Driving Technology-Led Transformation.

Motherson Technology Services Limited

Corporate Presentation

October 2023

Security level: For Intended Recipients Only

motherson

1975-1982
A Family Affair

Motherson was founded as a small family trading company by our current chairman,
Vivek Chaand Sehgal

1983-1986
An Automotive Revolution

The First affordable car to be assembled locally, the Suzuki Maruti 800, kickstarted a true revolution in Indian Transportation

1987-1998
Growth in India

Mercedes was the first luxury car brand to enter the Indian market in 1994. Two years later, they opened a local assembly line in Pune.

Motherson.

- Motherson started in 1975 in Delhi as a partnership between A Mother-&-son in a country finding its economic feet
- Our name signifies a relationship of trust with all our stakeholders
- Today we have reached The Forbes Global 2000

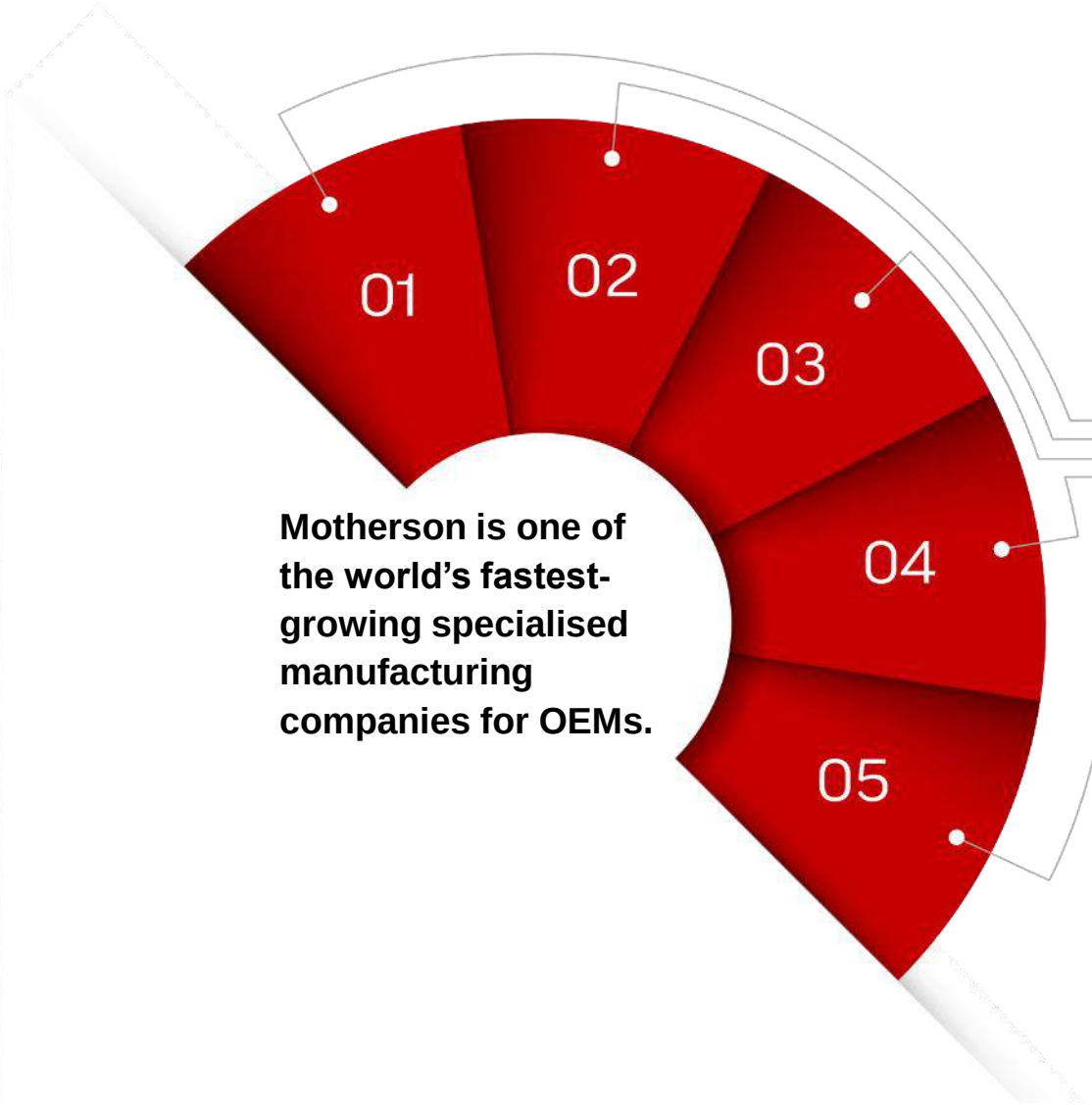
1999-2007
Arrival in Europe

By 1999, we were growing steadily and strongly. But we were still operating in India. We opened our first overseas office in Europe, but the real breakthrough came in 2002

2008-Present
Going Global

Since 2008, the group has grown multi dimensionally. We continued to focus o he three-fold growth strategy - organic

Motherson Group Today



Motherson is one of the world's fastest-growing specialised manufacturing companies for OEMs.

- **Focused Technology and Industrial solutions division accelerating innovation.**
- **Among the Top 25 automotive suppliers worldwide**
- **Over 200,000 people worldwide**
- **Operating over 300 facilities in 41+ countries**
- **Engineering focused company, strong Tier 1 OEM supplier**

Motherson Group Business Divisions

01 Wiring Harness

- Electrical distribution systems (EDS)
- Power modules
- Electrical cabinets and power packs
- Components for vertical integration

02 Vision Systems

- Exterior mirrors
- Interior mirrors
- Camera monitoring systems
- Components for vertical integration

03 Modules & Polymer Products

- Fully-assembled interior and exterior modules
- Decorative parts and small assemblies
- Tooling
- Elastomer parts

04 Precision Metals & Modules

- Precision machining and cutting tools
- Sheet metal parts
