

# AGILE MANUFACTURING 101

Presented by



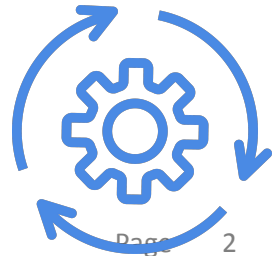
TULIP

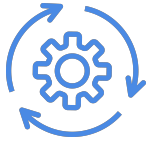


## About this Webinar

**AGILE  
MFG  
SUMMIT**  
POWERED BY  TULIP

Expanded presentation presented by Tulip CEO Natan Linder at the inaugural Agile Manufacturing Summit in Somerville, MA in May 2019.

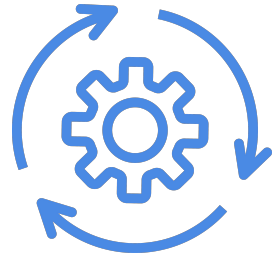




# Content Overview

1. Defining Agile Manufacturing
2. Is this a cultural shift?
3. Why Agile matters
4. Technology-enabled Agile Manufacturing

# What is Agile Manufacturing?



# Traditional MFG

Top down



Rigid



Definitive



Automation



# Agile MFG

Bottom-up



Flexible

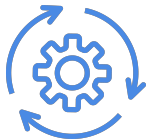


Iterative

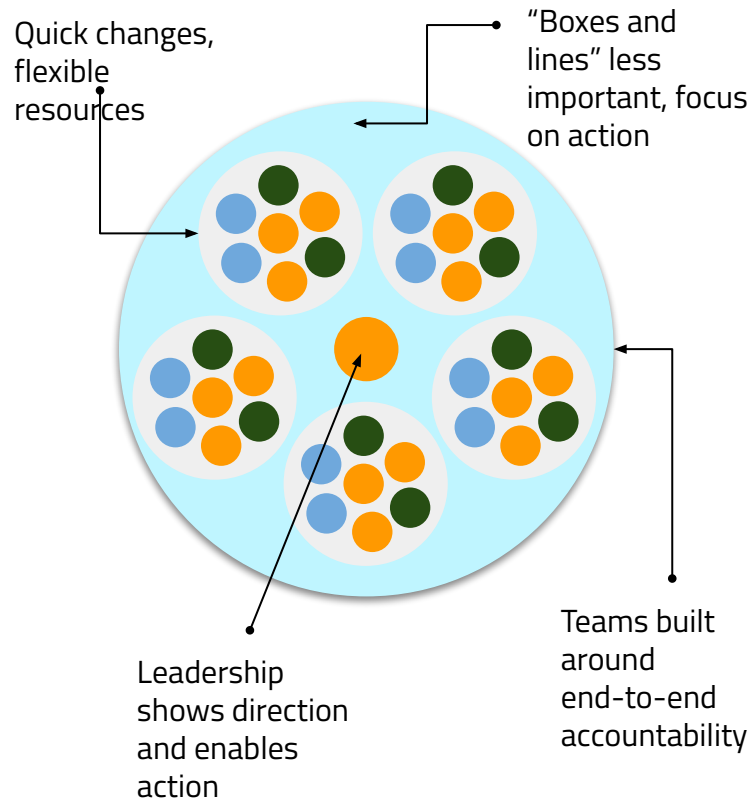
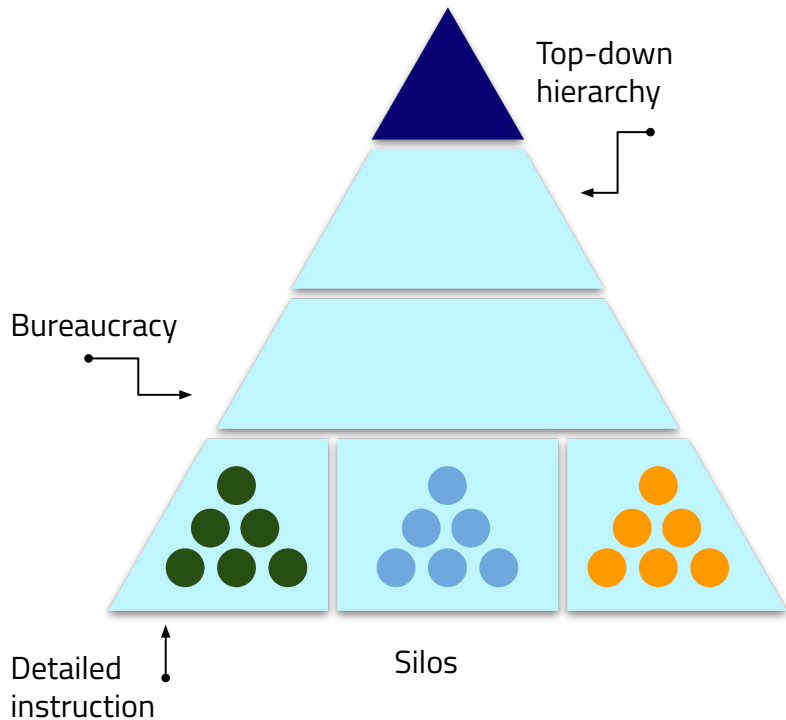


