

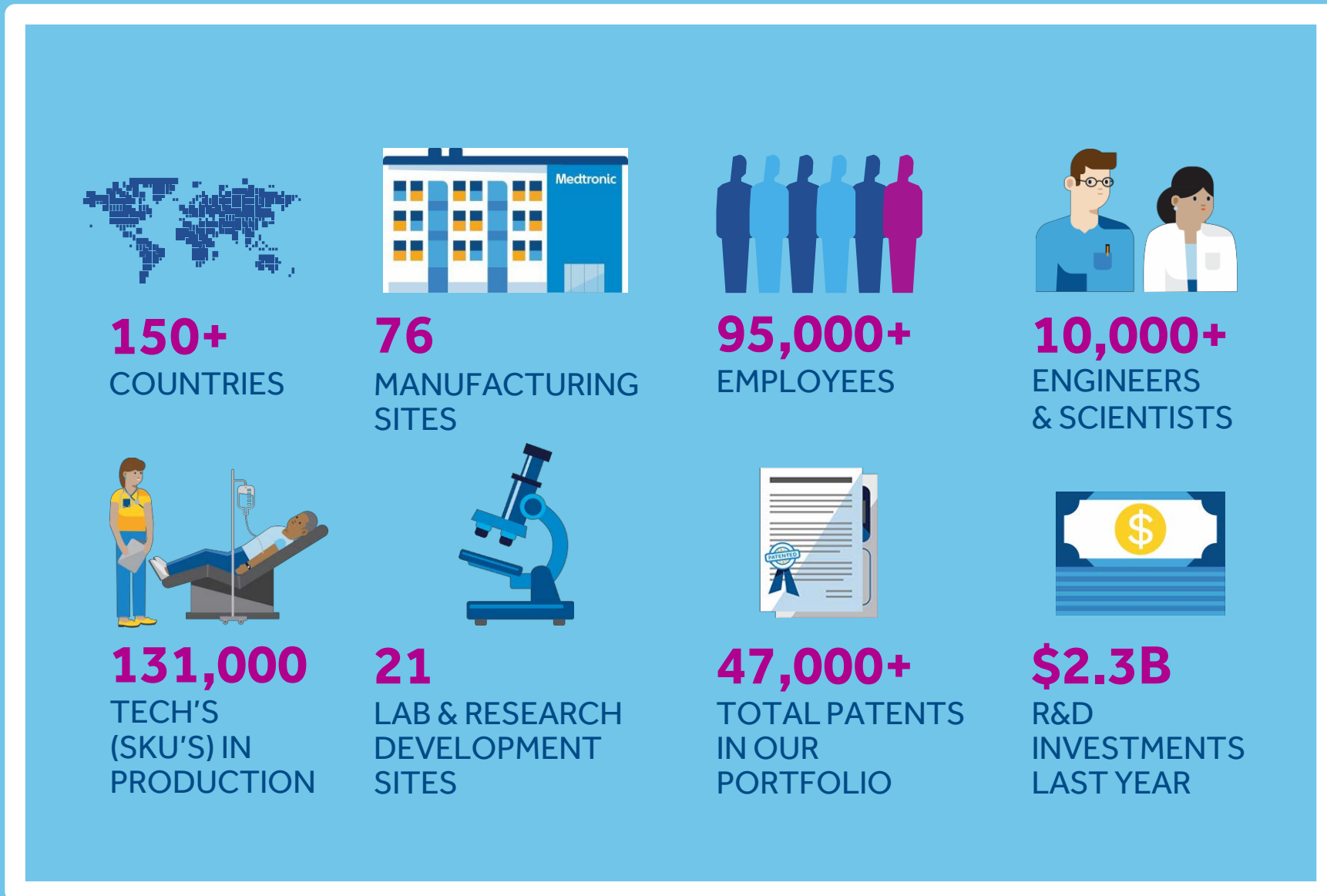
COVID-19: THINKING THROUGH THE PRESENT, PLANNING FOR THE FUTURE

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Medtronic
Further, Together

MEDTRONIC IS THE **WORLD'S LARGEST** MEDICAL TECHNOLOGY AND SOLUTIONS COMPANY

Our portfolio includes more than 213,000 global products which diagnose, prevent, mitigate, treat or cure disease or other conditions.



