Market Intel Platform

CONCEPT NOTE – DRAFT

Introduction

WHO's Operational Support & Logistics (OSL) is developing a Market Intelligence Platform ("Platform"), providing in-depth insight on market indicators, an alert system, market trends, demand clarity and supply chain capacities, and risk profiles associated with large-scale health emergencies. It will be a unique data platform by linking the impacts of epidemiological events and geopolitical issues (increase in demand, volatile demand, constraints on international trade) on supply chain operations.

This Concept Note is intended to provide a high-level strategy and approach to the Platform. As part of the development process, OSL will engage with stakeholders, various experts (data, IT, and legal), and others to determine the technical, legal, operational and management details of the Platform.

Background

The emergence of the COVID-19 global pandemic resulted in unprecedented and unforeseen market failures. As the world faced a novel pathogen, the scope and spread of which was unknown at the beginning of 2020, the UN and public health partners bore witness to global market breakdowns across key areas; severe access restrictions to essential emergency items and catastrophic disruptions to the transport market.

As leader of the Pandemic Supply Chain Network (PSCN), OSL was able to access key market intelligence and leverage early market warnings from companies to take early action and to ensure access of lifesaving supplies, including PPE and test kits in February-March 2020. Due to the scale and complexity of the global pandemic, OSL with WFP designed and led the COVID-19 Supply Chain System (CSCS), bringing together UN agencies, NGOs, and donors to improve access to critical, lifesaving COVID-19 supplies.

The CSCS had two main objectives: i) sourcing, accessing, and allocating essential but scarce COVID-19 products for IPC infection, protection and control (PPE), clinical support (Biomedical products) and testing (Diagnostics), and ii) delivering these products leveraging humanitarian air services. It used three core strategies: consolidated demand and allocation, coordinated purchasing, and streamlined delivery. The CSCS set-up was comprised of; i) an interagency Task Force that provided strategy and oversight, ii) three purchasing consortia (PPE, Biomedical, Diagnostics), and iii) a Control Tower that provided the operational backbone, the systems and tools for coordinated delivery.

While the CSCS was able to tap into the collective capabilities of global health partners, delivering approximately 50% of required COVID-19 supplies to low and middle-income counties, the completely unprecedented scale of the COVID-19 pandemic highlighted the fragility of complex supply chains that underpin today's world of interdependent economies.

Challenges

During the pandemic, the markets experienced and continue to experience instability and disruptions. Due to lack of visibility across the supply chain, organizations could not fully comprehend, manage, nor respond to the pandemic with appropriate surge capacity investments and risk mitigation of operational disruptions resulting from unprecedented demand. It is a challenge to understand and address the root causes of market disruptions.

Those organizations and governments with sufficient resources and political strength were able to secure critical resources from the market. In the end, inequitable access and distribution of critical supplies to those organizations and governments continue to hinder response efforts.

As the leader in emergency health logistics, OSL interacts with a wide range of commercial vendors – from those who provide specific health items to transport services required to deliver supplies to countries – all of which have access to key market data. Alone, this data offers little market insight. Untethered to epidemiological analysis and lack of correlation with the collective data and insight of the market, individual vendors each hold a proprietary piece of a complex puzzle that they are reluctant to share with external organizations.

The pandemic exposed weaknesses from upstream access to raw materials, mid-stream access to components and manufacturing operations, to downstream operations of shipping and distribution. One disruption in one part of the supply chain spectrum negatively impacted all other parts. And it did not only impact COVID19 supply chain operations, but different health care operations from supporting the operations of primary care or access to medicines treating non-communicable diseases.

While some market constraints of high-demand items are obvious, the COVID-19 pandemic has highlighted not only the need for early warning systems to allow for swift response, but also the difficulty of predicting equally-disruptive secondary and tertiary effects on the market stemming from factors such as border closures, export bans, shipping obstacles and bottlenecks (e.g. container availability) and component production capacities.

Data management during pandemics is time-consuming and resource intensive putting strains on organizations' operations. With dispersed data sources consisting of raw data, varying degrees of reliable and qualified data, and different data formats, data management systems and operating models require commitments from all stakeholders so that data sets can actually provide value to those who could benefit from the insights.

Finally, to support supply chains during pandemics and large-scale health emergencies, WHO must continue to develop the necessary trust amongst stakeholders and share insights based on relevant and reliable data. Use of data, access to data for analysis, and other relevant data governance issues will need to be addressed to secure visibility, bring stability to the markets and allow equitable access to critical supplies for those in most need.

Opportunity

One of the biggest lessons learned during the pandemic was how connected every sector (medical and non-medical), every action (or inaction), every policy (or lack thereof) is to other sectors, other actions and other policies. How policy impacted supply chains. How epidemiological trends impacted supply chains. How supply chains impacted response efforts which in turn impacted the trajectory of the epidemiological curve. This interconnected ecosphere impacted the response efforts at the global and local levels. And yet, no organization has a grasp of how it is all connected, where the risks and obstacles throughout this interconnected ecosphere impede response efforts or why. The Platform seeks to bring it all together.

