

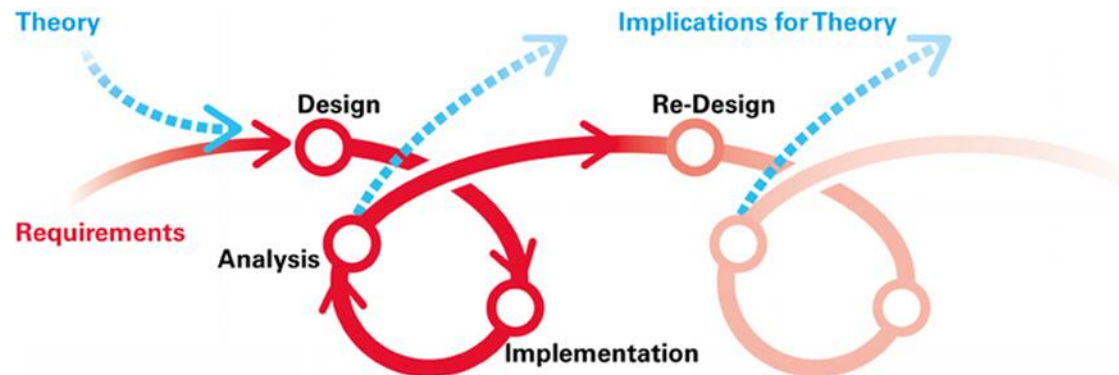


R&D Digitalization enables to increase speed to market

Georgios Tetradis-Meris

# Traditional R&D way of working

- *Linear WOW*
- *Focus only on current product/problem to solve*
- *Data is not standardised and normally saved in a local drive*
- *Dissipation of learnings goes to few*



