

# IMES

Intelligent Manufacturing  
Execution System

Phase I

## **Notice**

This project is research and develop by KMUTT.  
We're not recommended for production for now.  
Due to the project is still in developing.

# Problem Statement

Most of MES Softwares are complex, unresourceful and expensive.

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Unfriendly UI

Too Complex

Expert needs

# Pain Points



Inefficient planning  
and production



Poor quality  
production



Most processes  
not automated



Cost limitation



Require expert labor

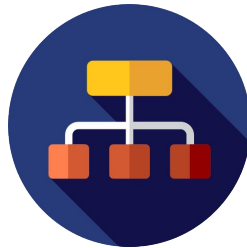


Wasting resources

# What can IMES do?



Scheduling



Tracking



Flexible

# Benefits



Increased Productivity



Enhanced Efficiency



Cost Reduction



Reduced DownTime

# Target Group



Small to Midsize  
Manufacturing

Job Shop  
Manufacturer Type

MES by  
Industrial  
Engineering  
KMUTT

Job Scheduling  
Algorithm



IMES by CS

Production  
Scheduling

Production  
Planning

Production  
Tracking



# Working Phases

2017 - Future

Phase I

Production  
Scheduling

Phase II

Productivity  
Optimization

Phase III

Machine  
Learning

Phase IV

Automation  
Control

## Phase I

Production Scheduling

Basic Simulation

Basic Tracking

## Phase II

Productivity Optimization\*

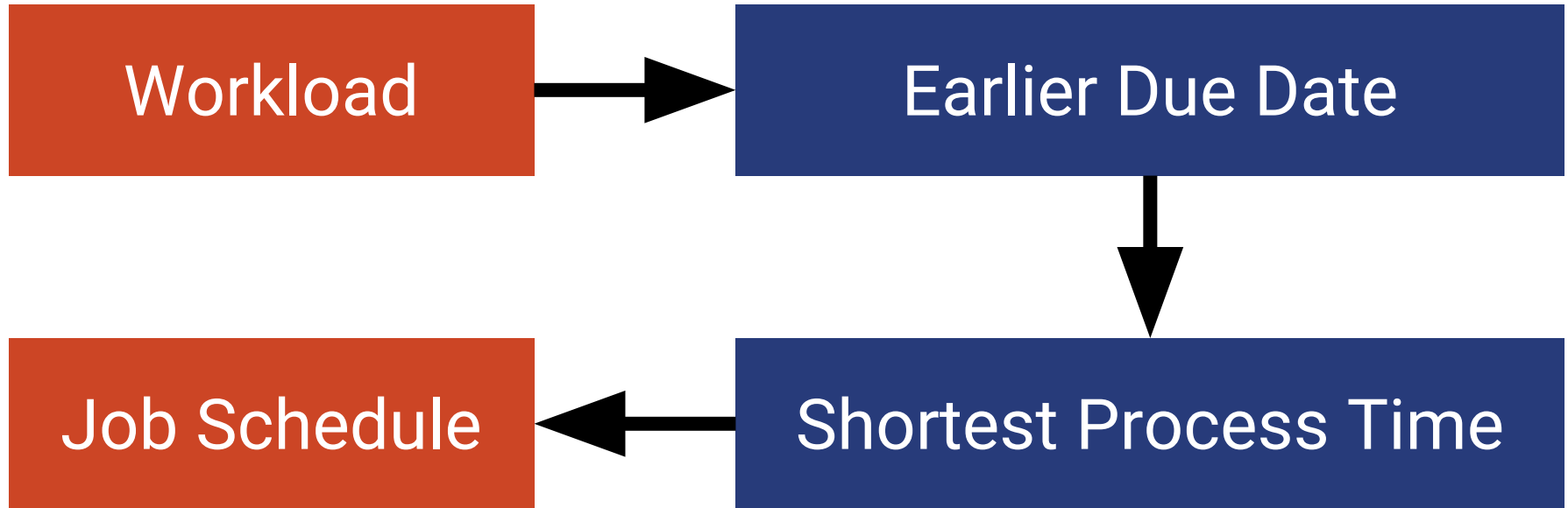
Advanced Simulation

Advanced Tracking

\*Profit Optimization is part of productivity optimization

# Production Scheduling

Using EDD + SPT to schedule



# Types of Scheduling

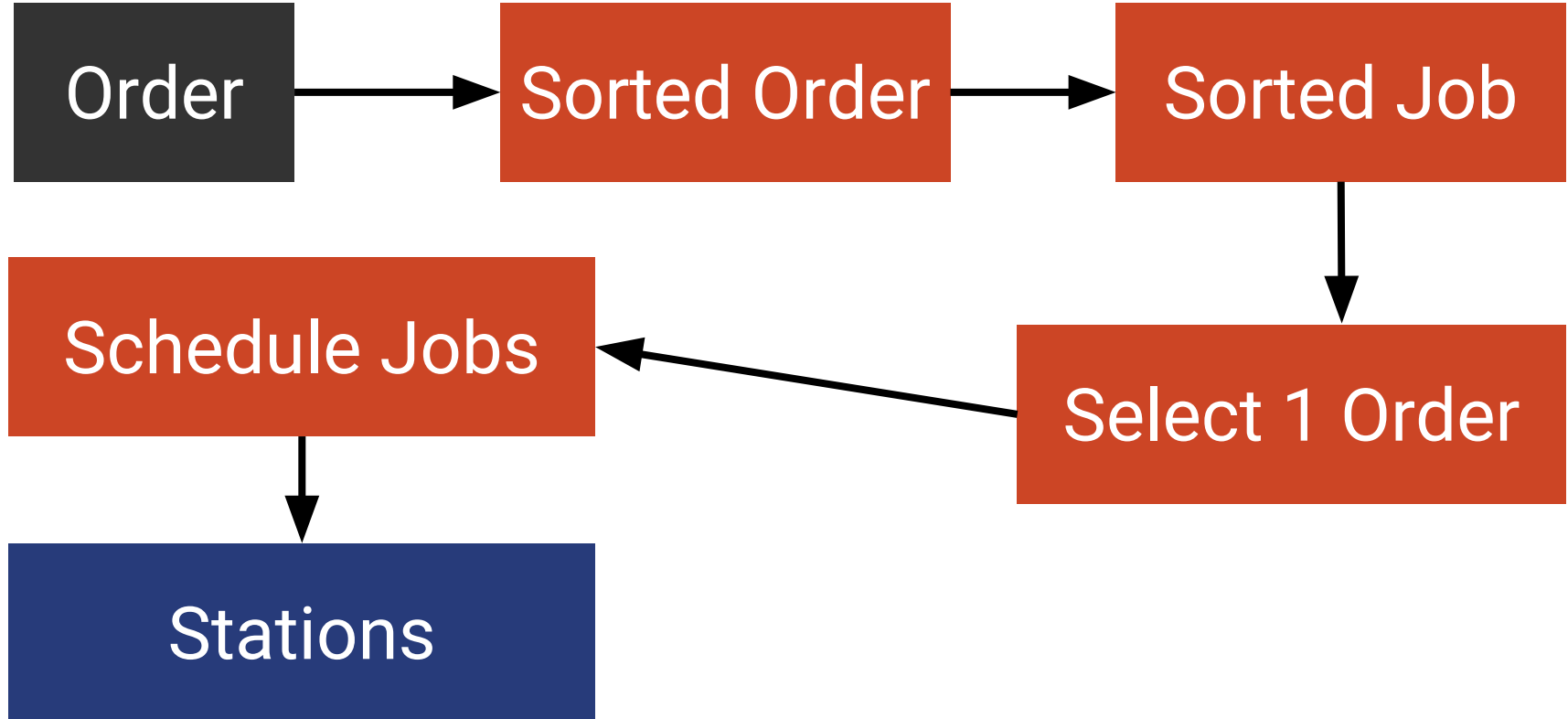
Job schedule by workload

Serial Production

