Equitable Vaccine Platform

## Introduction & Context

In the initial reaction to the onset of Covid 19, many national and regional governments turned to technology vendors for solutions to support their response. These have included technologies to support remote working and remote consultations with patients; to enable authorities to manage large volumes of queries from citizens worried about the infection or impacted by business closures; to manage the tracing and testing processes; to provide authorities with the data they need to make decisions. The key criterion for this phase was speed, as decisions were taken very quickly to close the economy; ramp up new testing and reconfigure health services.

As the epidemic continues on its exponential trajectory, continues to cause a loss of $375 billion to global economy every month, vaccines in Clinical Trials are racing towards Human Trials, Phase III and FDA Approval. It appears that, the vaccine manufacturing, shipment, delivery, allocation, distribution and monitoring of immunization process would be absolutely imperative to contain the trajectory of Covid-19

## A Data Driven Approach to Vaccine Allocation

As the vaccines race towards the Phase IV clinical trials and FDA approval, we see an increasing number of Govts. and govt alliances approaching Pharma organization towards procuring the vaccines for their populations. Considering the fact that vaccine supply would initially be limited and pharma organizations would be constrained with vaccine supply. The policy makers must plan on ensuring equitable allocation of vaccine doses. We also believe that equitable allocation and distribution of vaccines will be the key to contain the negative impact of Covid-19 Epidemic on populations with higher risk, local communities with less access to Healthcare.

We realize that towards addressing the challenges associated with vaccine allocation and delivery, technology can be a great enabler in improving the speed, transparency of vaccine distribution process by helping government and private agencies make Fair vaccine allocation decisions, provide decision makers with accurate data to address ethical conflicts and last but not the least, at a board level support Pharma and Governments through the entire supply chain of COVID-19 vaccine from manufacturing to last mile delivery. With our platforms and technology, we believe we could be an important enabler to support governments and pharma towards ending COVID-19 pandemic.

Our Data Driven approach towards equitable vaccine distribution envisions a Data Platform, which processes Population Health Data, Socio-Economic Determinants, Employment, Finance and Debt indicators and other environmental variables and presents advanced analytical insights to the policy and decision makers towards equitable decisions on vaccine allocation and distribution.

## Introduction Equitable Vaccine Platform

An Equitable Vaccine Platform (EVP) is an integrated technology solution that allows data from multiple sources and of various types, both structured and unstructured, to be ingested, processed, governed, accessed, and delivered to users, data applications, or other technologies in order to support both decision-making and core processes required in equitably allocating the vaccine doses in populations.

The goal of EVP is to provide policy makers, decision-makers and other stakeholders (hospitals, clinicians, patients, employers, citizens) with information and analytics related to individual health risk,

occupational risk, community vulnerability, access to healthcare, economic and societal aspects of the pandemic. The platform should support the decision makers with recommendations, ranking of populations for setting priority for vaccine allocation. Platform should also assist the Healthcare ministries develop a plan on scheduling and vaccination of populations over next 12-24 months.

The algorithms and other decision making workflows and decision scenarios within the platform are fully owned by customers and are configurable based on the specific needs and requirements of the governments. Microsoft only acts as a technology and tools provider which can accelerate the deployment of Equitable Vaccine Platform at scale.

## Scope of the Engagement

Microsoft is keen to collaborate with a small number of European Governments in the design and build of such an EVP to support the equitable vaccine allocation and distribution for COVID19.

