

IMES

Intelligent Manufacturing
Execution System

Phase I

Notice

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

Problem Statement

Most of MES Softwares are complex, unresourceful and expensive.

Unfriendly UI

Too Complex

Expert needs

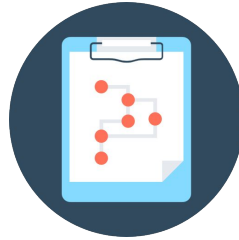
The screenshot displays a complex MES software interface with multiple overlapping windows and data tables. The top window shows a list of production orders with columns for order number, description, quantity, and status. Below this, there are several smaller windows showing detailed production data, including material usage, labor costs, and machine time. A 3D model of a mechanical part is visible on the right side of the interface. The overall layout is cluttered and difficult to navigate, illustrating the 'Unfriendly UI' and 'Too Complex' criticisms.

Ord.	Descr.	Q. Totale	Q. Vers.	Q. Scat.	Q. Ric.	Q. Scat. Ric.	Load Time	% Ric.	% Ric. Tot.	% Ric. Ave.	% Ric. Tot. Ave.
1	1895 P12500/01	332	1,00	0,00	0,00	0,00	21700	42	0%	0%	0%
2	1895 P280-0761	18	1,00	0,00	0,00	0,00	13040014	15020013	0%	0%	0%
3	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
4	1895 P401	75	1,00	0,00	0,00	0,00	17000014	27010000	0%	0%	0%
5	1895 P401	75	1,00	0,00	0,00	0,00	17000014	27010000	0%	0%	0%
6	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
7	1895 P280-0761	18	1,00	0,00	0,00	0,00	13040014	15020013	0%	0%	0%
8	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
9	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
10	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
11	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
12	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
13	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
14	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%
15	200 P2	200	1,00	0,00	0,00	0,00	12010012	07010014	0%	0%	0%
16	1895 P535125	141	1,00	0,00	0,00	0,00	21110013	27000012	0%	0%	0%