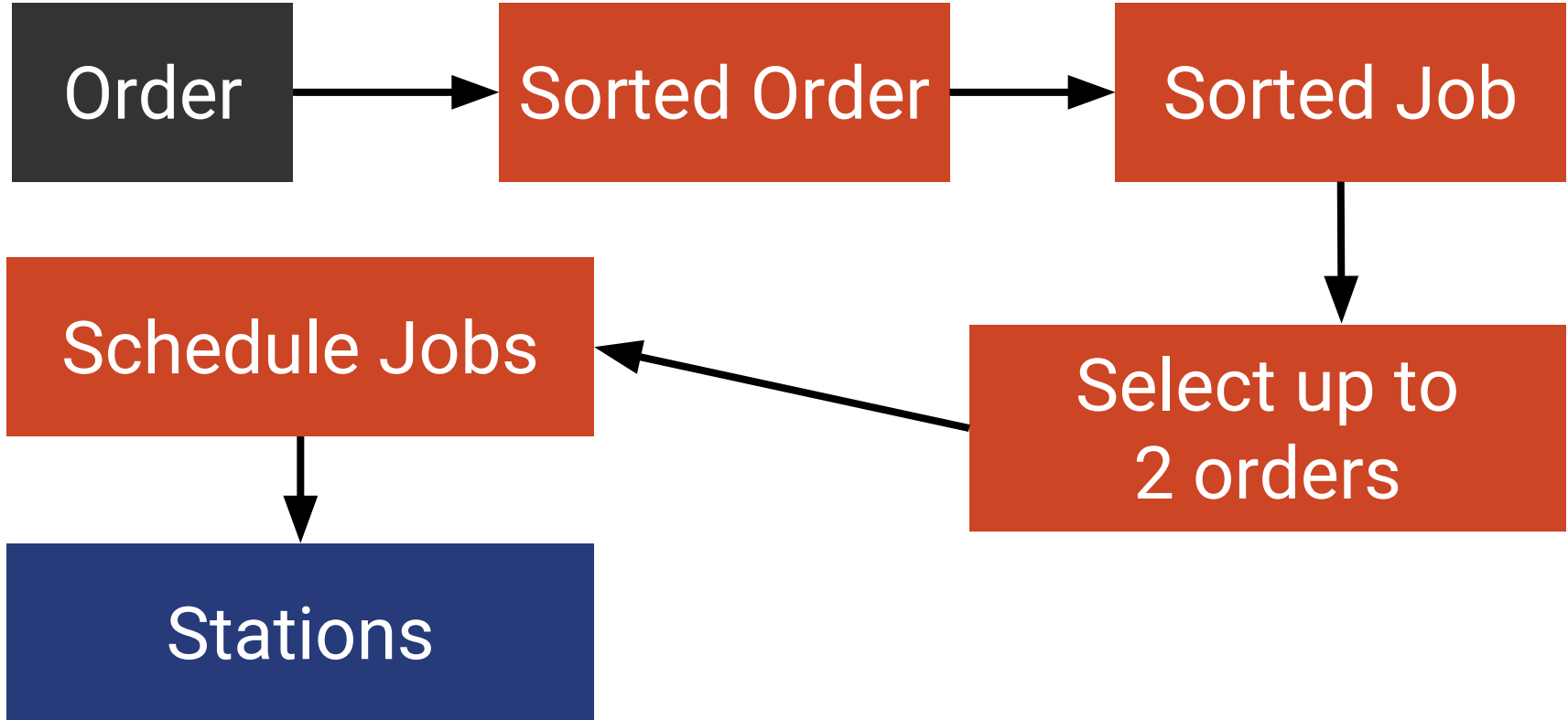
Parallel Production

Multi-component Production

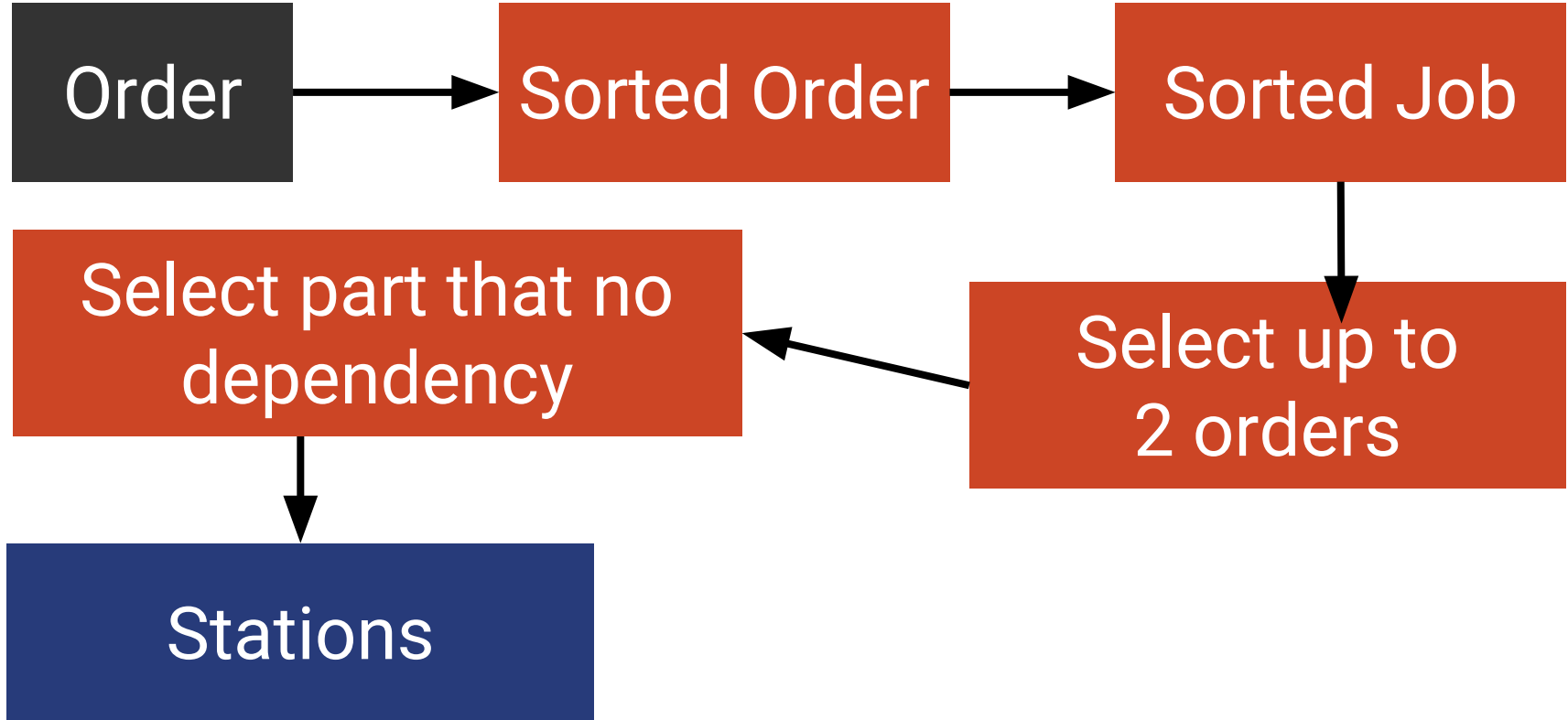
# Serial Production Model



# Parallel Production Model



# Multi-component Model



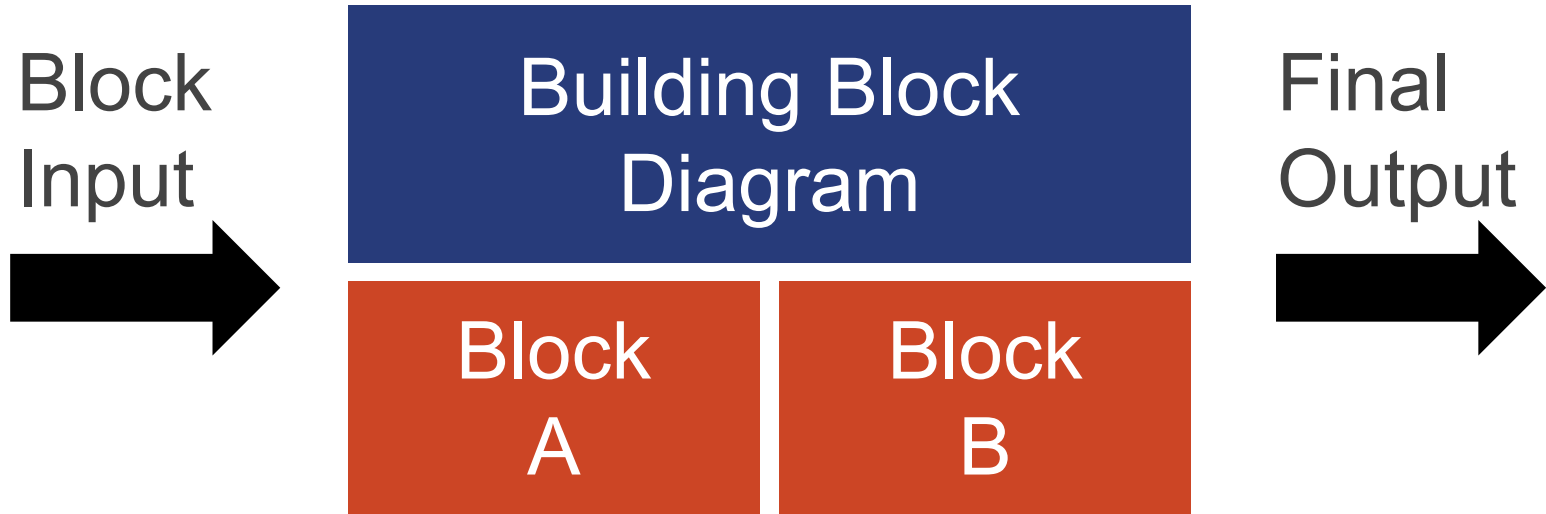
# Comparison of Scheduling

Serial	Parallel	Multi-Components
1 Order / Station	Upto 5 Orders / Station	Upto 5 Orders / Station
Use all machines per station	Weight based on machine job workload	Weight based on machine job workload
-	Product Parts with no dependency	Product Parts have dependency



