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Automation – Present and Future

Automation

Drives Sustainability

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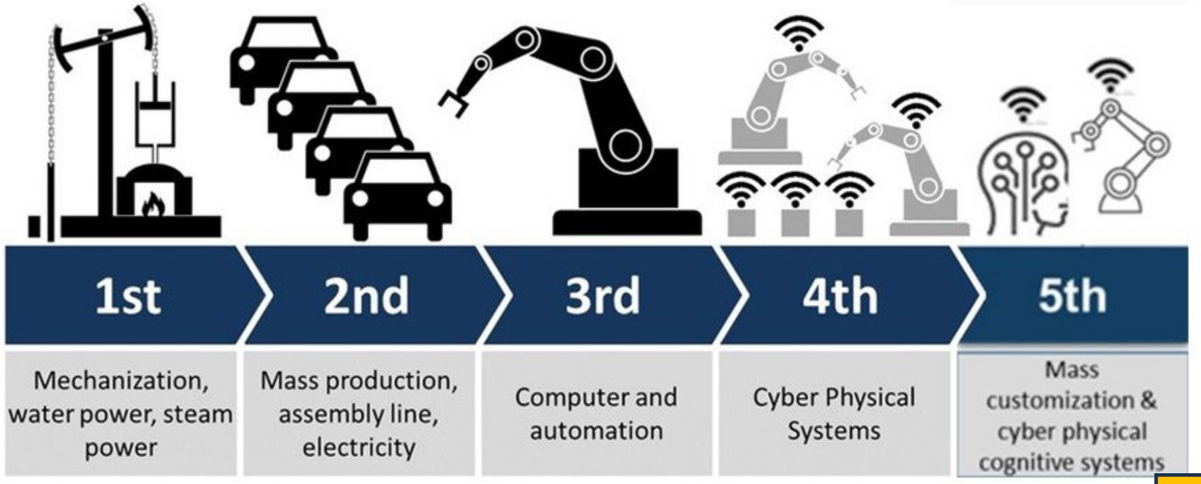
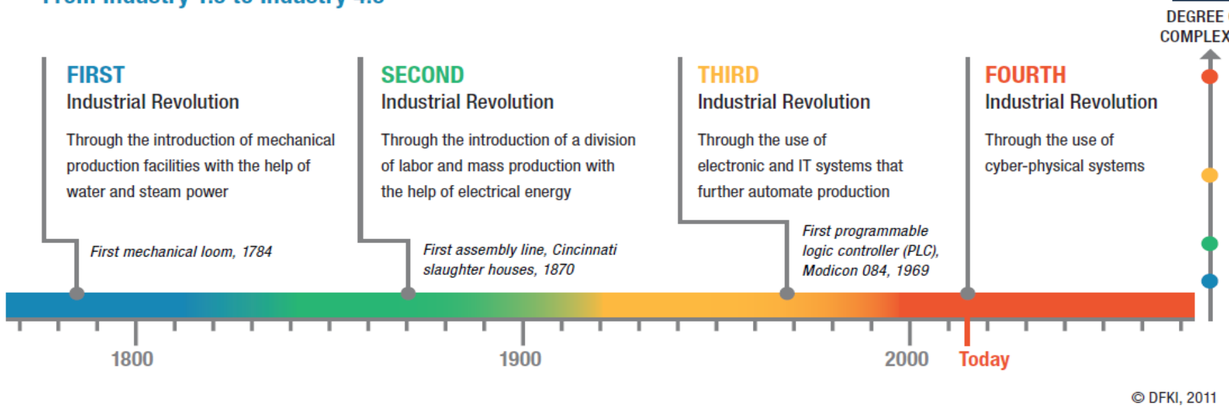
Transforming Grain Processing Through Digitalization to Achieve Sustainability Goals, Increase Process Efficiency, Minimize Down Time, Trace Products and Optimize Quality and Productivity

Automation Journey – Industry 1.0 …….4.0…..5.0





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Present Industry Pains

The majority of industrial companies say attracting talent is a key challenge. Increased automation and digitalization can overcome it and empower the next generation workforce.