Medtronic Business Strategy

THERAPY INNOVATION: Introducing and delivering meaningful offerings at the therapeutic, procedural, and system level

GLOBALIZATION: Addressing the inequities in healthcare access globally

ECONOMIC VALUE: Helping lead the creation of value-based healthcare solutions

Positive Impact on Non-Communicable Diseases

MORE THAN 70 conditions in the human body treated with our therapies

MORE THAN 2 people every second have their lives improved

More than Products: Integrated Health Solutions

Delivering tailored solutions to improve clinical, operational, and financial outcomes through long-term partnerships with hospitals, health systems, physicians, and payers

Transforming Healthcare: Value-based Healthcare (VBHC)

- Improving clinical and economic outcomes to expand access and optimize cost and efficiencies
- Under VBHC business models, shared accountability for costs and outcomes are linked to the product, services, or integrated solutions

Public Private Partnerships

These partnerships align with our corporate mission by increasing patient access. They drive our globalization strategy and actively contribute to the global push for universal health coverage. They create mutual benefits by leveraging skills and assets through the appropriate transfer of risk. Through jointly defined objectives they enhance economic value by delivering improved outcomes and increased access to therapy innovation.

Learn more at www.medtronic.com

KEY POINTS FOR MEDTECH AND MEDTRONIC

DESIGN AND ACTIONS SET OUR INDUSTRY APART

Innovation can come from **anyone, anywhere** at **any time**

Small, Medium-sized companies are at the **heart of our industry and key innovators**

The industry is **not constrained by any specific technical endeavor or scientific paradigm**

We want to grow our industry globally- we welcome the collaboration and competition!

"Access" to medtech takes an ecosystem of education and infrastructure(human & physical).

Medtech averages **7% of private/public health expenditure** in emerging and developing markets