- Process equipment
- HVAC systems and driver cabin modules

05 Technology & Industrial Solutions

- Information Technology and software
- Telematics
- IT solutions for healthcare
- Hardware automation & robotics

06 Lighting & Electronics

- Lighting systems
- Shock absorbers
- Paint coating solutions
- Air compressors

07 Aerospace

- Integrated solutions to customers using the existing capabilities of Motherson

08 Logistics Solutions

- Logistics of finished vehicles in both the group's internal supply chain as well as for external customers.

09 Health & Medical

- Re-Timer and Thim smart ring
- MaxM Skate
- 3DBioPen
- In-Vitro medical devices

10 Services

- Industrial park
- Automotive engineering services
- Machine tools accessories

Motherson Technology Services (MTS)

Fast Facts

JV
Motherson
& Sumitomo

430+
Clients

5000+
Professionals

20+
Years of
Experience

8 Countries
Official Base

41+ Countries
Customers Served

A CMMI Level 5 and ISO 9001:2015, ISO 27001:2013
Certified IT Company

Service Lines

- Infrastructure
- Digital & Analytics
- ERP Services
- Cloud
- Industry 4.0
- GBS & RPA
- Digital & Engineering
- Cyber Security

Industry Verticals

- Manufacturing
- FMCG
- Pharmaceuticals
- Automotive
- Healthcare
- Logistics

Our Services

Cloud

Accelerating Time-to-Market with Industry Leading Cloud Based Solutions

Infrastructure

Reinventing the Digital Foundation of Businesses by Providing Cutting Edge IT Infra Services

Digital and Engineering

Creating new digital products and services, leveraging data and technology

Digital & Analytics

Turning Technology into Business Outcomes Through Big Data & Analytics Solutions

Industry 4.0+

Connecting things, data, process and people

ERP Services

Driving Transformational Results for Global Enterprises Through ERP Services

Cyber Security

Keeping your businesses secure in real-time through our advance security services

GBS & RPA

Connecting Digital Vision with Business Reality Through Global Business Services (GBS)


Why Motherson

Our Value Propositions

Transforming Factories Globally

45+ Years of Global Manufacturing Excellence

Motherson Group's rich legacy brings over four decades of expertise in global manufacturing.