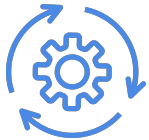
Augmentation





# Agile disrupts top-down hierarchy





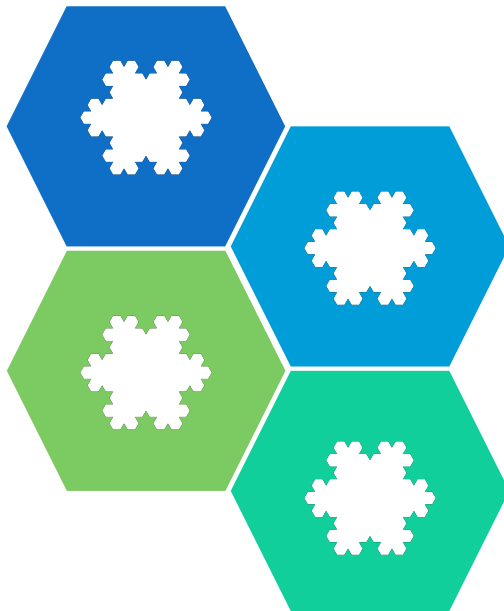
# Characteristics of Fractal Organizations

## Self Organization

Groups are free to self organize. They are capable of choosing their own approaches to problem solving, and executing self directed tasks.

## Adaption

Smaller groups can adapt to changes in their environments without interference from a formal hierarchy.



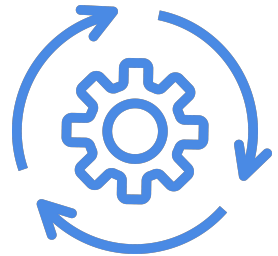
## Goal Similarity

Clear goals ensure these smaller groups conform to a shared objective. Despite being independent and self-directed, they have a goal-based accountability.

## Coordination

Each small group contributes to a coherent whole in a bottom-up way. Manage resources/skills across levels of the fractals - instead of hierarchy there's recognition of capability.

