Industry 4.0 Awareness Seminars Reports Template

MS Word File, Font Arial 12 , space 1.5

1.	Date of the Seminar	24/04/2019
2.	Organizers	CII
3.	Title of the seminar	Awareness Workshop on Industry 4.0 *The Indian Perspective*
4.	Programme	Annexure A
5.	Report: suggested contents (1) Main takeaway / good suggestions (2) Clusters covered (3) Nos attended - 68 (4) Success stories that need to be compiled / shared	(1) Main takeaways / good suggestions • Exposure to Industry 4.0 concepts • Exposure to explore the possibilities of 'Digitalization' - its benefits as well as key challenges • Understanding of how to apply Industry 4.0 in business • Additive manufacturing – its relevance, challenges and applications • Levels of Smart Manufacturing and applications, key ingredients and survey on Industrial IoT • Understanding of the digital journey of a company with Augmented Reality and Machine
6.	List of Speakers with contact details	Annexure B
7.	Presentations	Annexure C
8.	Resource persons for providing consultancy, skilling, guidance etc.	• Madhusudan Kestur, Director, Ace Micromatic Group • D Ramakrishna, Vice Chairman, CII Andhra Pradesh State Council and Managing Director, Efftronics Systems Pvt Ltd
9.	Photographs	Annexure D
10.	Learnings from the seminar	- Industry has a basic Understanding of the concepts of Industry 4.0 at a broader level (as

		understood from the participants who attended the workshops). They are keen on understanding in detail about the applications of how to benefit from implementing Industry 4.0 through specific case. -studies by companies who have deployed Industry 4.0. -Working models and demonstrations of Industry 4.0 Applications were very well received by the participants. It was also quite engaging and insightful. -Participants attending the workshops have shown great interest on interacting with DHI officials to understand about the various initiatives taken by Government in creating an enabling ecosystem for Industry 4.0 adoption.

Annexure A

Confederation of Indian Industry

Department of Heavy Industry
Government of India

Awareness Workshop on Industry 4.0
The Indian Perspective

24 April 2019 at 0930 hrs, Hotel Four Points by Sheraton, Visakhapatnam

P R O G R A M M E

0930 - 1000 hrs	Registration	
1000 – 1010 hrs	**Welcome Remarks**	**G Murali Krishna** Immediate Past Chairman, CII Visakhapatnam Zone and Managing Director and CEO Fluentgrid Ltd
1010 – 1030 hrs	**'Industry 4.0 – Road to Digital Enterprise'**	**D Ramakrishna** Vice Chairman, CII Andhra Pradesh State Council and Managing Director, Efftronics Systems Pvt Ltd
1030 – 1050 hrs	**Industry 4.0 Solutions for Smart Manufacturing, India Context**	**Madhusudan Kestur** Director Ace Micromatic Group
1050 – 1110 hrs	**Digital manufacturing with IoT**	**Navneet Kejriwal** Member, CII Smart Manufacturing Council and Plant Director, Dell India
1110 – 1130 hrs	Question and Answer	
1130 – 1145 hrs	Tea break	
1145 - 1205 hrs	**Approach to Digital Transformation in the area of Data Analytics**	**Pavan Kumar Singh** Head – IT and Data Analytics L & T Defence, Vizag
1205 – 1225 hrs	**Smart Factory Reference Architecture**	**Gopi Kumar Bulusu** CEO and Chief Technologist Sankhya Technologies India Operation Pvt Ltd
1225 – 1245 hrs	Question and Answer	
1245 – 1300 hrs	Summing up	**Navneet Kejriwal** Member, CII Smart Manufacturing Council
1300 – 1400 hrs	Networking lunch	

Annexure B

Awareness Workshop on Industry 4.0
The Indian Perspective
0930 hrs: 24 April 2019: Hotel Four Points by Sheraton, Visakhapatnam

List of Participants
(Final)

Speakers

Sl. No	Name	Designation	Organization	Email ID
1.	Mr G Murali Krishna	Immediate Past Chairman, CII Visakhapatnam Zone and Managing Director and CEO	Fluentgrid Limited	Murali.g@fluentgrid.com
2.	Mr D Ramakrishna	Vice Chairman, CII AP State Council and Managing Director	Efftronics Systems Pvt Ltd	md@efftronics.com
3.	Mr Madhusudan Kestur	Director	Ace Micromatic Group	mkestur@acemicromatic.com
4.	Mr Navneet Kejriwal	Member, CII Smart Manufacturing Council and Plant Director	Dell India	Navneet.Kejriwal@dell.com
5.	Mr Gopi Kumar Bulusu	CEO and Chief Technologist	Sankhya Technologies India Operations Pvt Ltd.	gopi@sankhya.com
6.	Mr Pavan Kumar Singh	Head – IT and Data Analytics	Larsen and Toubro Defence, Visakhapatnam	PAVANKUMAR.SINGH@larsentoubro.com

Annexure C

Digital Transformation

Date : 24th Apr 2019

Jeff Immelt on Digitalization

Image Source: Google

Pay per Laugh

PAY PER LAUGH

The first comedy shows where you only pay for what you consume.

Teatreneu

The problem

In mid-2013, the art industry in Spain suffered one of the hardest blows ever.

The government decided to raise the tax for theatrical shows from 8% to 21%, resulting in the greatest loss of audience in living memory.

People returned to consume "proven" entertainment en masse such as the American blockbusters…

Faced with this reality, the independent comedy theatre company Teatreneu decided to look at the situation with humour and invented something:

Pay Per Laugh.

The first comedy shows where you only pay for what you consume.

We fit out each seat with a facial recognition system that detects the smile, and proposes the following deal to spectators: "Entrance will be totally free. If the show produces no laugh, you don't pay anything. However, if you laugh, you have to pay for each smile".

Each smile produced is worth 30 euro cents, something that in this day and age is quite a reasonable price.

And so that no-one would cry for having laughed more than they could afford, the maximum amount to pay was 80 laughs or 24 euros.

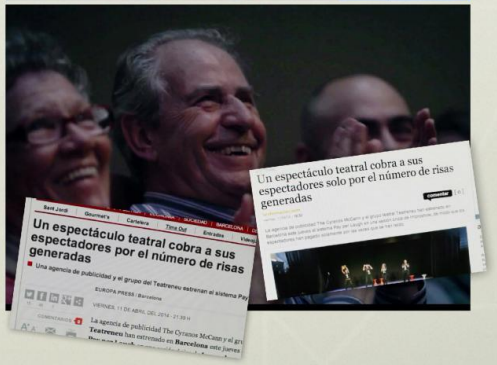
Results

The average price of the ticket increases by 6 euros compared to traditional shows.

The system was covered by the main national media outlets. **This produced more publicity, and this in turn produced 35% more spectators.**

Each pay per laugh show produced 7,200 euros of ticket money compared to 4,400 euros that was normally taken.

Currently the Pay Per Laugh system is being copied in other comedy theatres in Spain. A mobile phone app was created to use as a system of payment in other independent theatres.



