

The Medical Refrigerators help store vaccine vials that require extremely cold temperatures.

Kamal Nandi, Business Head and Executive Vice President, Godrej Appliances said.....

“We have received an order of Rs 95 crore for 9,000 medical refrigerators (with storage temperature of 2-8°C) and 3,000 chest freezers (with storage temperature of -25°C) from the health ministry, the Government of India.

.....There is another 3,000 units order for medical refrigerators from UNICEF India,” he added.

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Godrej Appliances to launch ultra-cool freezers in India for COVID-19 vaccine storage.... Dec 23, 2020.

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Nandi said, in January 2021, the company will be launching a vertical freezer with a storage temperature of  $-70^{\circ}\text{C}$  which will be an ultra-cool freezer.

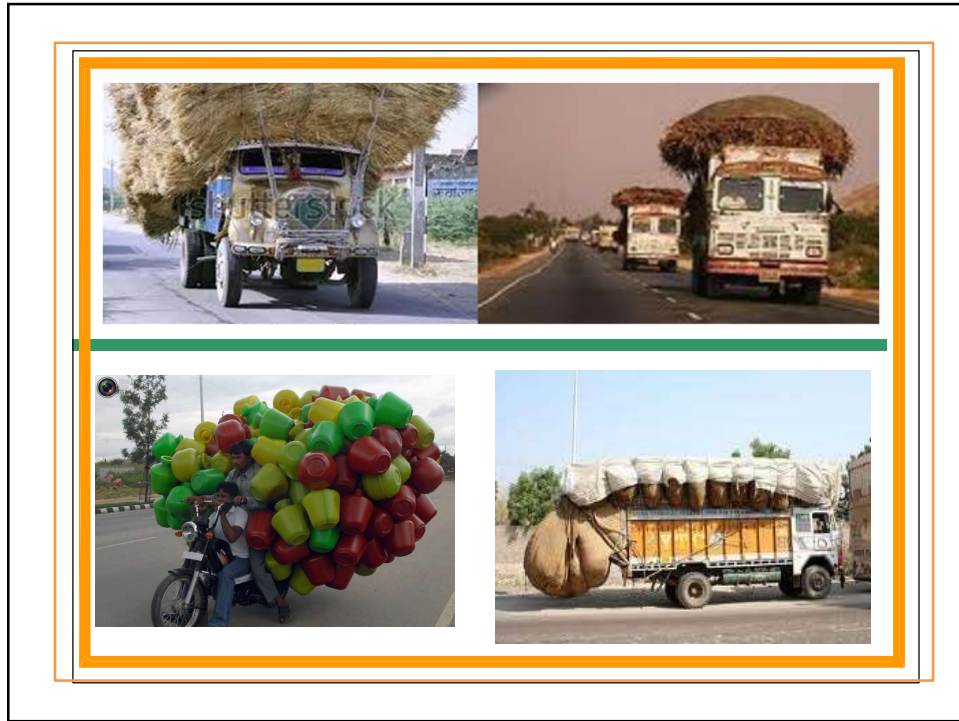
The Pfizer vaccine for COVID-19 needs to be stored at  $-70^{\circ}\text{C}$ ... .. while the Moderna vaccine needs a temperature of  $-20^{\circ}\text{C}$  (though it can be kept in the refrigerator at  $+2^{\circ}\text{C}$  to  $+8^{\circ}\text{C}$  for up to a month).

The AstraZeneca-Oxford vaccine needs a storage temperature of  $+2^{\circ}\text{C}$  to  $+8^{\circ}\text{C}$ .

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TEU capacities for common container sizes				
Length	Width	Height	Volume	TEU
20 ft (6.1 m)	8 ft (2.44 m)	8 ft 6 in (2.59 m)	1,360 cu ft (38.5 m <sup>3</sup> )	1
40 ft (12.2 m)	8 ft (2.44 m)	8 ft 6 in (2.59 m)	2,720 cu ft (77 m <sup>3</sup> )	2
45 ft (13.7 m)	8 ft (2.44 m)	8 ft 6 in (2.59 m)	3,060 cu ft (86.6 m <sup>3</sup> )	2 or 2.25
48 ft (14.6 m)	8 ft (2.44 m)	8 ft 6 in (2.59 m)	3,264 cu ft (92.4 m <sup>3</sup> )	2.4
53 ft (16.2 m)	8 ft (2.44 m)	8 ft 6 in (2.59 m)	3,604 cu ft (102.1 m <sup>3</sup> )	2.65

