





INDUSTRY 4.0

"Mass personalization production"

Tiny. Until you turn it on!

Md Sadiq

@ LERIG 2019, 30th January, Triple Helix Auditorium, CSIR-CLRI



India Fashion Studio, CSIR-CLRI

ACKNOWLEDGEMENTS



supported by:
D Suresh Kumar (SPDC) & K Dayalan (LPT)

TOSHIBA





**Industry 4.0: a way from mass
customization to mass
personalization production**

Although mass customization, which utilizes modularization to simultaneously increase product variety and maintain mass production (MP) efficiency, has become a trend in recent times, there are some limitations to mass customization.

- **Firstly** customers do not participate wholeheartedly in the design phase.
- **Secondly** potential combinations are predetermined by designers.
- **Thirdly** the concept of mass customization is not necessary to satisfy individual requirements and is not capable of providing personalized services and goods.

Industry 4.0 is a collective term for technologies and concepts of value chain organization

- Based on the technological concepts of radio frequency identification, cyber-physical system, the Internet of things, Internet of service, and data mining, Industry 4.0 will enable novel forms of personalization.
- Direct customer input to design will enable companies to increasingly produce customized products with shorter cycle-times and lower costs than those associated with standardization and MP. The producer and the customer will share in the new value created.

**This is a framework for mass personalization production
based on the concepts of Industry 4.0**

To overcome the gaps between mass customization and
mass personalization.

Let us see how we can realize mass personalization...

“Industry 1.0”, or “CP” Craft (customer) production (CP)

In this method, products were manufactured based on the requirements of users at a high cost and **with a limited number of products.**

CP is leveraged to depict the production paradigm change from entirely manual production to machine production.

“Industry 2.0” (or) Mass production (MP)

In the second industrial revolution, called “Industry 2.0” or “MP”, low-cost products were made using **large-scale production systems.**

It was mainly based on precision engineering, division of labor, standardization, and assembly line work. The first conveyor belt was introduced at the beginning of the 20th century



“Industry 3.0” or “MCP”- Mass customization production

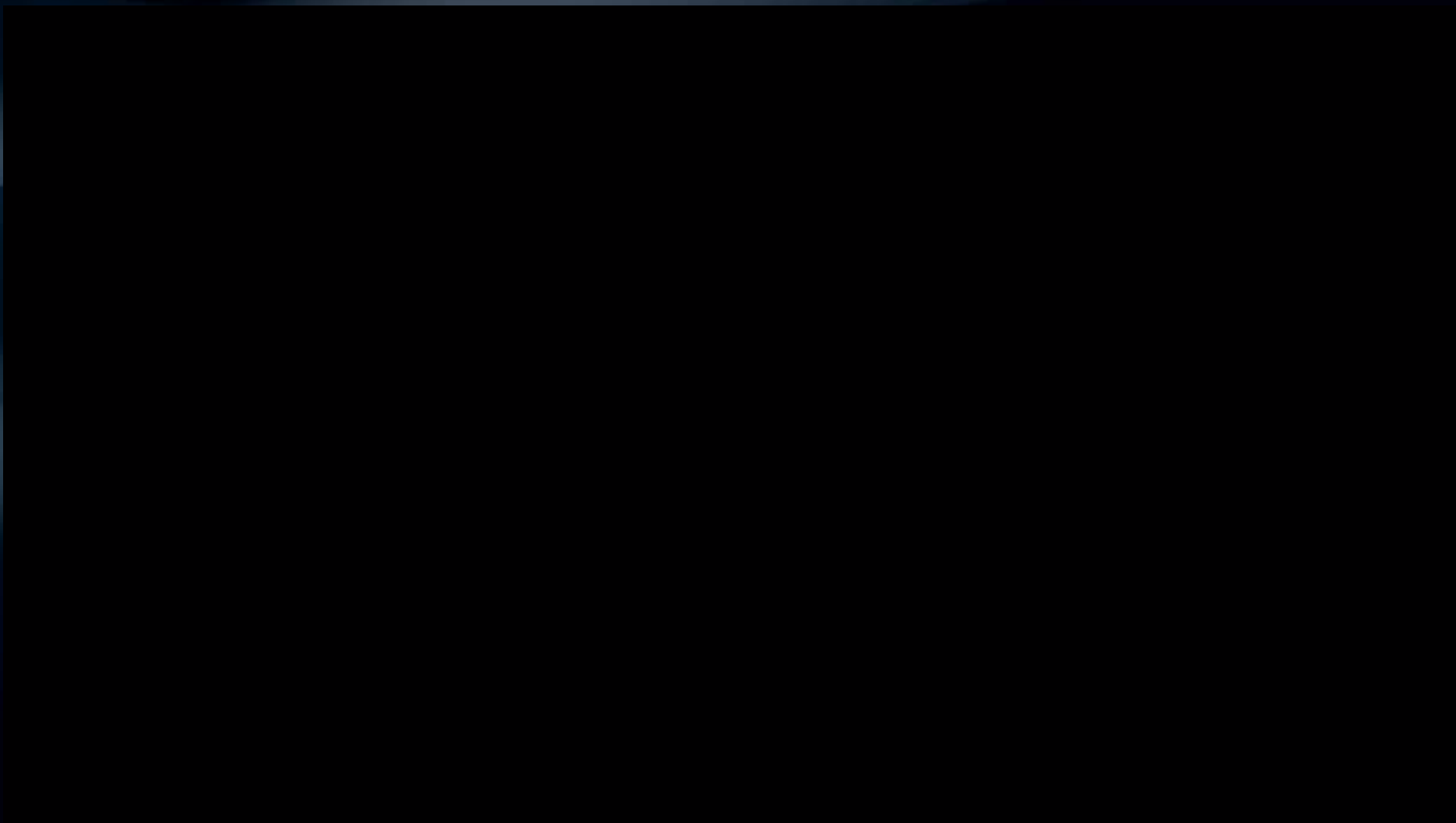
The third industrial revolution is referred to as “Industry 3.0” or “MCP”. In the late 1980s, customer demand for a large variety of products led to the development of “Mass customization”.