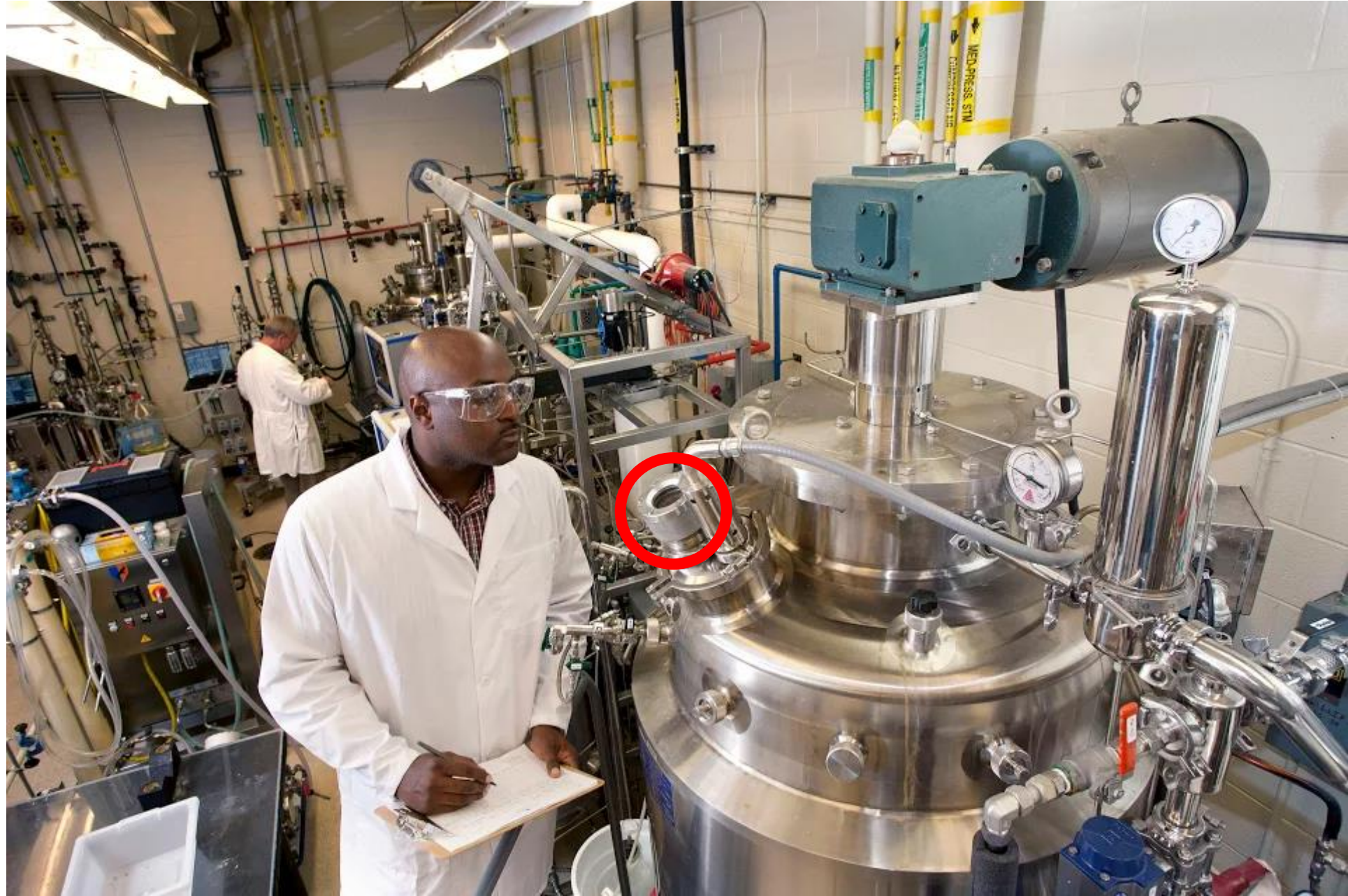
# Process monitoring

*Current Status*



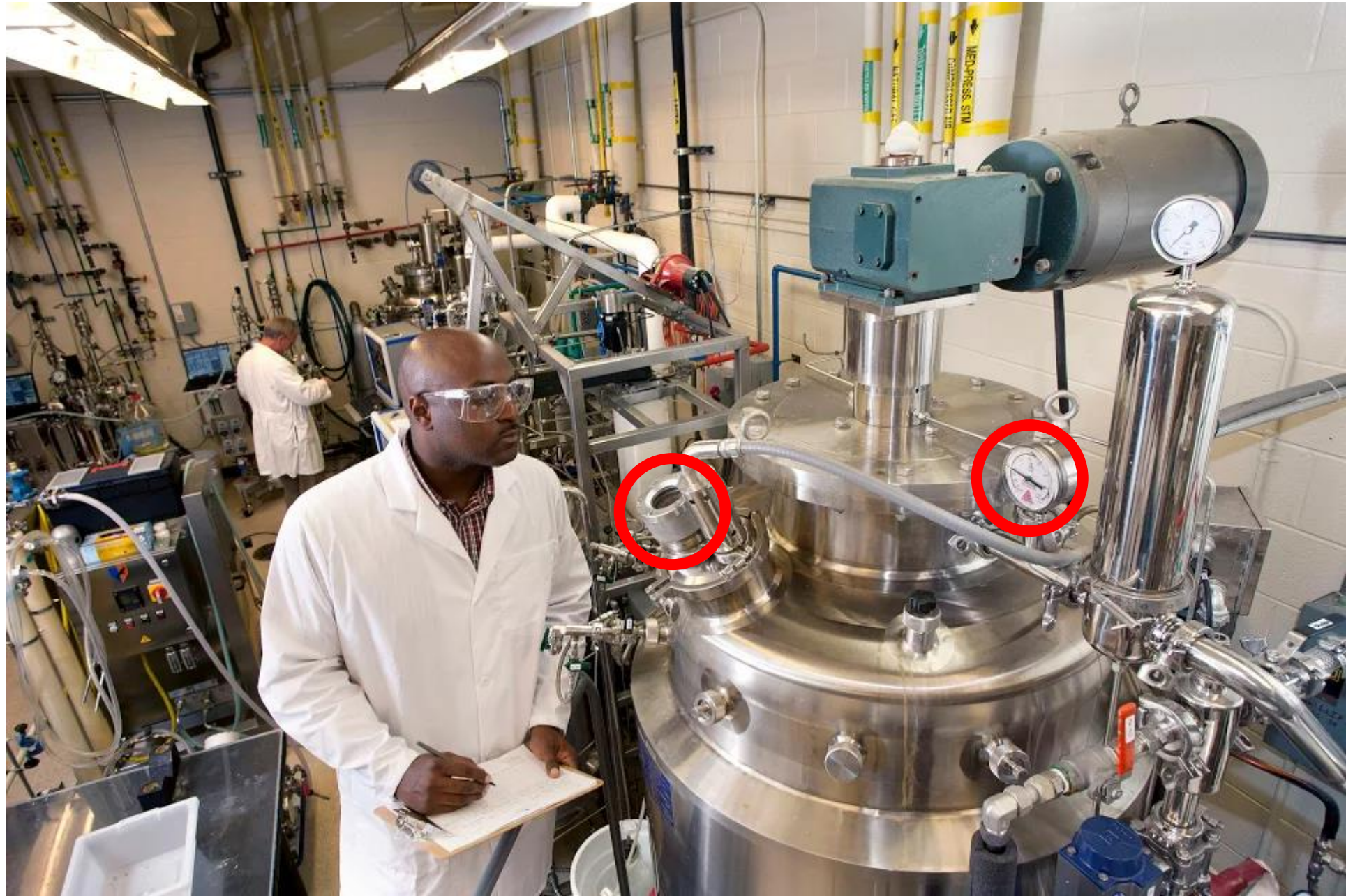
# Process monitoring

*Current Status*



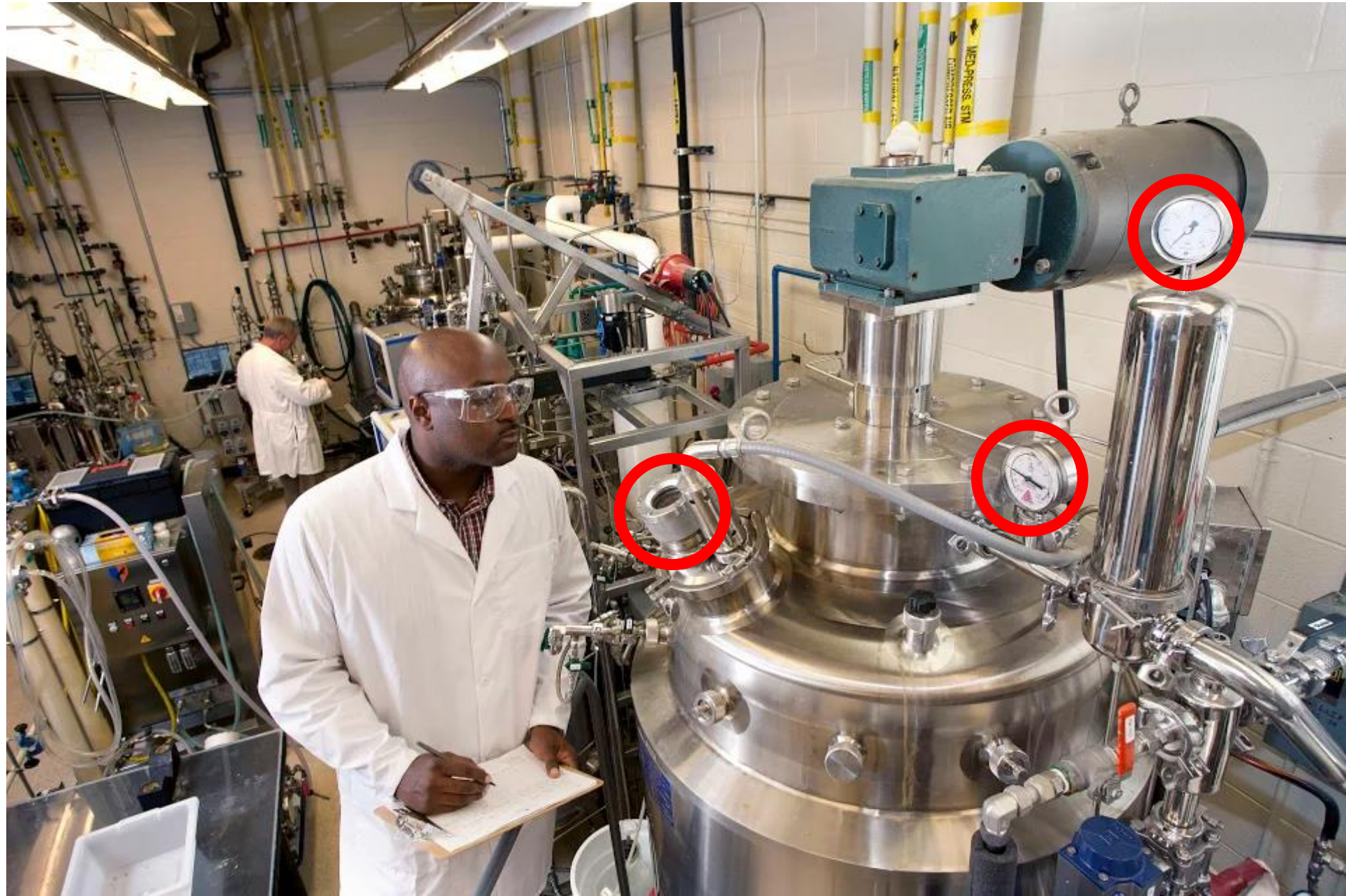
