

# OM 524 Final Project Presentation

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## Content Overview

- Companies to Discuss
  - BMW Manufacturing
    - Greenville, SC
  - Premier Automation
    - Pittsburgh Pennsylvania

- ▶ Topics for each company
  - ▶ Background
  - ▶ Type of system
    - ▶ High level overview
    - ▶ Low level overview
    - ▶ Variations
  - ▶ Generalizability
  - ▶ Success
  - ▶ Looking forward



<https://en.wikipedia.org/wiki/BMW>



<https://www.inc.com/profile/premier-automation>



# BMW Manufacturing

Large Automotive Manufacturing Plant, Greenville, SC.

Previous employer, Co-op + PACE (2018-2021)



<https://www.autonews.com/article/20160307/OEM01/303079996/largest-bmw-plant-will-expand-this-year>



# Background

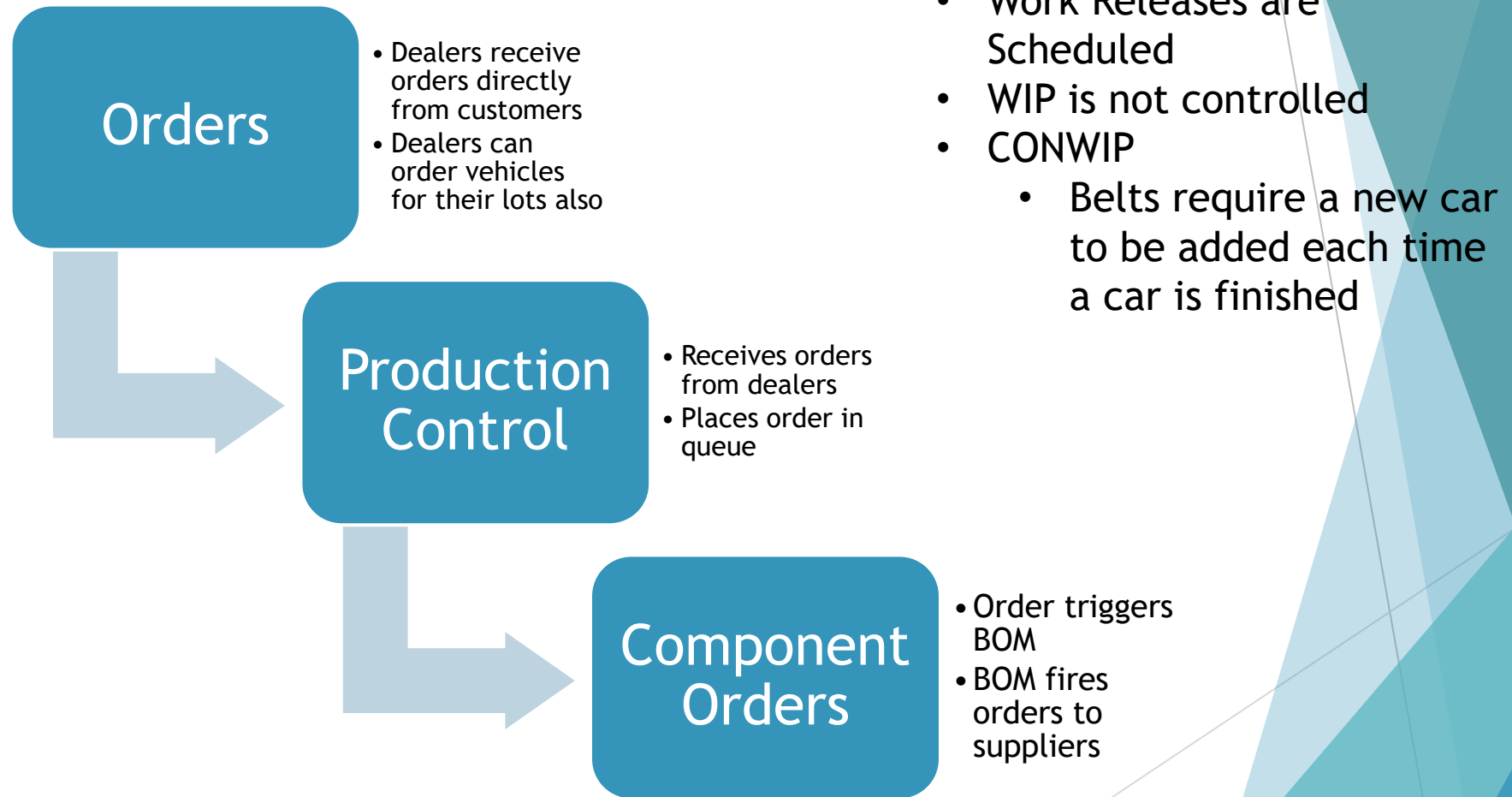
- ▶ Largest automotive exporter by value in USA
- ▶ Build 5 different models with millions of variants
  - ▶ Exclusive factory for 3 models
- ▶ Produces about 1500 vehicles per day
- ▶ Tens of thousands of individual components per vehicle