# Agile Manufacturing is a cultural shift





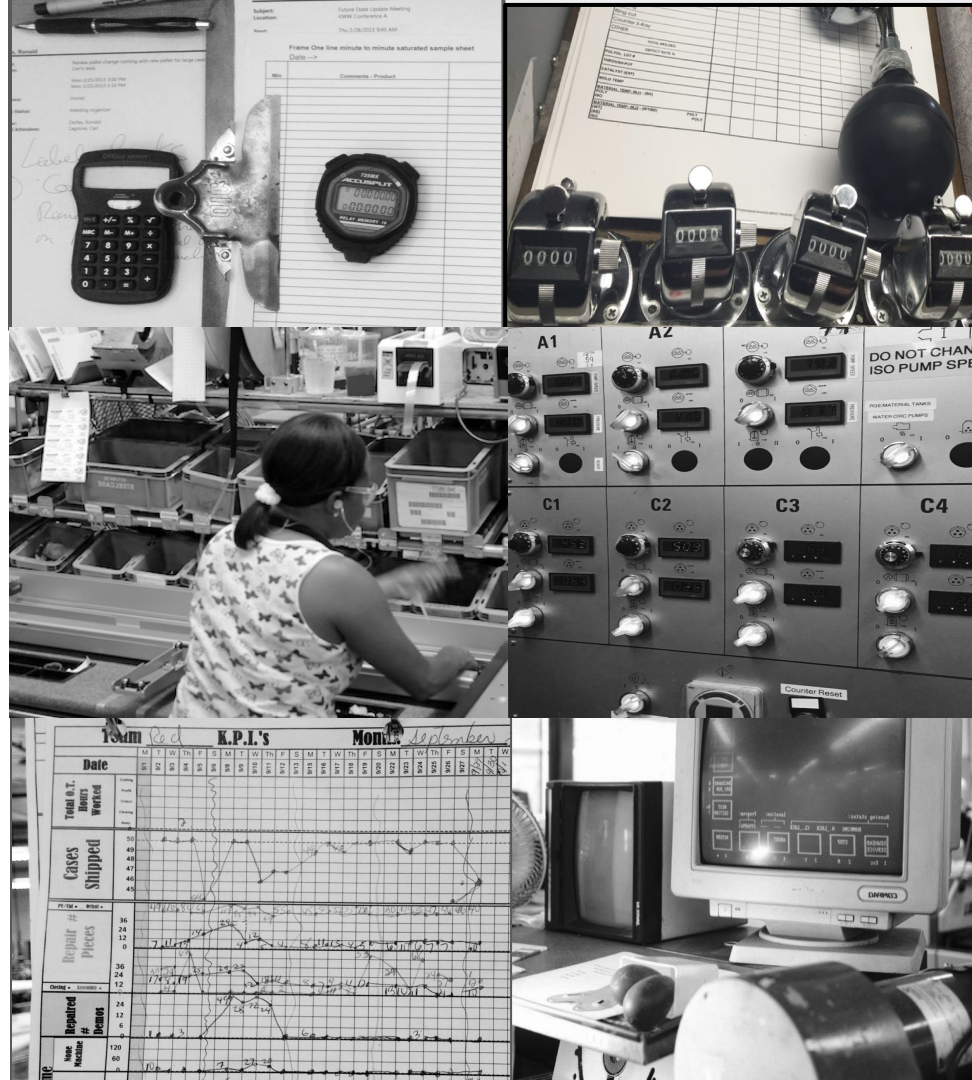
# People are #1 Resource

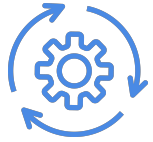
They are the best  
computer/resource manufacturers  
have



# Augment People with Better Tools

Workers are often not supported with the tools/environment they need to do their jobs

