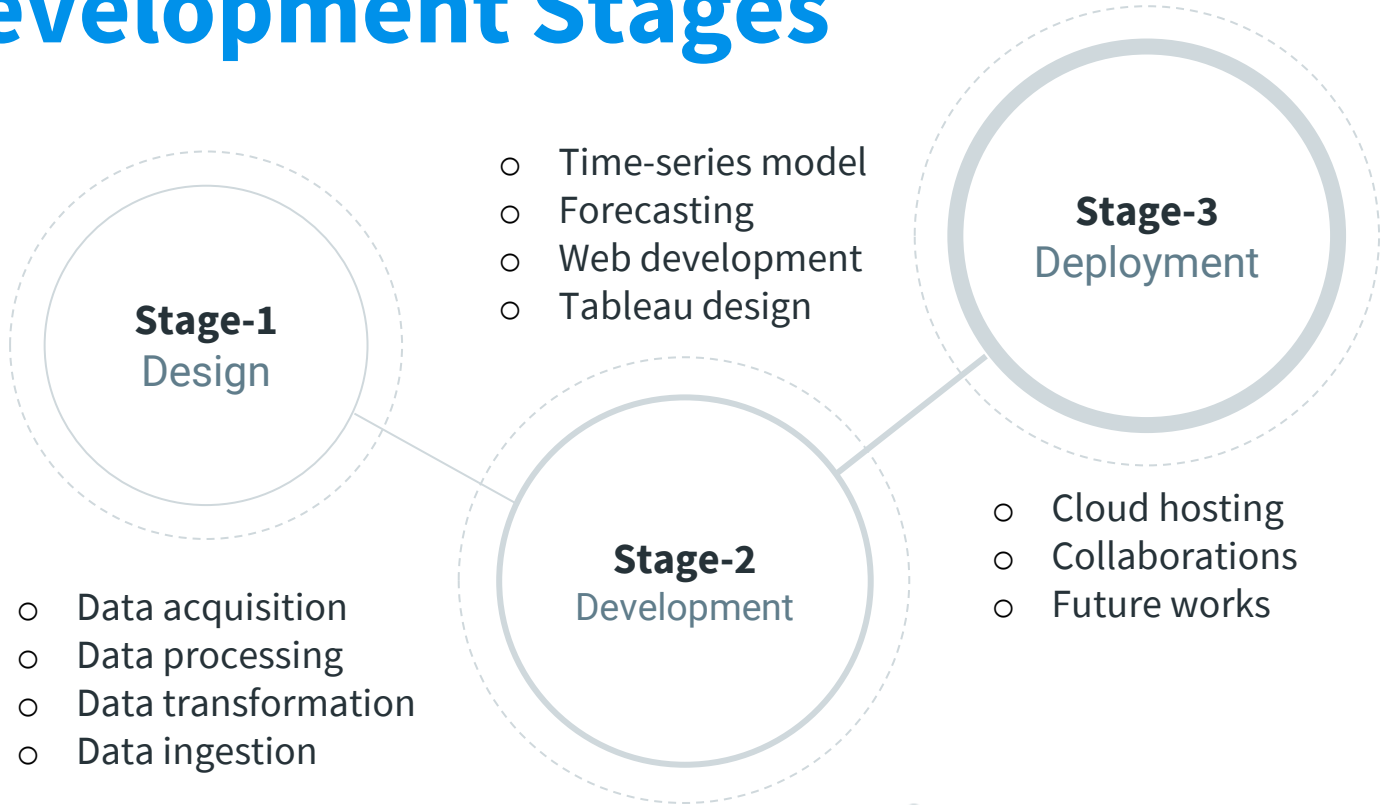


# Interface Design

- Forecast
- Vaccination
- Blog
- Awareness
- About Us



# Development Stages



# Implementation

Forecasting_Covid19_Phase_3_using_Time_Series_Models - Colaboratory (google.com)

# Thank You!