# Process monitoring

*Current Status*



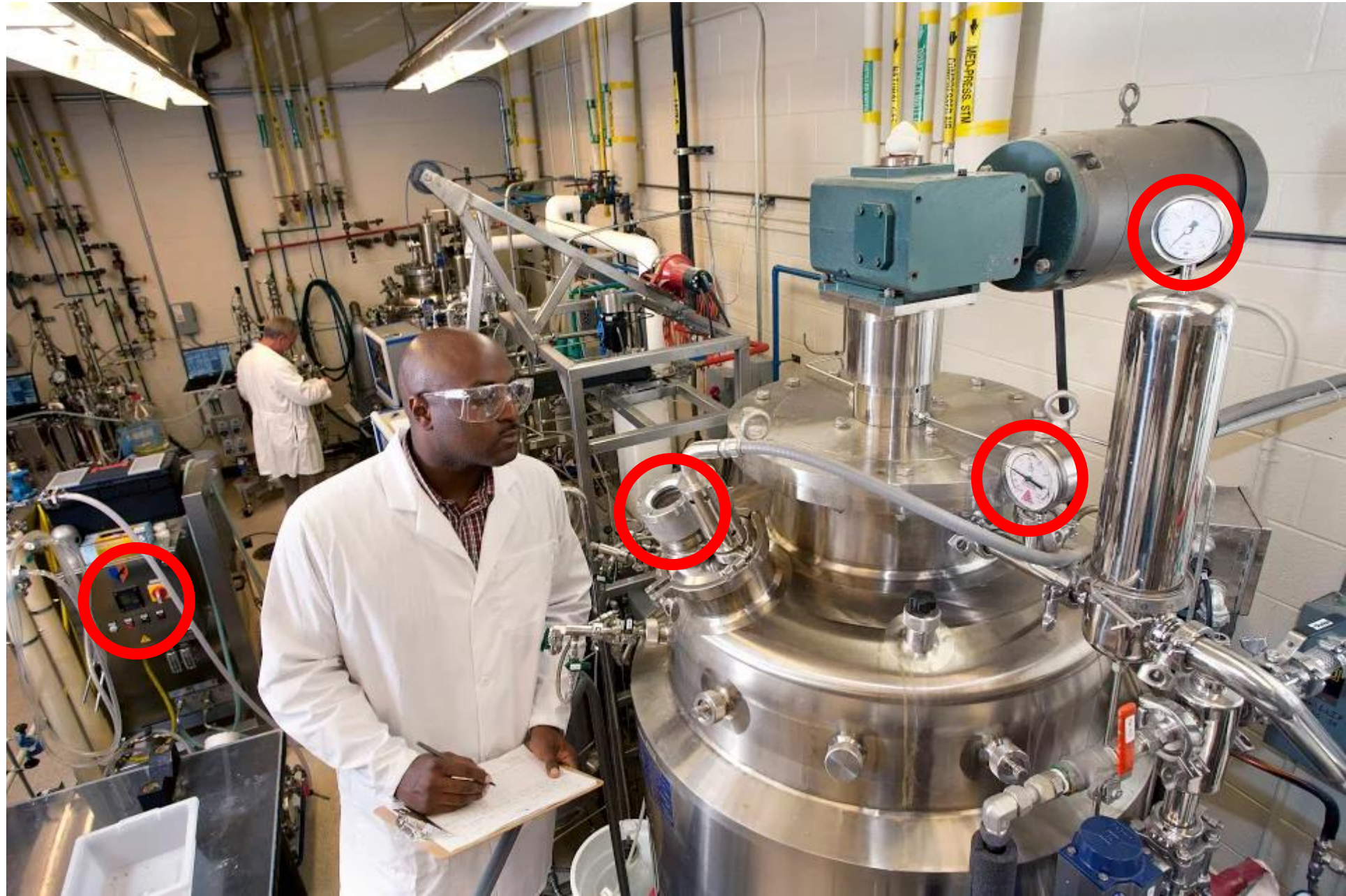
# Process monitoring

*Current Status*



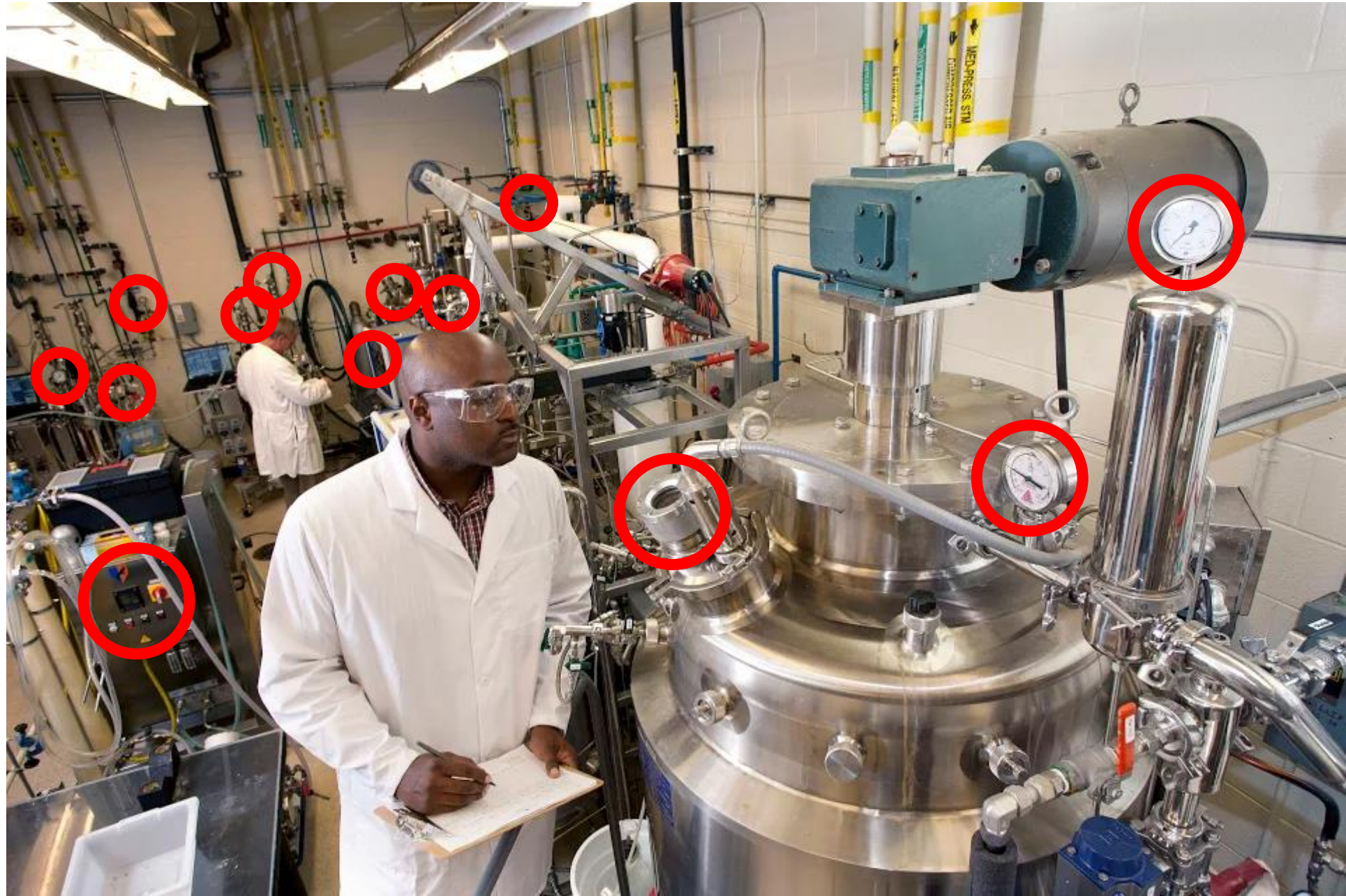
# Process monitoring

*Current Status*