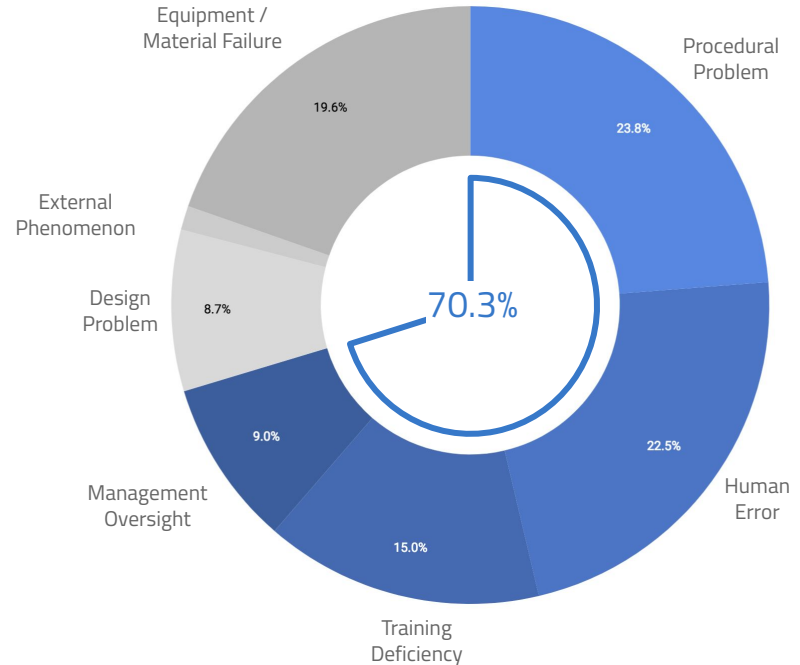




# Agile is tech-enabled culture change

People are the only way to solve 70% of the challenges manufacturers face

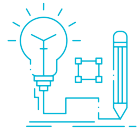
## Causes of failures in the factory





# Agile MFG

Scales the Human Contribution to Production in Manufacturing



Performance  
**Visibility**

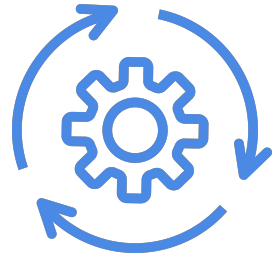


