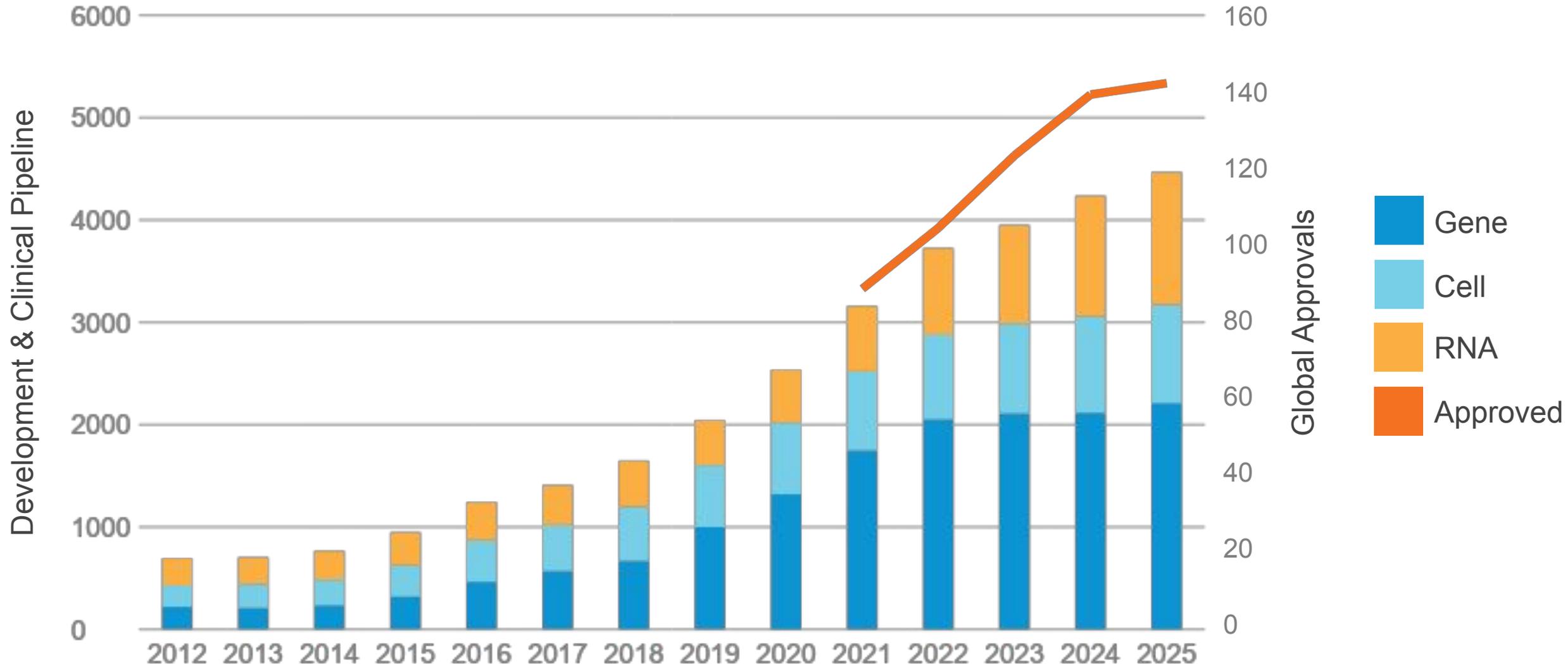




# From Manual to Machine: Scaling Cell Therapy Manufacturing for Commercial Success

Peter Walters  
Fellow, Advanced Therapies

# Market Maturity



# Horizons Life Sciences



01

Forward-looking on trends

02

400 - 500 leaders surveyed, NA & EU

03

Expert analysis and interpretation



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# Cell Therapy Challenges

- Variable starting materials
- Aseptic handling throughout
- Lost batch could be life or death
- Turnaround time is vital
- Consistency can be difficult
- Complex manufacturing steps
- No good road map