Technology-Led Transformation

MTSL has spearheaded technology-driven transformations in 300+ factories across 41 countries, handling diverse complexities and scales

Smart Factory Solutions

Our proven innovative solutions enable the seamless transition of traditional factories into smart, efficient operations

End-to-End MES Solution

We offer a highly customizable, tech-agnostic MES solution designed for cost-effective deployment in any factory setting

SAP Expertise

A dedicated team of SAP consultants specialized in Mfg. domain ensures comprehensive support & integration

Global Reach & Cost-Effectiveness

With a proven track record worldwide, Motherson Technology combines global reach with cost-effectiveness, making us the ideal partner for your digital factory journey

Driving Sustainability

Motherson is capitalizing on transitional opportunities, focusing on research, technology, and innovation for positive environmental impact, industrial excellence, sustainable materials, and renewable energy solutions, aligning with changing consumer preferences

Robust Partner Ecosystem

Our partners include some of the leading companies specialized in the manufacturing industries (Siemens, Mendix, Zebra, etc.)

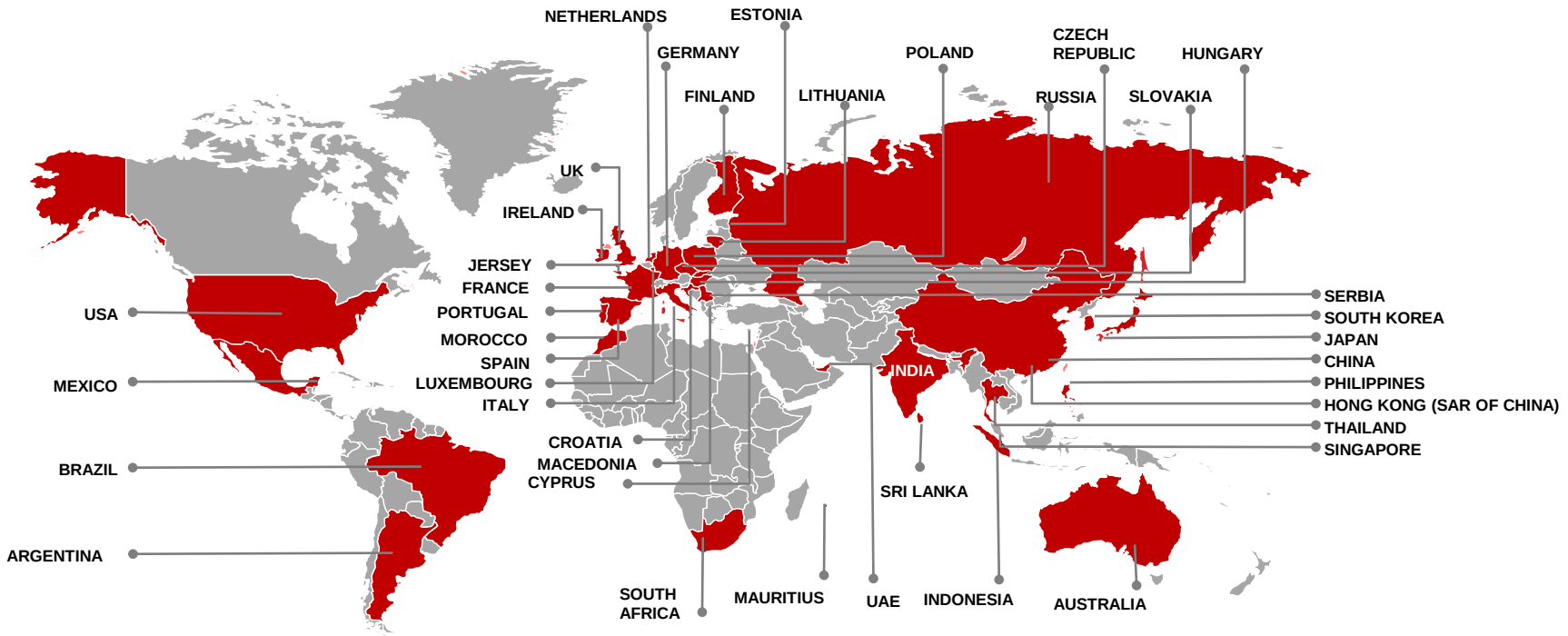
Smart Manufacturing Solutions

Motherson Technology Services

October 2023


motherson
Digital Factory with Motherson

Our Global Journey in Digital Factory



1

40+ Years of experience managing factory operations across the globe

2

We took plants stuck in the technological Stone Age and turned them into **futuristic, interconnected setup–** they went from legacy to legendary!