# Process monitoring

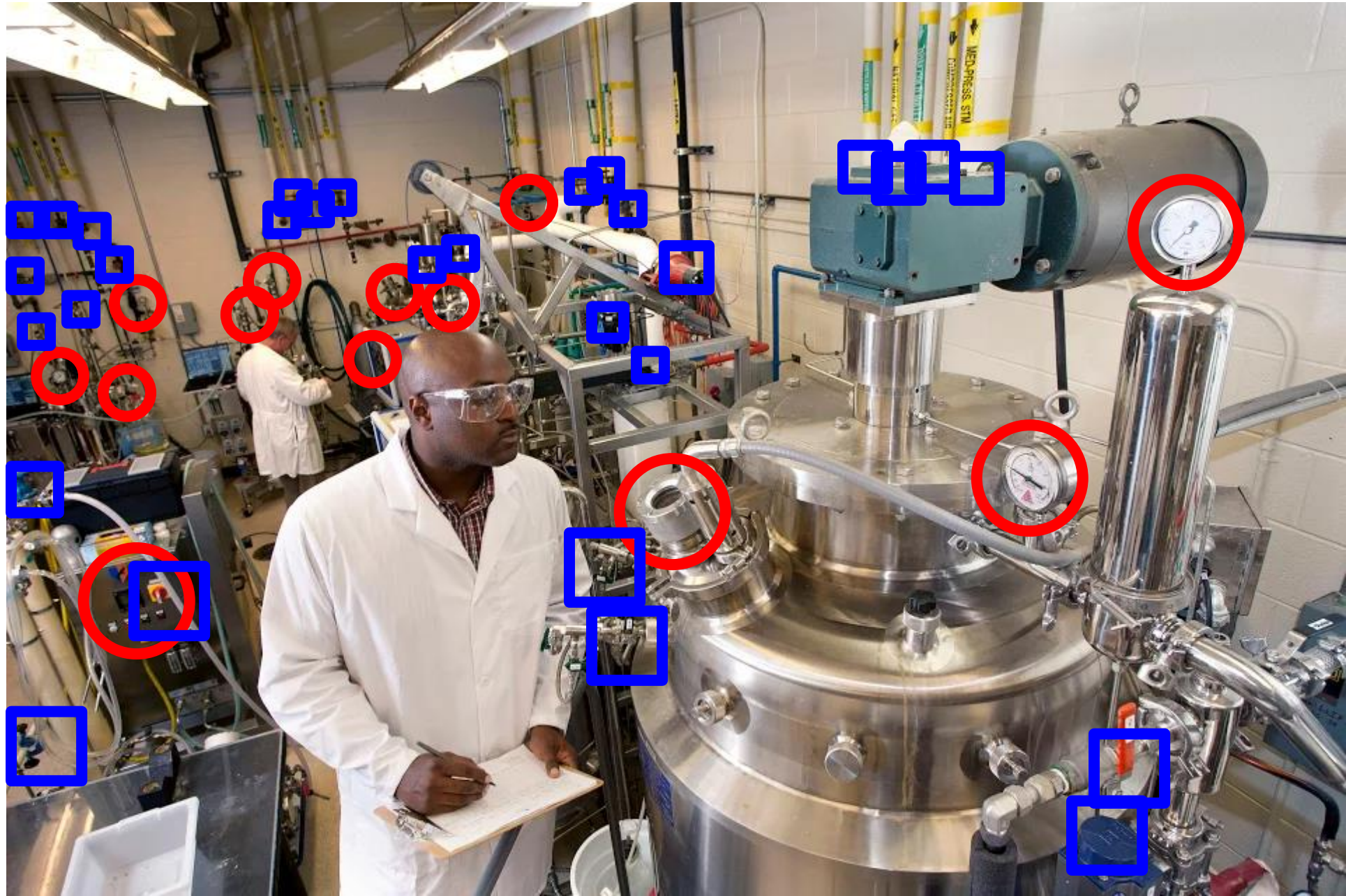
*Current Status*





# Process monitoring

*Current Status*



# Process monitoring

*Current Status*



# Process monitoring

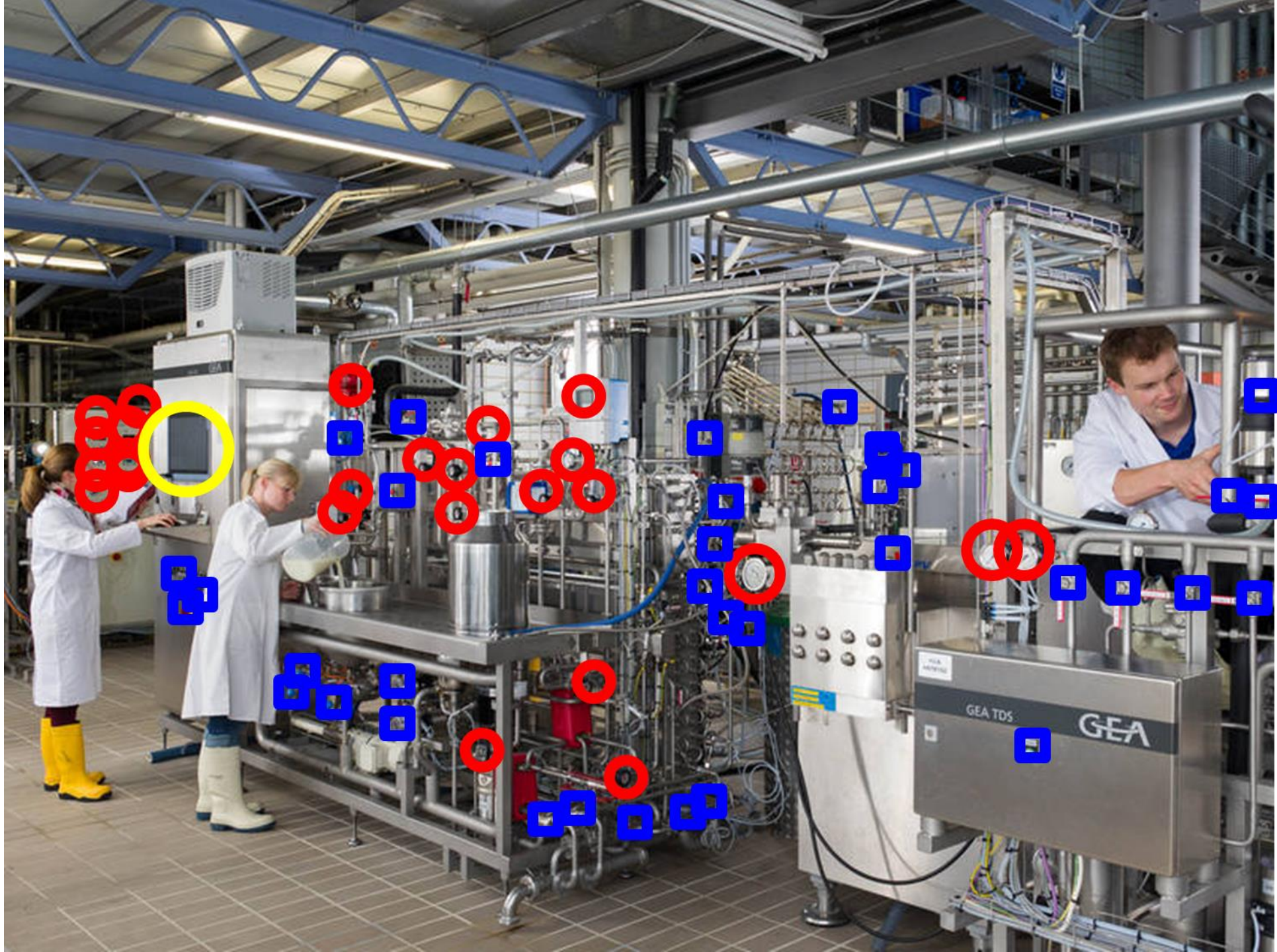
*Current Status*



# Process monitoring

*Current Status*





In

efficient

Traditional R&D way of  
working

- *Expensive : For each trial (>€2k/trial) we take only 20% of the output*
- *Poor Knowledge Transfer : depends on people experiences*
- *Time Consuming : Long R&D Lead time*
- *Issues on the Implementation : Solutions not optimised / Not including Sensitive Analysis*

