INTERNATIONAL ASSOCIATION OF

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BAGGAGE SYSTEM COMPANIES

Technology & Innovation Manufacturing Trends

January 12th 2017

Today's Challenge

"If you always do what you've always done, you'll always get what you've always got."

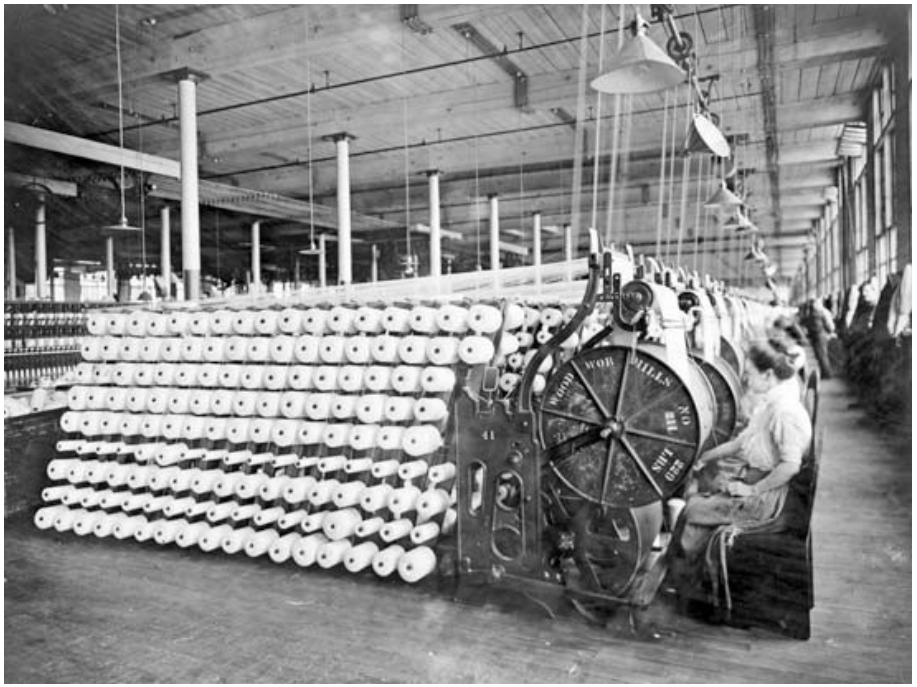
— Henry Ford

Evolution: A Principle Founded In Manufacturing

- Perspective: The four industrial revolutions
- Where we are at today in manufacturing and automation solutions
- What does the future hold?

First Industrial Revolution
Mechanization

- Late 18th Century to Early 19th Century
- Characteristic: SUBSTITUTION
- RESULT – Industrial Cities established



Women working machines
at the American Woolen Company,
Boston. 1912

Second Industrial Revolution
Mass Production

- Late 19th Century to Mid 20th Century
- Characteristic: ECONOMIES OF SCALE
- RESULT – Industrial Regions

In the Aviation World

- First powered flight – Wright Brothers 1903
- 1909 - First crossing of English Channel by Air
- 1910 - First Jet powered Engine flight
- 1914 - First Scheduled Air Service
- 1919 - First Crossing of the Atlantic Ocean by an Airplane