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*

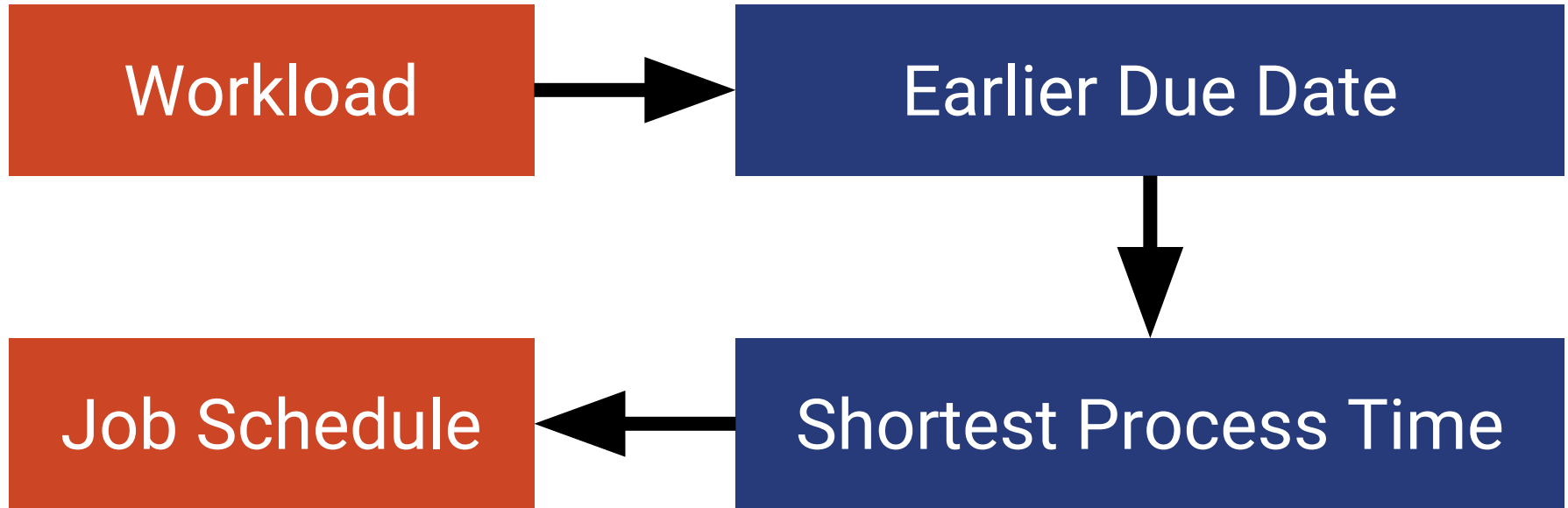
Advanced Simulation

Advanced Tracking

*Profit Optimization is part of productivity optimization