1. Skill Gaps
2. Technology challenges
3. Organisational Challenges
4. Lack of Clear Goals
5. Over Emphasise on Technology
6. Data Analysis and System monitoring

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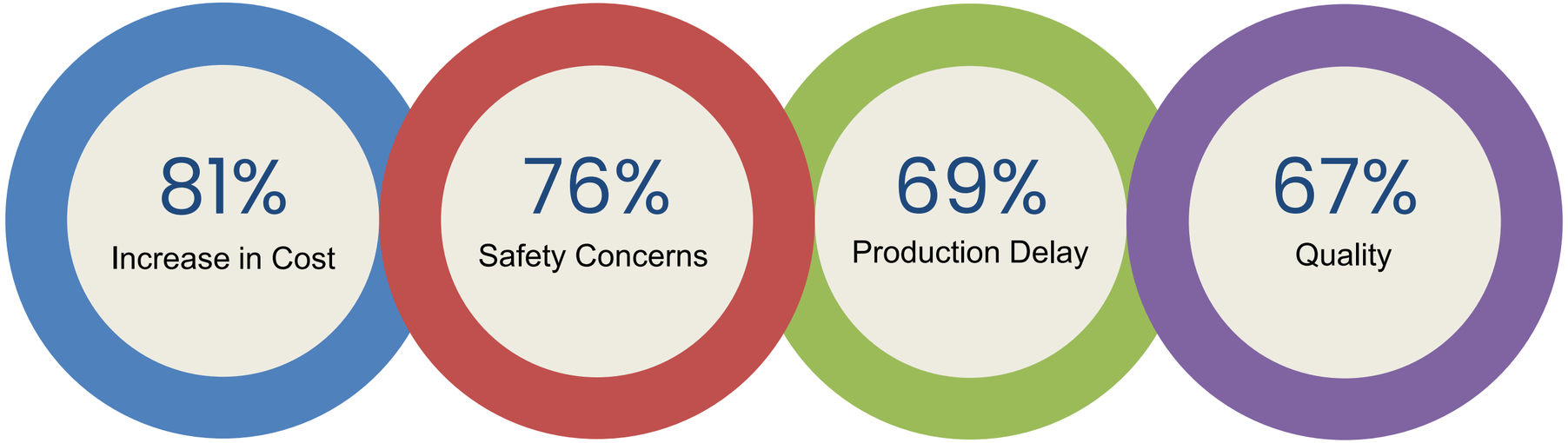
IMPACT – Ready to accept Challenges

Over 75% of industrial companies identify a retiring workforce and the struggle to acquire new talent as a key challenge.

Industrial training is not happening at the pace that fills the gap.



A shortage of skilled labour may have a far-reaching business impact not just in terms of staffing and knowledge transfer but also on innovation, safety, and weakened competitiveness.