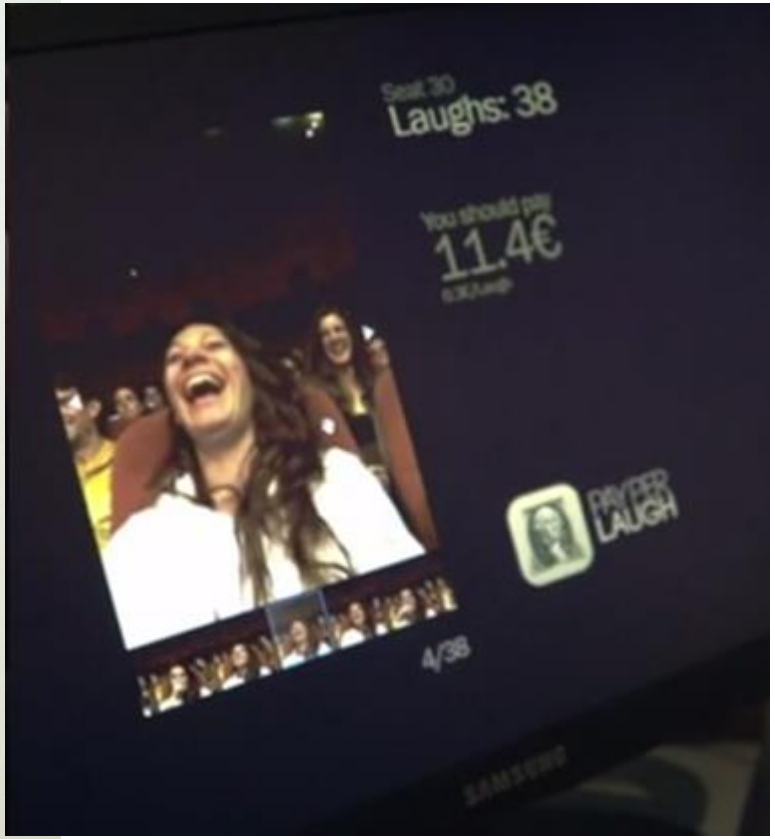


 Image Source: Google

LARSEN & TOUBRO

Inspection Remarks Classification

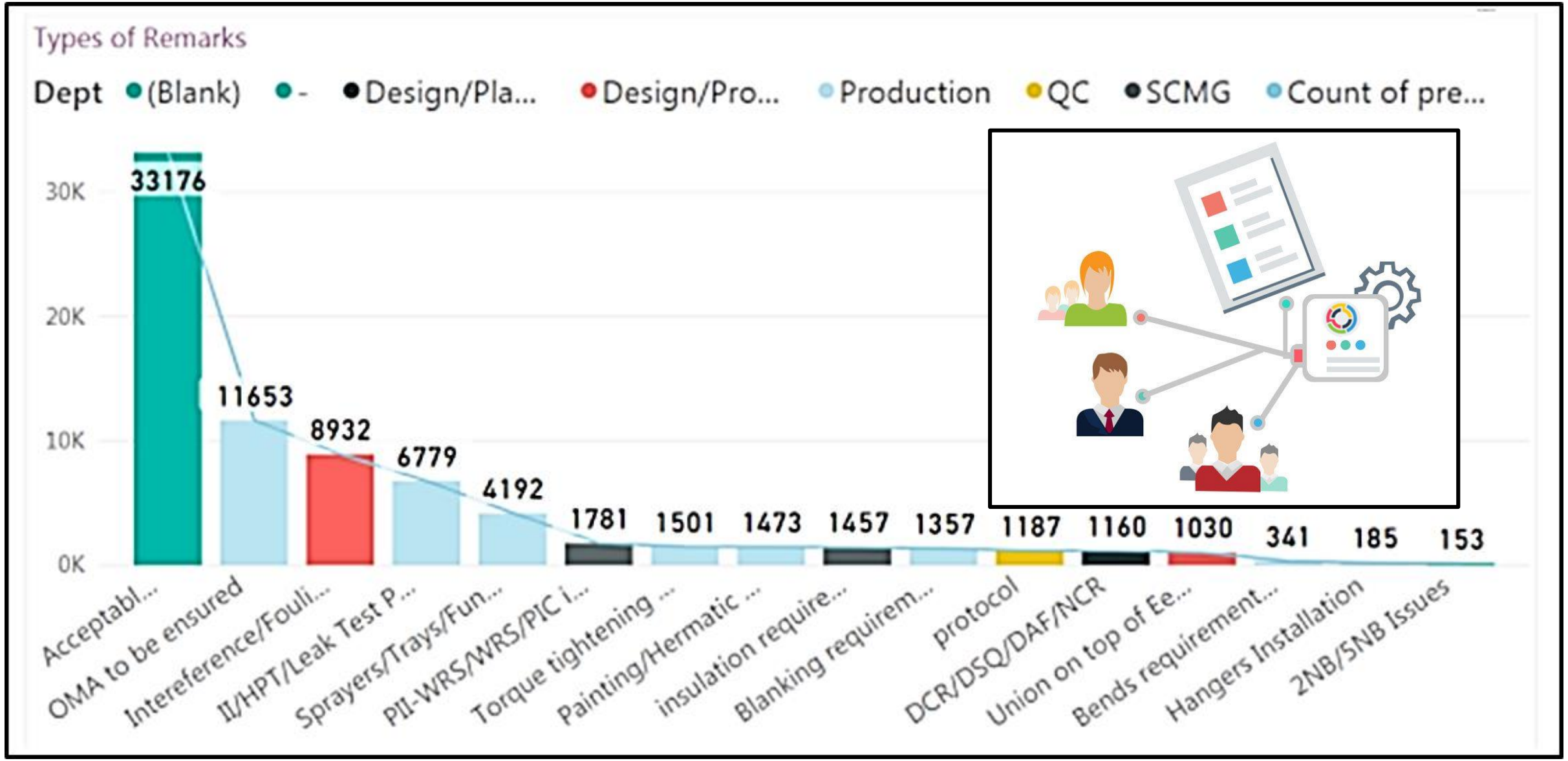
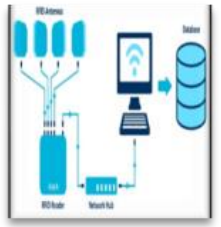
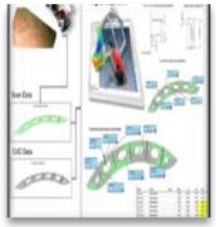


 Image Source: Google

Our Journey

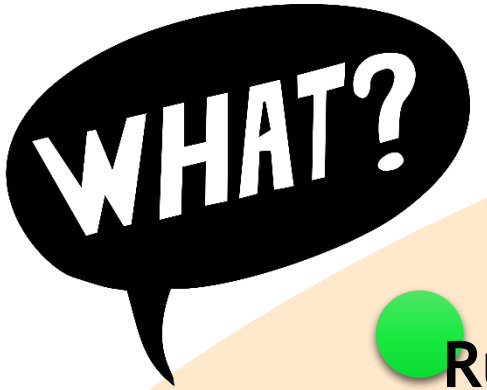




Yr-2009 Yr-2018

 Image Source: Google

Digital Transformation – What & How



Data Generation

Data Integration

Rule Based Automation

Data Analytics

Machine Learning

HOW?

 Image Source: Google

Data Generation

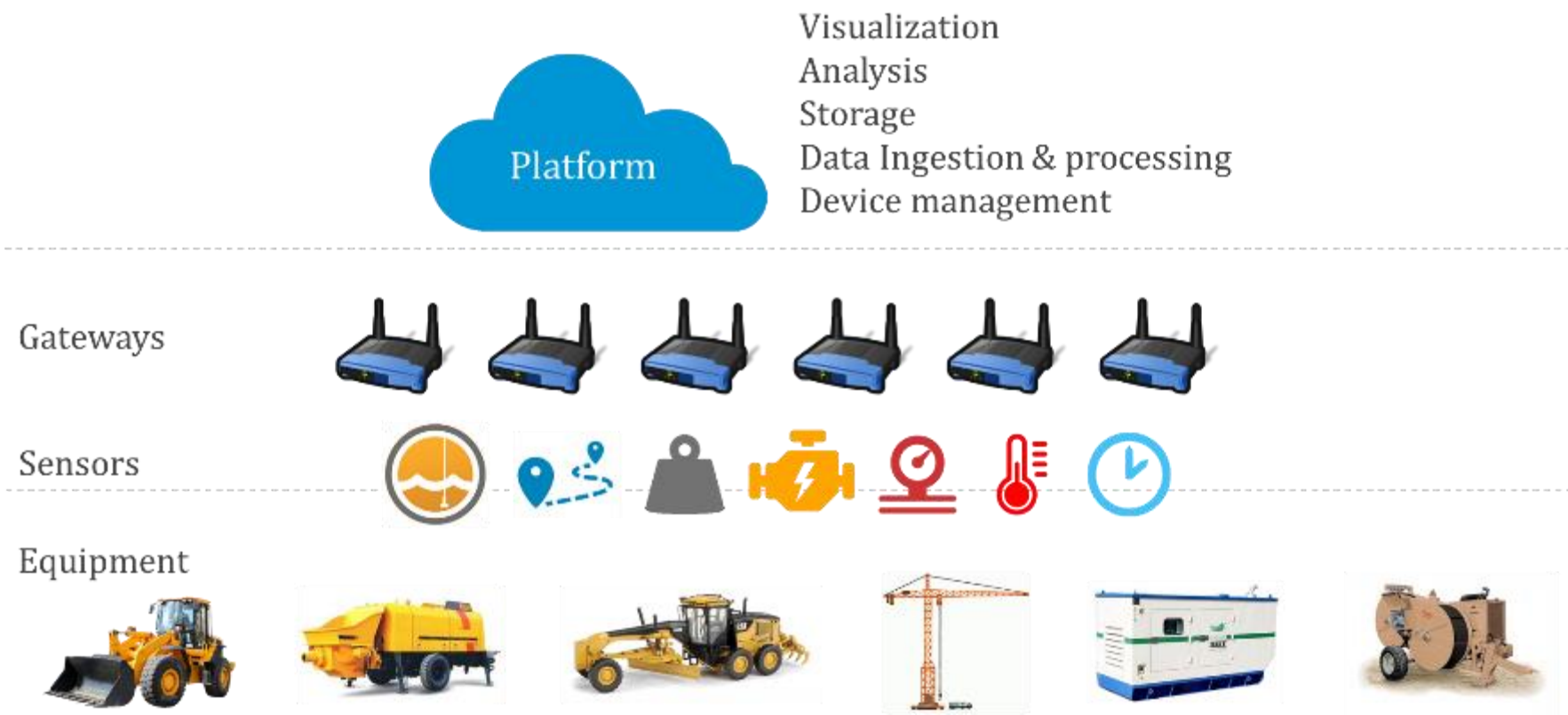
- Online Processes
- Sensors
- Digitization
- Internet