# Production Simulation

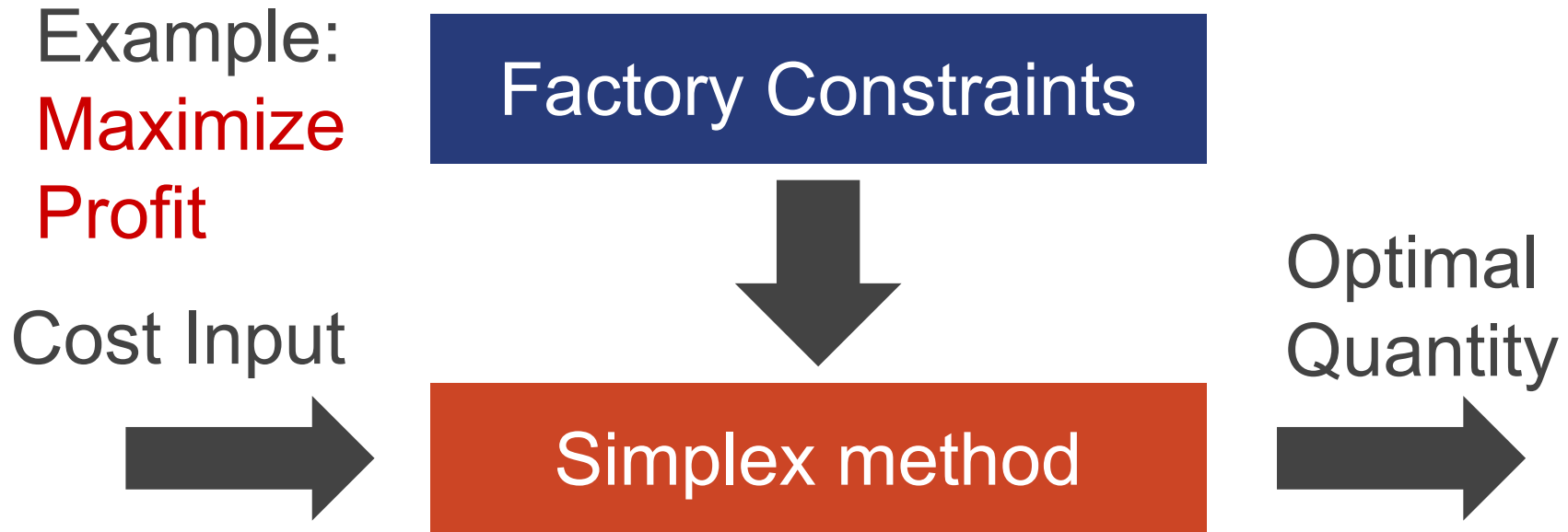
Display an Building Block Diagram



Customize Blocks

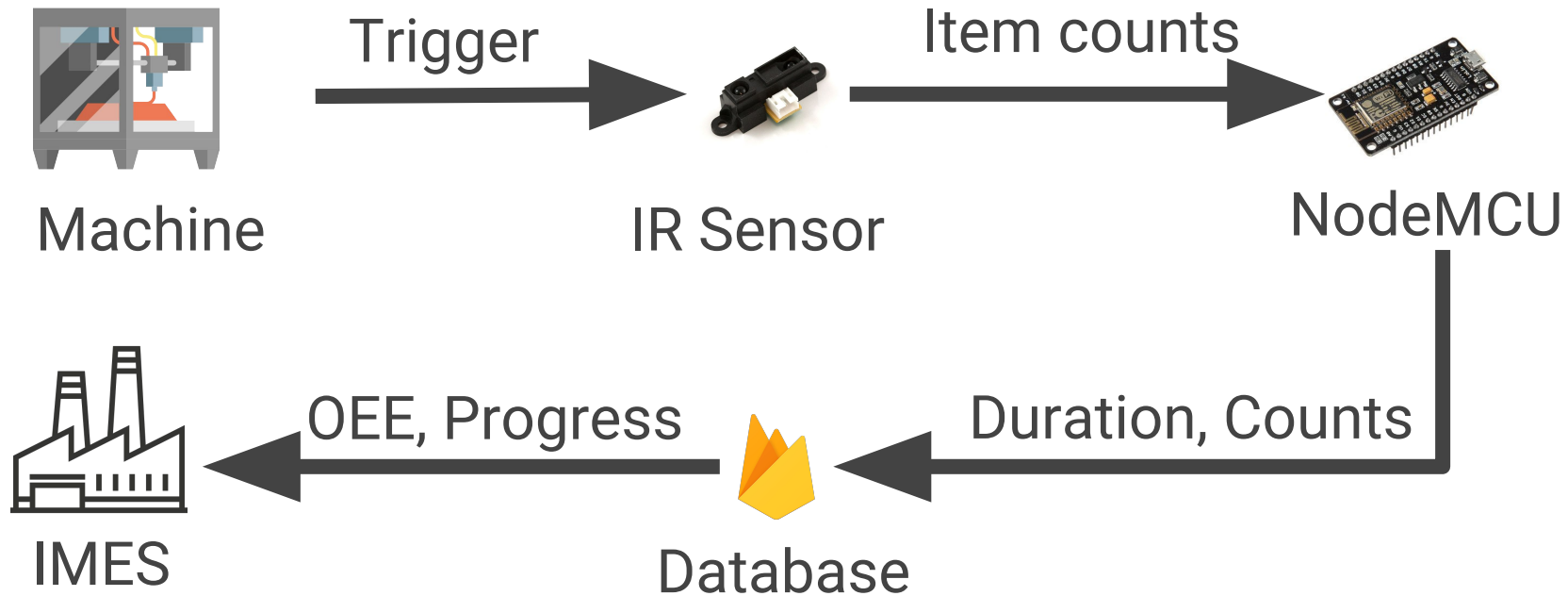
# Profit Optimization

## Using Linear