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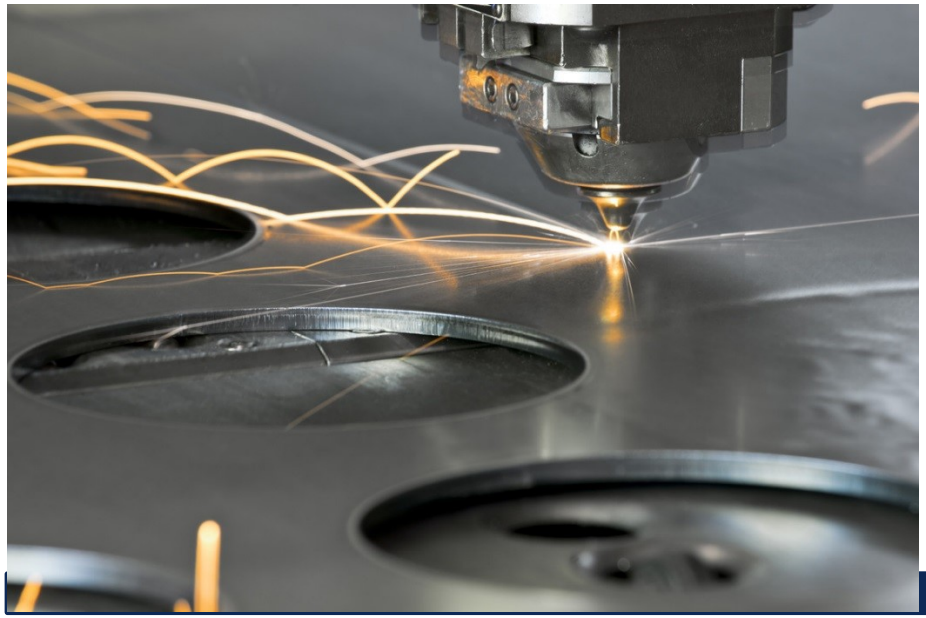
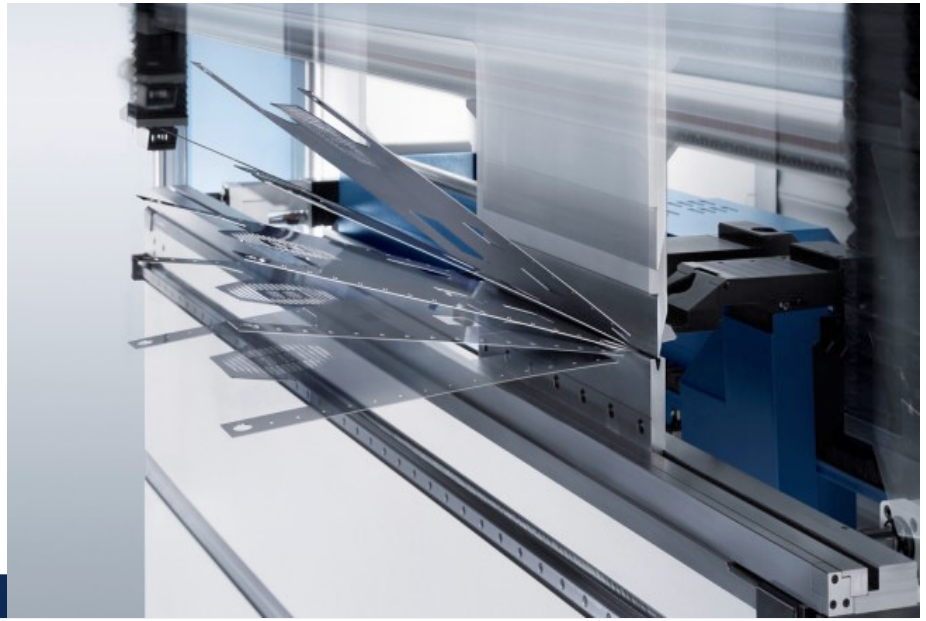
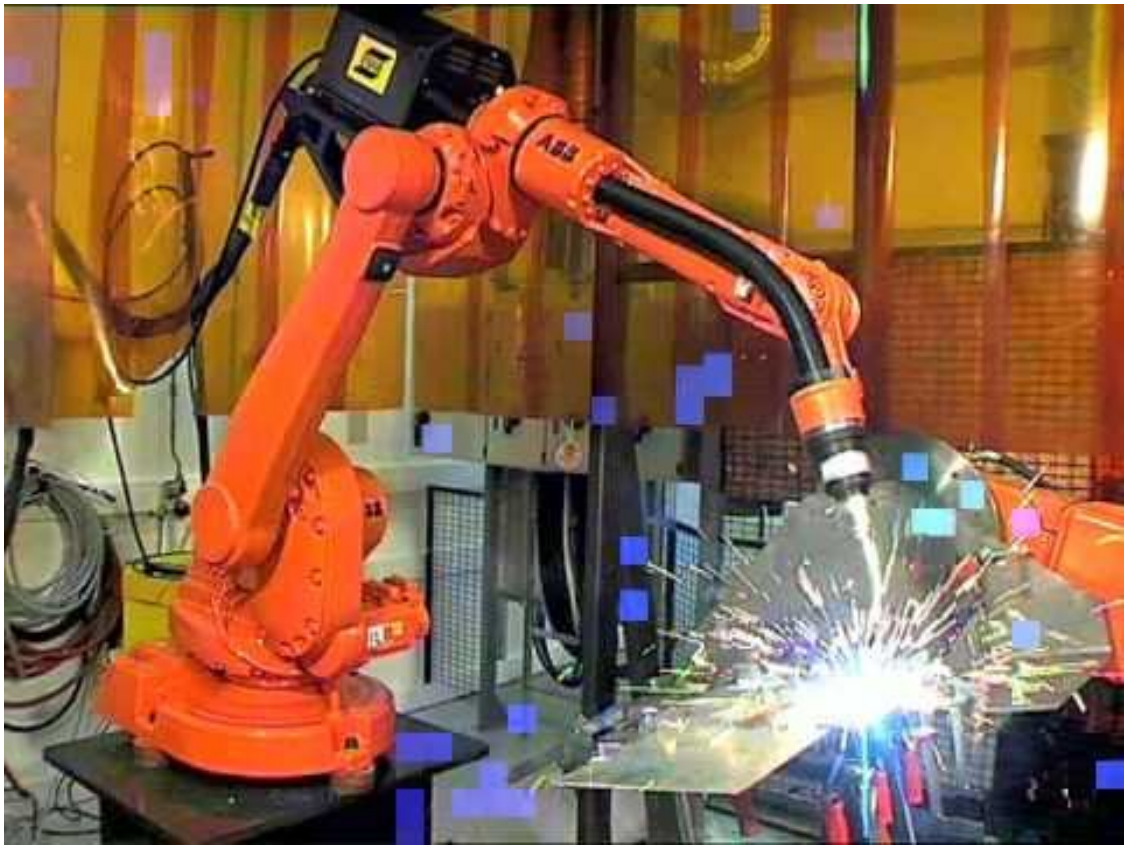
3rd Industrial Revolution
Automation