Twenty-Foot Equivalent Unit is a measure of volume in units of twenty-foot long containers, often used to describe the capacity of container ships and container terminals

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## Economies of Scale - Made of Steel

- The Economics of Very Big Ships
- Economy of Container Ships
  - Allows a T-shirt made in China to be sent to the Netherlands for just 2.5 cents.
  - The Eleonora Maersk and the other seven ships in her class are among the largest ever built:
  - Almost 400 m long, or the length of four soccer fields, and another half-field across.
  - The ships can carry 7,500 numbers of 40-foot containers, each of which can hold 70,000 T-shirts.
- On this voyage, the Eleonora was carrying supplies for Europe's New Year celebrations: 1,850 tons of fireworks, including 30 tons of gunpowder.

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Nanyang Technological University (NTU), Singapore and Volvo Buses have launched the world's first full size, autonomous electric bus, the Volvo 7900.

This is in partnership with Singapore government's Land Transport Authority (LTA) to develop and conduct autonomous vehicle bus trials for fixed route and scheduled services.

The single-deck Volvo electric bus is 12 metres long and has a full capacity of 80 passengers.

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## Preliminary design

An essential purpose of preliminary design is to demonstrate that the selected system concept will conform to performance and design specifications.....

.....and that it can be produced and/or constructed with available methods.....

..... and that established cost and schedule constraints can be met.