Image Source: Google

Data Generation - P&M Monitoring

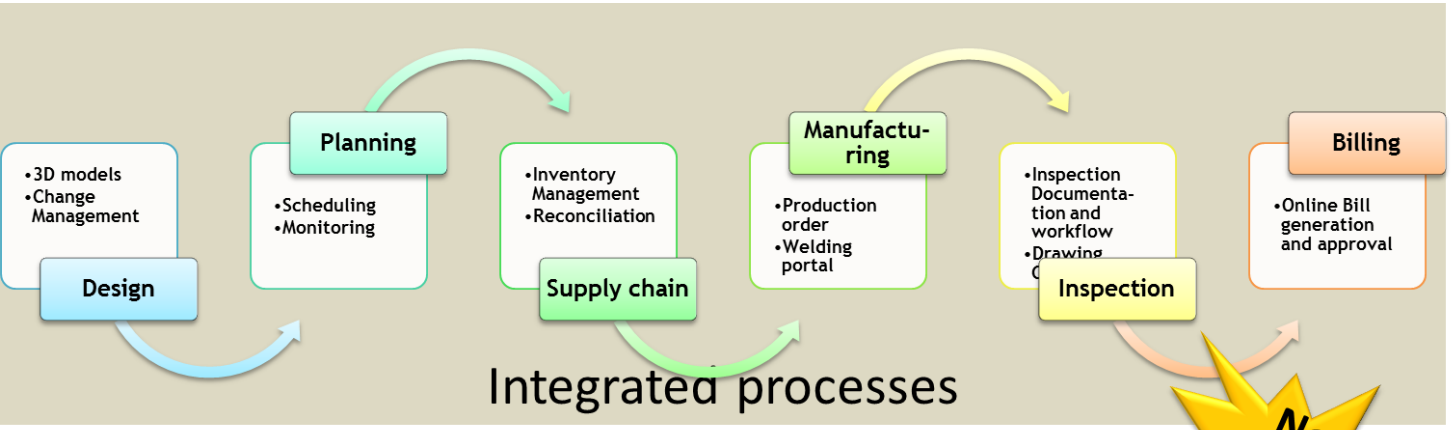
Concept *POC* *Implementation* ✓

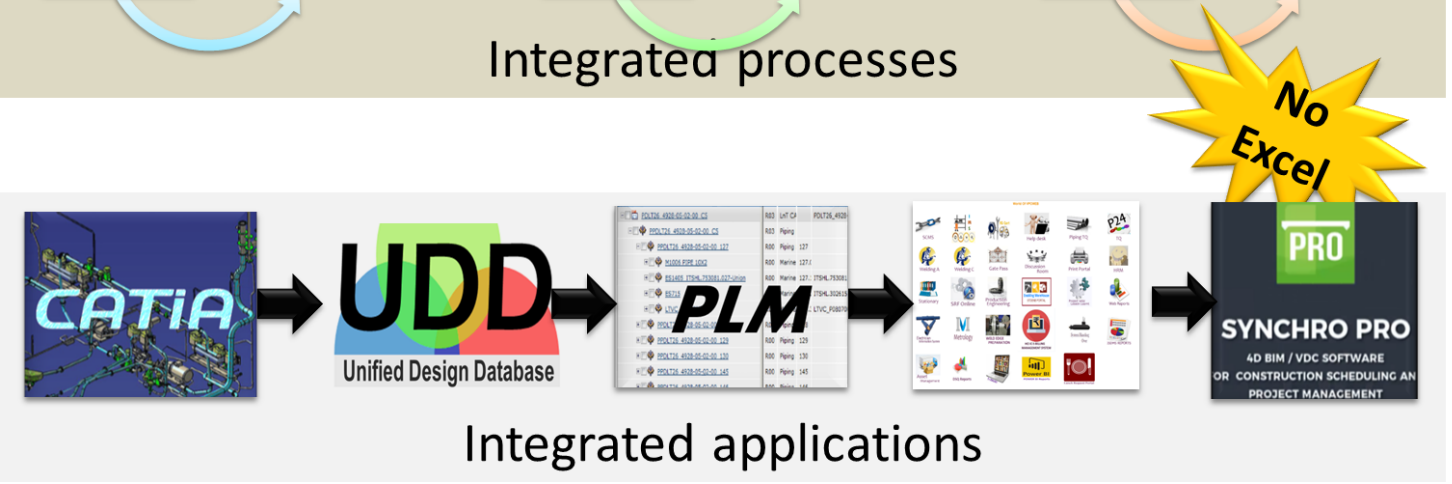
Equipment Prioritization → Solution Development → Instrumentation & Retrofit → Edge Processing → Data Ingestion Storage Analysis → Visualization



LARSEN & TOUBRO

Data Integration





Application Integration

Master Data

One Version of truth

Reduce Manual Entry

Rule Based Automation

Manual Preparation			
31 types	1000 Pg/M	300 Man-days	45 days
Online Billing			
Auto Bill	Online Approval	5 Man-days	

Project Closure Phase

- All deliverables exit criteria are met
- Transfer of deliverables to customer & support functions
- PIR report records recommend-ations & lessons learnt for future projects