3

Integrated over 20 distinct ERP systems seamlessly with MES and various peripheral systems

4

Our solutions like iDACS, Factory, and Procurement Analytics have **saved millions of dollars for our customers**

5

Our manufacturing plant operation is underscored by the pivotal themes of **transparent visualization, traceability, and automation**

Empowering the Digital Factory of Tomorrow: Harnessing Automation, IoT, and Analytics

SMART Assets

- Robotics – Human & Machine Interactions
- Quality & Traceability Aids
- Hardware to enable Lean Manufacturing
- Automation

SMART Manufacturing

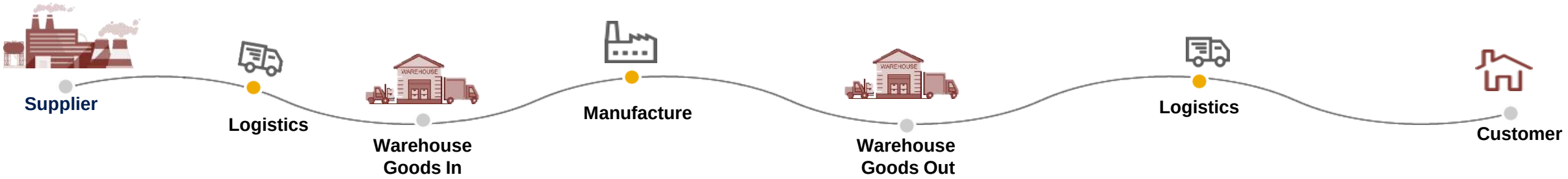
- Process & Assets
- Production Monitoring & control
- Automatic data acquisition
- Traceability & machine control
- Quality management
- Warehousing modules

SMART Decisions

- Descriptive / Predictive / Prescriptive Analytics
- AI Capabilities & ML Algorithms
- Predefined Manufacturing Algorithms
- Big data Platform

Typical Operations in a Factory Setting

Upstream (Suppliers x N) | **Manufacturing** | **Downstream** (Warehouse/Customer)



- Demand Broadcasting
- Goods Receiving
- Inventory Management
- Issuance to Production
- Review and Monitoring