Production Scheduling

Using EDD + SPT to schedule



Types of Scheduling

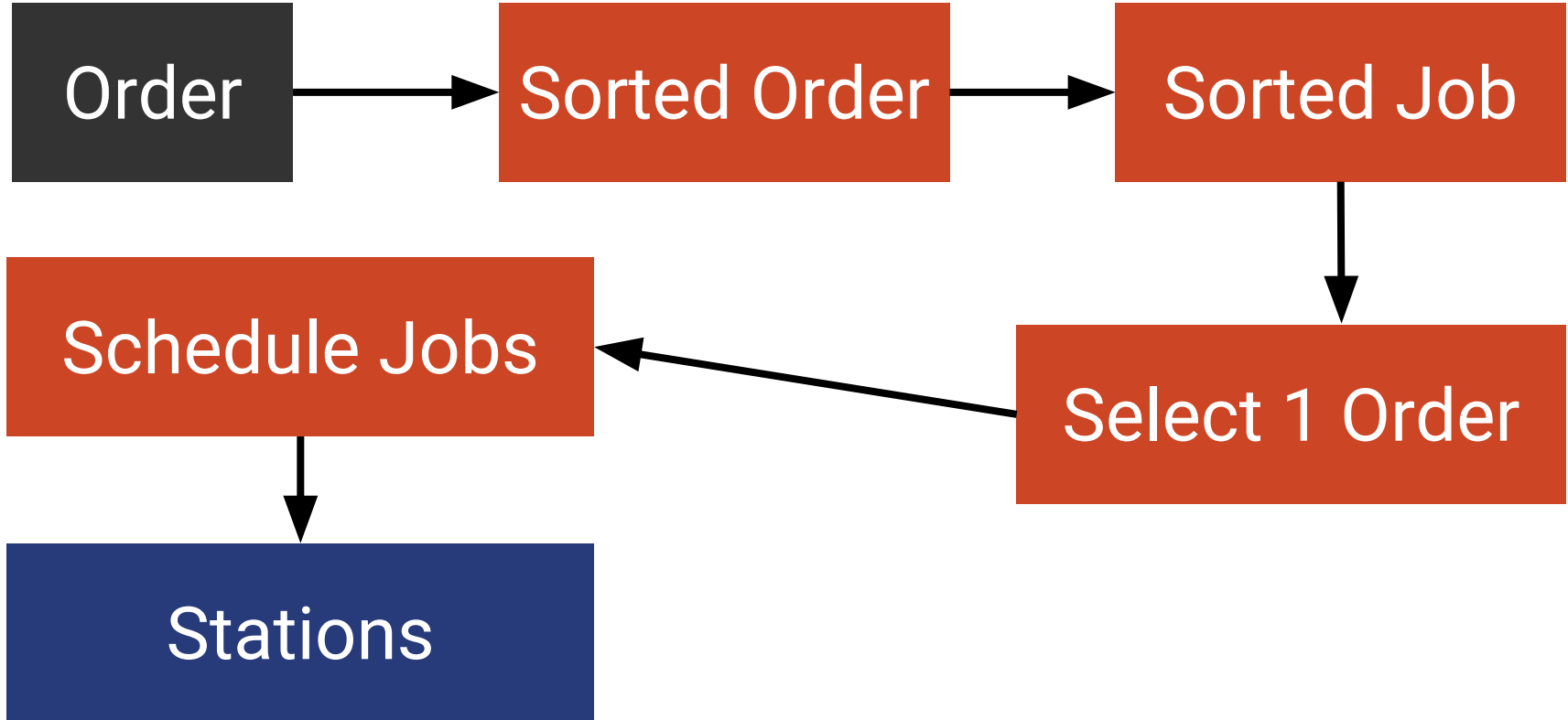
Job schedule by workload

Serial Production

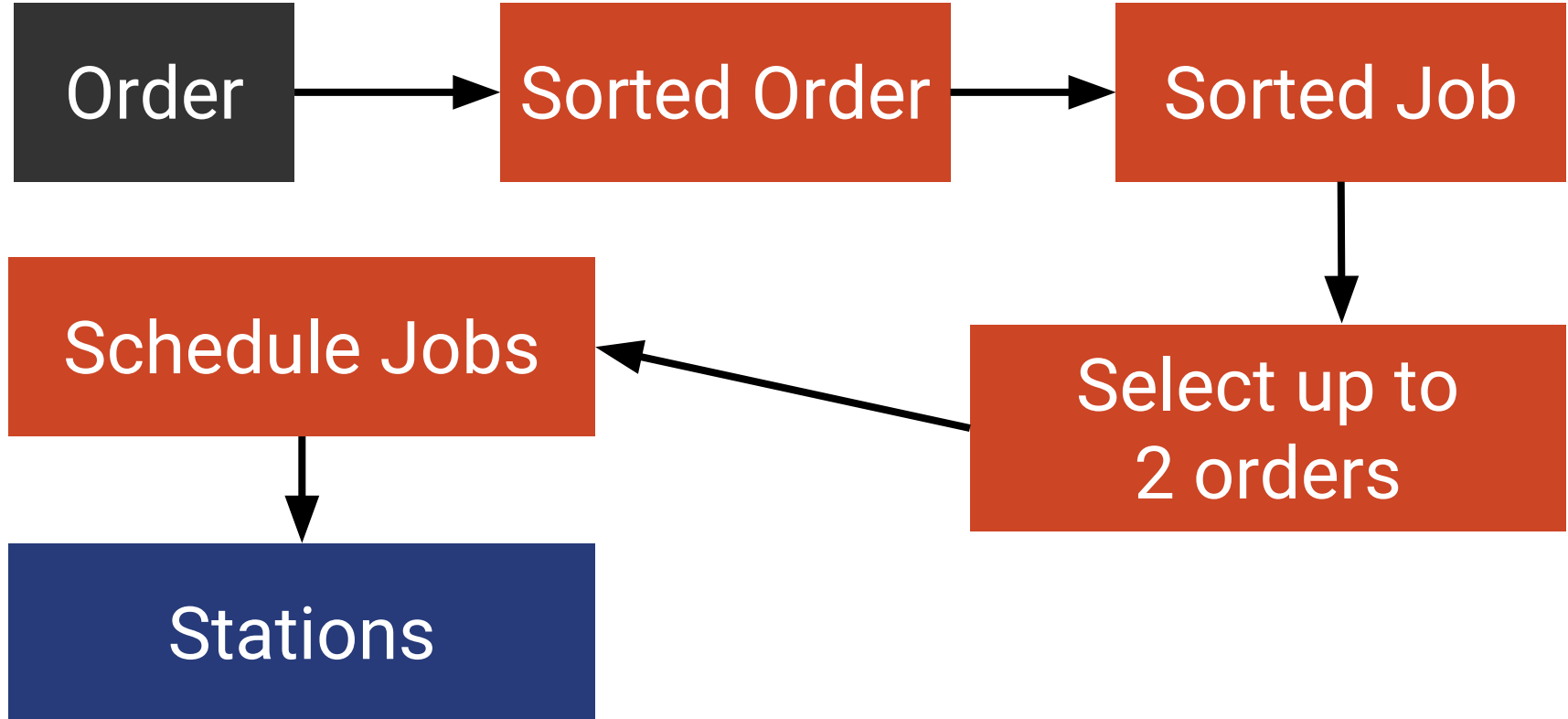
Parallel Production

