

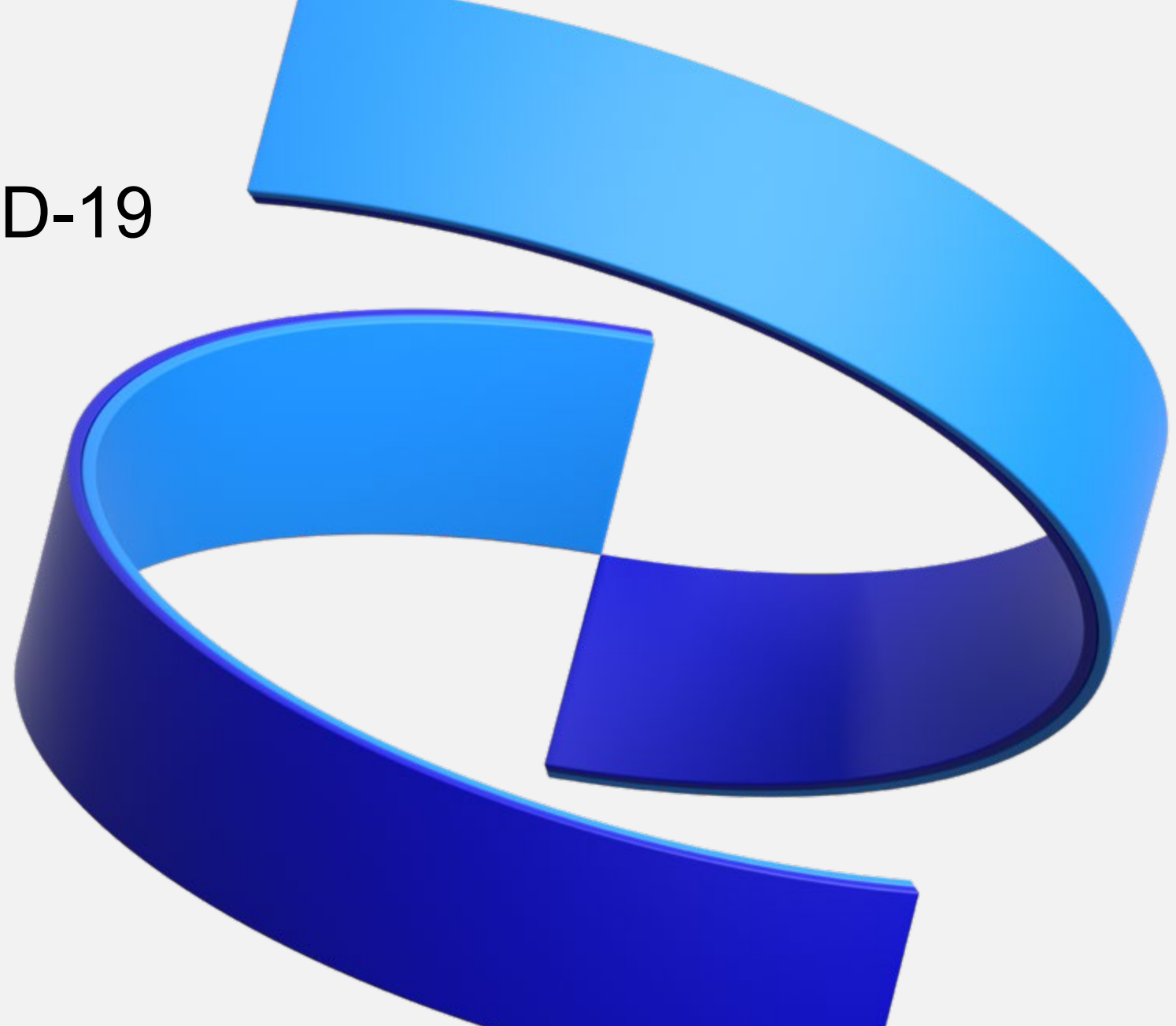
Delivering Pfizer COVID-19 Comirnaty Vaccine at *LIGHTSPEED*

Marylène (Mieke) De Winter,
Director, Global Automation
Global Engineering Leadership Team

Sinead McDonagh,
Enterprise Historian Program Lead
Pfizer Global Supply Digital Manufacturing

AVEVA World 2022 (San Francisco, CA-USA)

November 15, 2022



Agenda

- Pfizer: About Our Company
- Pfizer Covid Vaccine Journey: Science Will Win!
- Making Data Part of the Our Journey
- The Future: Continued Reinvention



Our Purpose: Breakthroughs that Change Patients' Lives

Pfizer Facts & Figures 2021-2022

~79K
 **COLLEAGUES**
around the World

37 
MANUFACTURING
Sites Worldwide

1.4B 
PATIENTS TREATED*
with Pfizer Products

>125
 **COUNTRIES**
in which Pfizer
sells Products

 **9**
PRODUCTS
with Sales Greater
than **\$1B** in 2021

104 
PROJECTS
in Clinical Research
and Development**

* Pfizer's year in review | Pfizer 2021 Annual Report

** As of July 28, 2022: [Product Pipeline: Pharmaceutical Pipeline for New Drugs](#) | Pfizer



Courage



Excellence



Equity



Joy

Partnering for Success

BIONTECH

- A **pioneer** in the mRNA therapeutics* field.
- Owns the most diversified **mRNA** technology portfolio in the industry.
- Highly **potent Lipid-Nano-Particulate (LNP)** mRNA vaccine platforms.
- Operates **GMP-certified** manufacturing facilities in Germany including laboratory space.