“Industry 3.0” or “MCP”- Mass customization production

It was based on the development of information, automation technology, and the computer. This led to numerically controlled (NC) machines, such as industrial robots, flexible manufacturing systems (FMS), and computer integrated systems (CIM), as well as manufacturing management systems, such as product life management (PLM), enterprise resource planning (ERP), and manufacturing executive system (MES), which could be modified much faster than conventional mechanically automated machines and processes.

Consequently, **flexible production was developed and systems featured high productivity, low cost, and large varieties.**



**How did our Indian Shoe Industry
stand up to this challenge?**



creating customized craftsmanship

customization manual



H&S Customization: A distinguishing offering for a 'Distinguished' You

When we started out conceiving Brand H&S, we were determined that we will challenge the status quo and be innovative when it comes to giving our customers, product offerings in Leather .

Customization as a concept emerged out of our deep industry experience, technical skills and prowess and extensive knowledge of Leather materials and fashion trends.

The objective of 'Customization in H&S' is to give you a choice of options in Colours and Accessories for Shoes and Bags.



Customization for Fit

- For Customization of Shoes in H&S, we use the revolutionary “Foot Scanner”, to take the exact measurement of your feet and model a unique ‘last’, which is a replica of your feet.
- The foot data and an e-model last of your feet, will be banked with us. You can choose any style in the range of exquisite styles across silhouettes – Oxford, Derby, Monk, Moccasin, Slip On and Sandals.

Industry 4.0

Industry 4.0 allows the production of individual products at the cost of MP. This specifically means that production companies are capable of solving the principle interface issues between production, product development, and product usage, and hence drive all major value-added processes towards the requirements of customers.

In addition, by leveraging IT-based communication and interaction services, tools, machines, and products, **Industry 4.0 allows flexible and smart production control.**

Tread with caution!



Clarks 'robot-assisted' shoe factory in Street may close

The shoe retailer Clarks has announced its UK factory could close.

The firm opened a new manufacturing unit in 2017, featuring "robot-assisted" technology, at its headquarters in Street, Somerset.

Up to 300,000 pairs a year of the footwear firm's desert boots were to be made at the facility, creating up to 80 technical and managerial jobs.

But the firm is now consulting on its closure after those targets were not met.

"Despite best efforts, we have determined that the levels of production and cost targets we hoped for will not be reached in the short to medium term," Clarks said in a statement.



Definition of 4.0

- Cyber-physical system
- Mobile and cloud computing and Internet of thing
- Big data, data mining and knowledge discovery
- Internet of service

With the growing amount of ICTs, the concept of mass customization cannot keep up with individual demand and provide personalized services. Meanwhile, the technological concepts of Industry 4.0 will enable a whole new form of personalization. In order to bridge the gap between mass customization and mass personalization, a framework for MCP based on the concept of **Industry 4.0 is the F.U.T.U.R.E.**

BOSE



INDUSTRY 4.0

Tiny. Until you turn it on!

Committed to leading the way !