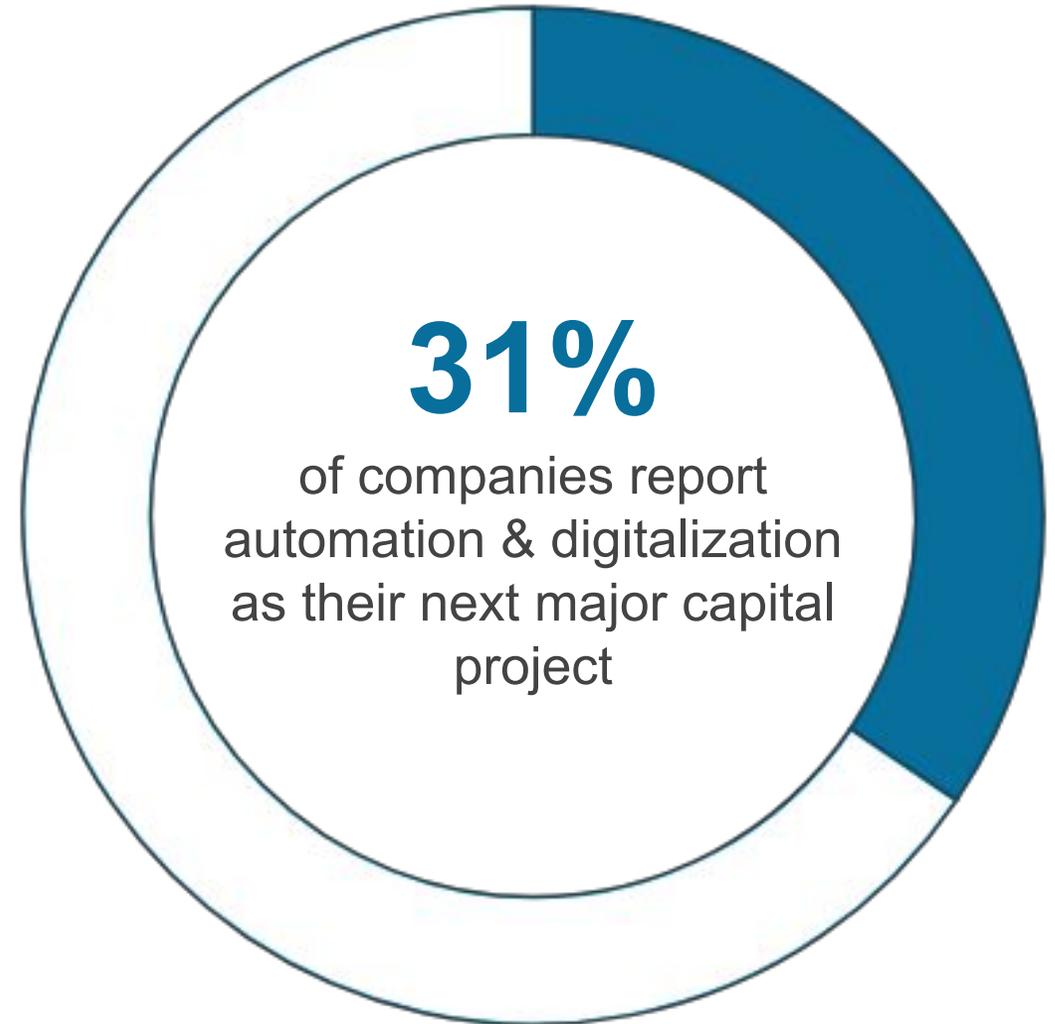
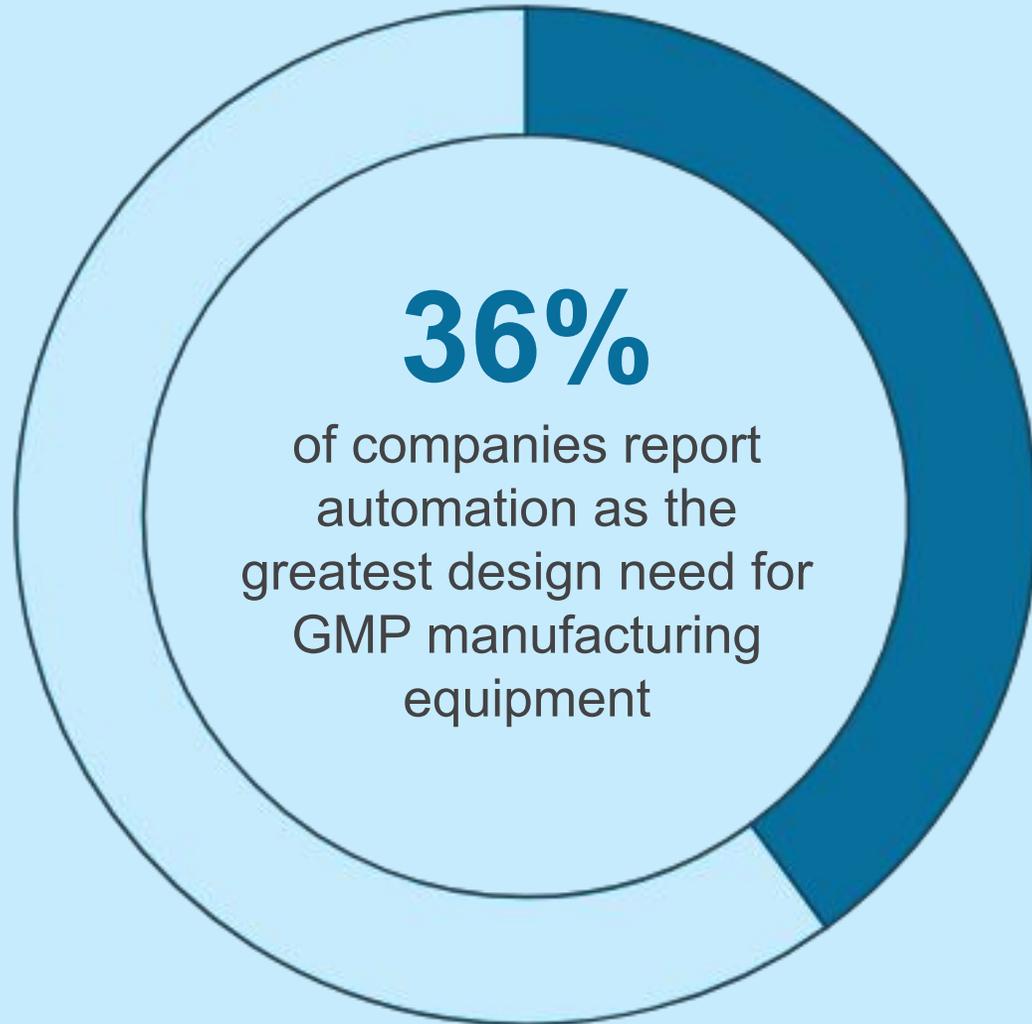