 **Pfizer**

- **Leader** in infectious disease vaccine research & development.
- One of the **largest manufacturers** of vaccines and therapeutics.
- Large **pharmaceutical sciences development** organization.
- Extensive **pilot scale** capabilities.

*Note: More than 100 peer-reviewed publications including 5 mRNA publications in the Journals Nature and Science in the last 4 years.

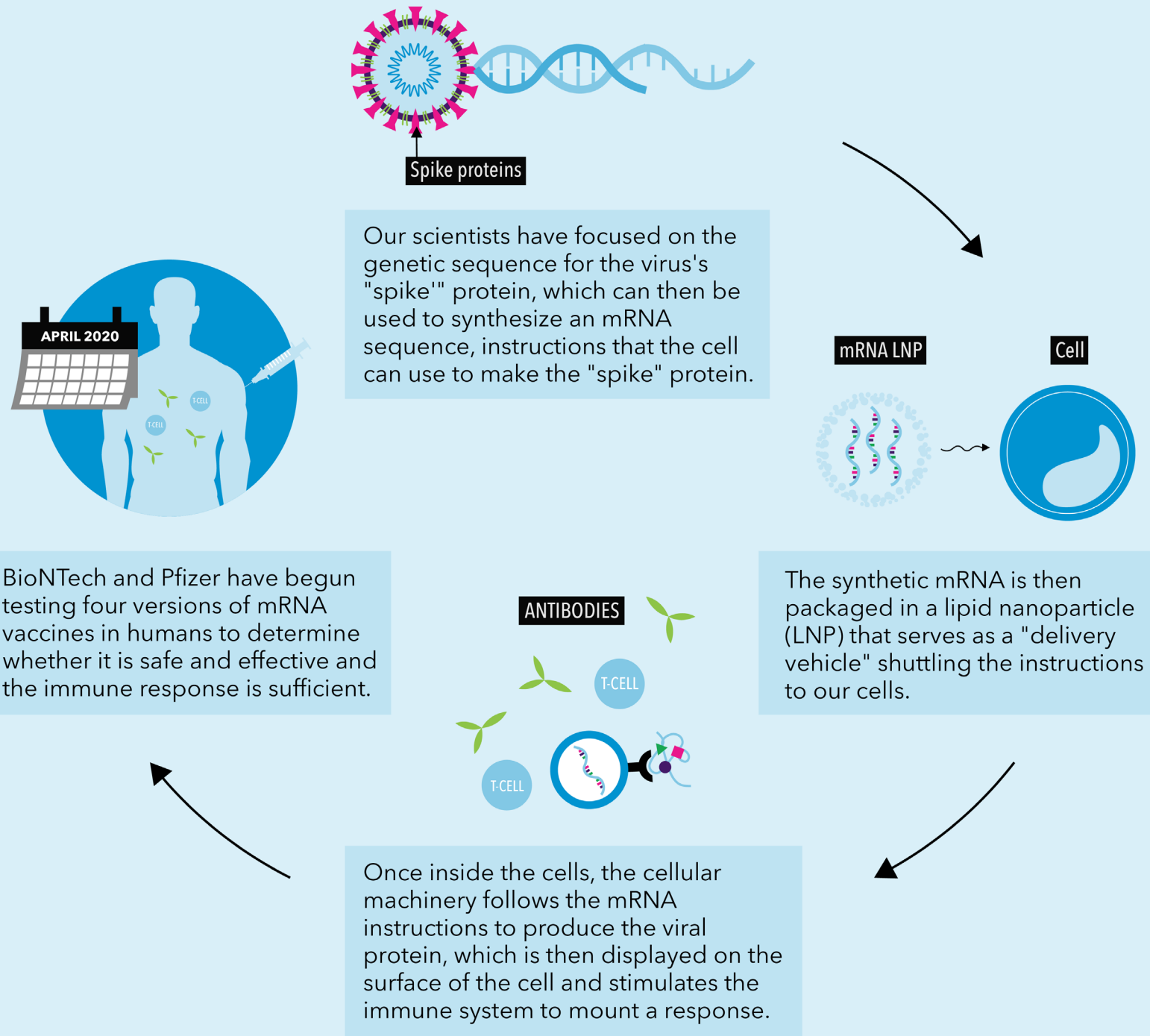
About mRNA Vaccines

To build an mRNA vaccine, scientists need to access
only the genetic sequence
of SARS-CoV-2,
NOT the actual virus.