Programming

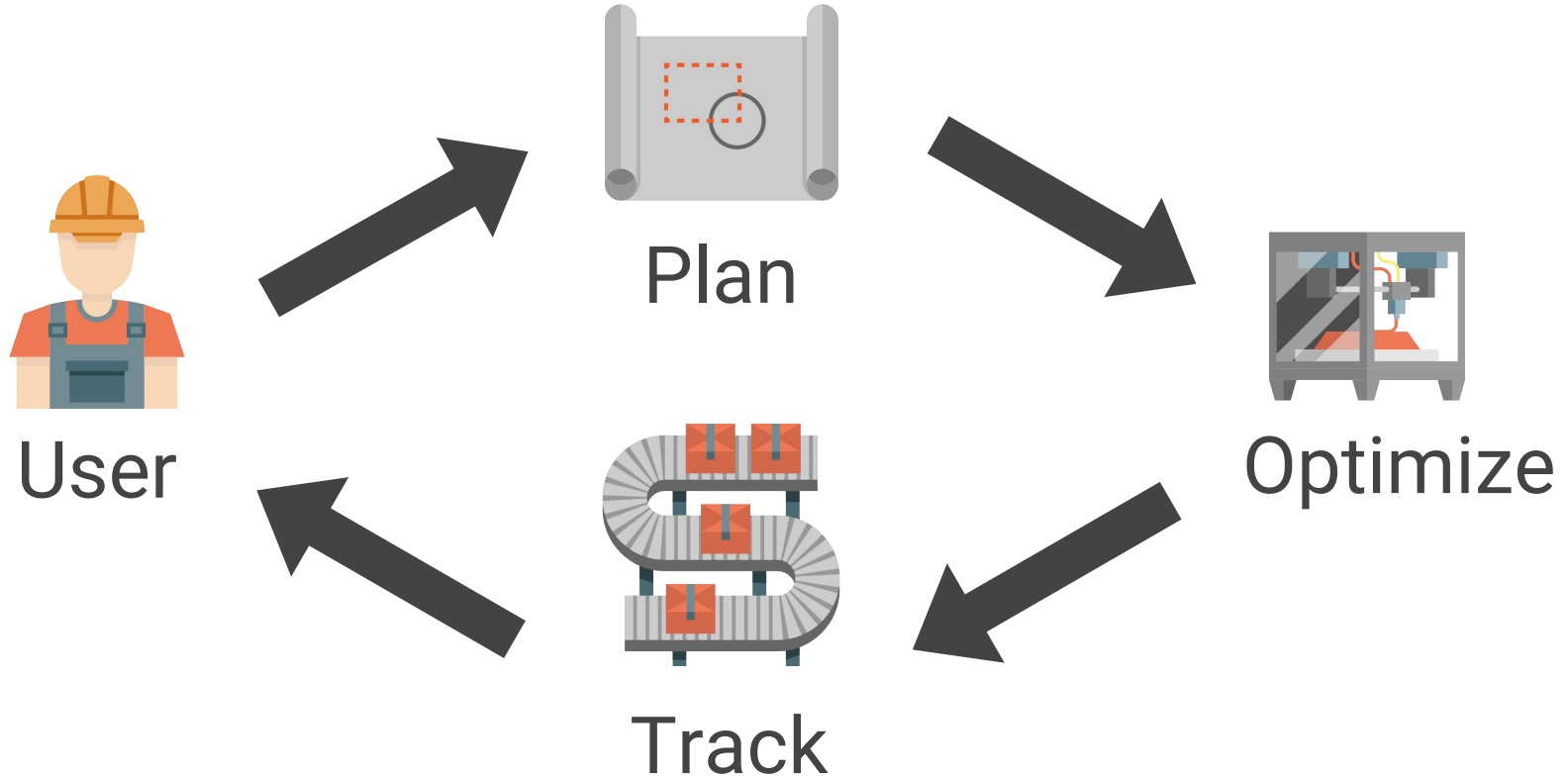


# Production Tracking

Basic Tracking using IoT. Workflow



# IMES Eco-system



# Project Progress

September 2017

Production Scheduling