90% cycle time reduction

Image Source: Google

Data analytics

INGEST → PREPARE → STORE → ANALYZE

Devices

Social

Machine logs

Video

Web

Sensor

Relational

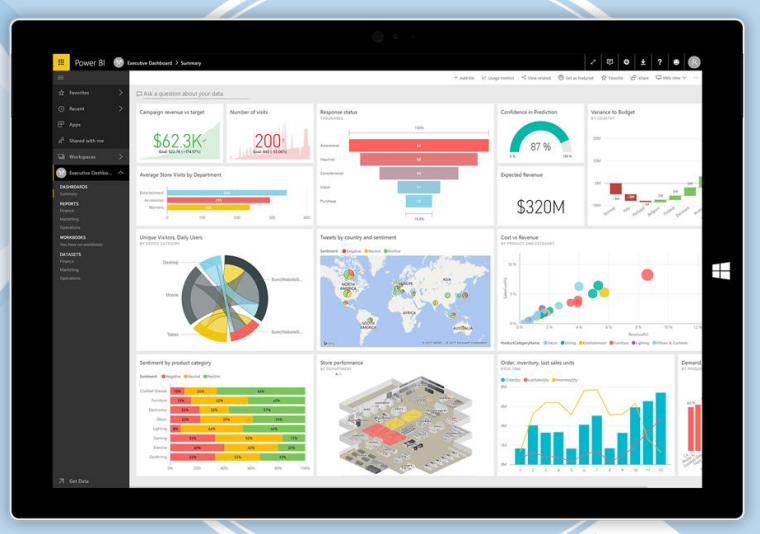
Clickstream

Aggregations

Cleansing

Governance

DATA LAKE STORE



Power BI

Image Source: Google

LARSEN & TOUBRO

Machine Learning

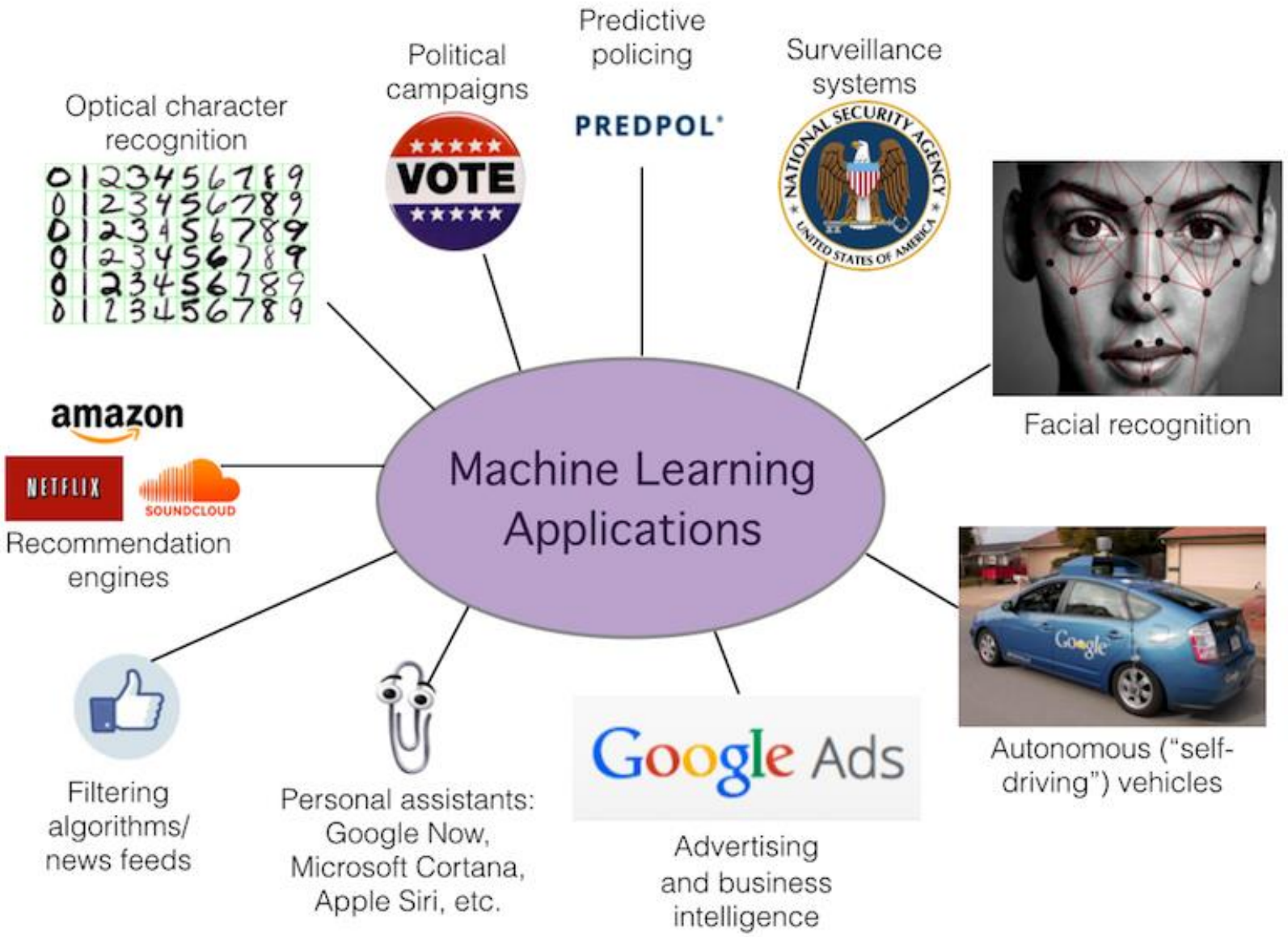
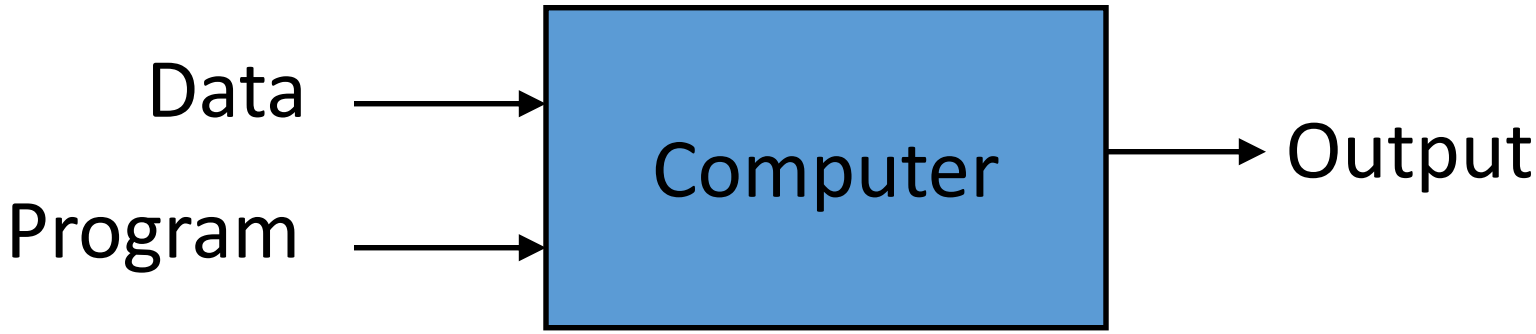
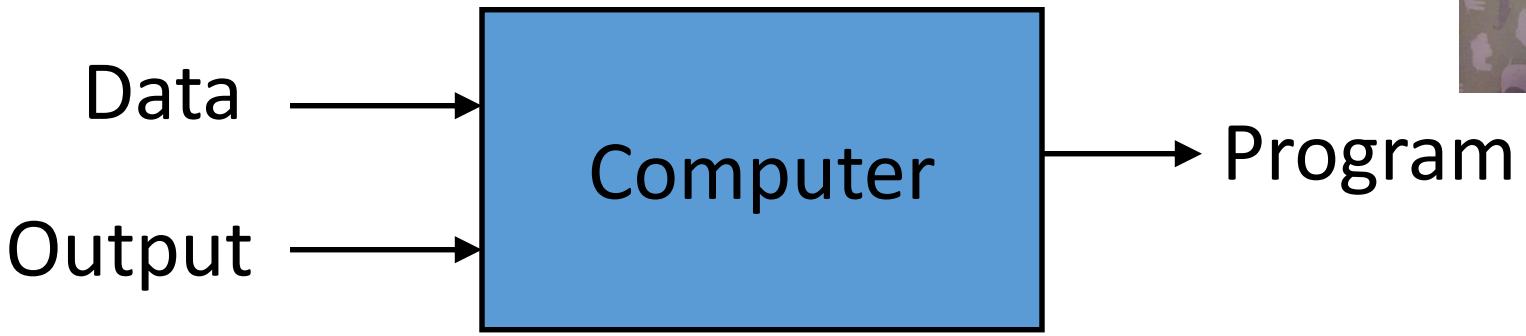