Source: [PFIZER mRNA Vaccine COVID Infographic \(Pfizer Newsroom, October 2022\)](#)



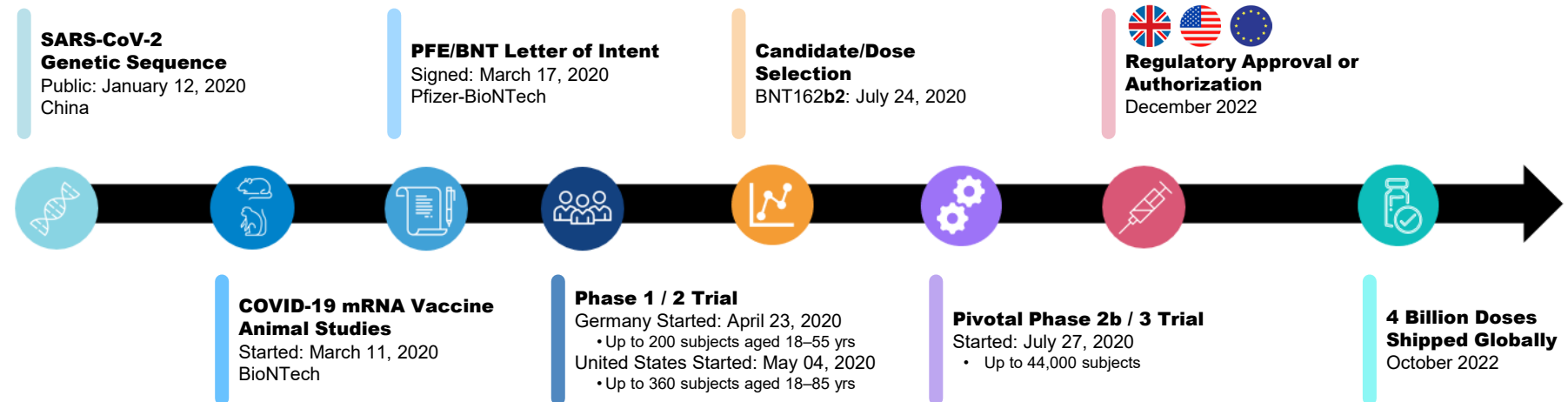
Breakthroughs that change patients' lives



Project *Lightspeed*



Pfizer-BioNTech: COVID-19 Vaccine Program Overview



Pfizer Commitment: Global Access for Patients

Fair & Equitable Access*

- **Pfizer Pledge:** To strengthen and support global healthcare systems.
- **Vaccines Donated:** 558+ million doses to 126 countries.
- **Vaccines Delivered:** 1.5+ billion doses to 111 low-to-middle income countries.
- **Global Partners:** BioNTech, governmental entities, and international health partners.

Source: Facts and figures from Pfizer Global Supply Overview dated 04 September 2022.



BIONTECH

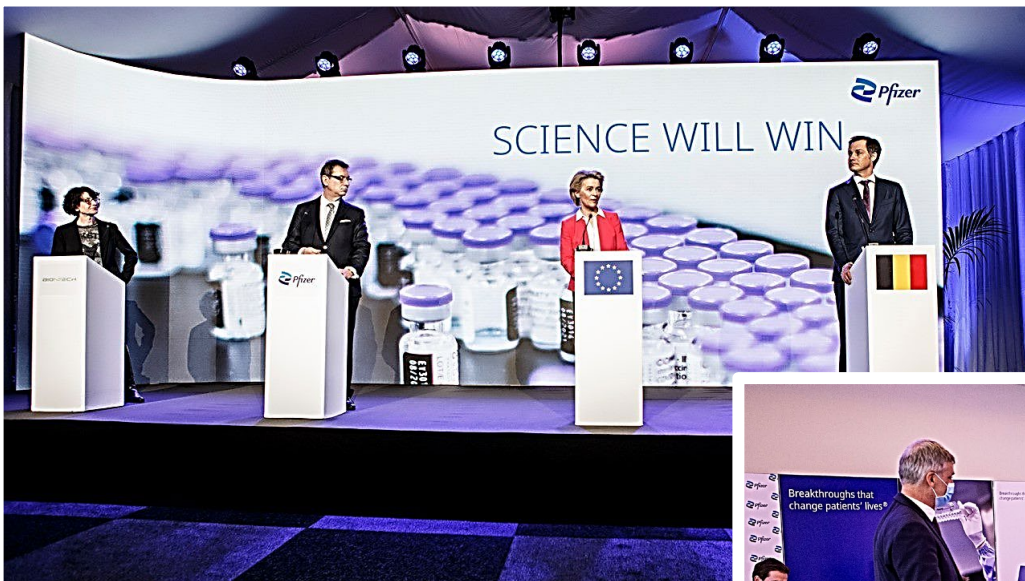
COVAX



Breakthroughs that change patients' lives

Confidential 124

Pfizer Manufacturing Sites: Kalamazoo (US) & Puurs (BE)



Exciting
Places
To Be!