The Platform has the opportunity to be the key source for many industries on how the market is functioning. It will highlight and assess the impact of how a pandemic's supply chain operations impact other non-pandemic, health care interventions (NCDs, other infectious disease outbreaks, etc).

The Platform, a public/private partnership, seeks to access data held by organizations – public health entities, government agencies, private sector manufacturers and suppliers – to provide insight on needs, risks, trends, market conditions and demand to better support pandemic responses. By understanding the epidemiological trends, government policies, operations and needs of stakeholders, the Platform will provide the means to make informed decisions, supporting the continued operation and resilience

of the global supply chain, global response efforts and government policy implementation that will effectively support the response.

It is the intention that the platform will provide constant, real-time insight to all stakeholders by seeking collective intelligence. The Platform will quickly mobilize epidemiological data, government data, and market data to assess and provide insight for a whole-of-society approach to respond to a pandemic. The only way that happens if all the Platform can "connect all the dots" from all stakeholders.

Throughout the COVID-19 emergency response, public health professionals, governments, and vendors have consistently sought out WHO to provide coordination and direction in constrained essential markets. As the leader of the Pandemic Supply Chain Network, vendors turned to WHO in search of guidance on demand, access to raw materials and component, alerts of pending epidemiological trends, and government support during market turmoil. As the global public health leader with access to 194 governments, WHO has the access to the epidemiological data and to government data. ==Connecting private sector data with epidemiological and government data is the crux of the value proposition of the Platform.==
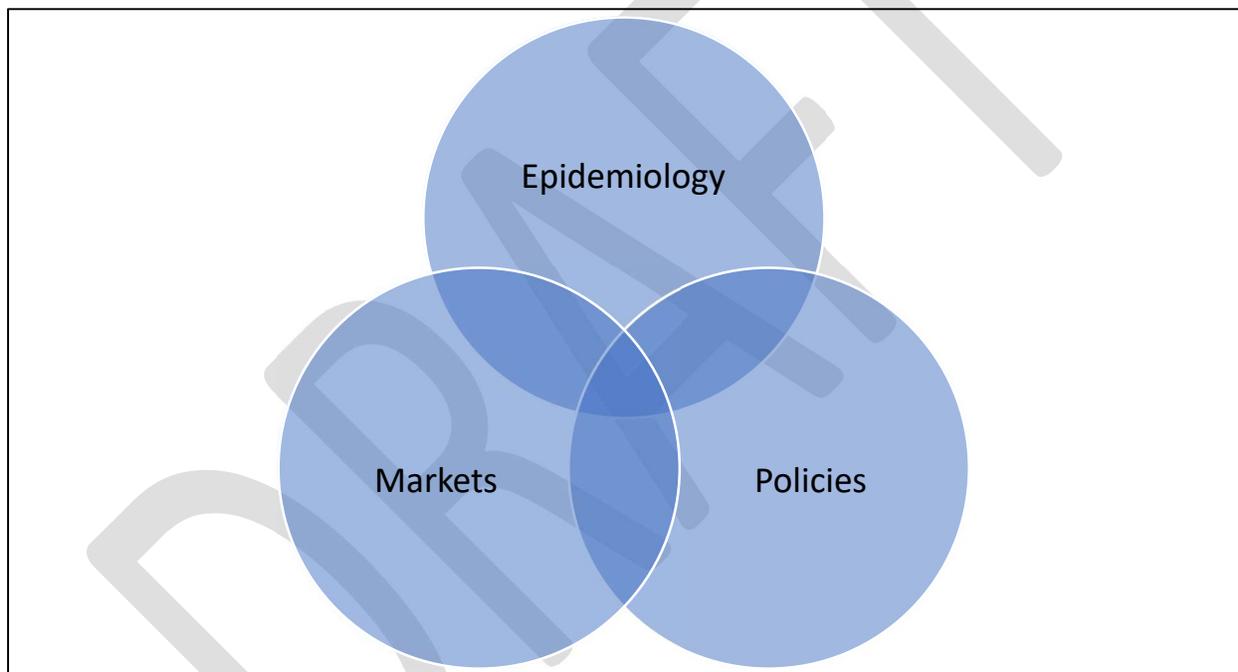
For enhanced pandemic readiness, opportunities abound for improved coordination with commercial markets; to identify and harness key data points and to merge with key epidemiological intelligence in support of real-time market intelligence to better predict and mitigate operational response risks.

The Platform will catalyse the development and use of digitalization by:

- Providing data analytics and insights,
- Real-time event identification and alerts.
- Risk profiles and assessments.

This insight will support continued operations of the global supply chain with:

- A better understanding of the supply chain ecosystem,
- Analysing the nature of the intertwined supply chain network and operations.

In the end, the Platform will support resilience and robustness by supporting organizations' decision making for:

- Risk mitigation of inventory development and management,
- Surge production capacity development,
- Recovery of systems and facilities.

The pandemic has proven that there is more uncertainty than not, and with greater uncertainty, the need for greater information and understanding of the impact each intervention, policy, and public health issue has on the global system becomes more critical.