- 2nd half of 20th Century
- Characteristic: INPUT COSTS
- RESULT – Global Production Networks





Leading To Other Advanced Production Technologies



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The rate of change in aviation was also Significant at this time.

- The beginning with the first commercially produced American jet liner.

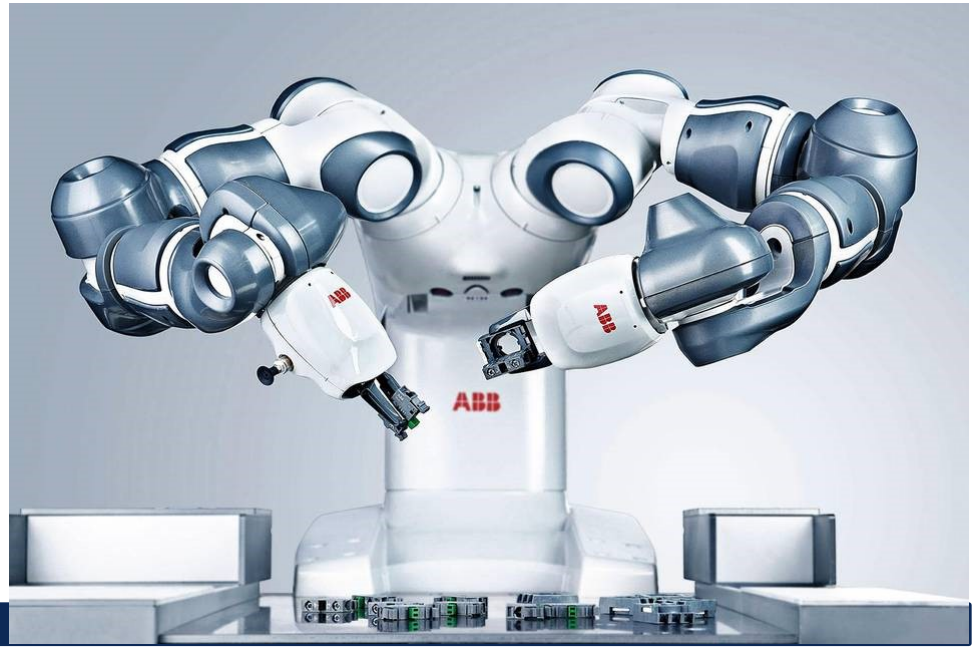
- Many consider this the beginning of commercial aviation.

Boing 707 prototype Model 367-80 or "Dash 80"

In Aviation – in 1958 the first Boeing 707 was produced and was the first production American jet liner that allowed the US to gain the lead in commercial jet transportation. (less than 60 years ago).

4th Industrial Revolution
Robotic Technologies

- Early 21st Century
- Characteristic: Flexibility & Standardization
- RESULT – Global Value Chains



Parallels of Evolution

1. Advances in technology have a direct impact on all aspects of manufacturing of Airport Baggage Handling Equipment

   - The way equipment is manufactured
   - The way the equipment is shipped to site
   - The way the equipment is installed
   - The way the equipment is operated and maintained

Parallels of Evolution

2. Airport Operations Demand a Higher Level of Sophistication from its Equipment
   - Higher capacity and reliability
   - Serve as an “innovator” of the business through its use
   - Greater intelligence and integration across systems

   - *How are things evolving in your organization?*

A New Paradigm

- RESHORING of manufacturing
- Innovative procurement methods balance flexibility to innovate with cost control measures and metrics
- Total Cost of Ownership considerations drive investment

f(CAPEX + OPEX)

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Those Evolving Should Embrace …

- Modern Baggage Handling Equipment Standards:
  - User Interfaces
  - Safety
  - Maintainability and Quality
  - Energy Efficiency
  - Scalability and Ease of Upgrades

Changes in Baggage Handling

Changes in Lobby trends -

From the traditional ticket counter

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Scale Injector Conveyors

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Self Serve Bag Drop

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Bag Make-up Trends

From pier sort conveyor lines

Bag Make-up Trends

And proven solutions such as slope and flat plate carousals

Tugs and Carts

The biggest problem yet to be addressed in baggage handling has to be Carts and Tugs.