Multi-component Production

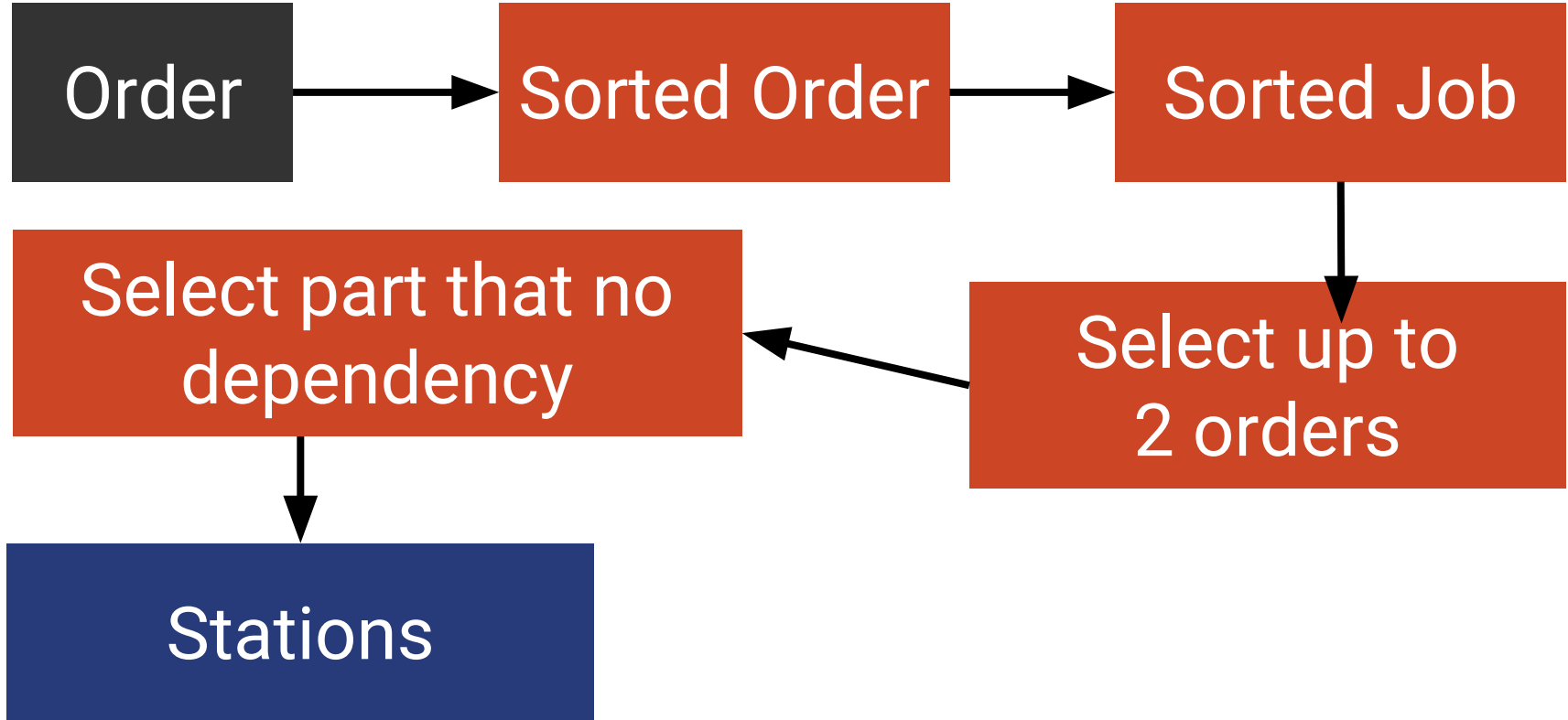
Serial Production Model



Parallel Production Model



Multi-component Model

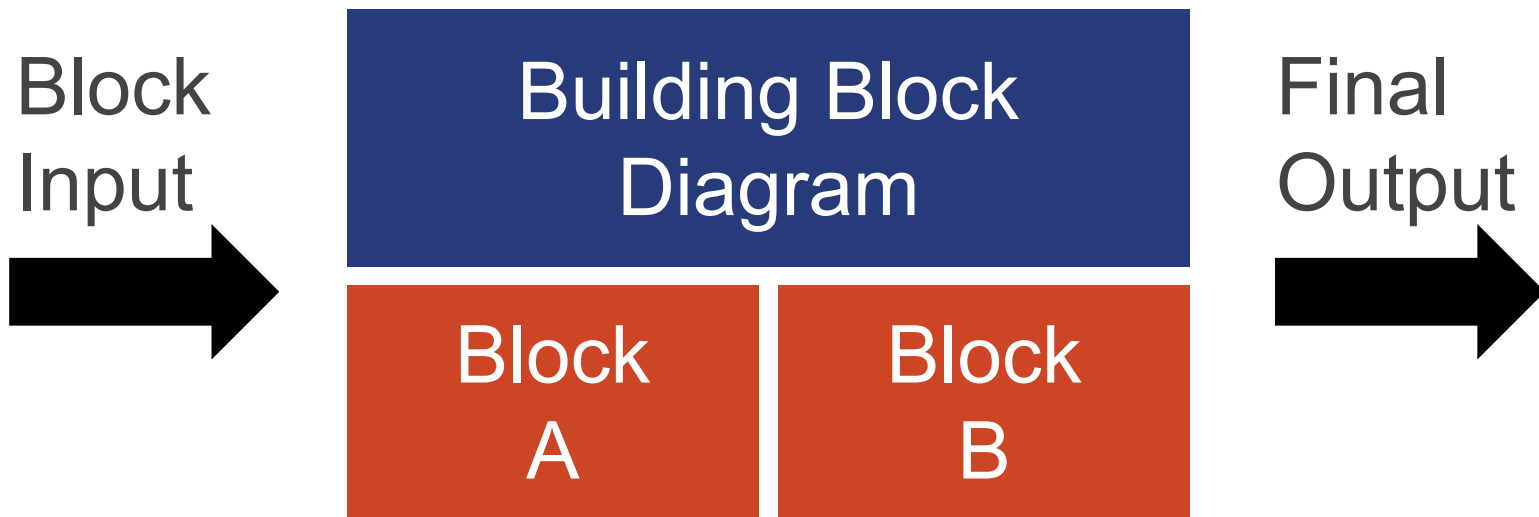