Operating Model

Products and operating models need to be designed in a way that support the delivery of the Value Proposition to all stakeholders. Benefits that each contributor and user receive must be sustained and continuously strengthened as necessary. The benefits clearly prove a demonstrable public interest as well as benefits that accrue directly to organizations.

Value Proposition

The expected Value Proposition creating the incentive for organizations to become stakeholders is as follows:

i)   Situational awareness. The Platform will provide users with dynamic and real-time market insight and monitoring. Conditions in the markets need to be visible and understood to improve risk mitigation efforts.

ii)   Market signals. Global supply chains are interconnected on a global scale. Insight derived from assessing diverse data sets will provide a comprehensive alert system, enable demand clarity from buyers, and show available supply chain capacity from manufacturing to distribution. These market signals are not always clear or easily correlated but are essential to understand how to respond to any pandemic.

iii)   Risk profiles. Develop risk profiles and "preparedness and response" triggers to support global operations' decision-making.

iv)   Relationships and trust. Build unique, sustainable relationships by building a platform where users of the insight are also the contributors of the data

v)   Interconnected. Create new global collaborative environment linking epidemiological, market and geopolitical monitoring and insight.

vi)   Collective Intelligence. The Platform will generate superior outcomes based on the collective wisdom of all stakeholders relative to proprietary insight within a given organization.

vii)   Supply chain optimization. With insights aggregated across the supply chain spectrum, companies will be able to increase manufacturing speeds, optimize distribution of products, build trust and transparency across an organization's suppliers, provide flexibility of

operations, increase collaboration amongst partners and competitors alike to solve common problems, and support investment decisions.

The intention is to create an intelligence product that is continuously evolving, learning, and adapting while always incorporating new data sets and analytical tools. User-friendliness will be paramount to ensure easily understood insights about complex connections is disseminated equitably.

Users

For the Platform to succeed, it is imperative to understand who the Users are and ensure that they benefit from the Value Proposition. The Users are expected to be governments who want to understand the market's ability (or inability) to support their response efforts, UN agencies and response organizations who procure critical supplies, and manufacturers and their suppliers who want to have greater clarity of demand of their products used in a health emergency response as well as the risks and functioning of the global supply chain.

Relationships

All successful operations require strong Relationships amongst organizations and individuals. The Platform is a market network where multiple organizations engage in a community-like platform, open to all relevant stakeholders and users who share a specific objective. Each organization is empowered to share inputs in this market network, creating various "nodes of engagement" organically, with WHO acting as the central node connecting stakeholders. The strength of the Relationships is based on WHO's support and work with Member States, its trusted position as the global public health leader, and engagement with private sector organizations during public health emergencies such as the COVID19 pandemic.

Channels

Supporting Relationships, the Platform will develop appropriate Channels to facilitate engagement amongst stakeholders. The expected Channels include an appropriate IT infrastructure including data management systems, web platform, information distribution, and IT applications facilitating data governance and distribution of analytical tools.

Partners

Aligning with OSL's partnership strategy, the Platform is unique because the Key Partners are also its Users. Utilizing a federated data model, data will be accessed, not retrieved, from individual governments, UN agencies, manufacturers, and suppliers of raw materials and component parts. Data is not distributed or shared with the Platform, but analytical tools developed by OSL will be embedded within an organization's data infrastructure. The organizational insight is then anonymized and aggregated where additional analytical tools will be used to understand correlation and causation of trends within the market allowing for the Platform to develop leading indicators, initiate and manage alert systems, disseminate ongoing trends, provide visibility of market capacities and bottlenecks, and highlight supply chain risks. This global insight is then disseminated to all stakeholders giving them greater insight on the market as a whole and how it will impact their operations in an emergency response.

A new initiative supported by German Government and WHO called the WHO Hub for Pandemic and Epidemic Intelligence https://www.who.int/initiatives/who-hub-for-pandemic-and-epidemic-intelligence will be an integral partner combining the epidemiological insight with the market insight. Additionally, the Platform will engage with IT suppliers, data experts, and other data networks. Overall,

when aggregating the Partners from the PSCN, the Global Respiratory Partnership, potential stakeholders with academia and the WHO Hub for Pandemic and Epidemic Intelligence, Member States, and NGOs, the platform intends on gaining insight from approximately 500 different stakeholders.