# First Generation

Manual, flexible, low investment



# Automation



# Second Generation

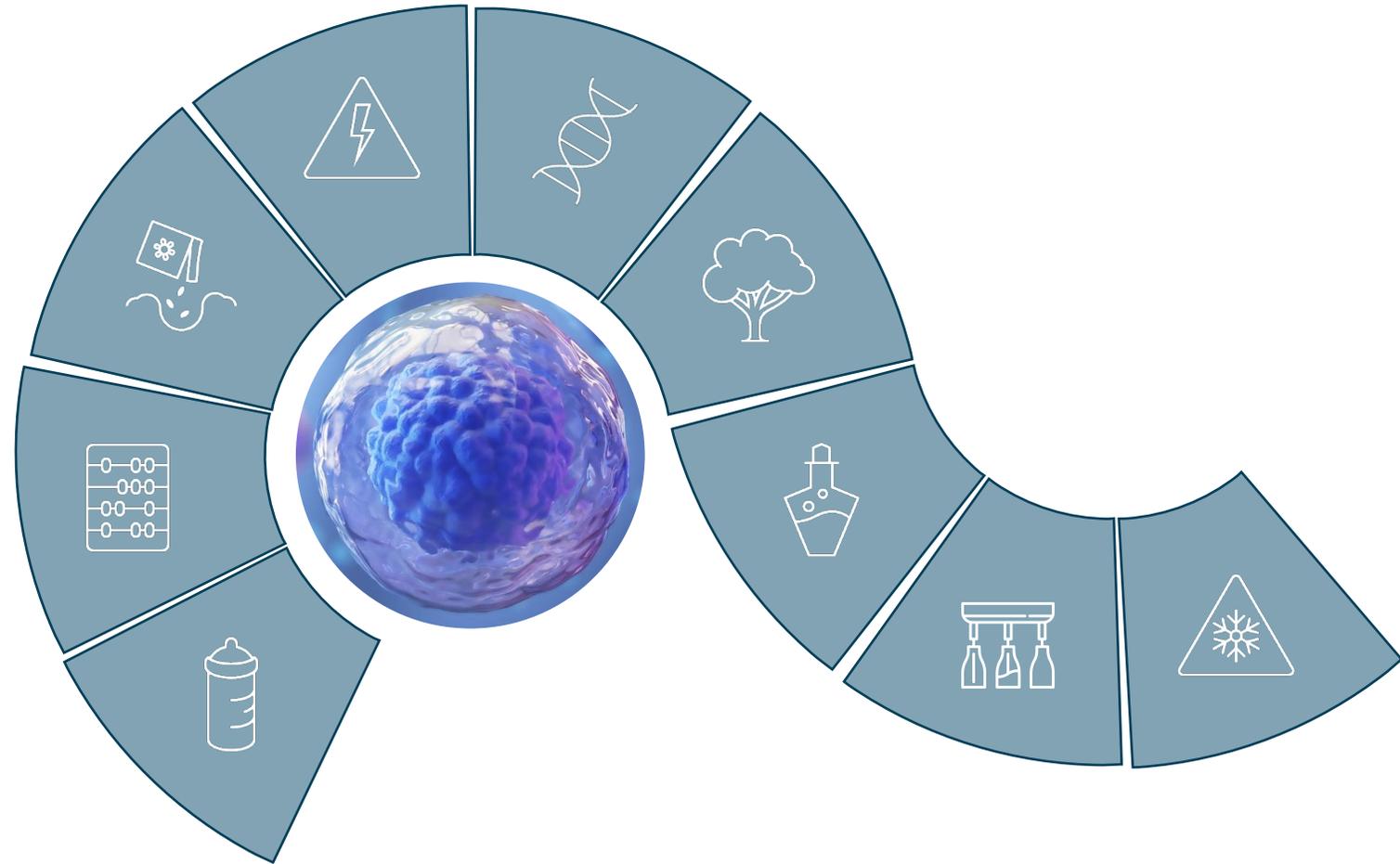
Processes closed and automated



# Tech Direction



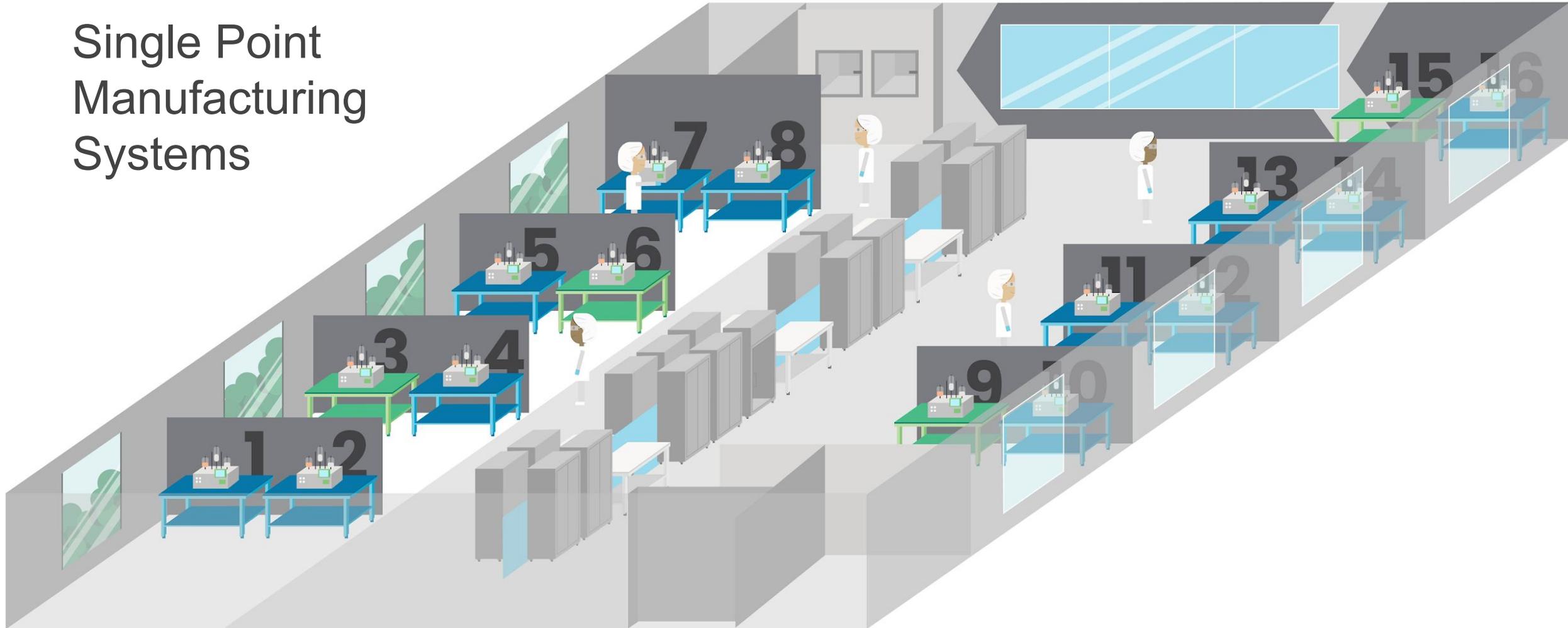
Unit Operation  
Manufacturing  
Systems