Comparison of Scheduling

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

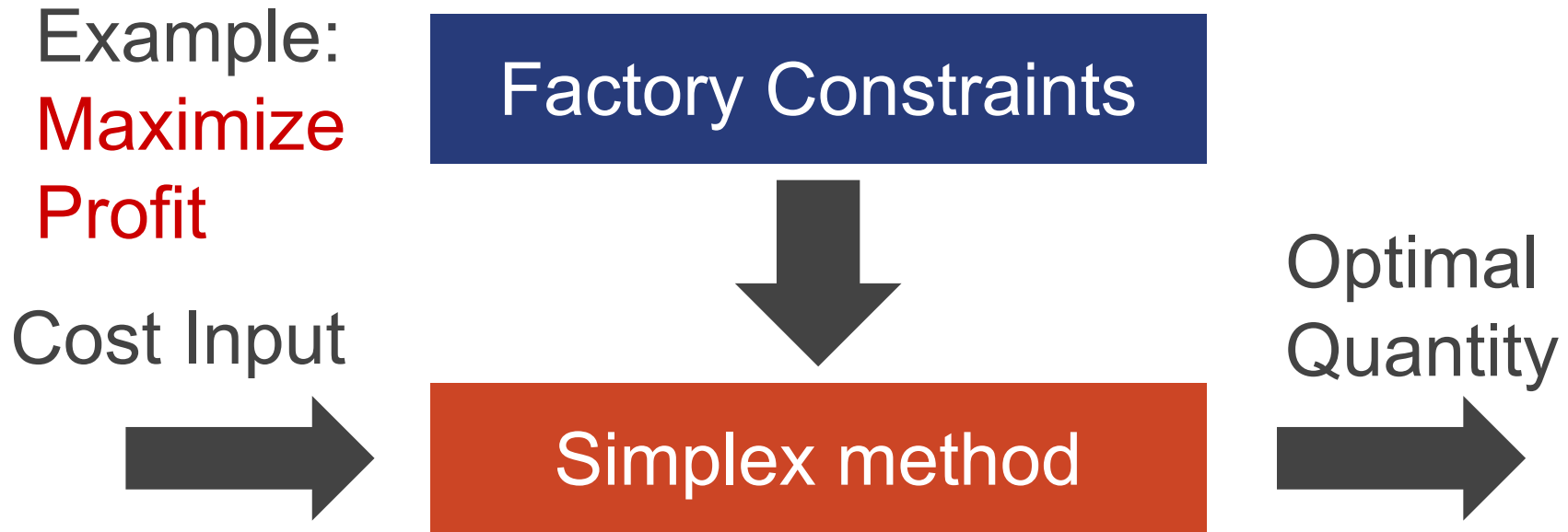
Display an Building Block Diagram



Customize Blocks

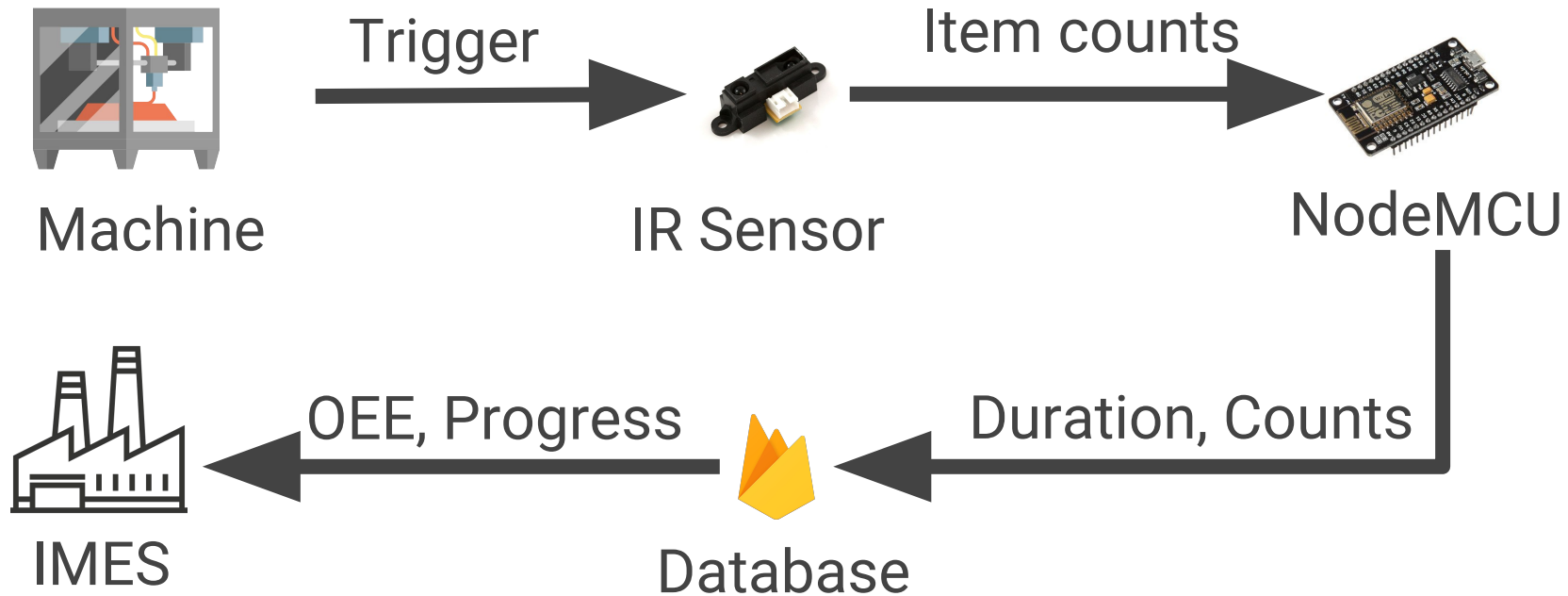