 Image Source: Google

Traditional Programming



Machine Learning



You See

Your ML Algorithm Sees

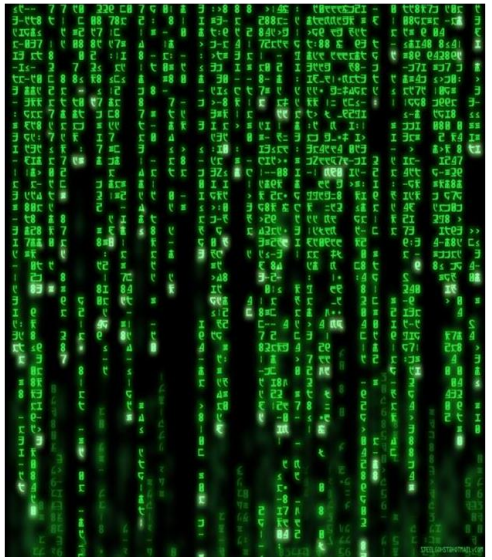


 Image Source: Google

Machine Learning

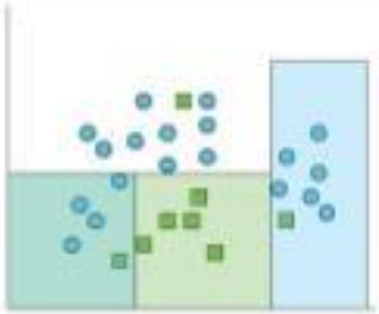
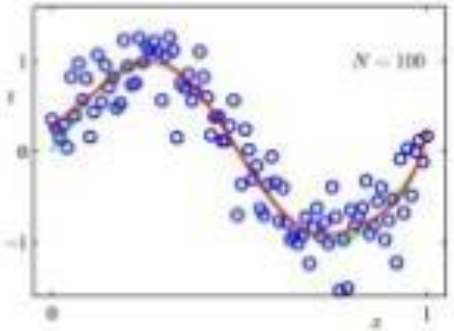
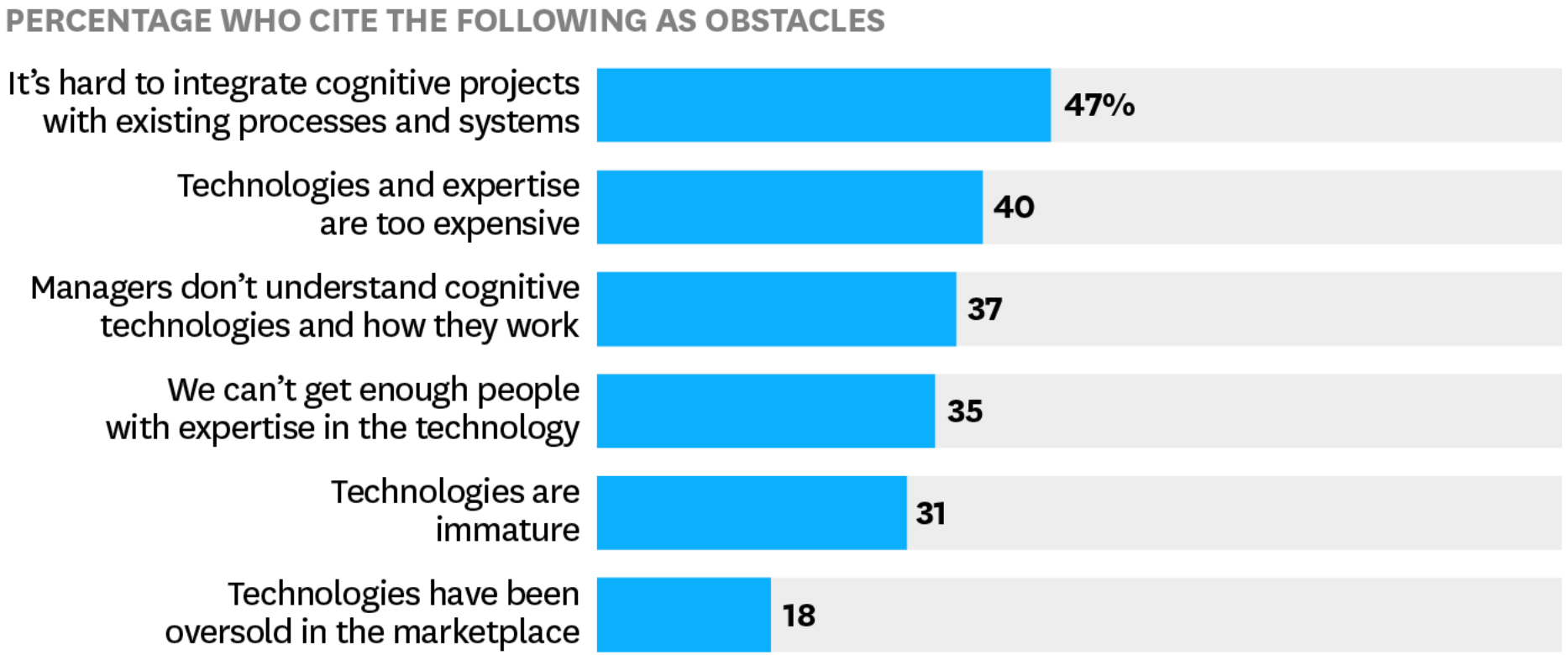
Predictive methods	Descriptive methods
Classification  Learns a method for predicting the instance class from pre-labeled (classified) instances	**Clustering**  Finds "natural" grouping of instances given un-labeled data
Regression  An attempt to predict a continuous attribute	**Association Rules**  Method for discovering interesting relations between variables in large DBs

Image Source: Google

The Challenges of AI

Executives in our survey identified several factors that can stall or derail AI initiatives, ranging from integration issues to scarcity of talent.



SOURCE DELOITTE 2017
FROM "ARTIFICIAL INTELLIGENCE FOR THE REAL WORLD,"
BY THOMAS H. DAVENPORT AND RAJEEV RONANKI, JANUARY–FEBRUARY 2018

 Image Source: Google

Digital Transformation – What & How

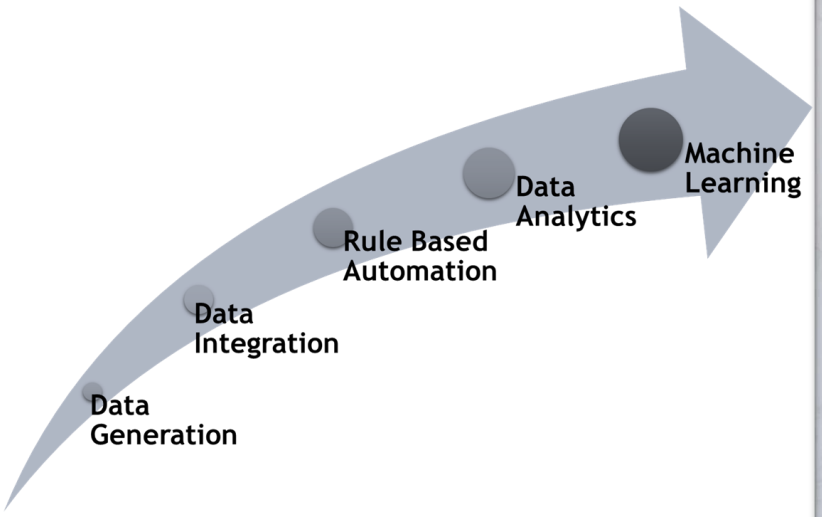


Image Source: Google

Digital Strategy

Image Source: Google

Digital Strategy

Vision

To achieve operational excellence, increased profitability and set global benchmarks

1 Software & IT systems

- IT systems, cloud platform, datamarts and data lakes to enable advanced data analytics