# World is changing R&D is transforming to keep up with the changes

- *FMCG the pace of changing has being multiplied due :*
  - *Speed of information through www , social media, ...*
  - *Consumer Demographics changing (Urbanization)*
  - *The raise of non-branded products*
  - *Local vs Global*
  - *Consumer Trends (Flavors, what is good and bad for you, increase on allergies and diet changes)*
  - *Increasing costs of Raw Material*
  - *>1000 new product launches/year*
- *Critical for a business to Speed to market seamless execution*
- *The role of R&D to unlock*

***Future is here somewhere but not evenly distributed***



# Digitisation of R&D enables speed

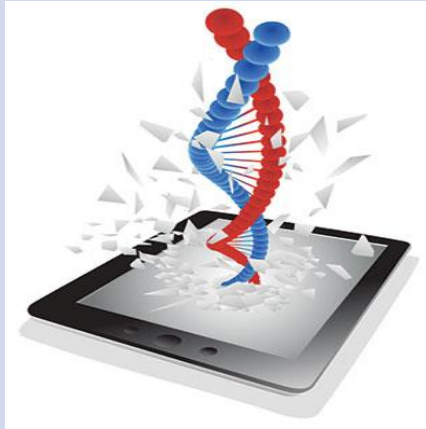
*Embraces across all Functions*



- *Internal Customers, external Customers, Suppliers & Consumer*
- *The focus will be on R&D part*



# R&D Different Way of Working



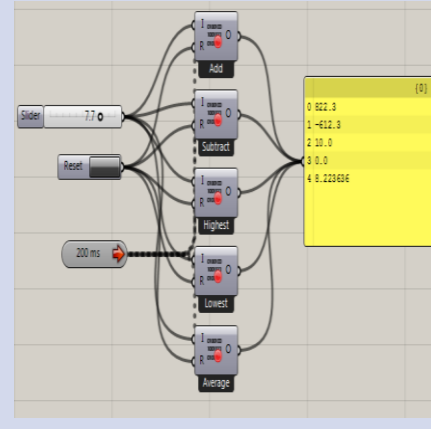
In Silico



Immerse  
ourselves in  
Digital



Pair Data  
Scientists  
with Experts



New ways to  
record, share  
analyse Data



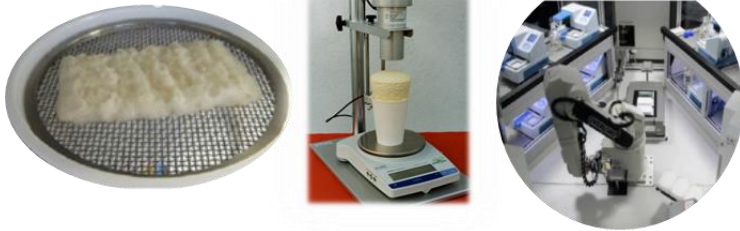
Collaborative  
Working  
Internal &  
External

# DIGITAL TRANSFORMATION : Data Driven R&D

- *Leveraging digital technology to capture and unlock value from data*

## Capture

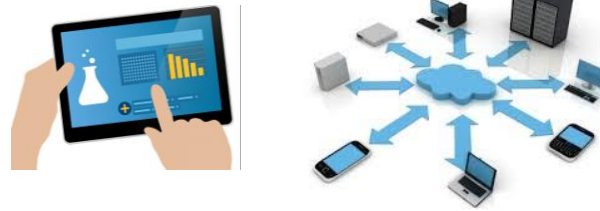
### STRUCTURED DATA FROM EXPERIMENTS



- Standardisation and automation of core measurements
- On/in line sensors to capture process conditions

## Integrate

### SCIENTIFIC KNOWLEDGE BASE



Integrating three key data sources:

- Formulation
- Process conditions
- Measurements

## Exploit

### PREDICTIVE MODELLING

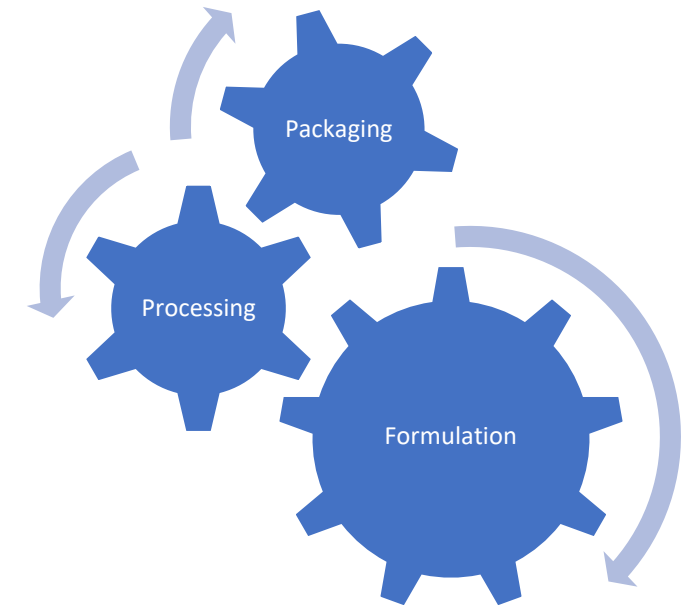


- Data-driven predictive capability:
  - Process analytics and simulation
  - Mix and product stability
  - Correlation to sensory trends