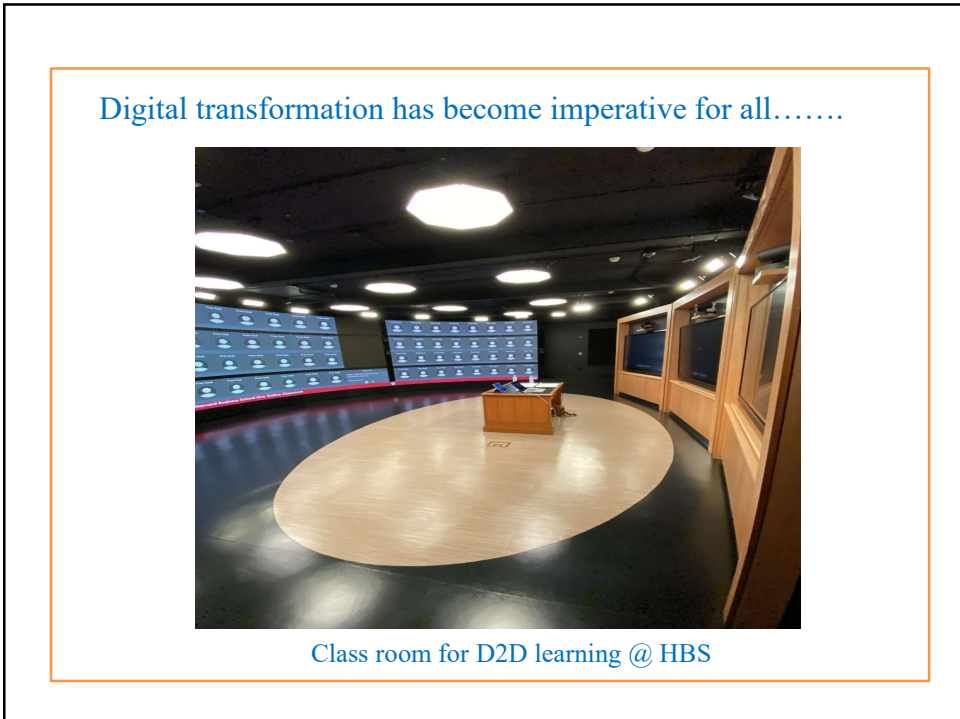
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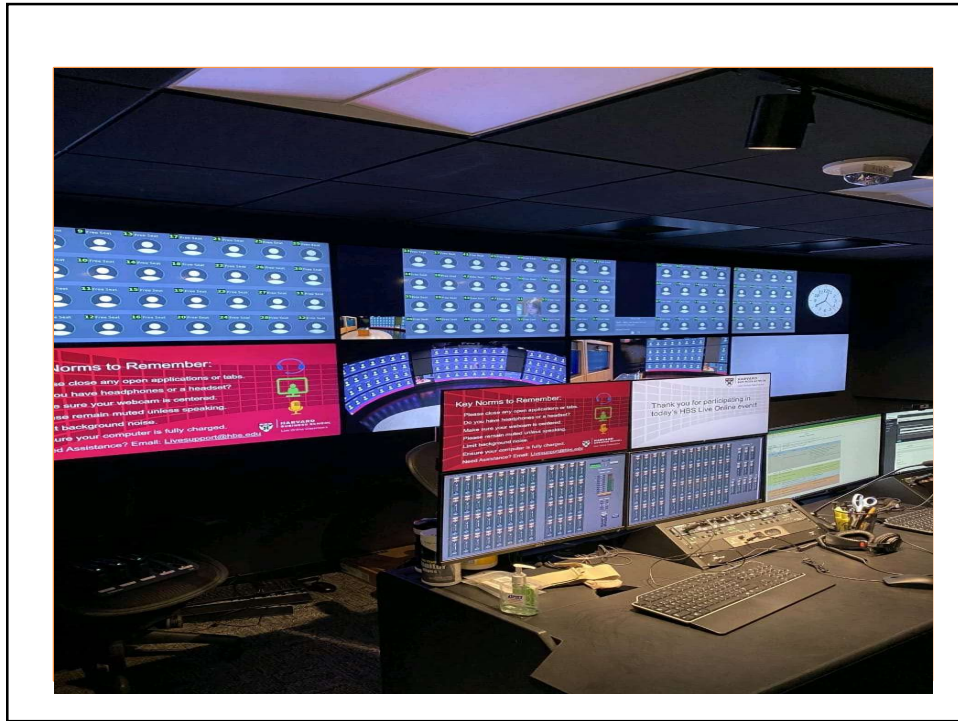
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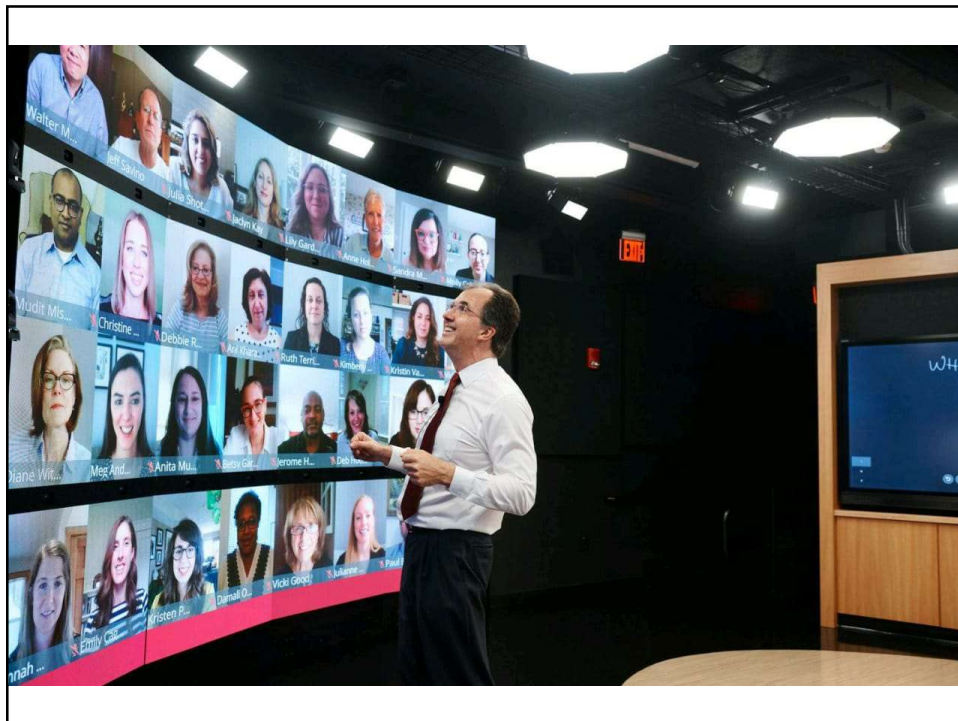
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