Serial & Parallel

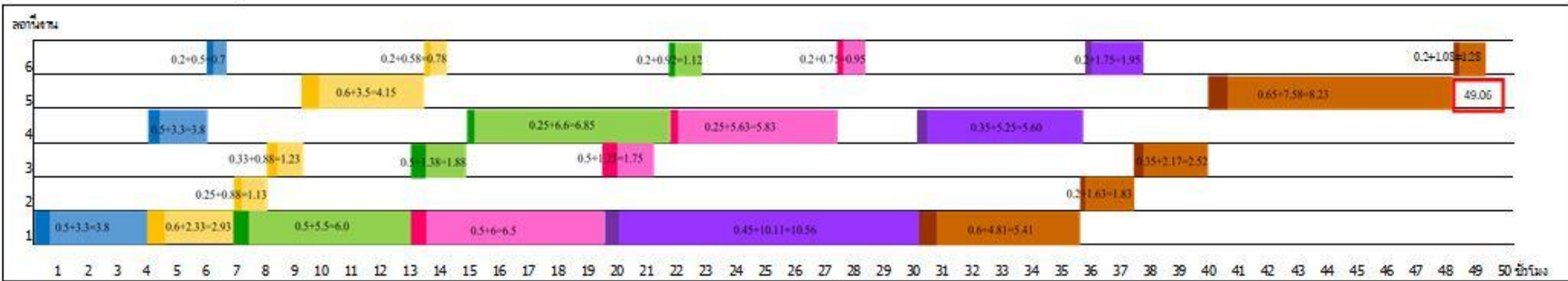
Basic Tracking

75% Complete

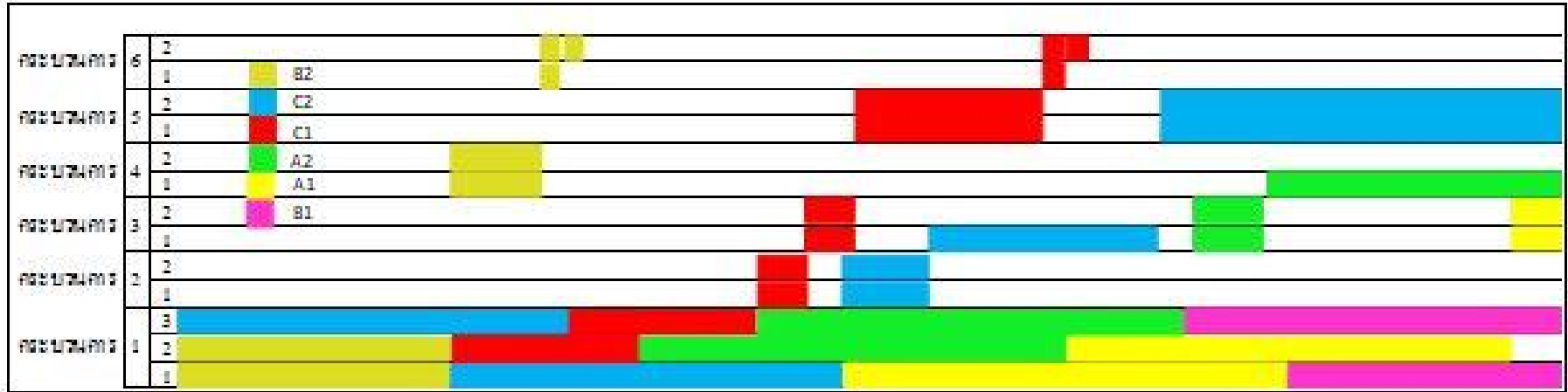
Basic Simulation

Work In Process

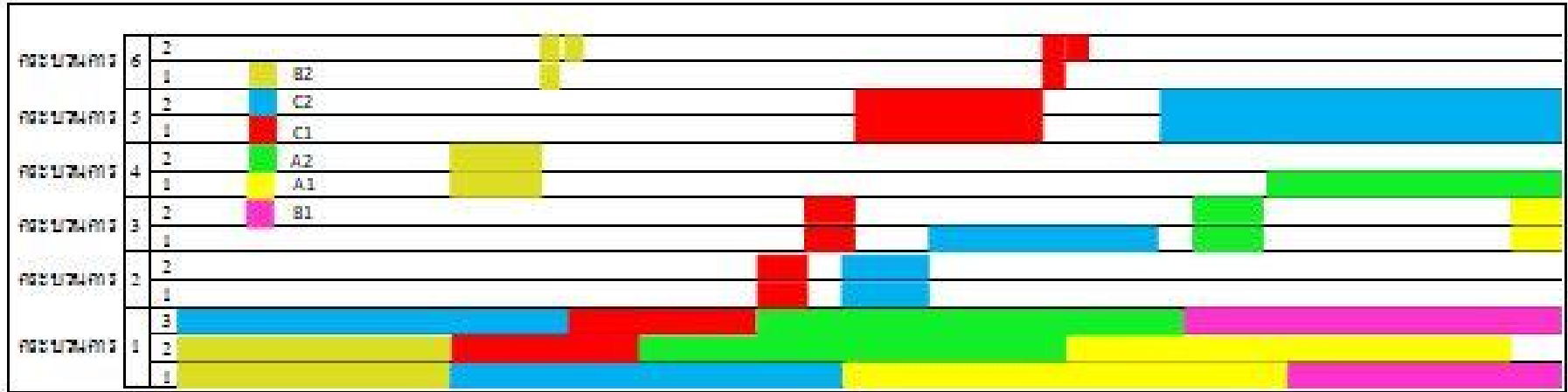