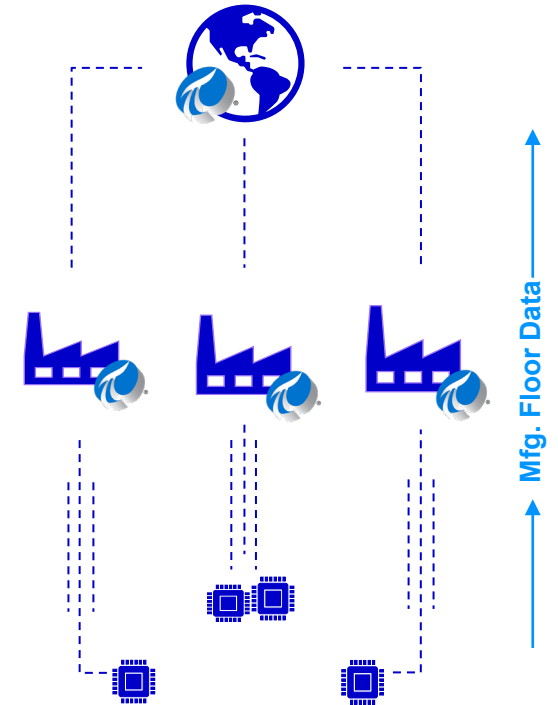
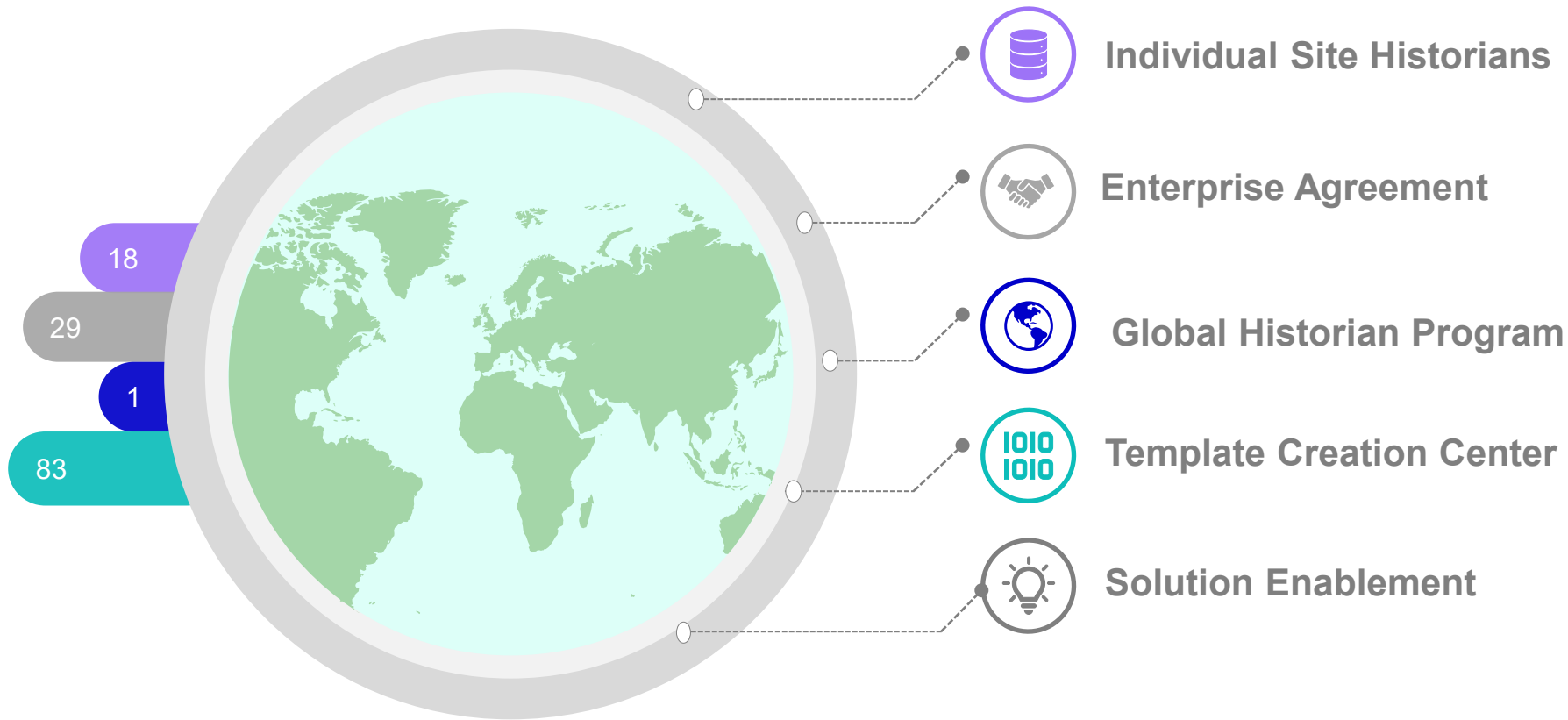
Achieving Unprecedented Manufacturing Success

The Whole is More than the Sum of Its Parts

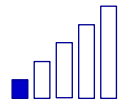


AVEVA PI System at Pfizer: Global Implementation

2019 Kick-off, established prior to COVID-19 Vaccine Manufacture and Ramp-Up

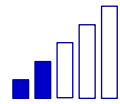


AVEVA PI System Footprint: Reaching 100% Data Connectivity and Availability



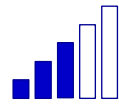
Implementation in Progress

6



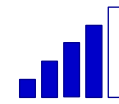
Connected Locally to a Site Historian

6



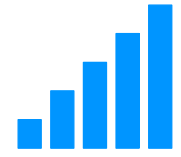
Connected Locally to a Site PI Historian