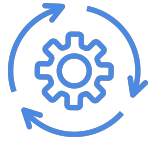
Tech & Process  
**Flexibility**



Resource  
**Scalability**

# Why does Agile MFG matter?

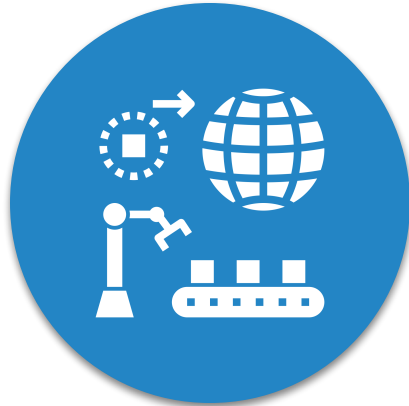




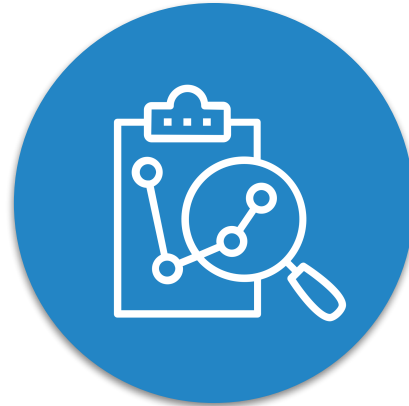
# State of Manufacturing Today



Complex  
Supply Chains



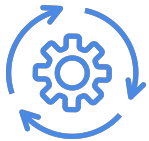
Fast paced  
technology waves