# Tech Direction



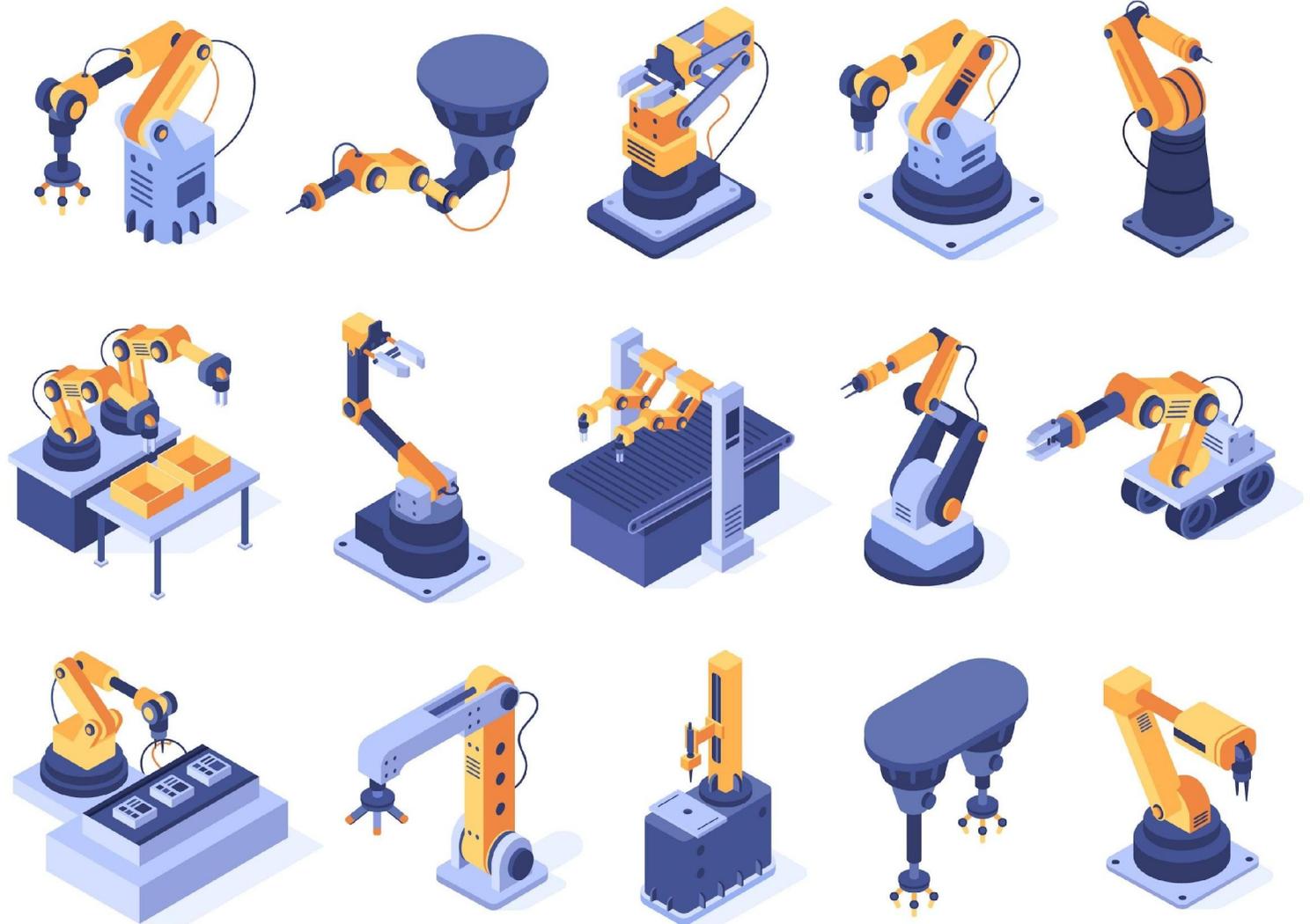
## Single Point Manufacturing Systems



# Tech Direction



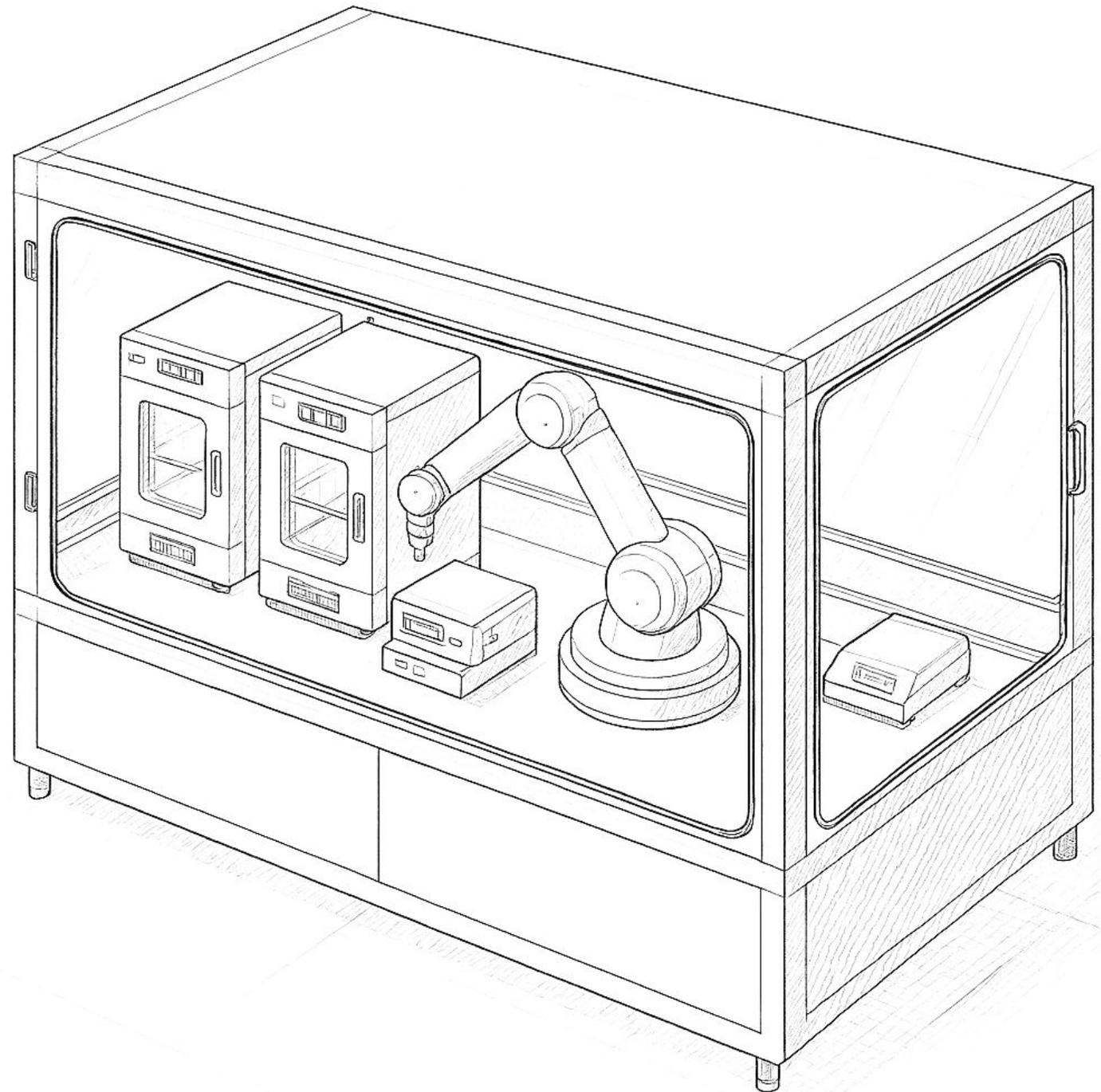