6

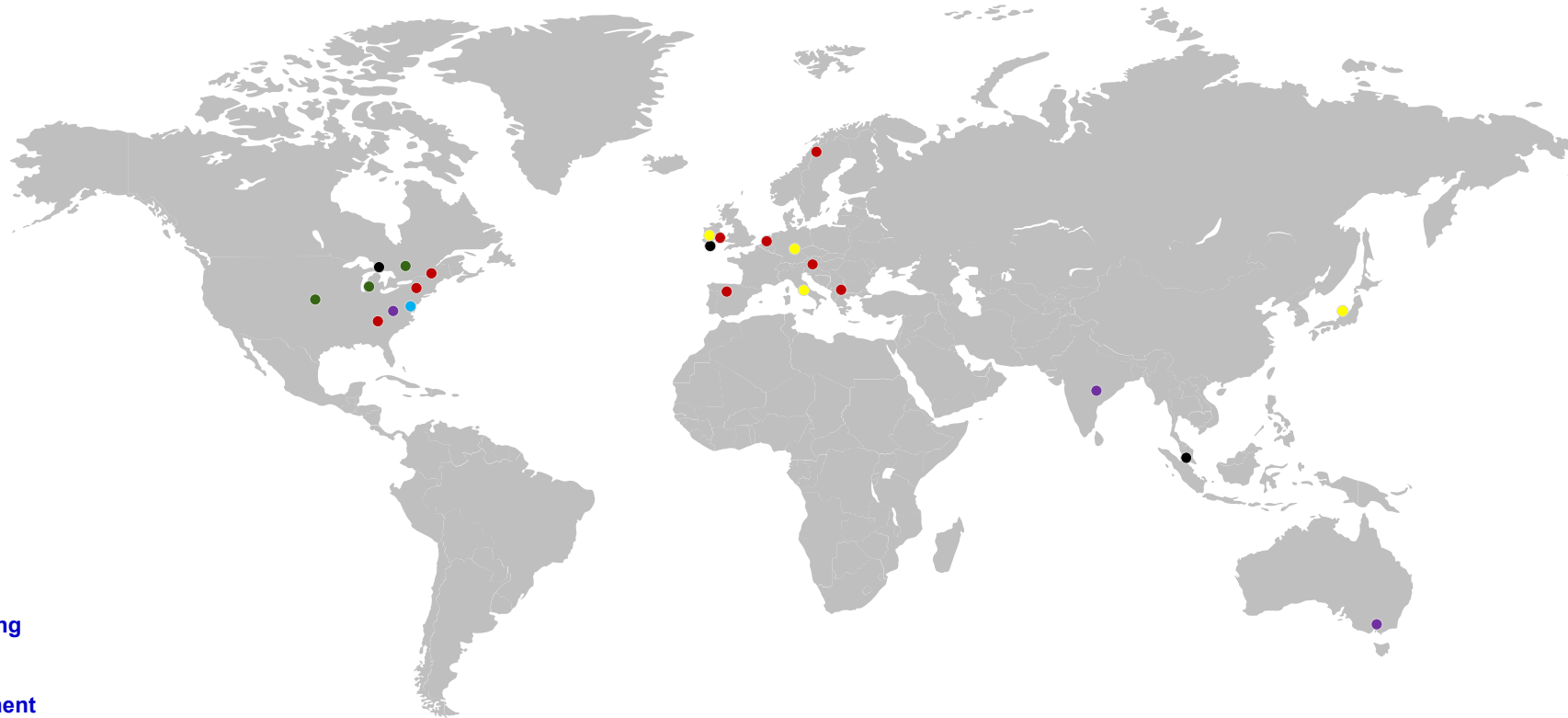


Connected to Global PI Historian

11



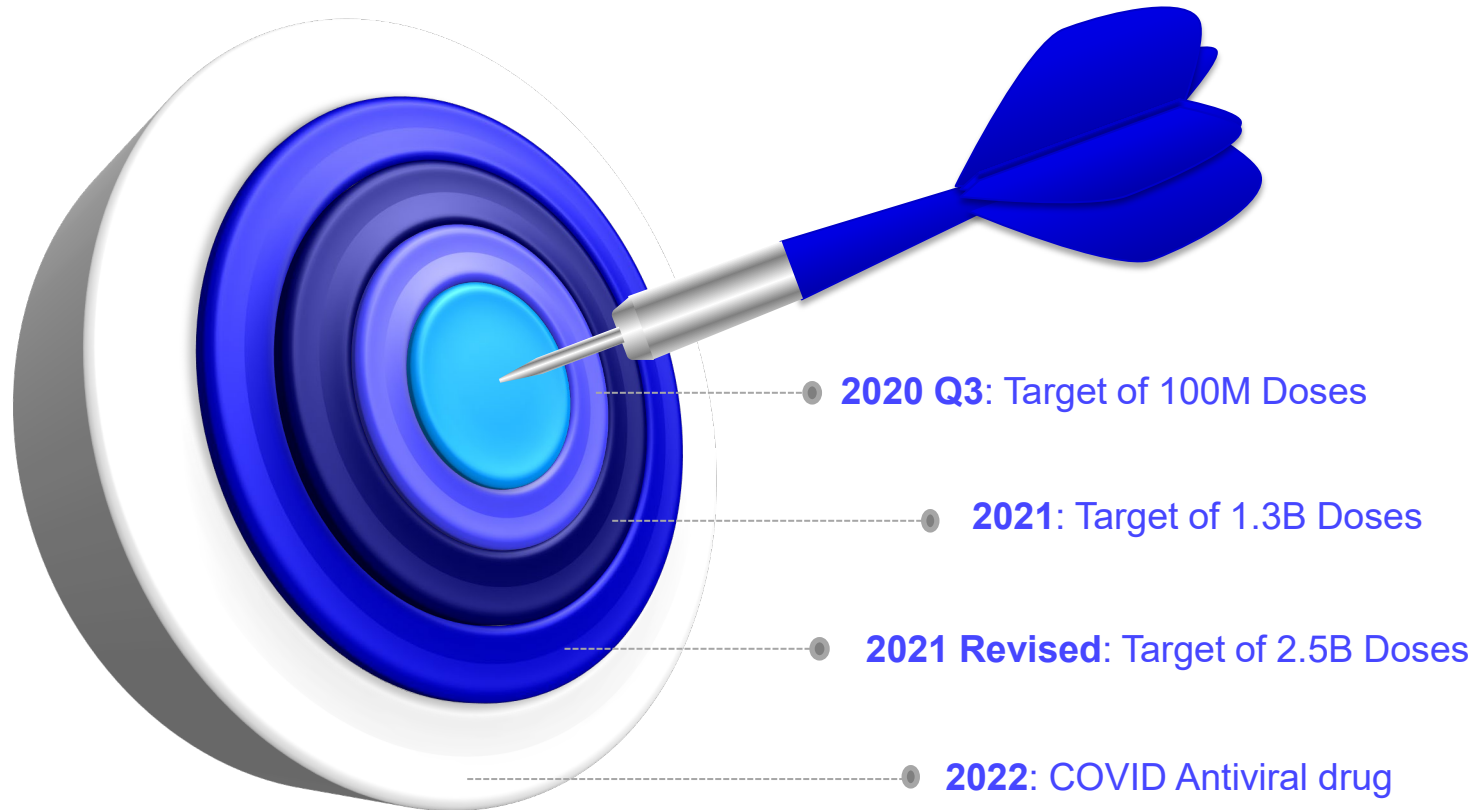
100% Available & Structured Global PI Historian