Combining Users, Relationships, Channels, and Partners, one can view the basis of the operating model as follows:
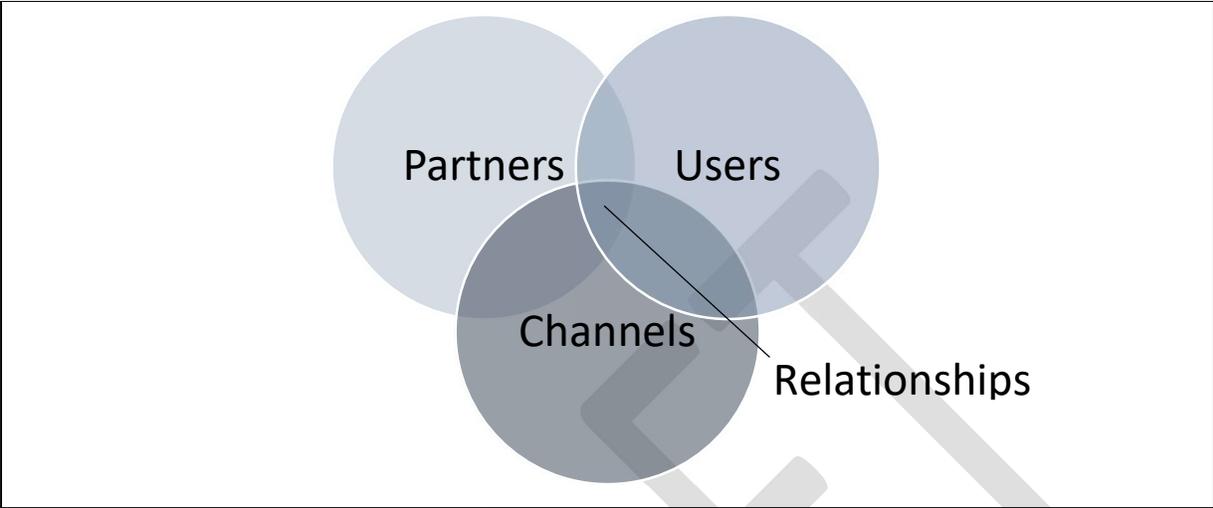
Resources

The Platform will acquire the necessary Resources to support the various operations. These include the physical and logical data architecture, operating procedures, data integration and quality control, governance, and advanced analytic tools. Core to WHO's and OSL's strength is the integration of resources consisting of health logistics, epidemiological trends, and supply chain management.

Additional resources include proper domain data specialists, diversity of data sources and analytical tools.
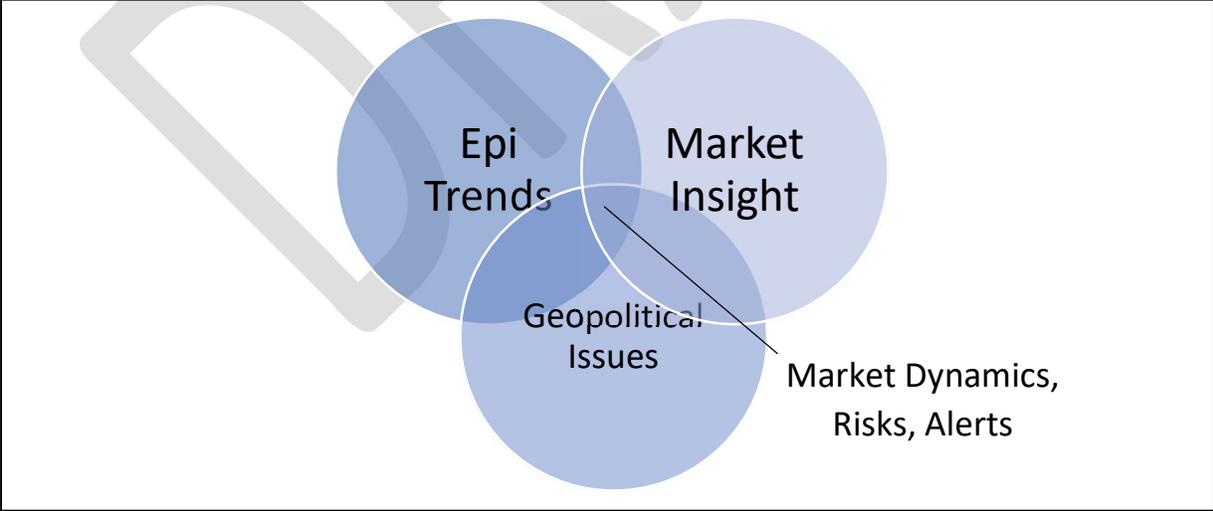
Activities

WHO's role will be as a "Data Steward", acting as a trusted intermediary that manages the Platform. The Platform will require day-to-day management consisting of numerous Activities. These include, but are not limited to:

- Data access and governance
- Tools development and data analysis
- Forecasting and dissemination
- Relationship and agreement management
- Platform design and management
- Fundraising

Data Access Models

There are a variety of data access models available. Though there are examples where WHO works with the private sector, government agencies, and multi-lateral institutions to gain access and use of data, and the Platform will leverage that expertise, a public-private data platform such as the Platform will be unique: i) data contributors are also the Platform's users, and ii) protecting private data while combining private data with public data, epidemiological data, and geopolitical factors to assess for public health benefits.