Profit Optimization

Using Linear Programming

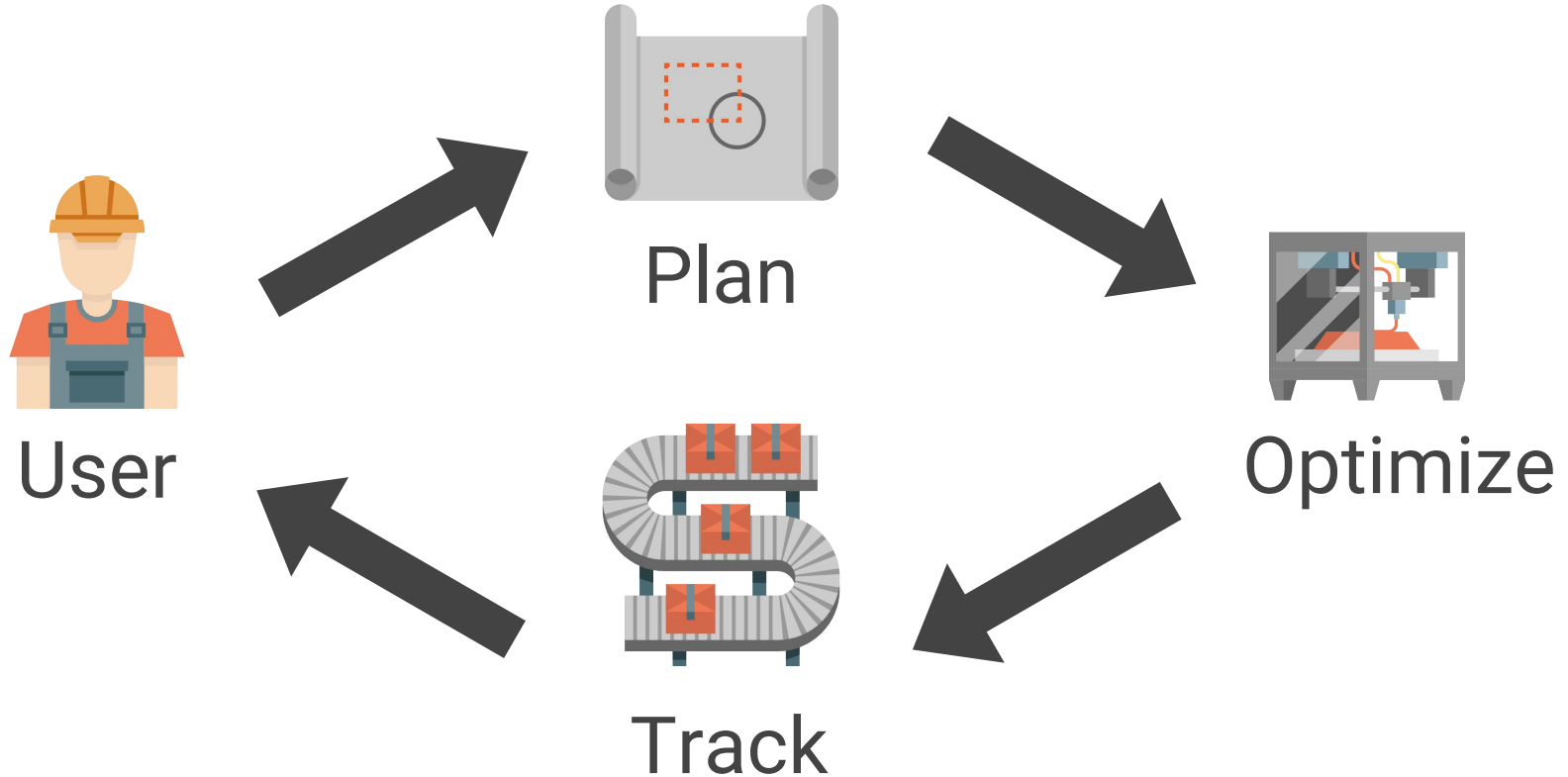


Production Tracking

Basic Tracking using IoT. Workflow



IMES Eco-system



Project Progress

September 2017