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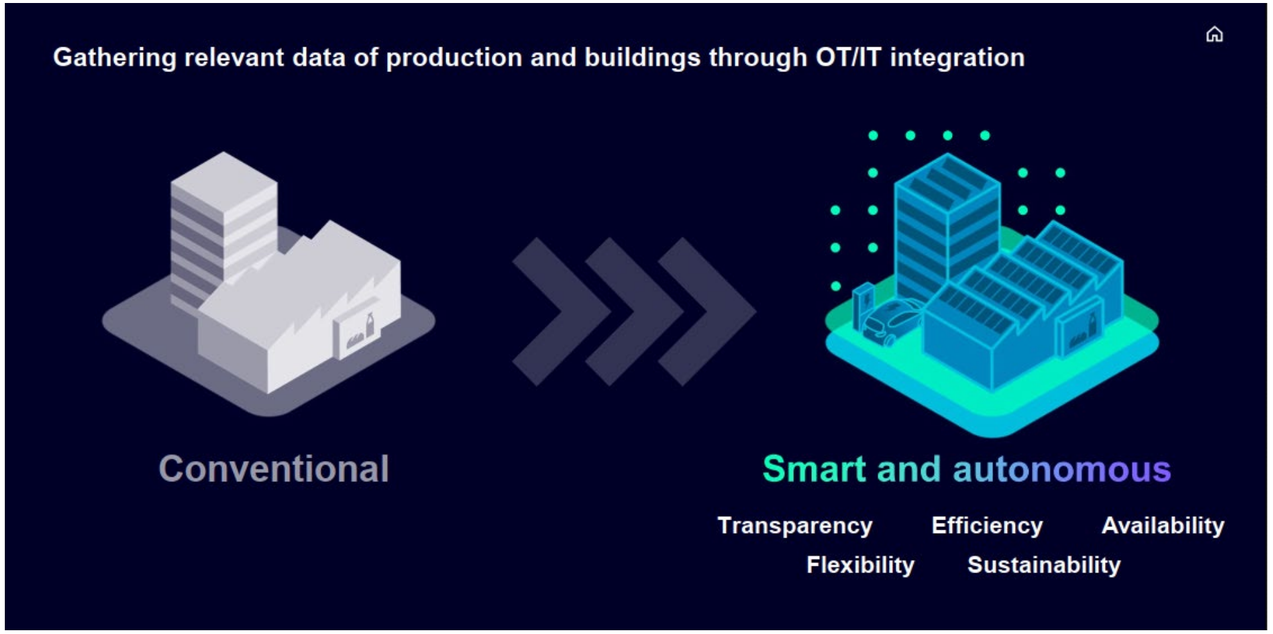
What if one could solve the above problems easier and faster..?



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What Lies in future for Industrial Automation..?

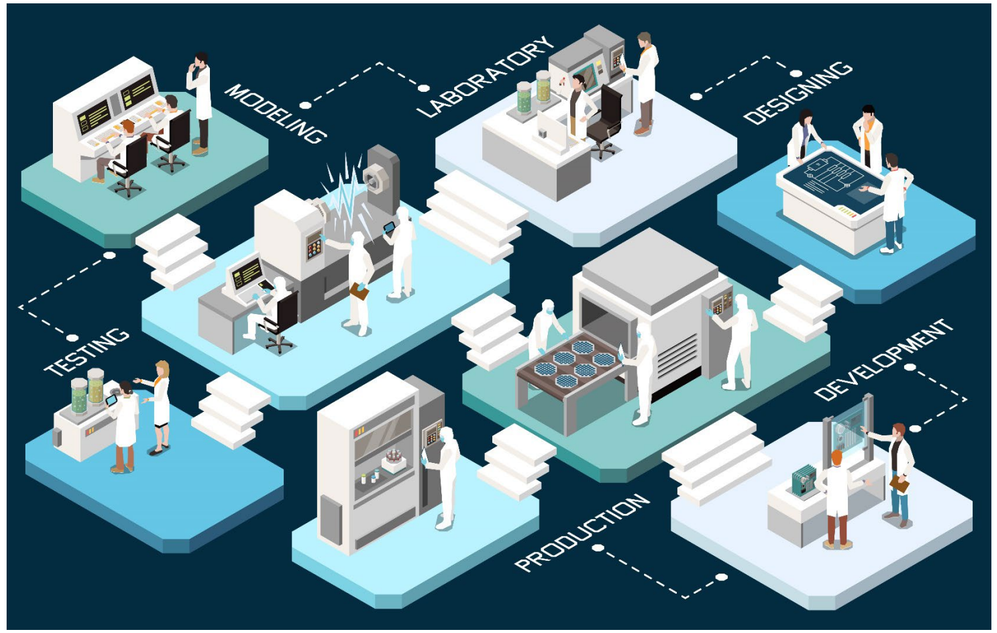
OEMs are working towards…

Machines are becoming more intelligent. Thanks to sensor technologies.

Machines are getting Networked

Innovative ways to use production and energy data.