<https://www.motor1.com/news/579561/2023-bmw-x7-facelift/>



# High Level Overview



# Low Level Overview

- ▶ Some subsystems act like pure push
  - ▶ Body shop
    - ▶ Bodies are released into the body shop based on estimated demand
    - ▶ Not necessarily an order associated with each body
  - ▶ Pure pull
    - ▶ Sub assembly stations
      - ▶ Shopping carts
        - ▶ Shopping carts are operated on Kanban cards
- ▶ Components
  - ▶ Mostly JIT for highly customizable parts (engine, seats)



# Generalizability

- ▶ System is extremely complex
  - ▶ Necessary for high levels of variation
  - ▶ High utilization across most areas
  - ▶ Lots of issues with variability
    - ▶ Wiring Harness
    - ▶ Bodies
- ▶ Likely better options for companies with lower volume or lower complexity
  - ▶ Downtime is very costly
  - ▶ High margin products



# Success

- ▶ Plant is highly successful
  - ▶ Arguably most important plant in network
  - ▶ Plant is being expanded despite labor costs in US (1, 2)
    - ▶ Mostly due to skilled labor force
    - ▶ Improving quality
- ▶ Plant facing steep competition
  - ▶ Older management team less adept to new technologies
  - ▶ Need to leverage advantages and not rely on existing reputation





# Premier Automation

Small panel builder, Pittsburgh, PA

Previous Employer, Intern 2019-2020

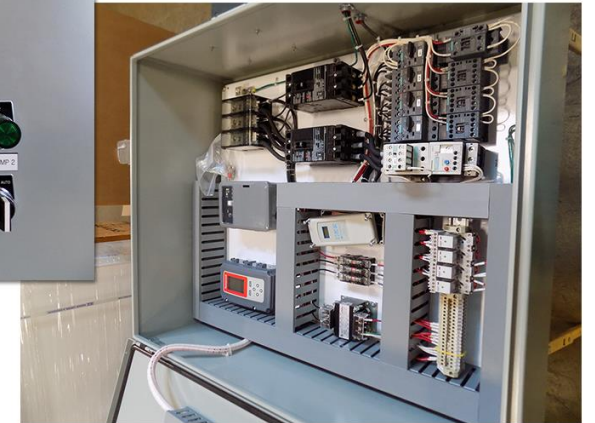


<https://premierautomation.com/>



# Background

- ▶ Growing electrical equipment and automation panel builder in Pittsburgh
  - ▶ New Office in Alpharetta, GA
- ▶ Previously all custom work
  - ▶ Job shop, all items built-to-order
- ▶ Exploring more standardized options
  - ▶ Panelshop.com



<https://panelshop.com/project/everything-ice-case-study/>



# High Level Overview

## MRP

- No single line, jobs built to order
- Number of jobs typically limited by person or space capacity

## Some Inventory

- Some inventory held for bulk parts
- Machinery on hand to customize bulk parts to order

## Highly Parallelized

- Staff typically have specific expertise, rotate across jobs as needed



# Low Level and Advantages/Disadvantages

- ▶ Parts typically ordered as jobs started but limited to no contracts
- ▶ No physical movement of jobs around shop
- ▶ Advantages
  - ▶ Able to be extremely flexible (massive building sized jobs to single panels)
  - ▶ Very little excess inventory
- ▶ Disadvantages
  - ▶ Limited ability to negotiate component prices
  - ▶ Low demand forecasting ability
  - ▶ Difficult prioritization
    - ▶ Mostly done by feel



# Looking Forward/Scalability

- ▶ PanelShop.com
  - ▶ Ability to offer more generalized products
    - ▶ Possibility to standardize production processes, linearize
    - ▶ Ability to offer customers lower lead times
  - ▶ Possible to better analyze subprocesses
    - ▶ Ability to identify inefficiencies
    - ▶ Ability to make process more scalable
- ▶ Success
  - ▶ Highly successful
  - ▶ Period of uncontrolled growth



# Sources

1. <https://governor.sc.gov/news/2021-11/bmw-manufacturing-expanding-spartanburg-county-operations-new-logistics-center>
2. <https://www.press.bmwgroup.com/global/article/detail/T0371814EN/bmw-group-investing-more-than-200-million-to-add-new-press-shop-at-south-carolina-plant?language=en>
3. <https://panelshop.com/what-we-do/>
4. <https://premierautomation.com/>

Note: Most information obtained from first hand experience.