# DIGITAL TRANSFORMATION : Data Driven R&D

**Formulation** - High Throughput Experimentation, In Silico  
Design new products by Product Characteristics & Attributes

- DoE from past, current trials (100% trial info) and deliver algorithms to enable to design recipes without experiments
- HTE, accelerate the development of new ingredients & formulations, automate the experimentation process



# DIGITAL TRANSFORMATION : Data Driven R&D

## *Process / Packaging – Digital Twins, Process Models, Machine Learning*

- *DoE from past, current trials (100% trial info) and deliver algorithms to scale up and improve current designs and sensitivity analysis*
- *Extract data from machines to predict & correct*
- *Build Digital Twins / Simulations to accelerate speed of execution*
- *Use Machine Learning for the evolution on algorithms*
- *Use of AR*



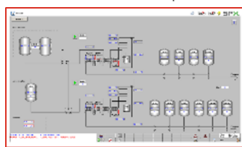
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### Pilot plant is a knowledge factory

**From :** Only 8% currently is used to generate knowledge **To :** use 100% to generate knowledge currently

Mixing

Central Data capture



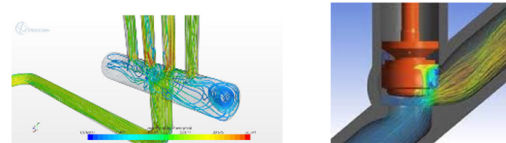
Packaging

Downstream Processing



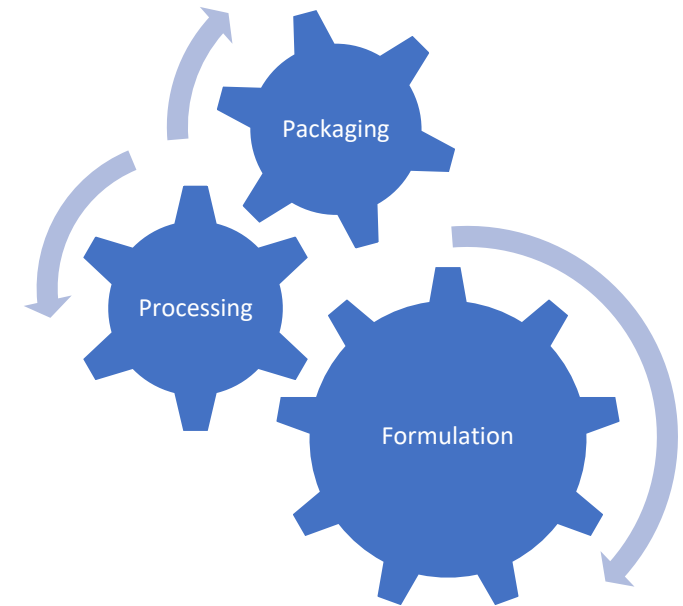
Visualisation on team PC

### Design Critical Components for Functionality



**Use of simulations to:**

- identify fast best solution for specific parts
- reduce prototyping



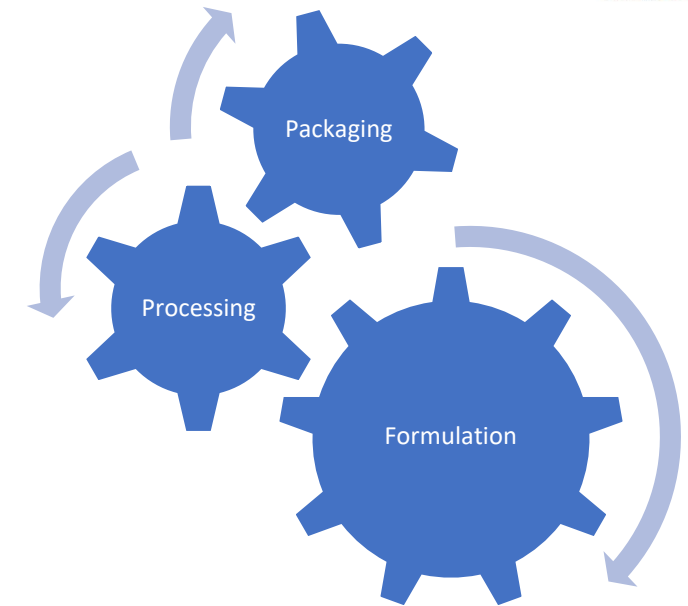
# DIGITAL TRANSFORMATION : Reduce Time to Market

## Key Points:

- *Organisation needs to embrace Digitisation*
- *Learn Fast, Launch Fast*
- *The Value is not the data but what you get out of the data*
- *Pockets of knowledge need to be democratised and easy to find*
- *Partnership and openness to the outside world is key*
- *Solution seeker not a problem seeker*



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Any Question