THE GLOBAL PANDEMIC: A CASE STUDY WE'RE CURRENTLY LIVING

OUR VENTILATOR CHALLENGES

LOGISTICAL

Constraints

1500

Components

100

Suppliers

14

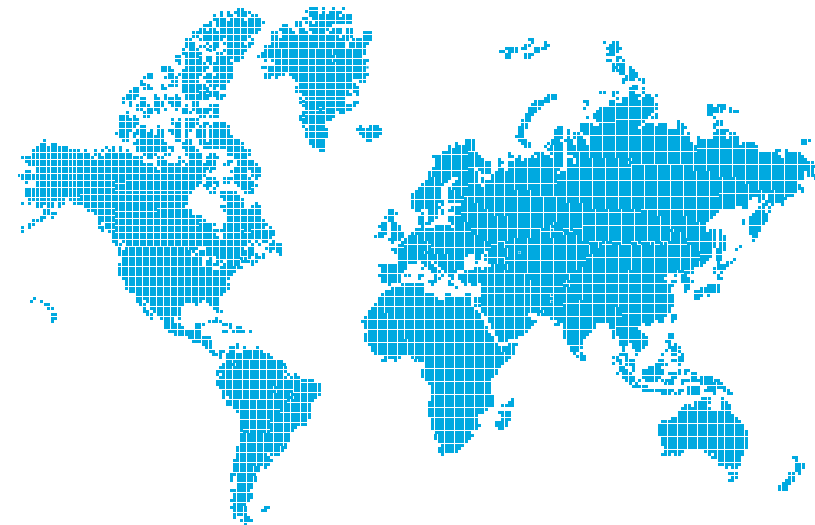
Countries

EXPORT/IMPORT

Restrictions

A CATALYST FOR CHANGE

COVID required solutions in **days and weeks** not months and years

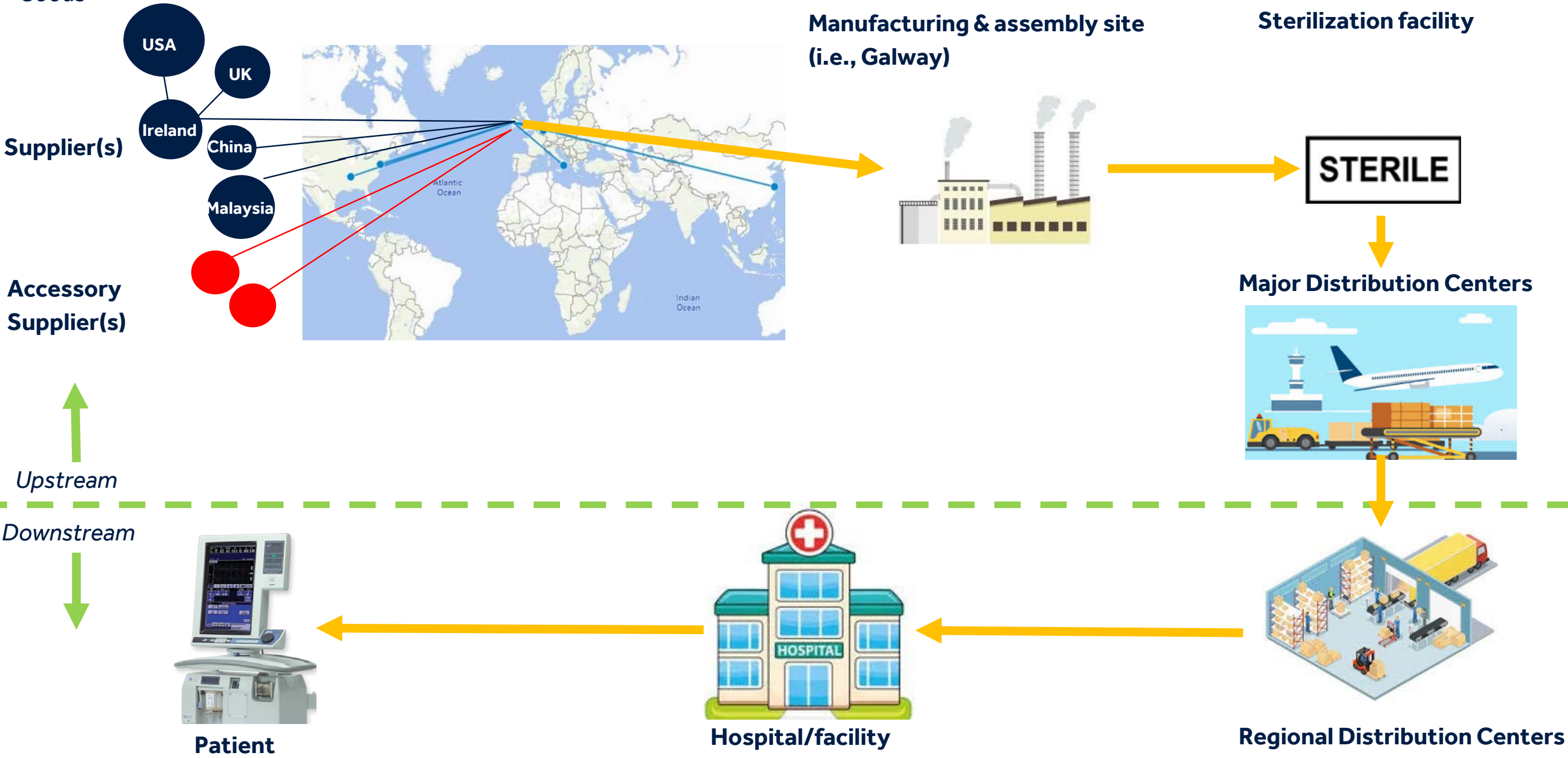


By joining forces with other technology companies and suppliers, COVID became a **catalyst** for change and initiated new ways of thinking about how we could partner with other industries