## Rationale for a platform-based approach to EVP (Equitable Vaccine Platform)

Most of the Pharma Organizations are indicating the delivery of COVID vaccines from early fall 2020. Since the vaccine supply would be very limited in the beginning and raises a lot of transparency, fairness and ethics issues. There are several reasons why a EVP could be an important enabler towards assisting the governments and Healthcare institutions with right decision making, some of the key challenges which EVA would support are as below:

1. **Transparency** - Governments and public health institutions would be under tremendous pressure to communicate with citizens in an open way on how many vaccine doses were delivered to the country/region/municipality and who all were scheduled and prioritized for vaccination and why. They would need to identify various different socio-economic determinants, vulnerability, risks and other environmental factors towards prioritizing citizens for vaccination and make this information on selection public.
2. **Fair Allocation** - Identify citizens for equitable allocation of vaccination would be extremely critical to contain the pandemic. It would be very important for the governments to identify vulnerable communities, under-represented populations are not overlooked and consider these vulnerable populations while prioritizing large scale vaccination scheduling.
3. **Address Ethical Conflicts** – Data driven insights would be must for the Healthcare institutions to address the decision making during ethical concerns and dilemmas in selection of patients. It will help them with drive the right principled actions and hard decisions. For example, whether the government should vaccinate prisoners who are living in COVID hot spots or children within a local family.
4. **Monitor Adverse Events** – Considering the fact that most of the vaccines are going to be produced in record time, and no vaccine is 100% perfect, it is highly likely that there would be a high number of adverse events in the beginning. A data platform would be very helpful in understanding the nature of adverse events and help Health authorities to respond effectively to adverse events and mitigate vaccine hesitancy.
5. **Granularity**: It appears many European Governments have strategy of procuring the vaccines. This in turn requires Public Health data of sufficient granularity to make such targeted decisions on vaccine allocation and as well as allocation of healthcare resources.
6. **Range of actors**: In each country there are a significant number of players in the vaccine effort. These include political leaders, public health, social services and other public services, regional

and local authorities, hospitals and other first responders. **A single source of truth is essential to ensure a coordinated response across these societal actors.** In addition, all these societal players will have demands for data which will increase pressure significantly on IT functions; lead to time wasting on manual data gathering, and potentially slow responses

7. **Data first:** A core tenet of the platform-based approach is to aggregate the data without understanding all the uses of the data in advance i.e. focus on data first and then build the applications needed to analyze, visualize, combine, communicate, support decisions. We believe this is a suitable approach for the pandemic as the uses and users of the data will undoubtedly evolve as the situation evolves

8. **Solid Foundations:** While the present data platform is in context of COVID, however we imagine a scenario where Health institutions can leverage this platform for other nation wide vaccination programs. This approach prevents the risk of building one-off application with no ongoing value; risk of security or privacy vulnerabilities; lack of integration to existing systems; duplication in terms of accessing and manipulating data; additional IT management burden. A platform-based approach can help to mitigate many of these risks

**Approach to security, privacy compliance**

Our interest in this initiative is as a platform provider. We provide cloud-based compute and storage as well as the tools required to ingest, clean, analyse and visualize data of all types. There are several technology vendors who provide similar services. Microsoft believes that we have certain advantages due to the hybrid nature of our platform (combining hyper-scale cloud with on-premise), the breadth of the data management capabilities available, our experience in working with Government, our partner ecosystem and our competitive costs. We believe that Data Driven insights powered with technology would be a key enabler towards ending the COVID19 Pandemic.

We also believe that our approach to Trust is unique. We have no commercial interest in the data or Customer's AI algorithms and we make clear contractual commitments in that regard. We are very aware of the Public's concerns that third parties could undermine privacy safeguards on the basis that access to personal data is needed to support the pandemic response. Microsoft's Chief Technology Officer has recently published seven principles that Microsoft will use in the design of any application meant to support the Covid 19 response

Further information on these principles may be found at https://blogs.microsoft.com/on-the-issues/2020/04/20/privacy-covid-19-data-collection/[2]

**Conclusion**

We believe that technology and data driven insights would be a key enablers towards ending COVID-19 Pandemic, and a data platform assisting governments, public and private institutions with equitable and fair allocation of vaccines may play a crucial role towards weakening the intensity of COVID-19. In order to protect everyone, we require more initiatives and partnerships between the governments, public and private institutions and communities that embrace the power of technology and data platforms for informed and transparent decisions according to the new and emerging realities on ground.

**References**

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