Robots + Cobots



# Tech Direction

## Equipment-bound robotics

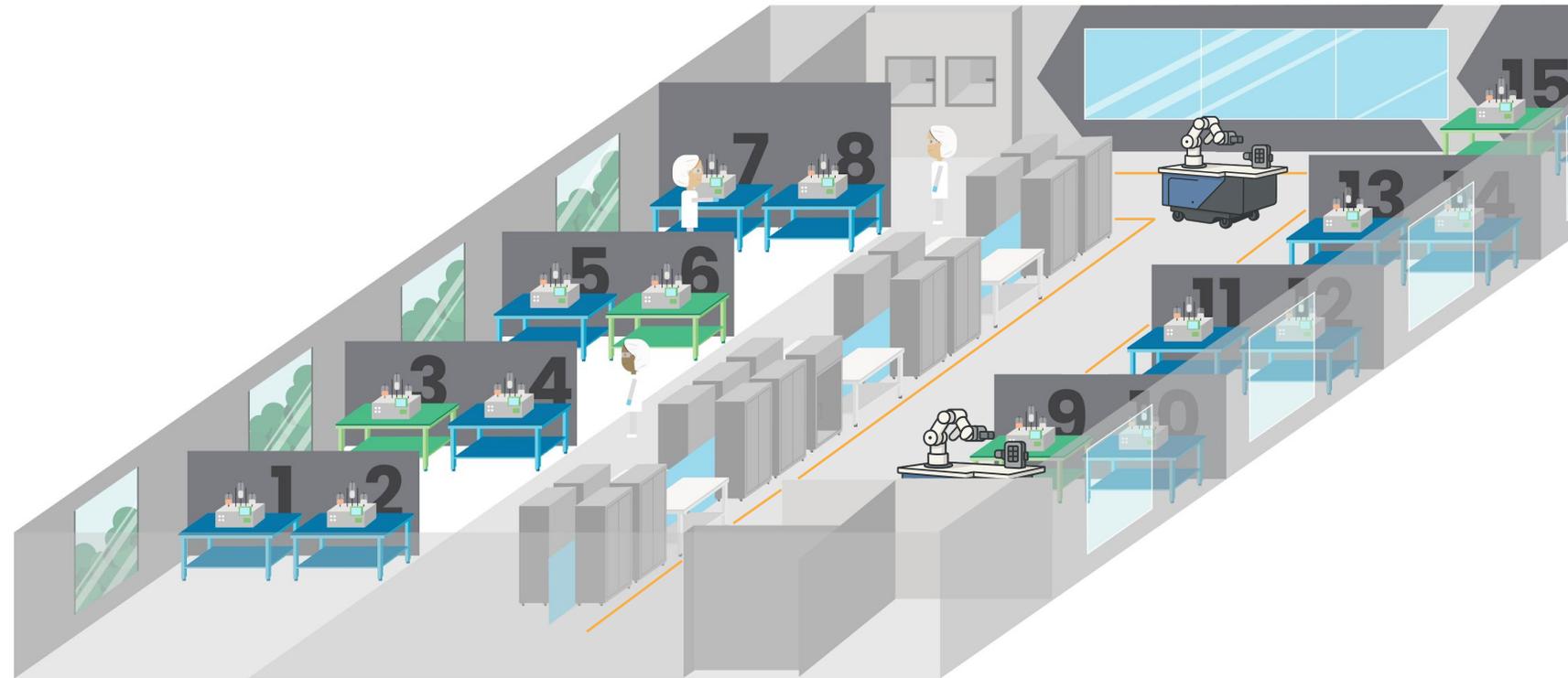
- Closure
- Flexibility
- Personnel access
- Cost value