Digital Twin technology – Asset Management



Self- Optimising Plant

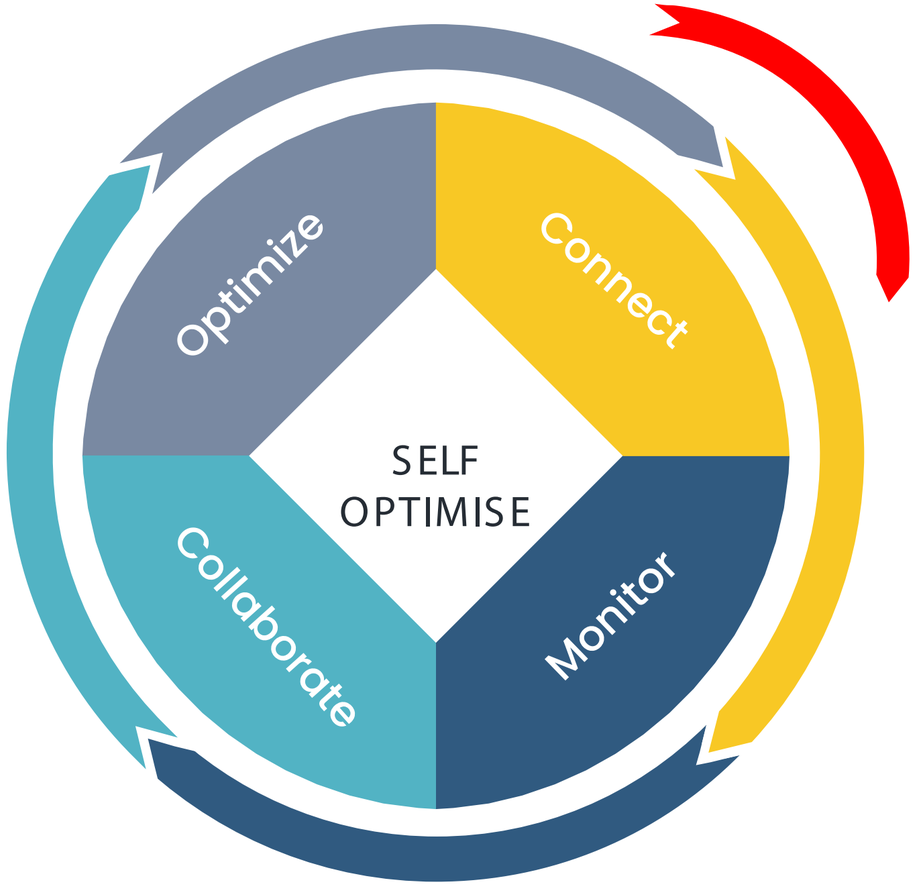
It is a self-Adapting, Self- Leaning, & Self-Sustaining

Future

Self-learning, self-adapting, and self-sustaining. They can monitor performance data to understand how changes in the environment

Machine Manufacturers and Automation companies are working on this

1. Machine-to-Machine (collaboration opens new opportunities where systems can collaborate without any human intervention and solve engineering problems efficiently and effectively



1. Machines are intelligent.
2. Machines on Net-Working
3. Data Acquisition

Partly Achieved

1. Condition Monitoring.
2. Maintenance Scheduling
3. OEE
4. Energy Management
5. Quality

Partly Achieved

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Challenges and Success Factors