2 Hardware

- Analytics servers for development and production of analytics use-cases

3 Data and Cyber-security

- Infosec and Cybersecurity

4 Tools, Platforms and digital assets

- Advanced system based and simple excel analytical models and visualization

5 Knowledge platform

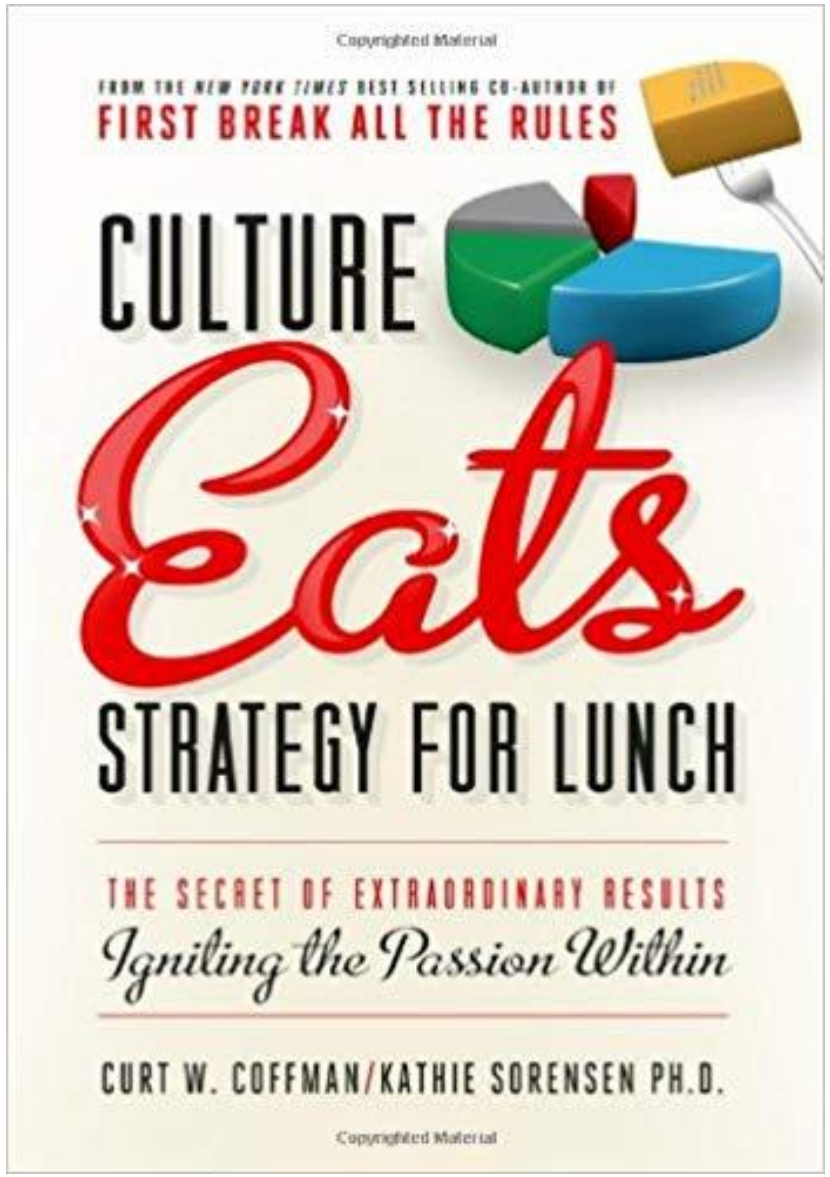
- Knowledge repository for codifying learning

6 People, Skills and training

- Hiring talent from outside and building capabilities in-house via workshops, trainings and certification courses

Image Source: Google

The Cultural Perspective



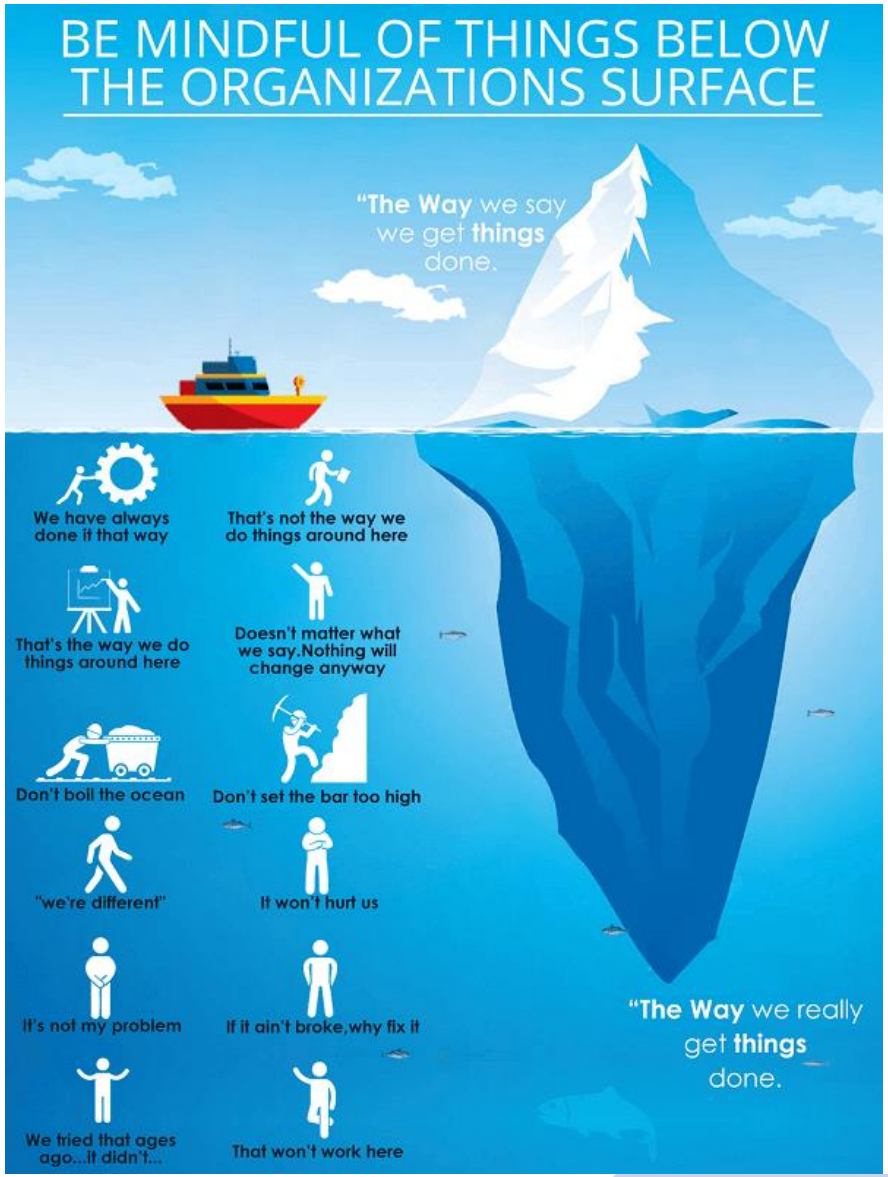
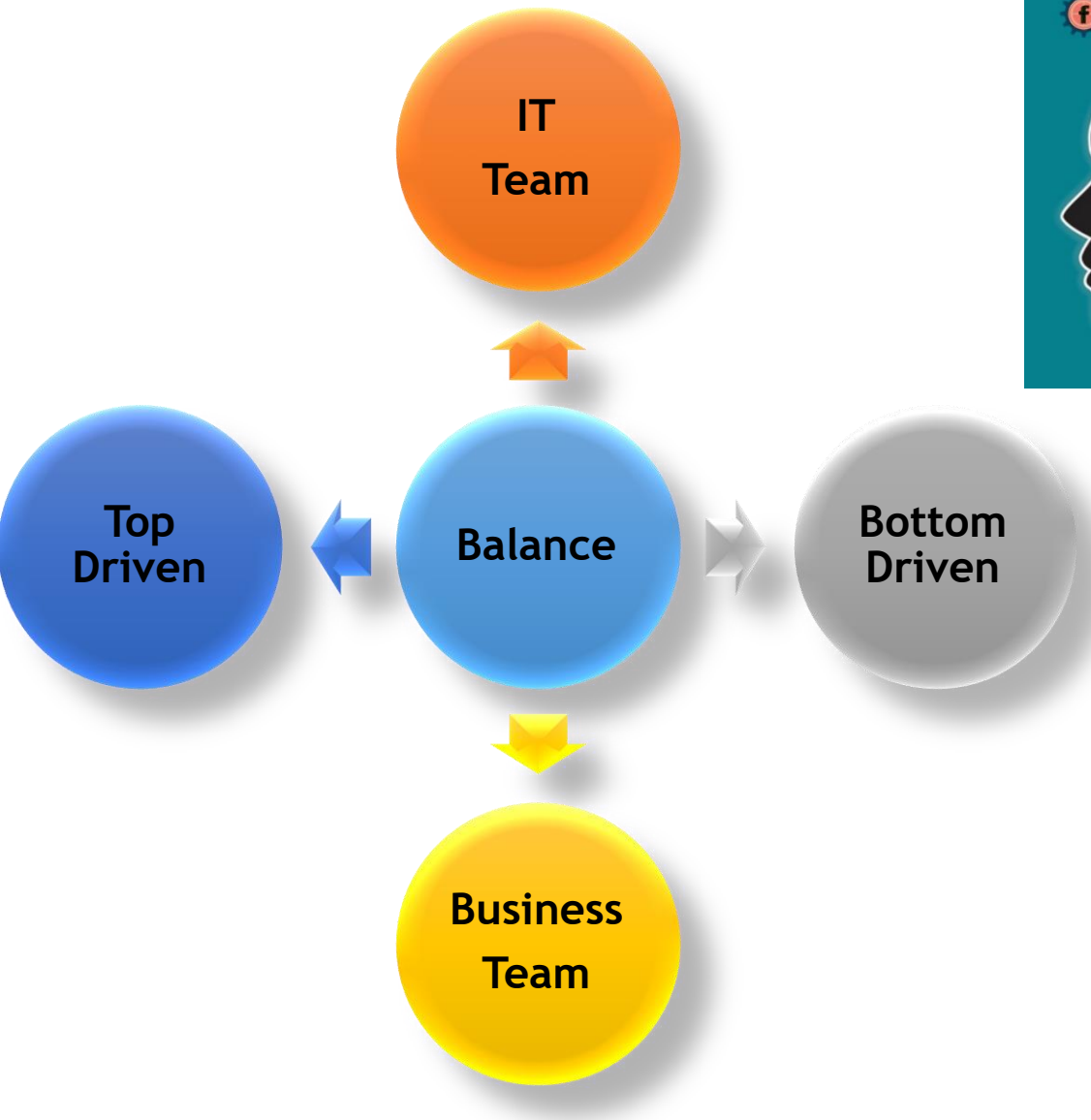