The Platform will take a global public-health oriented approach to its operations. It will reflect the rights, interests and ethical standards of all stakeholders while protecting and supporting the public health objectives of the International Health Regulations (2005). Ethical and legal frameworks will govern data access and use. Insights from data analysis will be made public while protecting the privacy and confidentiality of data contributors. The Platform is not an owner of any data but fulfils the role of stewardship and service provisions.
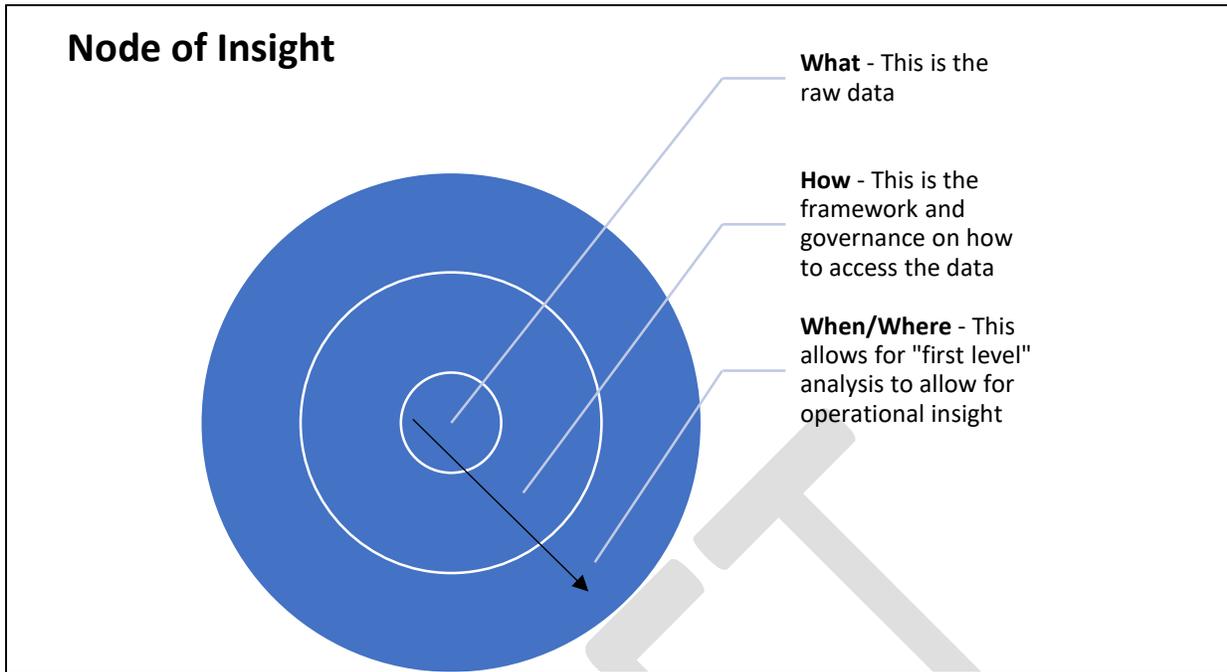
The Platform will apply best efforts to adhere and enforce the following principles;

- Transparency: Contractual agreements will identify persons or entities that have access to data and the purposes for the data.
- Shared Value: Contractual agreements will recognize that all stakeholders have contributed data on an aggregated basis and anonymized allowing for shared value across the users.
- Respect for Commercial Interests: Contractual agreements will address the need to protect relevant commercial interests and trade secrets.
- Public Interest: Contractual agreements will ensure that data access and use of data will be intended for public benefits and purpose and not for unrelated purposes. Data access and use will be proportional and not excessive compared to the purpose of the collection.
- Data Quality: Contractual agreements will ensure that data will be relevant and current.
- Reasonable Security: Adequate security safeguards will be established.

Nodes of Insight

A node of insight is the insight derived from a specific entity – public or private, epidemiologically, politically, commercially. There is a basic path of engagement that will enable first level, basic understanding of critical operational insight. The basic components are the following:
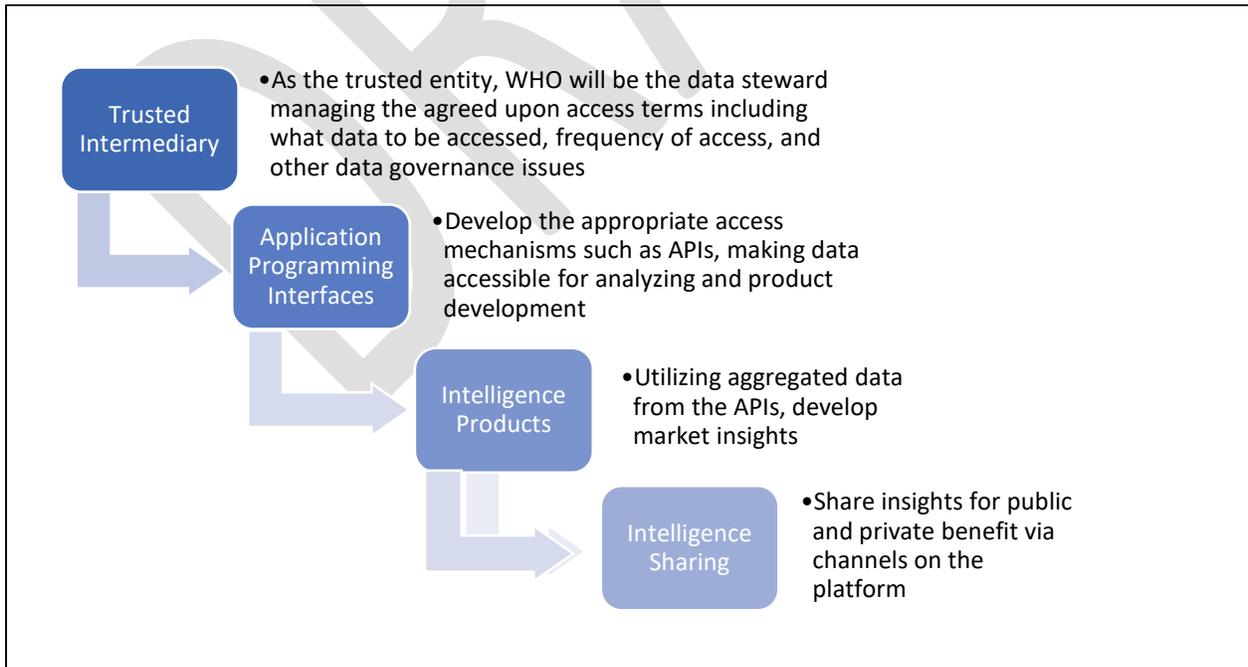
- What – Raw data, both structured or unstructured, that is initially accessed
- How – The frameworks and governance that enables access to the raw data
- When/Where – This is the first level, basic analysis enabling operational insight.