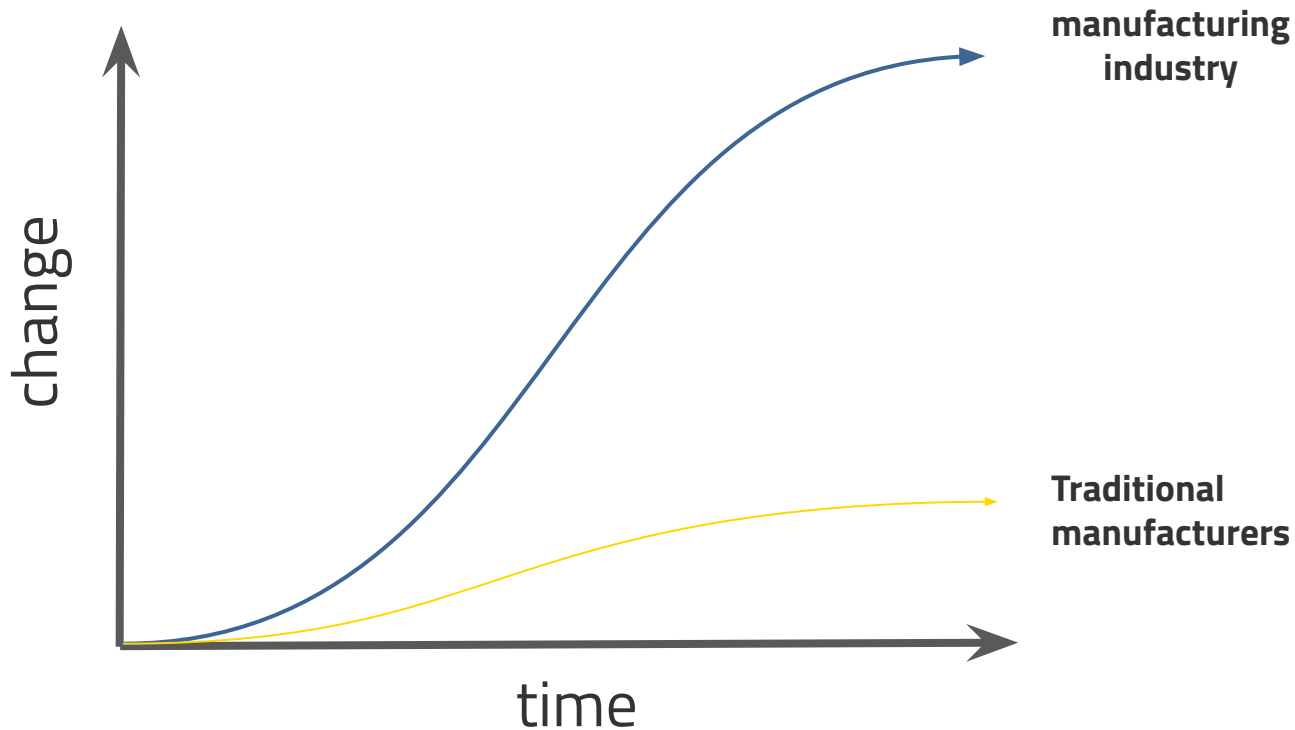
Data driven  
everything

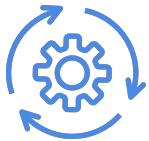


Workforce  
Transformation

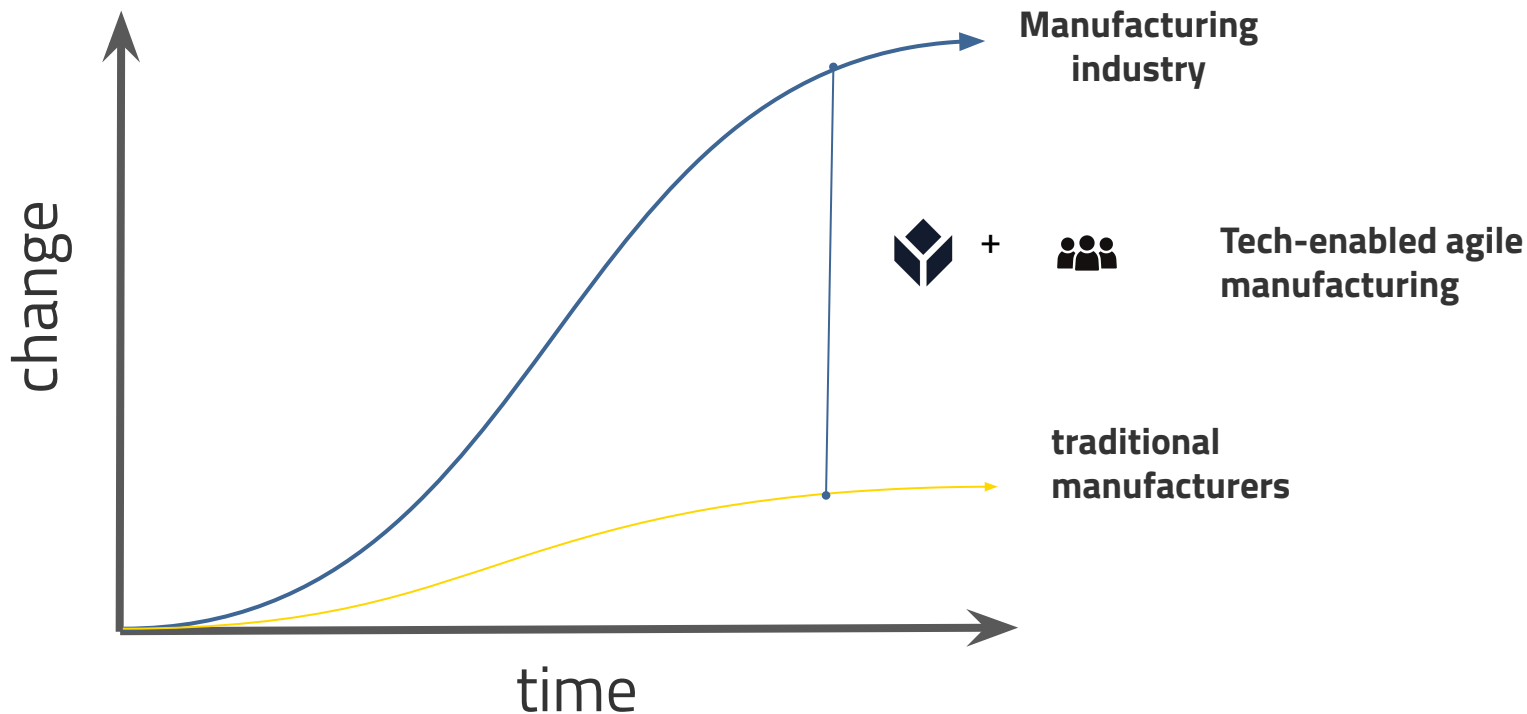


# Without a new approach, manufacturers get left behind



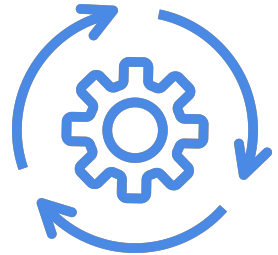


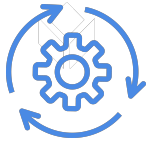
# Engineers use Tulip to help manufacturers quickly adapt agile manufacturing