 Image Source: Google

Digital- People Focus



Ecosystem

- Partners
- Infrastructure
- Experts
- Engineers

Don't ask ROI, Believe Experimentation

Performance and Features are key

 Image Source: Google

Thank you…

The Science of IoT

Accelerating National R&D Collaboration for Smart Factory Platforms

Smart Factory Reference Architecture

[to drive collaboration and standards]

February 25, 2017

Super Computing Consortium of India

Platform for Technology Collaboration and CoCreation

www.scci.in

About SCCI

- Formed during 2011-2012 – an autonomous unit of Gravity 2.0 Research Foundation (Trust)
- Goal of acting as a platform to facilitate the wide-spread use of large-scale computing to help create wealth and spread prosperity
- Works through technology collaboration groups
- Independently develops policy frameworks and offers policy inputs
- “Let us collaborate to transform India in the true spirit of Bharat”

Some Key Initiatives

- Bhavini – Bharatiya Vignana Nidhi
  - Bhavini Sensor Fund
- Indian Language Technology Standards
  - Sanskriti, UMM, SOIL
- Joint R&D Roadmap with III of Taiwan
- Manifolda - Modeling Language for Complex Systems
- An Identity Standard for IoT
  - Payment Token ID Standard
- The Panini Award
- Vision 2020 with IoT
- Bharat Knowledge Vision 2017

What is Make In India ?

- Launched by Honorable Prime Minister of India, Shri Narendra Modi during 2014
  - Aims to create 100 million jobs in the manufacturing sector and increase contribution of manufacturing in GDP to 25%
- Growth Opportunity in Systems 2017-2025
  - 100 Million Jobs = (100 x 10 ^ 6) x (25 x 10 ^ 5)
  - INR 6 x 10 ^ 13 = INR 250 Trillion

Internet of Things ?

- A broad term that refers to deeply embedded computer systems
  - Cyber physical systems | Complex Systems | Systems of Systems
  - Smart everything
- A trend that transforms every thing manufactured into an embedded computer
- Autonomous Vehicle
  - it is a computer or a car ?

IoT and Make In India

- To succeed MII has to create global economic space for India made systems
- IoT is a global disruptive force that is transforming the manufacturing sector
- IoT offers a perfect area of focus to create emergent manufacturing economy in India

- IoT an Opportunity for Make In India

Characteristics of IoT

- Collect data in real time
  - Sensors and Sensor Systems
- Process information in real time
  - Computing
    - Distributed, Concurrent, Federated, HPC
  - Cloud
- Make decisions, act, respond, react
  - Actuators, Cyber physical systems
  - Autonomous everything

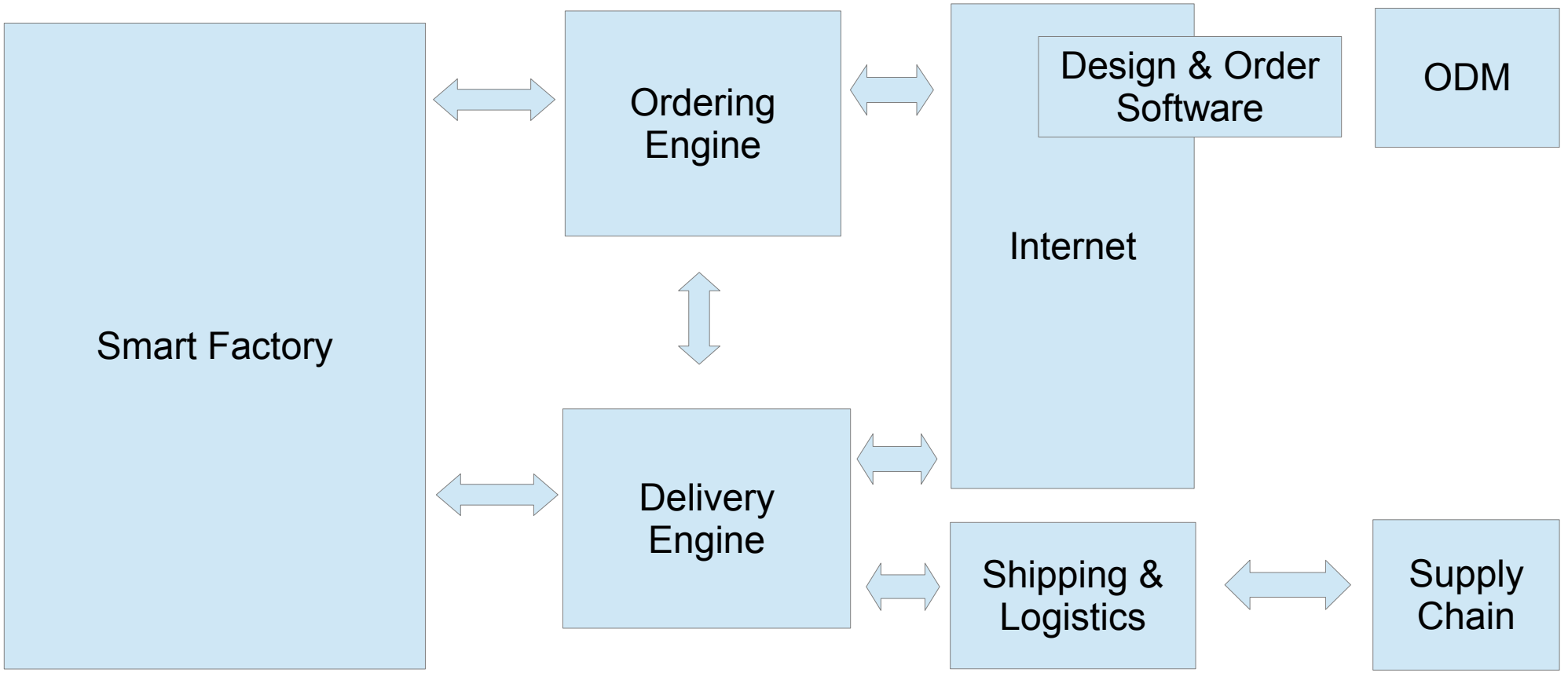
A Smart Factory !