Node of Insight

What - This is the raw data

How - This is the framework and governance on how to access the data

When/Where - This allows for "first level" analysis to allow for operational insight

Public health actions impact private sector operations. Geopolitics dictates policies, formal and informal, which will impact public health actions. Private sector operations can impact geopolitics. The interconnectedness is chaotic and unknown. In the marketplace, nodes of insights come from all these sources. The Platform will connect an indefinite number of nodes of insights across all sectors to go beyond the When/Where analysis. It will determine the Why – the causation and correlation. With the appropriate analytical tools, the Platform will be able to "connect the dots".
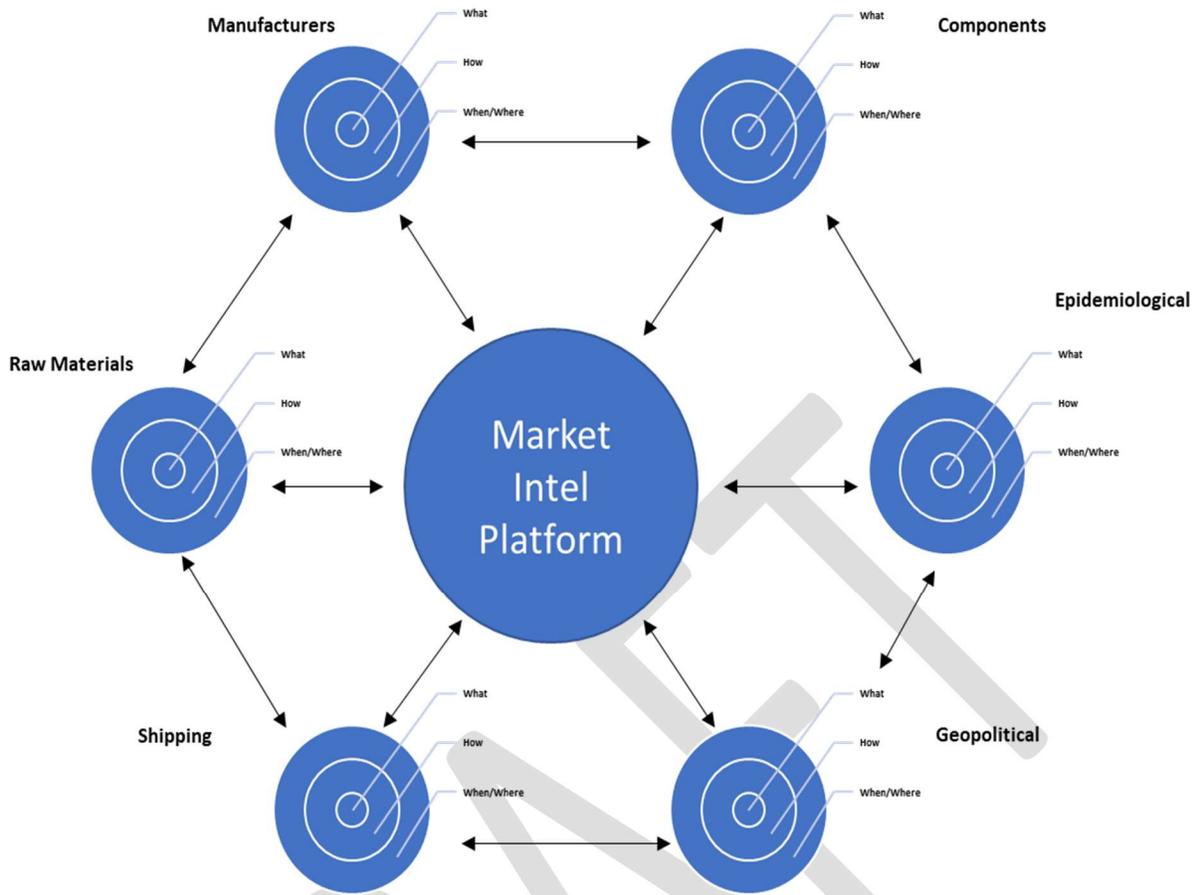
The general framework of the operating model consists of a federated-type system that will have various levels of engagement:

Trusted Intermediary
- As the trusted entity, WHO will be the data steward managing the agreed upon access terms including what data to be accessed, frequency of access, and other data governance issues

Application Programming Interfaces
- Develop the appropriate access mechanisms such as APIs, making data accessible for analyzing and product development

Intelligence Products
- Utilizing aggregated data from the APIs, develop market insights

Intelligence Sharing
- Share insights for public and private benefit via channels on the platform

Products and Applications

Below is a list of potential products that will be available on the Platform. The analytical tools to provide the necessary insight will include linear and non-linear analysis, correlation and causation analysis, pattern recognition, anomaly detection, regression analysis, stochastic modelling, and others. Data linkage will be a key source for invaluable insights.

- Market dynamics
    o Demand for products by country and aggregated on a global scale.
    o Product supply capacity and availability including surge capacity and bottlenecks.
    o Transport availability and bottlenecks
    o Trends analysis and predictive analytics
    o Peer-to-peer collaboration tools
- Risk
    o Global and Country Supply chain risk profiles showing how a large-scale health emergency impacts the global supply chain.
    o Product Risk Profiles showing how a large-scale health emergency impacts the demand and supply of a given product.
    o Transport Risk Profiles showing how a large-scale health emergency impacts the transport and distribution of critical supplies.
    o Conceptual roadmaps, scenario planning, simulations
    o How risks and trends in the epidemiological situation, market dynamics, and geopolitical events/policies impact one another
- Alerts
    o Leading indicators demonstrating potential demand spikes, bottlenecks, and supply shortages
    o Real-time dashboard, dissemination of insights, and media alerts

Data Needs and Collection

Below is a preliminary list of data sources and needs. They include both structured and unstructured data, public and private data, and governmental data.

- Access
    o Connect with existing data networks/platforms including those of trade associations, multi-lateral institutions
    o Access to data via manufacturers and suppliers
        ▪ Raw material and component suppliers
        ▪ Non-pandemic health interventions (medicines, equipment for NCDs, other infectious diseases)
        ▪ Logistics and distribution companies
    o Connect with WHO's and other global health organizations' data networks
    o Connect with government data sources and regulatory bodies
- Raw Data
    o Available Supplier base and locations with lead times
    o Available Production capacity and lead times
    o Surge capacity
    o Production locations
    o Transport capacity and availability
    o Regulatory, bottlenecks

- Operational, bottlenecks
- Financial, bottlenecks
- Geopolitical, bottlenecks
- Epidemiological (qualitative analysis, MOH alerts, WHO guidance and announcements, disease control publications
- Government needs, country-based absorptive capacity, funding availability and funding gaps

Data Governance

Data governance is broadly defined as process of managing the availability, usability, integrity, and security of the data. The model to be designed by the Platform will institutionalize the above-mentioned principles of Transparency, Shared Value, Respect for Commercial Interests, Public Interest, Data Quality, and Reasonable Security. The type of data, how it is accessed and analysed, and how insights are shared will determine the overall data governance strategy and model. The Platform's data governance intends to combine "security technologies" with "privacy technologies" to build the trust amongst data owners, WHO as the trusted "data steward" and users of the developed insight. Through the various technologies, anonymization techniques and aggregated data, it is the intention of the Platform to ensure that the data principles are implemented and enforced.

Applications

	Data Access	Direct Insight	Correlation/Causation – Impact

Market Dynamics	• Government, country needs
	• Absorptive capacity
	• Funding availability
	• Epidemiological data
		• Demand clarity – Buyers
		  o Country demand aggregated globally
		  o Absorptive capacity for countries to properly use supplies
		  o Funding availability
		• Demand clarity – Manufacturers/Suppliers
		  o Requests coming into manufacturers
			• What is driving demand? Can demand be funded? Is demand meeting the needs of the most vulnerable? Should demand be reallocated or supported based on epidemiological needs, funding availability, absorptive capacity?
			• Does the market have visibility on the entire demand? Are there duplicative requests creating unnecessary strain on the markets? Why are there duplicative requests and what is the economic impact? Epidemiological impact?