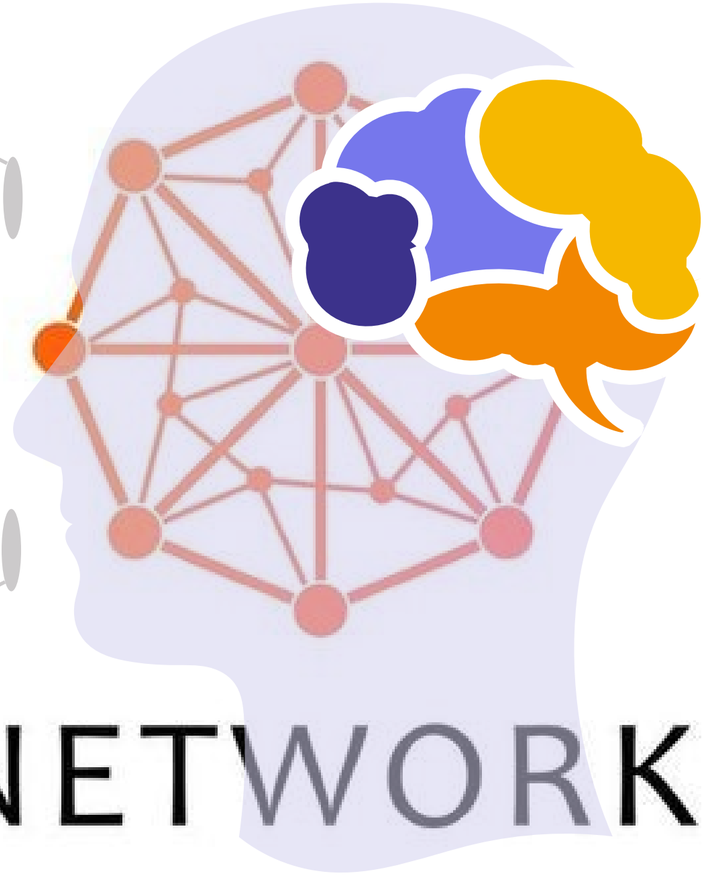
Stake holders must address 1.Skills Gaps / 2. Technology Challenges. / 3. Organizational Challenges.

OEM

Process and Machines needs to be built with Intelligence. ML, DML implemented

End User

Resource and Sill Development



Automation Company

Build Process and Interface knowledge.

PLC Manufacturer

Understands Processes and Works in hand with OEM's needs

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Trends that OEMs like Siemens and Schneider working on…

Technology trends and underlying technologies

Industry-agnostic trends

1 Next-level process automation…

Industrial IoT[1]

Robots/cobots[2]/RPA[3]

… and process virtualization

Digital twins

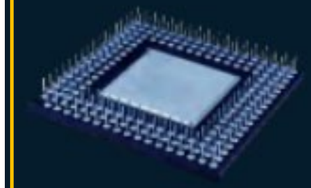
3-D/4-D printing

2 Future of connectivity

5G and IoT connectivity

3 Distributed infrastructure

Cloud and edge computing



4 Next-generation computing

Quantum computing

Neuromorphic chips (ASICs[4])

5 Applied AI

Computer vision, natural-language processing, and speech technology

6 Future of programming

Software 2.0

7 Trust architecture

Zero-trust security

Blockchain

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Simple flour mill of 300 TPD ROI for Automation investment

Depends on place to place and mill to mill

Automation ROI calculator excel

Items	Manual	Semi Automatic	Automatic	Remarks
Cost of Automation and Installation	55,000	93,500	1,49,600	
Houly Production	11.00	11.25	12.38	Installed capacity is 12.5 MT
No of Machines	1	1	1	
No of Manpower day	20	15	10	
Total Machine cost	55,000	93,500	1,49,600	
Life Span of Fixed Asset based on Company policy	10	10	10	No of Years
Machine proportioned cost	5,500	9,350	14,960	Based on Company Policy, How many years required for Return of ROI
Employee Salary	7,500	5,625	6,250	
No of Months	12	12	12	
Labour cost	90,000	67,500	75,000	Calculation= Monthly Cost* No of Operators*12months
Power Consumption (KWH)	70	65	62	
Cost/Unit	0.10	0.10	0.10	
Working Hours	5,760	5,760	5,760	Two shifts considered per day in automations
Electricity cost (INR)	40,320	37,440	35,712	Calculation= Units per Hour*No of Hours*No of Machines*Cost/unit*No of Working Days/Month*12months
Annual Maintanance Investment	6,250	5,750	1,250	Includes Machines spares and general maintenance costs
Operational abnormality expenses	1,68,563	1,47,691	25,348	operational abnormality
Unforeseen	2,000	1,000	1,000	
Total Cost	**3,20,133**	**2,74,356**	**1,59,520**	
Profit/Loss		**45,776**	**1,60,613**	
ROI Years		**2.0**	**0.9**	

Value in USD