- What is an ideal Smart Factory ?
  - Automate manufacture of widgets based on design and a programmable assembly line of machines
- Various Names
  - Germany – Industry 4.0
  - US – Industrial IoT
  - Japan, China – Industrial Robots
  - India – Smart Factory

Purpose of Reference Architecture

- Broad overview of Smart Factory SubSystems and Components
- Guidance for Component and Communication Standards
- Inspire Research and Development
- Categorize and Catalogue National Efforts
- Help with Due Diligence for Venture Capitalists and Banks

Smart Factory Architecture
Where There is Opportunity

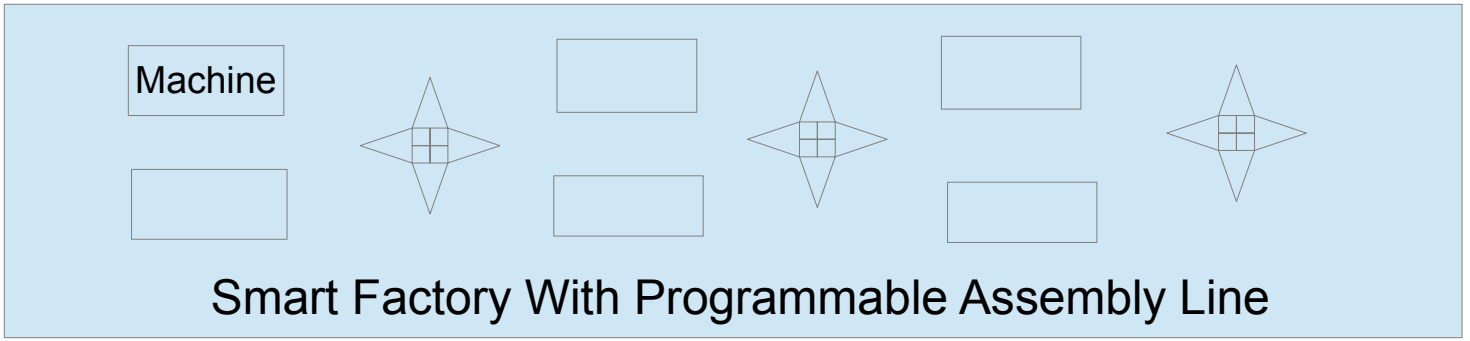


Inside The Smart Factory

- Manufacturing Execution Planner
  - Planning (Artificial Intelligence – Non Polynomial)
- Manufacturing Scheduler
- Smart Machines
  - Receive and execute orders in real time
  - Accept designs and parts
  - Transform and output
  - Power efficient, low wastage
  - Communicate with assembly line

Smart Factory

Reference Architecture



Shipping

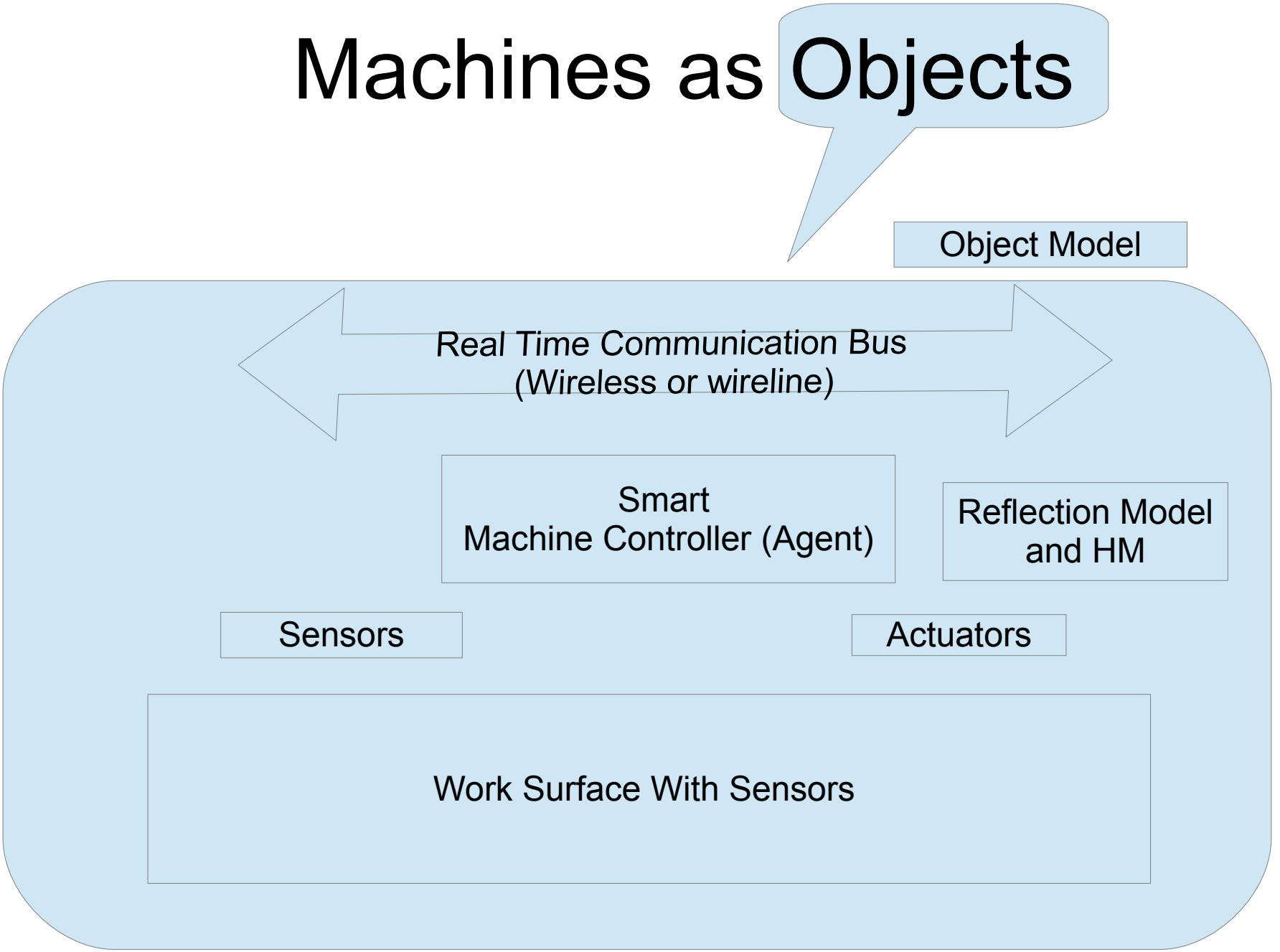
Manufacturing Execution Planner &
Manufacturing Scheduler

Job Order
Queue

Inside a Smart Machine

- Reflective
  - Knows and communicates its capabilities
- Responsive
  - Receives orders electronically and executes them
- Adaptive
  - Identify and learn from mistakes
- Modular and Reconfigurable
  - Plug and play maintenance
  - Can be altered to carry out different types of transformations
- Health Aware
  - Support predictive maintenance
    - zero unplanned down time

Machines as Objects



Capabilities of SCCI

- SCCI works through collaboration projects
- SCCI offers membership services for collaborators and cocreators (annual subscription)
- Current collaborator capabilities
  - Electronic & Electro Mechanical Systems
  - Sensors
  - Software & Communication Stacks
  - Software As A Service Platforms
  - Real Time Analytic Platforms & Dashboards
  - IoT & Cyber Physical System Design Platforms

Next Steps !

- Join SCCI
  - Collaborate and - or CoCreate
    - http://www.scci.in
- Follow SCCI
  - @supercomp_india @gravity_v20 #TheTechState
- Join SCCI Research Computing SIG
- Support a Bhavini Fund
  - Support R&D
  - Secure your competitive advantage

Annexure D

Photo Gallery


CII
Confederation of Indian Industry
PAVAN KUMAR SINGH
D RAMAKRISHNA


CII
Confederation of Indian Industry


A Smart Factory !
Confederation of Indian Industry
CII