	• Manufacturer production capacity (normal and surge), availability, lead times, and locations • Manufacturers' supplier production capacity (normal and surge), availability, lead times, and locations	• What is the size of the market? • What is the availability of production for emergency needs across 180 countries? • How long are lead times? • What is the surge capacity and how long will it take to implement?	• Can the market respond to 180 countries needs and requests? What are the factors supporting or inhibiting the market? • What are the factors causing long lead times? • Can production be diversified and expanded? What are the factors supporting or inhibiting surge capacity? • What are the investment needs to respond to 180 countries? • What and where are the bottlenecks in sourcing raw materials, components and manufacturing? What are the causes? What is the "domino effect" due to bottlenecks?
	• Transport capacity and availability	• What is the available capacity of the transport market? • How long are lead times?	• What and where are the bottlenecks? • What are the causes of the bottlenecks? • What are the relevant correlations?
Risk Management		• What are the risks in the market? • What are the levels of severity of the risks?	• What are the causes of the risks? • Are risks correlated with other risks, operations, policies? • What are the risks at country levels, global level?
Alerts and Insights	• Through the temporary acquired data and/or at the data source the Platform will be able to hold simulations and scenario building • Potential predictive modelling • Regular alerts of the insights from the analysis of data	• Dissemination of the alerts and insights will bring clarity and visibility of the market's capacity to respond to an emergency • Provide clear guidance for appropriate response	• How will epidemiological events impact demand in short term (0 to 3 months) and intermediate term (3 to 9 months)? • Are there reasonable levels of confidence from buyers and manufacturers to predict what the long-term needs will be? • Dissemination of both technical guidance for products and demand will support investment decisions by manufacturers and suppliers. • Potential to support guidance and development of stockpiles. • Potential to optimize and link stockpiles with current procurement lead times. • Alert of potential and pending risks within the supply chain and their impact on manufacturers, suppliers and other industries.

Risks & Obstacles

Risk & Obstacles	Description	Existing Solutions or Steps to Mitigate
Accessing sensitive and proprietary data	- Companies will be reluctant if not unable to provide key information. - Governments will only provide publicly available information which may not be sufficient. - International agencies may be reluctant to share information due to its own by-laws.	- WHO has already established data sharing mechanisms with 14 UN and NGO agencies as part of the CSCS - WHO has models to access and utilize sensitive data - Complete buy-in from all stakeholders and proactive engagement is essential - Create additional data protocols and models to create the proper incentives for organizations to both contribute data and receive insight - Clearly communicate and demonstrate that participation of a specific organization provides much greater rewards - Will need to access data from trade associations, academia, and governments combined with individual company data - With a federated data architecture, including data access and analytic insights, the Platform will protect and support data privacy and confidentiality
Governance of the Market Intel Platform	- Governance of the platform will require reliable funding, dedicated staff, and continuous development of tools and applications. - Will require complete buy-in from senior management of all stakeholders. - Mechanisms need to be in place to ensure accountability, transparency, and compliance with ethical principles, data security and privacy.	- The WHO Hub for Pandemic and Epidemic Intelligence will provide both government and WHO support in the areas of technical support, data access, data integration and quality control, data management, governance, and standardisation - Clearly defined agreements that align all interests will build the necessary trust
Funding	The Platform will require sustainable funding, preferably a diversified funding base that does not rely solely upon traditional donors	- WHO will make best efforts to raise funds from relevant donors - Users have expressed interest to participate in an annual subscription-based model
Platform design	- Based in WHO - It is an ambitious project with numerous obstacles	- WHO is not a data management expert and will engage with vendors to create the appropriate platform - Potential investment and operating costs may inhibit access and use of the platform. - Leverage WHO's public health leadership position to build the necessary collaboration
Broad stakeholder base	Include governments, NGOs, UN agencies, manufacturers and sub-tier suppliers	- The greater diversity of the data providers and users, the greater the strength of the Platform - Build the necessary trust amongst all stakeholders with transparency, data protocols agreed by all, and diversified stakeholder base

Glossary of Terms

Operations Support & Logistics (OSL): OSL is a unit of WHO's Health Emergency Programme implementing and managing logistic and supply operations for health emergencies on behalf of governments, designs technical guidance for health logistics, and builds capacity for governments to respond with highly effective health logistics.

COVID19 Supply Chain System (CSCS): As a logistical mechanism specifically designed to respond to the COVID19 pandemic, the CSCS brought together UN agencies, public health partners, and NGOs to improve access to supplies. Led by WHO and WFP, the CSCS was established with an interagency Task Force providing strategy and oversight, three purchasing consortia for PPE, Biomedical, and Diagnostics equipment) and a control tower, managed by WFP.

Pandemic Supply Chain Network (PSCN): The PSCN is an informal network of manufacturers, suppliers, distributors, NGOs and government agencies who collaborate to address critical issues during large-scale health emergencies.

Global Respiratory Partnership (GRP): The GRP is an informal working group within the PSCN consisting of biomedical companies looking to bring stability and greater access for LMICs during large-scale health emergencies.

Essential Supply Forecasting Tool (ESFT): Designed by WHO, the ESFT is an epidemiological-driven tool that estimates the quantities of supplies per country for COVID19 responses.

WHO Hub for Pandemic & Epidemic Intelligence: The Hub is a newly launched initiative of WHO based in Berlin, Germany that seeks to leverage WHO's unique convening power across 194 countries to foster global solutions. Utilizing big data and innovative analytical tools, the Hub will strive for better data, better analytics, and better decision.