Production Scheduling

Serial & Parallel

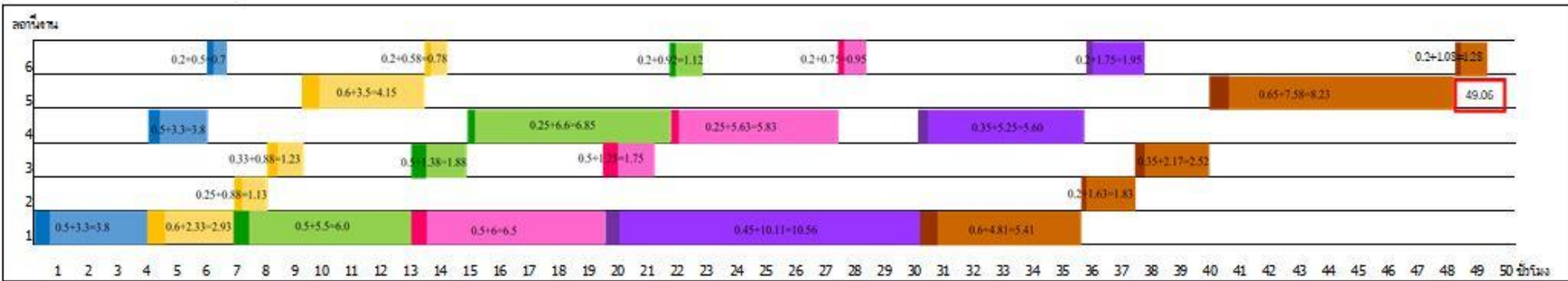
Basic Tracking

75% Complete

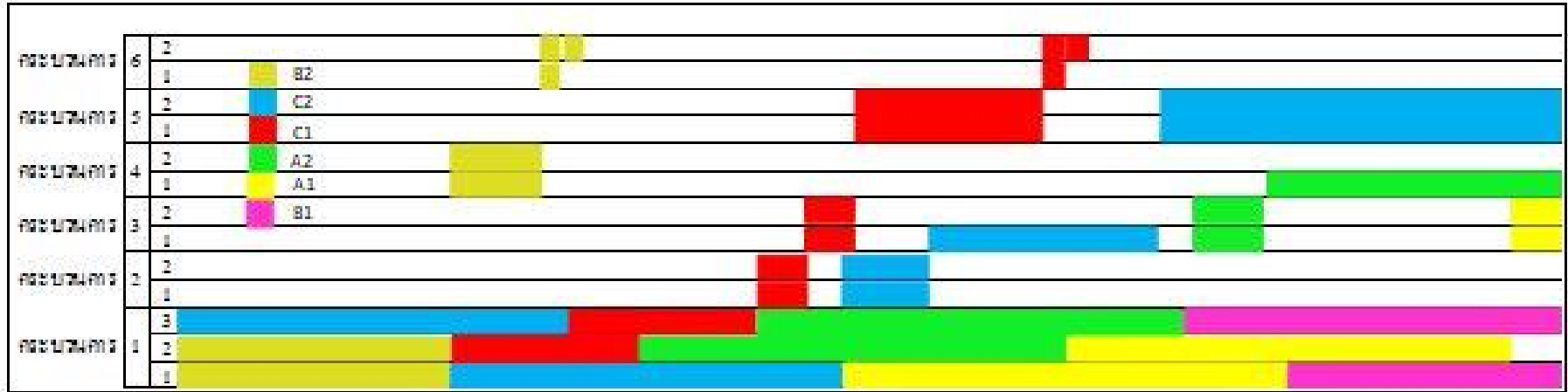
Basic Simulation

Work In Process