# Serial Production Chart



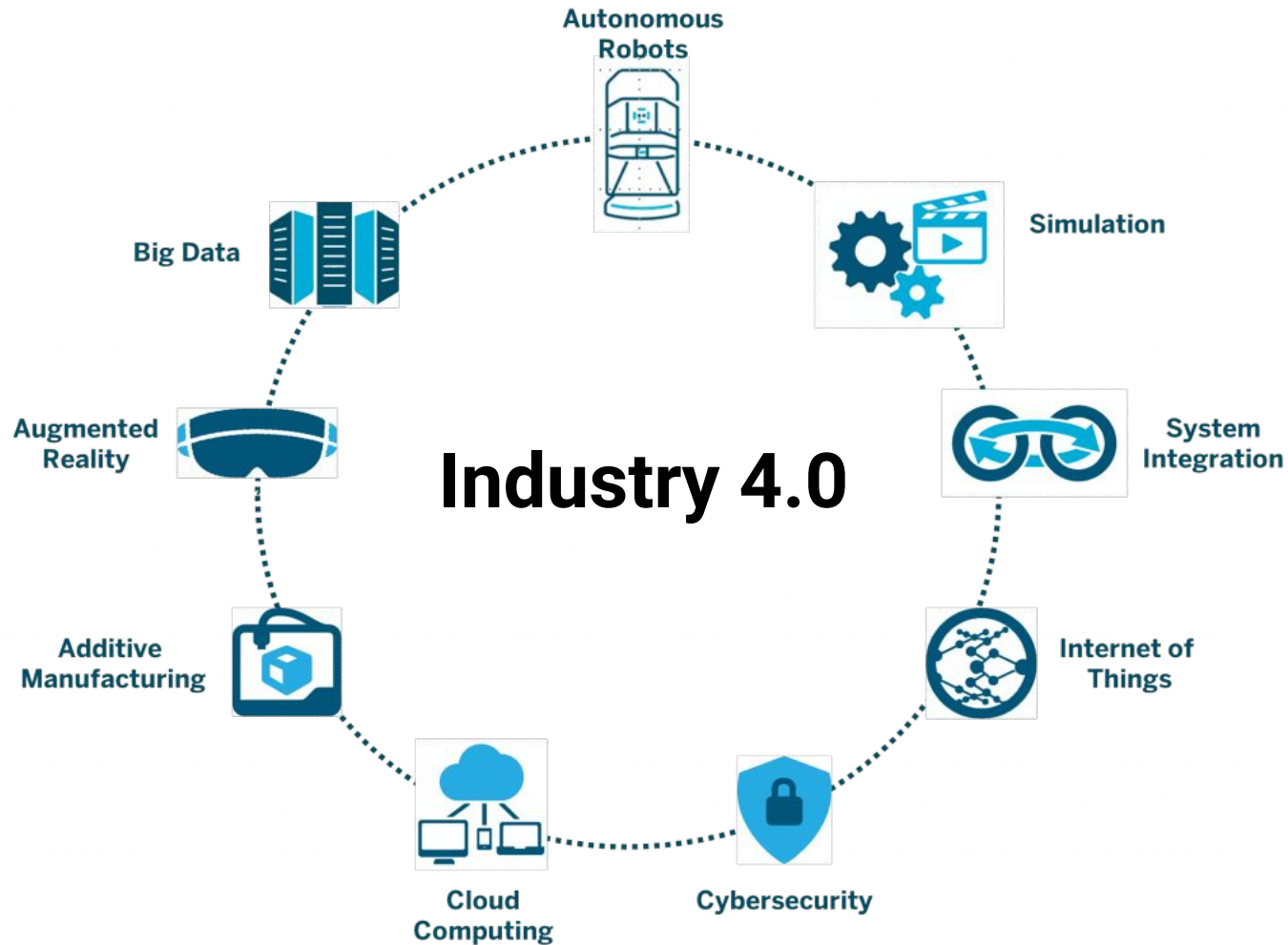
# Parallel Production Chart

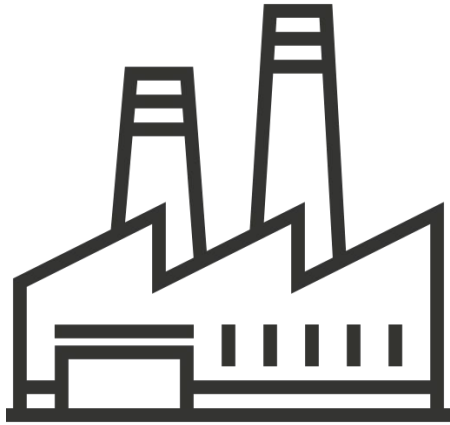


# Multi-components Chart









Let's Demo