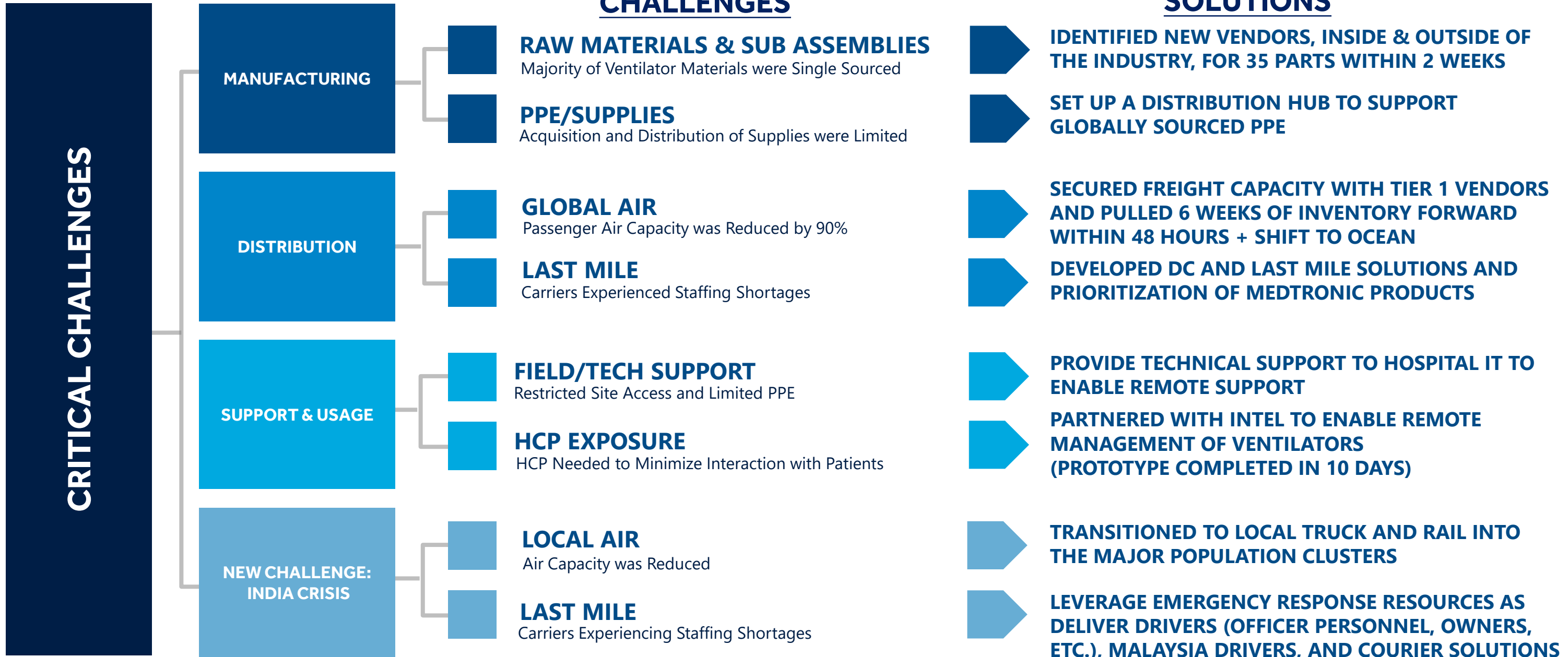
MDT SUPPLY CHAIN: EXAMPLE- VENTILATORS

Goods

Finished Products



OUR CHALLENGES & SOLUTIONS



MEDTRONIC RESPONSE TO COVID-19 DRIVEN BY OUR MISSION

WRITTEN IN 1960, OUR MISSION
DICTATES EVERYTHING WE DO.