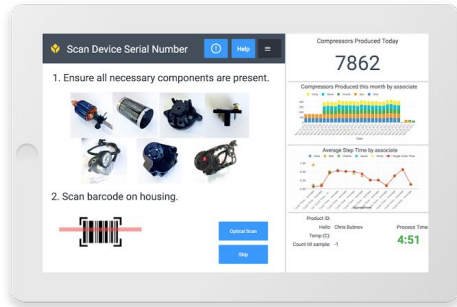


# Tech-enabled agile manufacturing with Tulip



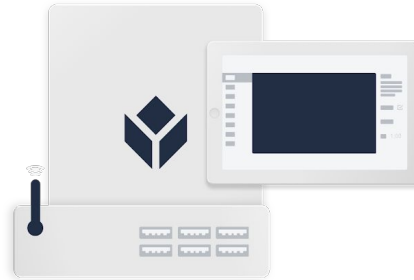


# Tulip's approach to flexible, bottom-up tech



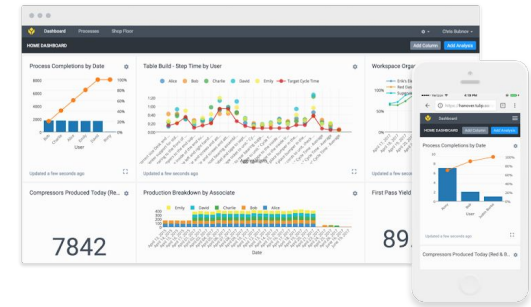
## MANUFACTURING APP ENGINE

Create powerful manufacturing apps through our drag & drop engine



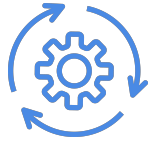
## SHOP FLOOR IOT

Easily connect machines, sensors, and smart tools to manufacturing apps

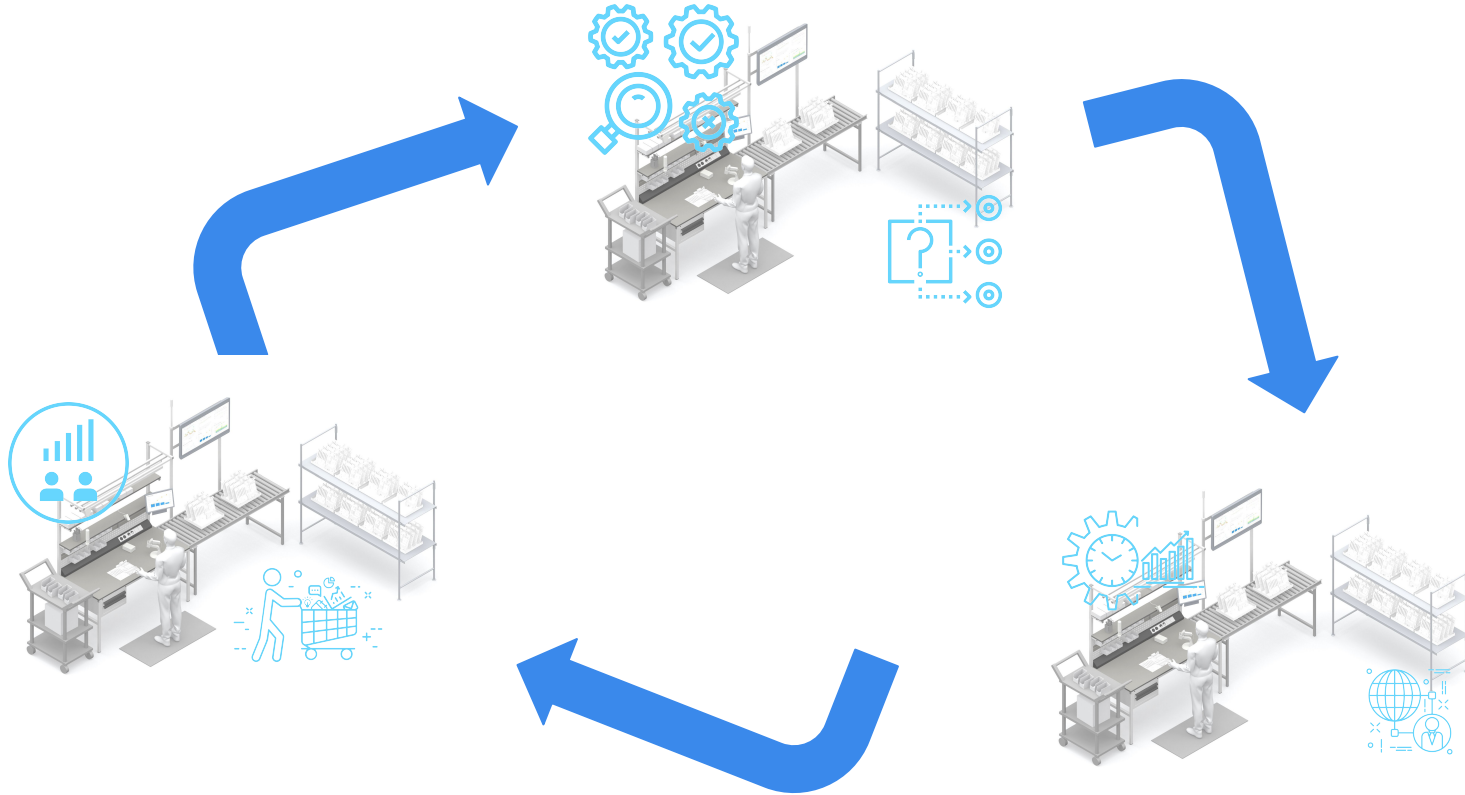


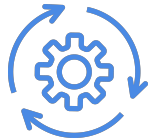
## MANUFACTURING ANALYTICS

Analyze and visualize production in real-time to implement changes and continuously improve