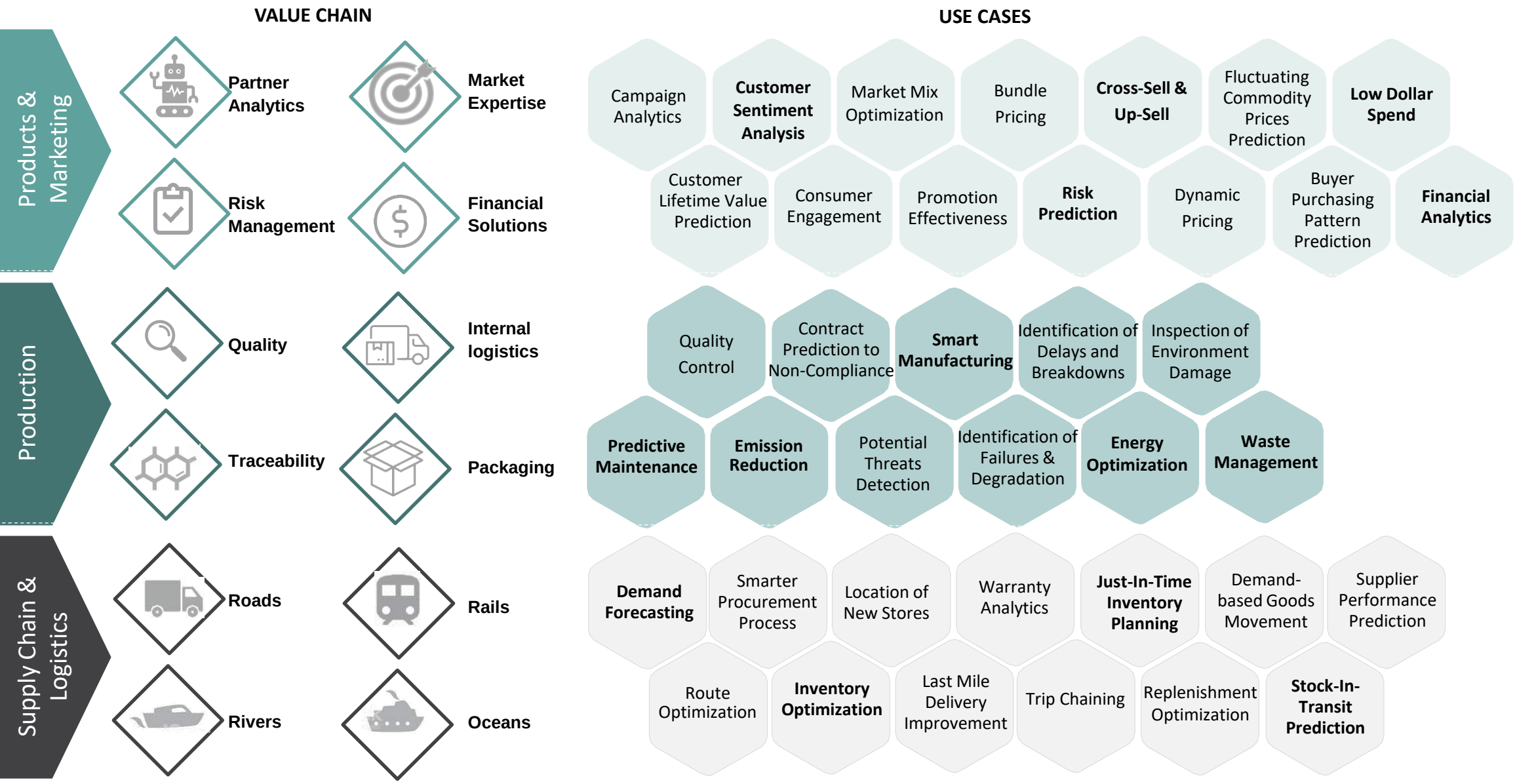
- Scheduling & Planning
- Production Control
- Quality Control
- Intralogistics Movement
- Production Monitoring

- Receiving
- Storage
- Material Handling
- Packing & Shipping
- Stock Monitoring