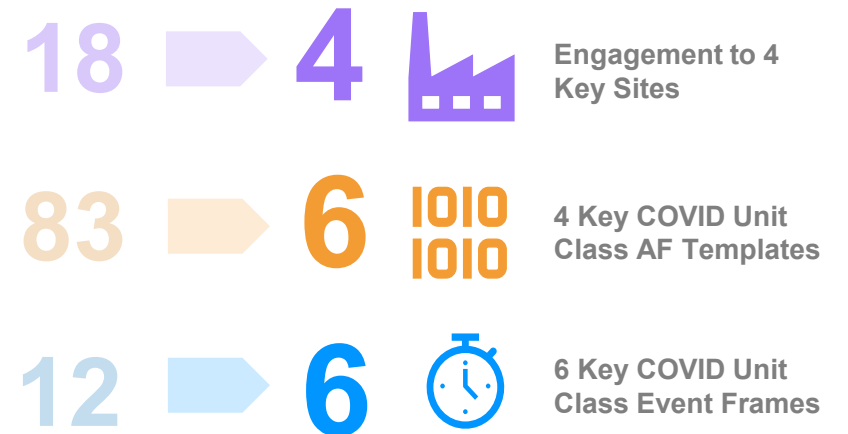
- API Sites
- Biologic Sites
- Aseptic Sites
- Global Solids Manufacturing
- Sterile Injectables Sites
- WW Research & Development

A Moving Target: COVID-19 Vaccine Manufacturing Ramp-Up

Constant Acceleration of Efforts for Full Data Availability on Existing and New Assets of the COVID Manufacturing Chain meant Refocused Delivery



Delivery Refocused



COVID Vx Data Strategy



Supply Chain Acceleration



Optimise Distribution



Cold Chain Integrity



Increase Visibility



Max Throughput



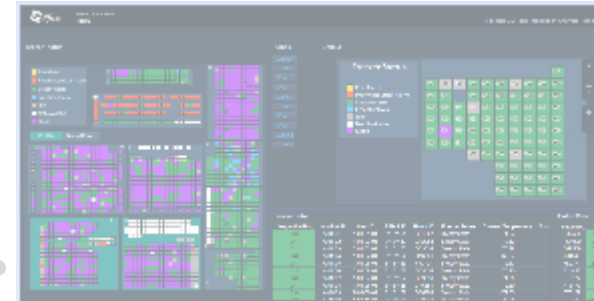
Reduce Cycle Time



Enhance Quality Adherence

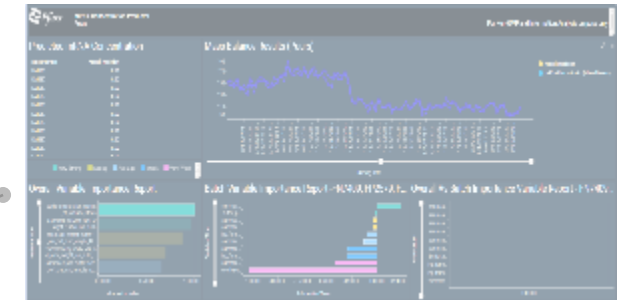
Delivering value across 7 key goals...

Freezer Farm Analytics Hub

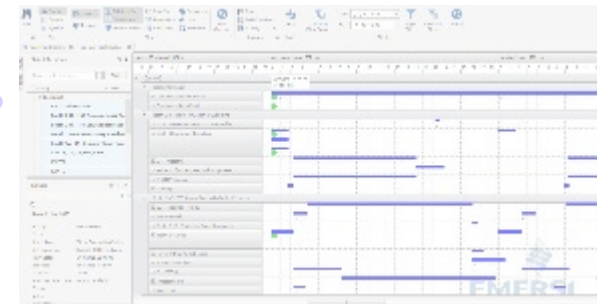


...for breakthroughs that change patients' lives...