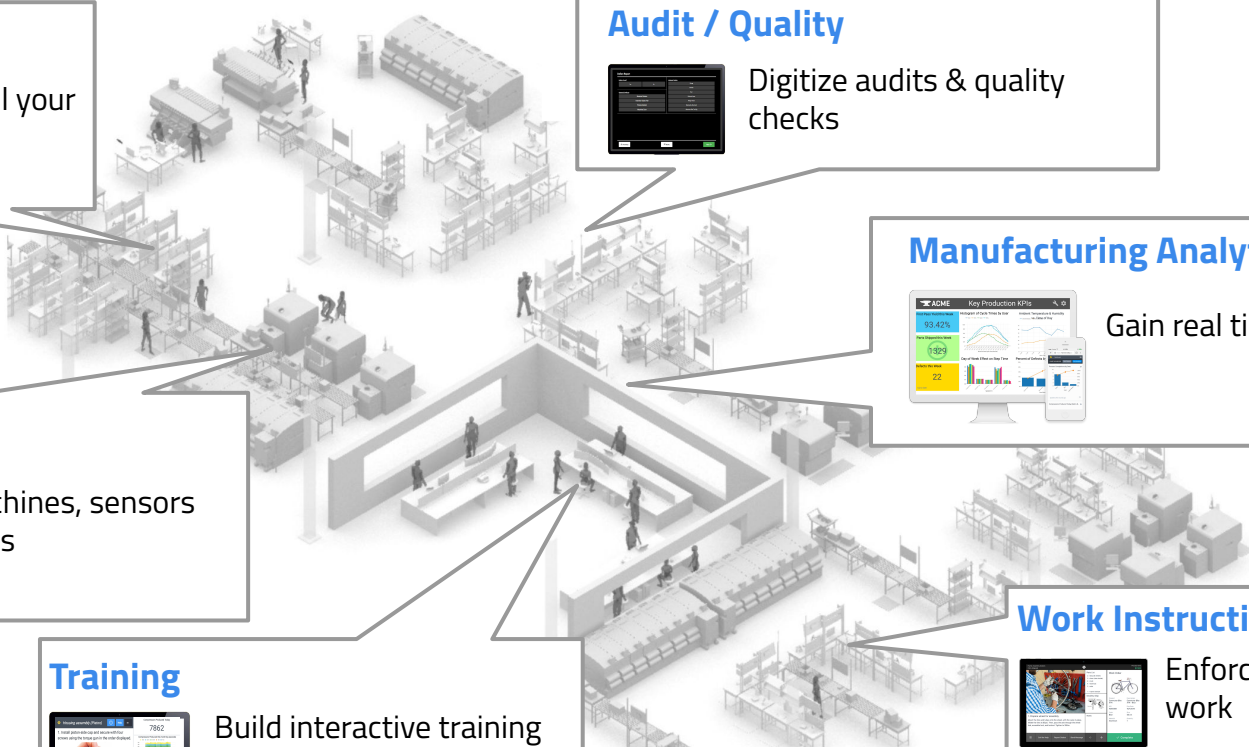


# Agile teams iterate and adapt to change, with tech as nimble as they are





# Flexible, localized problem solving



## Production Visibility



Gain visibility into all your processes

## Audit / Quality



Digitize audits & quality checks

## Manufacturing Analytics



Gain real time visibility

## Machine Monitoring



Monitor machines, sensors & smart tools

## Work Instructions

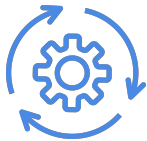


Enforce standard work

## Training



Build interactive training apps



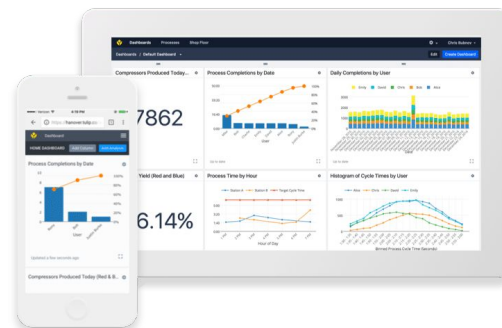
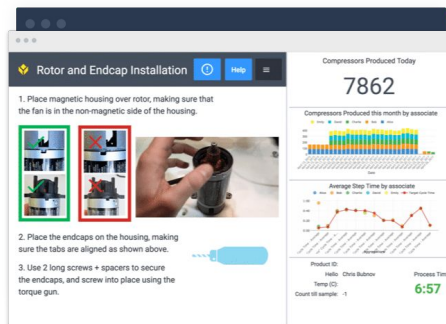
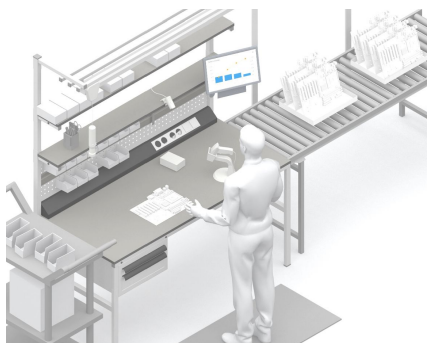
# Tulip's platform enables ongoing agile manufacturing

We call it a bottom-up digital transformation.

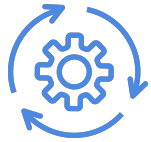
**SHOP-FLOOR PROCESS**

**MANUFACTURING APP**

**REAL-TIME  
PRODUCTION DATA**

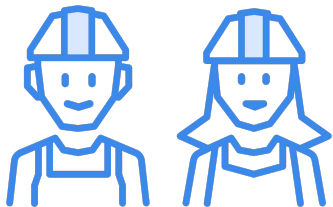


**PROCESS  
OPTIMIZATION**



# Empower the whole team

Manufacturing apps can improve the performance of everyone on your team by guiding work, improving quality, and providing real-time data.



## OPERATORS

Augment operator skills to help them be more productive and make less mistakes. Provide data-driven feedback.



## PROCESS ENGINEERS

Help frontline engineers drive their digital transformation, automatically collect data, and improve faster.



## LEADERSHIP

Give leadership real-time visibility of operations track the most relevant KPIs.

# Thank you!

## Final notes:



We will send you the  
recording



We'll share Q&A responses  
with all registrants



Please complete the exit  
survey