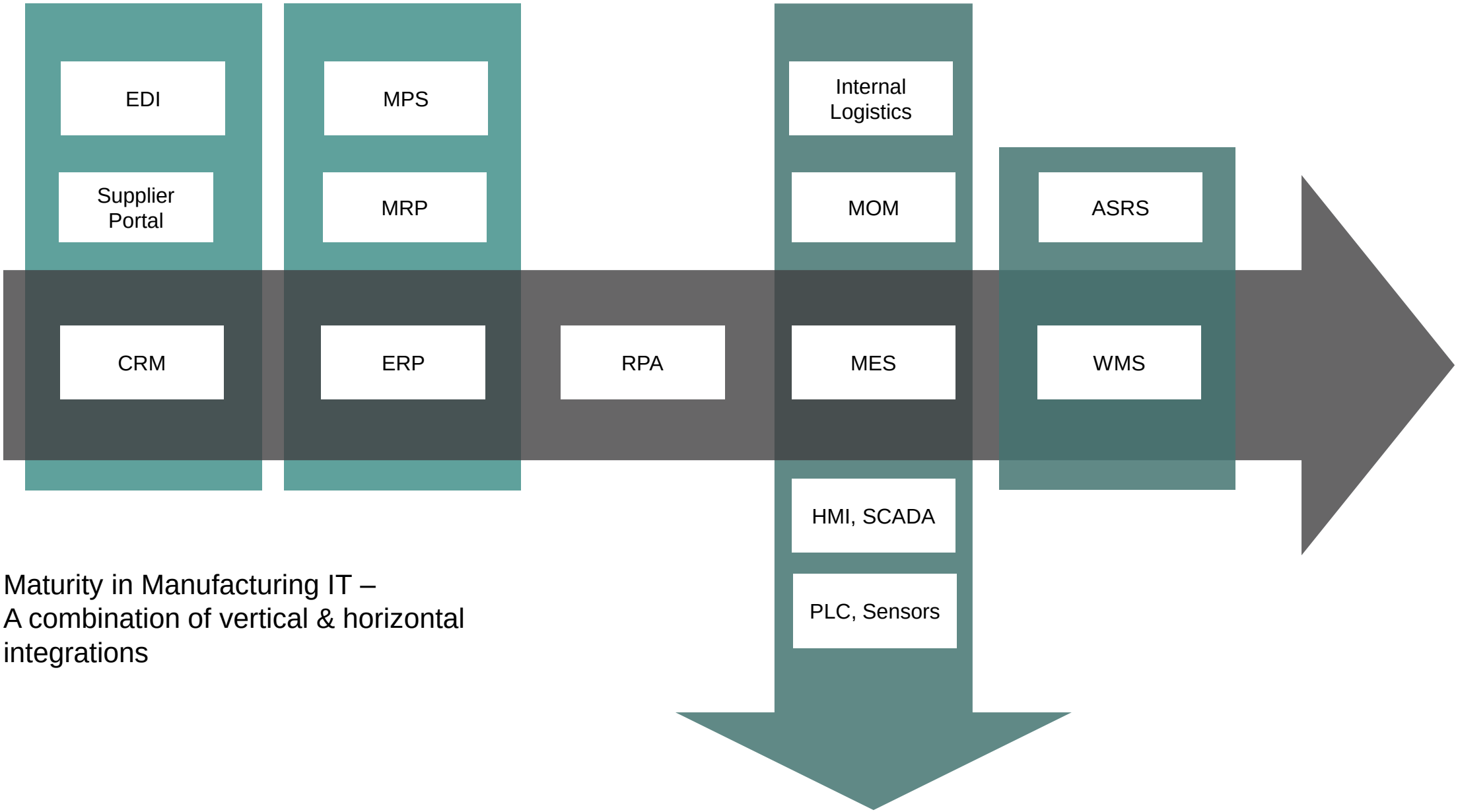
Our Approach to Digital Factory

	Manufacturing	Warehouse	Supply Chain	Interactive Dashboard	Assisted Decisions
Connected	 Shop floor visibility to Management	 Real time visibility of Inventory, Production and finished goods	 End to end traceability and reverse trace	 Real time reporting and Data Analytics for continuous improvement	 Predictive Alerts & Recommendations
Optimized	 Asset utilization and Optimization	 Inventory and warehouse workflow optimization and control	 Optimized Supply chain	 Safety Stock Optimization leading to reduced supplier plan fluctuations	 Assured Predictability to outcomes
Actionable Intelligence	 Intelligence for Plan vs Actual	 Intelligence to bring in product / quality-centric solutions	 Intelligence to handle variance in demand	 Alert notification for critical events, error proofing and Process Interlocking	 Brings operational efficiencies through intelligent insights

Key Use Cases Spanning Value Chain



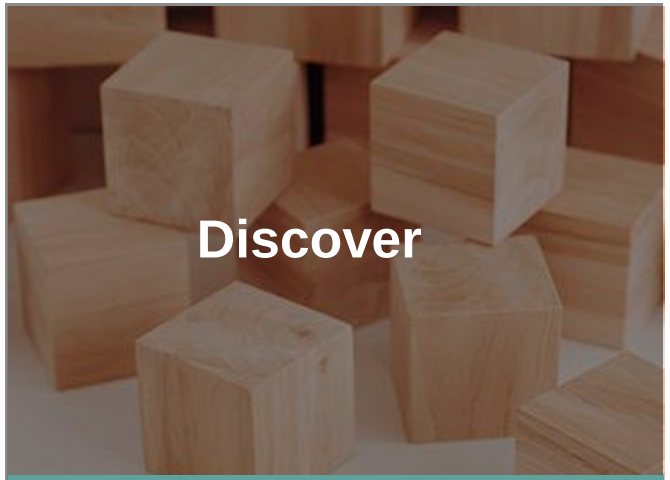
Seamless Integration to enhance efficiency, connectivity, and overall performance



Maturity in Manufacturing IT –
A combination of vertical & horizontal integrations

How Do We Transform.