MRNA Prediction



Real Time Scheduling



...while innovating with new game changing solutions

AVEVA PI Data Enabling Solutions



Solution End Users

The solutions built with AVEVA PI data catered to a wide range of end users from operators to executives



Asset Frameworks

Global asset frameworks standardised data from equipment across the main manufacturing sites

Freezer Farm Analytics Hub

Freezers in Pfizer all streaming **2 temperature tags** each.

Real Time Scheduling

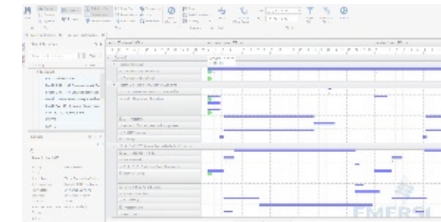
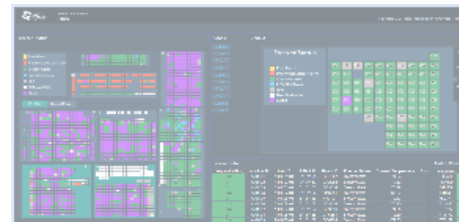
Capacity modelling and real time scheduling using **event frames** reducing lead times

MRNA Concentration Prediction

Continuous monitoring of >1000 tags identifying key process variables

✓ Global Historian Program refocused on the CVx sites and assets

✓ PI Data Enabled high value solutions across the CVx manufacturing chain