# Tech Direction

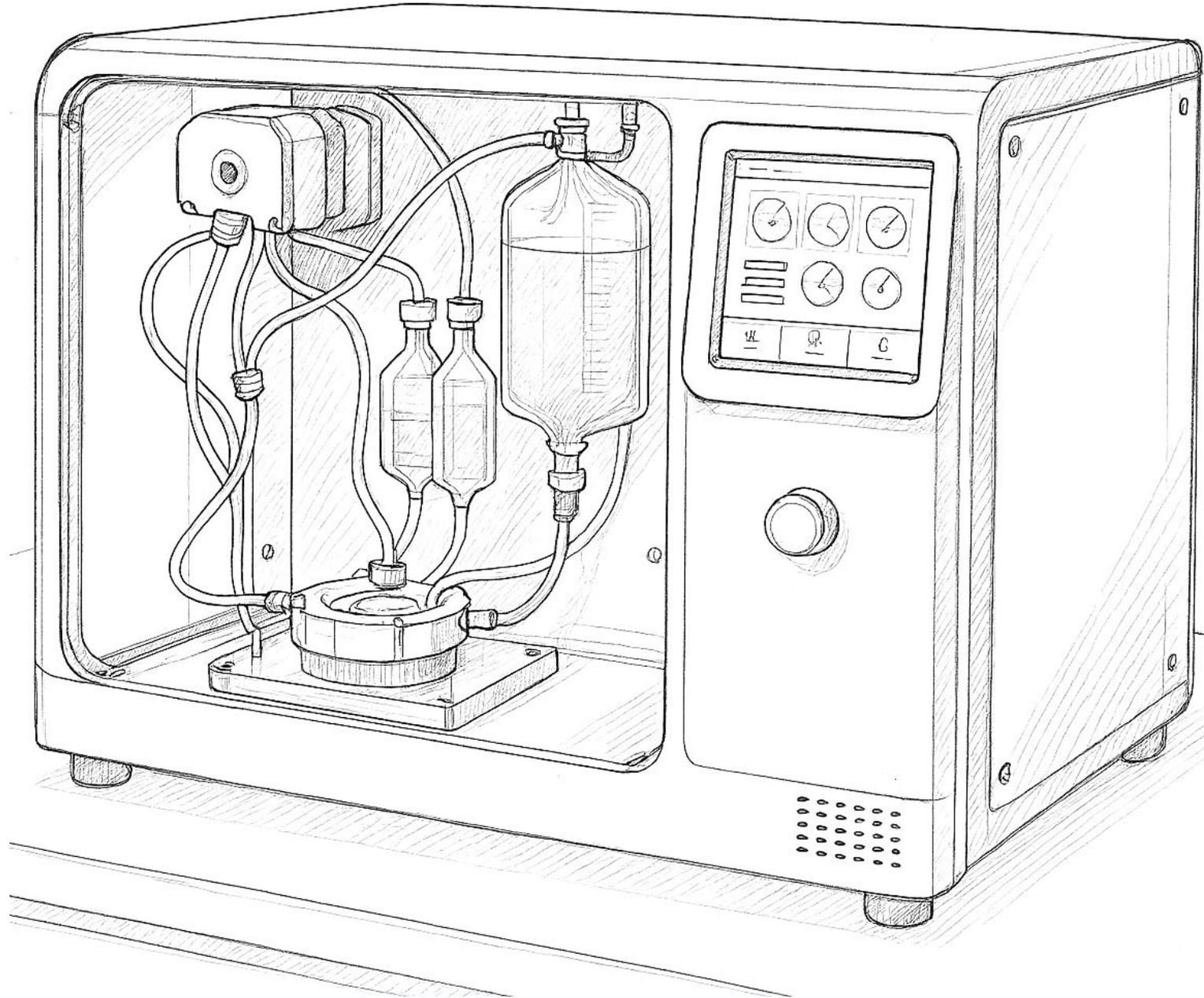
## Mobile robotics

- Travel path(s)
- Robot interface
- Leak detection
- Quality clearance



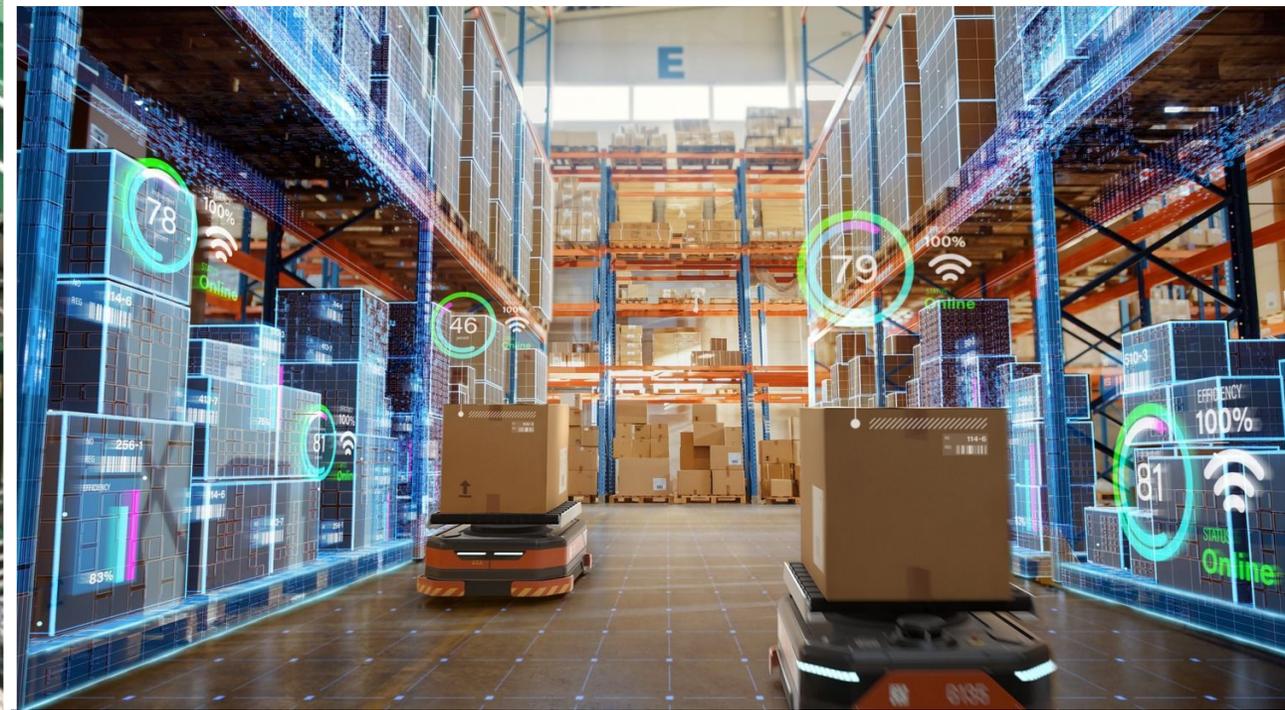
# First of Kind

- Heavy engineering
- Long lead time
- Supply chain
- Reliability
- Extensive testing