1 To contribute to human welfare by application of biomedical engineering in the research, design, manufacture, and sale of instruments or appliances that **alleviate pain, restore health, and extend life.**

2 To direct our growth in the areas of **biomedical engineering.**

3 To strive without reserve for the **greatest possible reliability and quality in our products.**

4 To make a **fair profit.**

5 To recognize the **personal worth of employees.**

6 To maintain **good citizenship.**

- In an open source initiative, **released its PB560 ventilator design specifications publicly**, providing manufacturers around the world the ability to rapidly accelerate ventilator production.
- Working with WHO, UNOPS, others to **define list of biomedical technologies** critical to COVID-19. Also, helped to found **Global Respiratory Partnership** in relation to WHO
- Rapidly delivered limited market release for a **remote management feature** on the company's critical care ventilators, which may reduce healthcare workers' exposure to COVID-19
- **Collaborating with others** to manufacture critical components for Medtronic's critical care ventilators.
- **Committed to not raising ventilator prices** as a result of the COVID-19 pandemic
- Medtronic spurred the formation of the **Ventilator Training Alliance**, aimed at ensuring appropriate ventilator training for healthcare workers.

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COVID-19 AND NONCOMMUNICABLE DISEASES

SOME PRELIMINARY FINDINGS ON THE NEXUS

NEUROLOGICAL ISSUES

- 50% of COVID-19 patients experience neurological issues
- Infection significantly alters Alzheimer's markers implicated in brain inflammation
- Some believe COVID-19 can enter the nervous system, lie dormant, and potentially return
- Uncertain how long neurological issues persist after recovery

CARDIOVASCULAR ISSUES

- Hypertension is 2nd highest disrupted NCD service
- Complications which have been reported to have association with COVID-19 include
 - Cardiac arrest
 - Heart failure
 - Arrhythmias
 - Myocarditis risk
 - Elevated serum troponin levels

RESPIRATORY ISSUES

- Cytokine storm can injure the lungs and cause airway injury
- COVID-19 can induce lung failure/damage, pulmonary fibrosis, and hypoxemia
- Patients are at risk of venous thromboembolism, especially if they have prolonged immobilization

DIABETES

- 2nd most common comorbidity related to COVID-19
- Dexamethasone (steroid) can elevate blood sugar, lead to full-blown Type 1 & 2 diabetes
- Diabetics with COVID-19 more likely to receive invasive mechanical ventilation and develop acute kidney injury
- COVID-19 directly and indirectly inhibits insulin production

RENAL FAILURE

- Extra-pulmonary manifestations have been reported, including liver and GI tract issues
- Patients with liver cirrhosis may be more susceptible to infection
- Up to 30% of COVID-19 cases develop moderate to severe kidney injury

OBESITY

- Vaccines may not be as effective in individuals with obesity, due to disturbed antibody response and T-cell dysfunction
- Quarantine/ 'stay-at-home' measures contribute to increases in:
 - Consumption of high-processed foods
 - Food insecurity
 - Depression / sleep disturbances

FUTURE DEMAND SCENARIOS- MEDTECH

FACTORS

- Severe chronic/Non-Communicable Diseases-Procedures Delayed (partic in vaccinated countries)
- How will C19 actually evolve? Heavily impacts upon predicted demand
- The strong but preliminary evidence around A) Long Covid B) NCD's directly tied to onset of Covid-19

CONCLUDING THOUGHTS: WHAT WE'VE LEARNED

SUGGESTIONS FOR THE FUTURE

Supply Chains Vastly More Complicated than Leaders Thought

- Upstream
- Downstream

Vastly improve understanding of Medtech industry

- Unintended trade obstacles
- Tariffs
- Human element

Regulatory Agreements Can & Do Help

- Rely on pre-established approvals in high quality regulatory countries

WTO: Emergency Convening Consultative Mechanism

- Quickly spot, communicate globally and deal with technical barriers

Tariffs on C19 Products

- 15.2% in one major Asian economy

CONTACT INFORMATION



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