Enabling Analysis Across All Manufacturing Sites

Full Process Oversight on Pfizer Comirnaty Vaccine

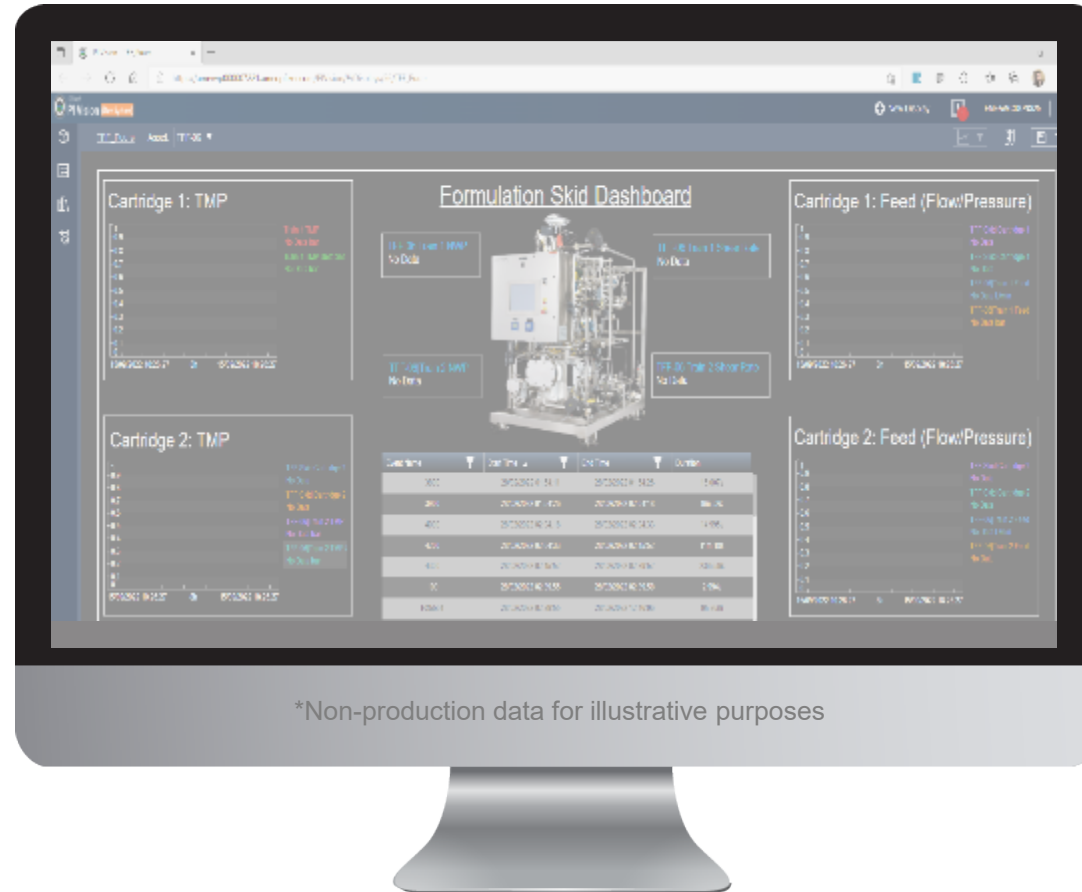
Democratisation
Of Data



Knowledge and Tech Transfer
Between Sites



Enabling Remote Work
And Analysis



Process Comparison



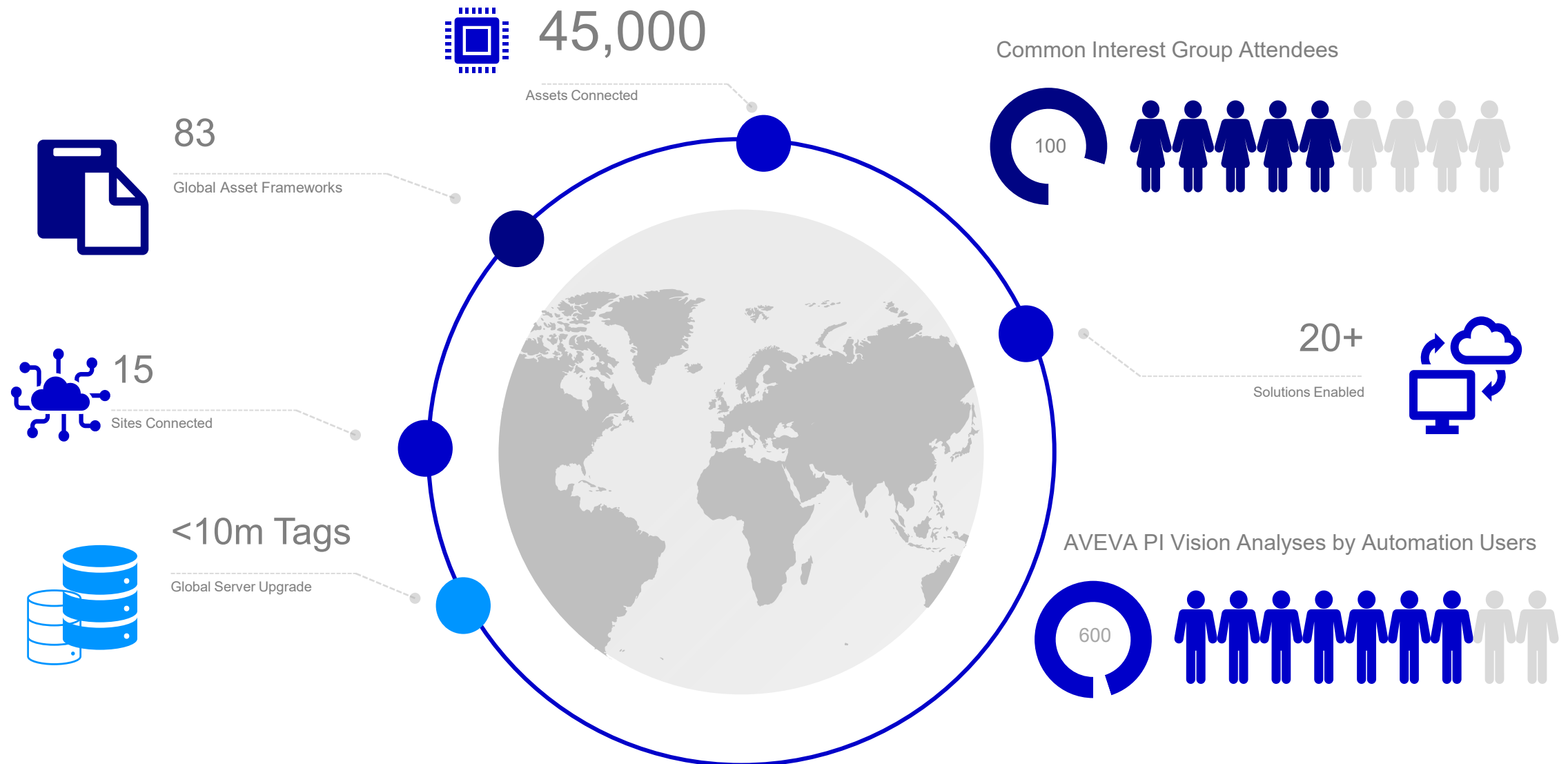
Encouraging Connection and
Collaboration

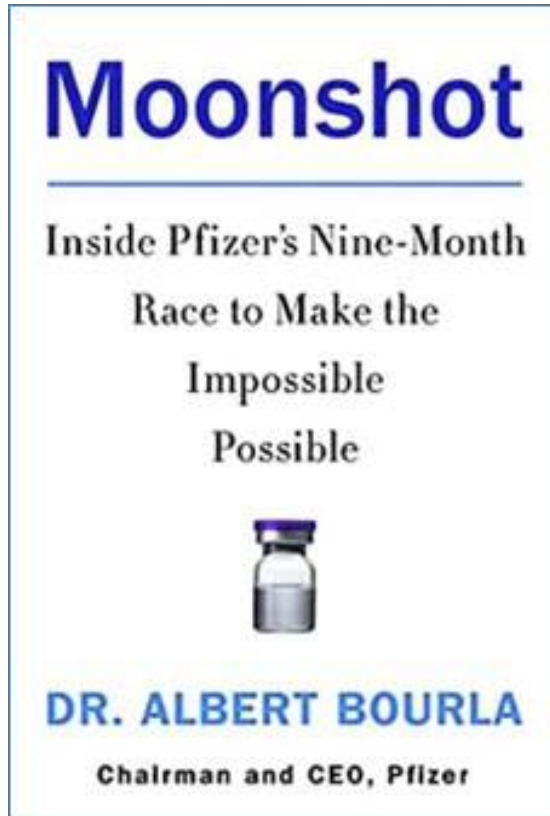


Accelerated Decision
Making



Continued Acceleration & Scale Out





Nurture the future of technology and AI

‘What if data and digital tools could reinvent prevention, patient empowerment **and the pace of both R&D and manufacturing?**’

- Chapter 12 : A Pro patient, pro innovation agenda
(Five-point plan - #3 Nurture the future of technology and AI)

Thank You



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Visit for more information: <https://www.pfizer.com/science/coronavirus/resources>