

# COVID-19 VACCINE DELIVERY

Global supply chain collaboration

## THE NEED FOR ULTRA DEEP FREEZE

COVID-19 vaccination is based upon mRNA technology whose chemical stability is not yet proven. Transport under extremely low temperatures up to -80 degrees (Ultra Deep Freeze) is required to assure stability of the vaccine throughout the supply chain.



## UNCONVENTIONALLY CONVENTIONAL



Conventional pharmaceutical supply chains operate at 2-8 degrees, or at minus 20 degree maximum. Ultra Deep Freeze transport is a niche market. Using dry ice enables temperatures below minus 20 degree - but resources for cooling equipment must be explored and optimized.

## ORCHESTRATING RESOURCES

Pharma products are often transported in specialized boxes and containers. Their cost is high while availability today is limited. DHL suggests in a whitepaper that 15 m deliveries in cooling boxes will be needed the next two years - capacities and process management of global supply chains must be very well planned.



## INFRASTRUCTURE FOR SUCCESS



As vaccination transports are urgent and special, air freight is the preferred transport mode. However, air capacities are rare, especially as co-loading to passenger airplanes is limited during the pandemic. Road infrastructure is the last ultimate key to success before vaccines reach their final destination.

ARE YOU CONTRIBUTING TO COVID-19 VACCINE DELIVERY? IF YES: TALK ABOUT IT! IT MATTERS!

We take communication off your shoulders:  
[www.cs-mobility.solutions](http://www.cs-mobility.solutions)