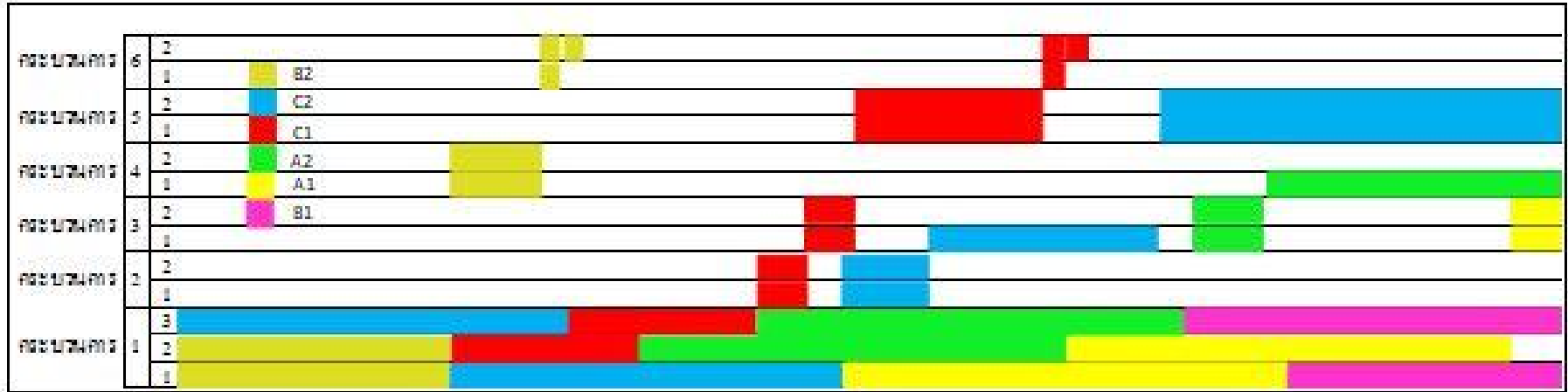
Serial Production Chart

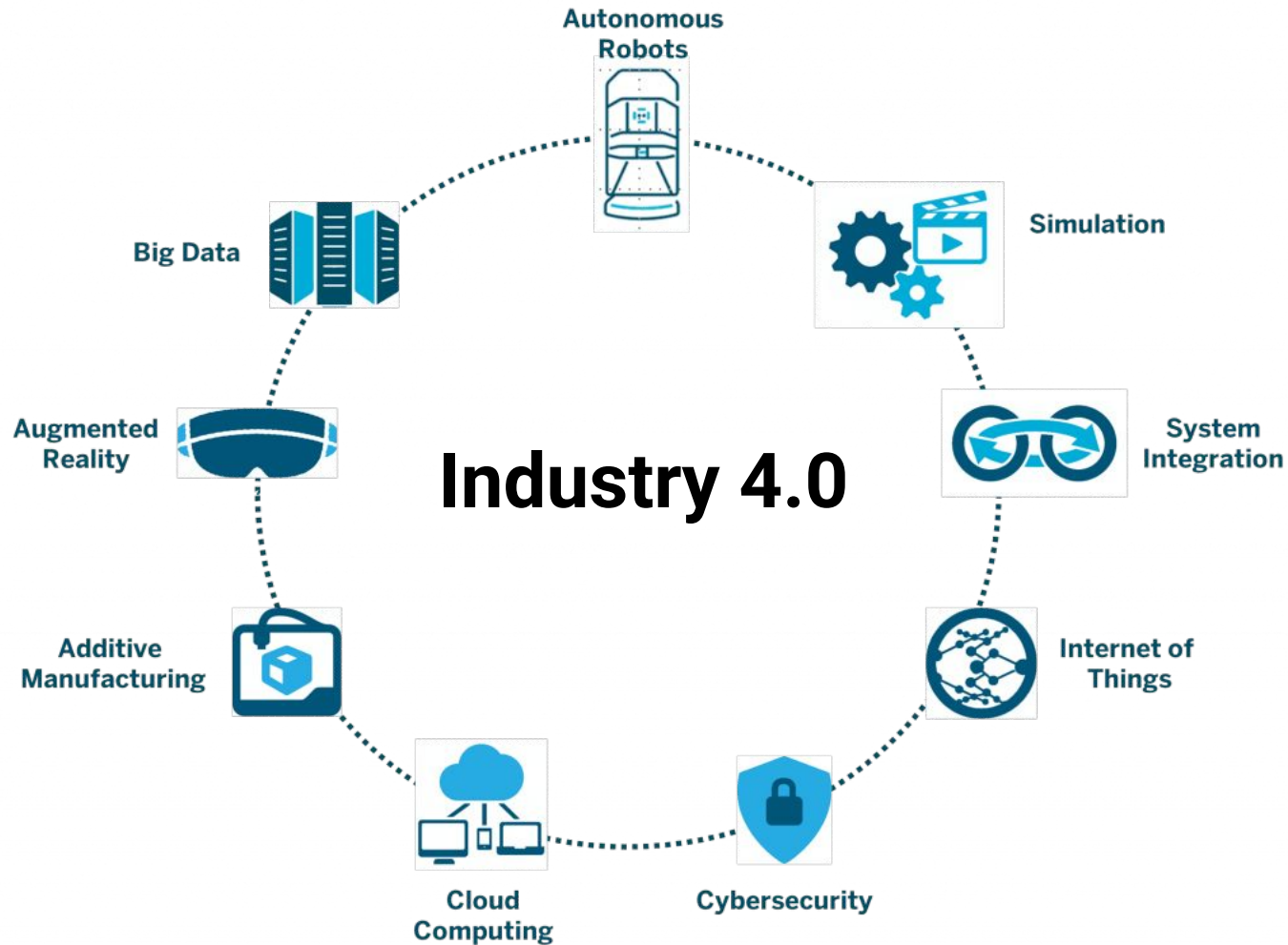


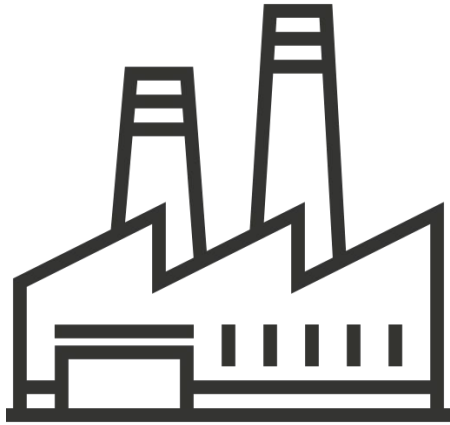
Parallel Production Chart



Multi-components Chart







Let's Demo