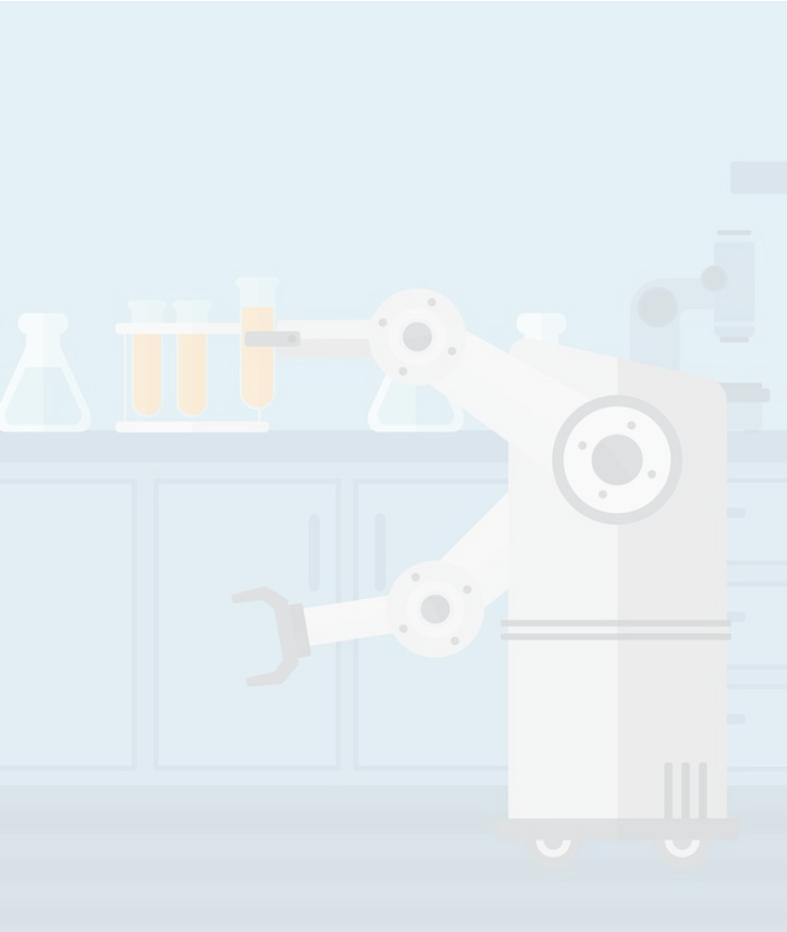


# Tech Direction

Site-wide automation support



# Lab Tech Direction



**75%**

High throughput systems

**68%**

More compact, automated equipment

**61%**

Densified storage with automated storing and retrieval

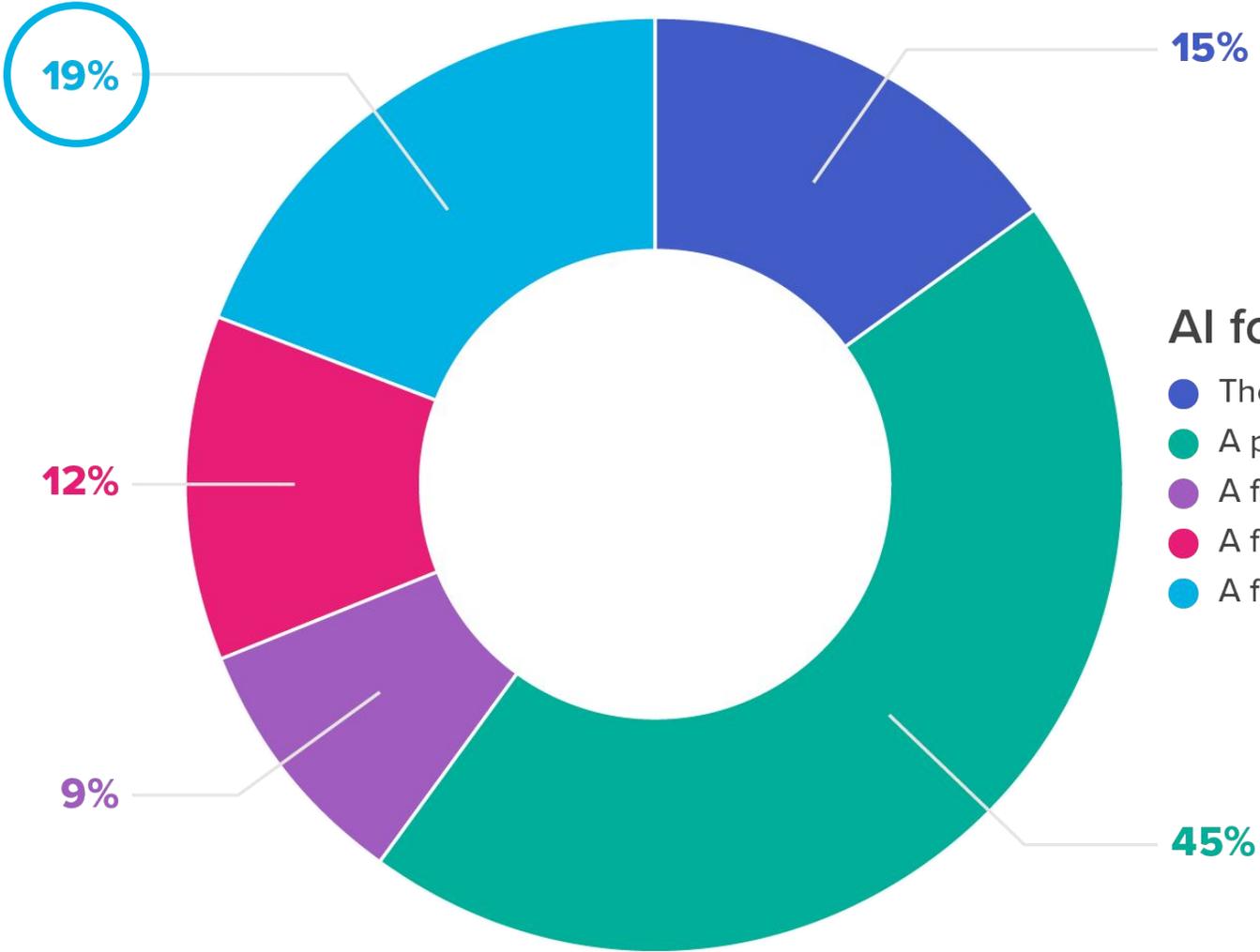
**60%**

Robotics

**58%**

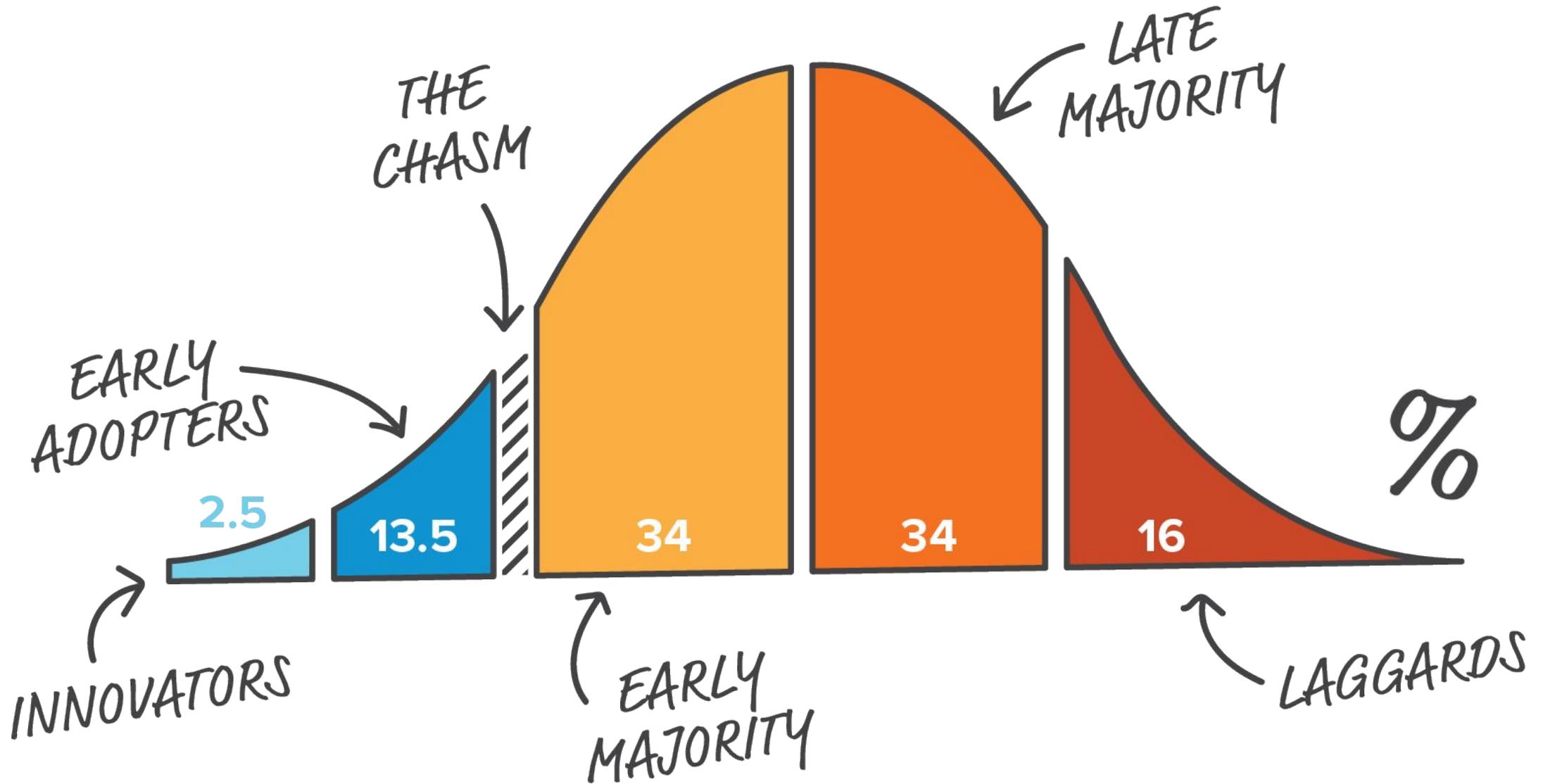
AI

# AI & Manufacturing



## AI for Use in Process Data Analysis

- There is no plan to integrate AI
- A plan is being discussed/created
- A formal plan is in place but funding is not secured
- A formal plan with dedicated funding is in place, but hasn't yet started
- A formal plan is currently executing, or has been executed





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