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Baggage Make Up Systems

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Baggage Loader

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Automated Container Handling Systems

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Automated Container Unloading

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Baggage Lifting Table

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Baggage Unloader

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The Putter

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Bag Lifter

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Automatic Bag Loading

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Robot Loading / Bag Load

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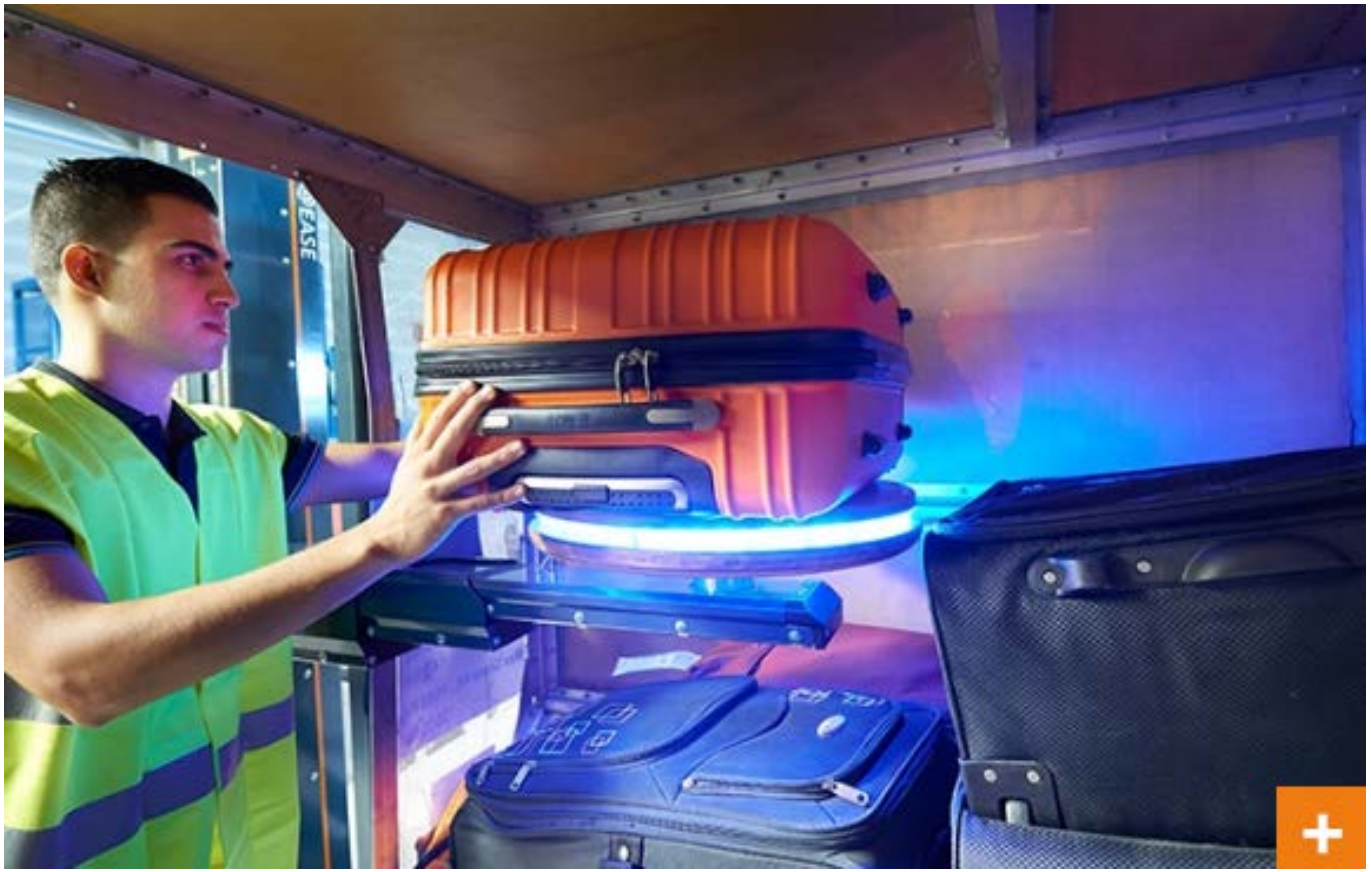
Stack-ease



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Thank you and welcome to the