Our Approach

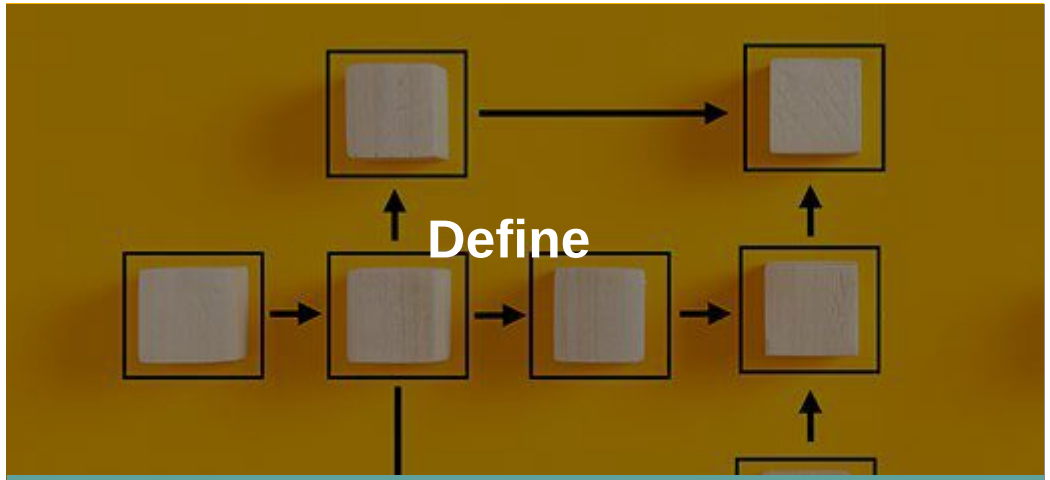


Process Landscape

Technology Landscape

Plan & Align

- Business Objectives
- Strategize Key Drivers for Change
- Identify areas to study
- Define As-IS to ‘To Be’ State
- Identify priority areas of transformation



Transformation Roadmap creation, Innovation & Ideation Core Transformation Activities

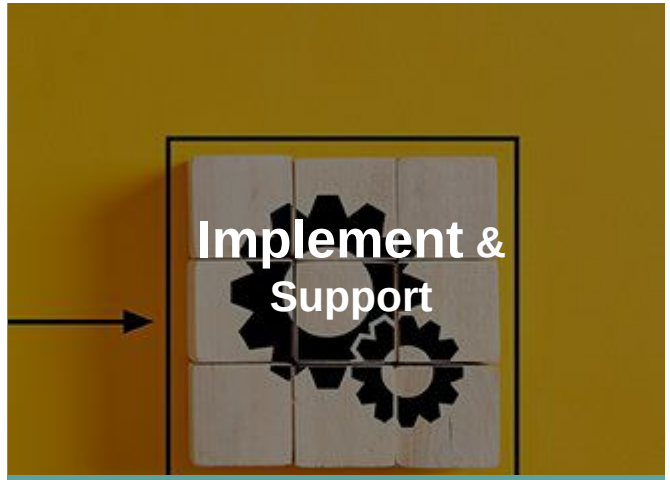
Process and Technology mapping

Assess & Evaluate

- Digital Factory Maturity Assessment
- Functional & Process Automation
- Technology Maturity Assessment
- Automation Steps

Ideate & Innovate

- Evaluate Technology Products and map operational process – identify gaps and develop mitigation strategy
- Ideate and innovate in the areas of AI/ML and RPA



Implementation & Post implementation support

Implement & Support

- Efficient implementation methodology and create replicable and scalable solutions

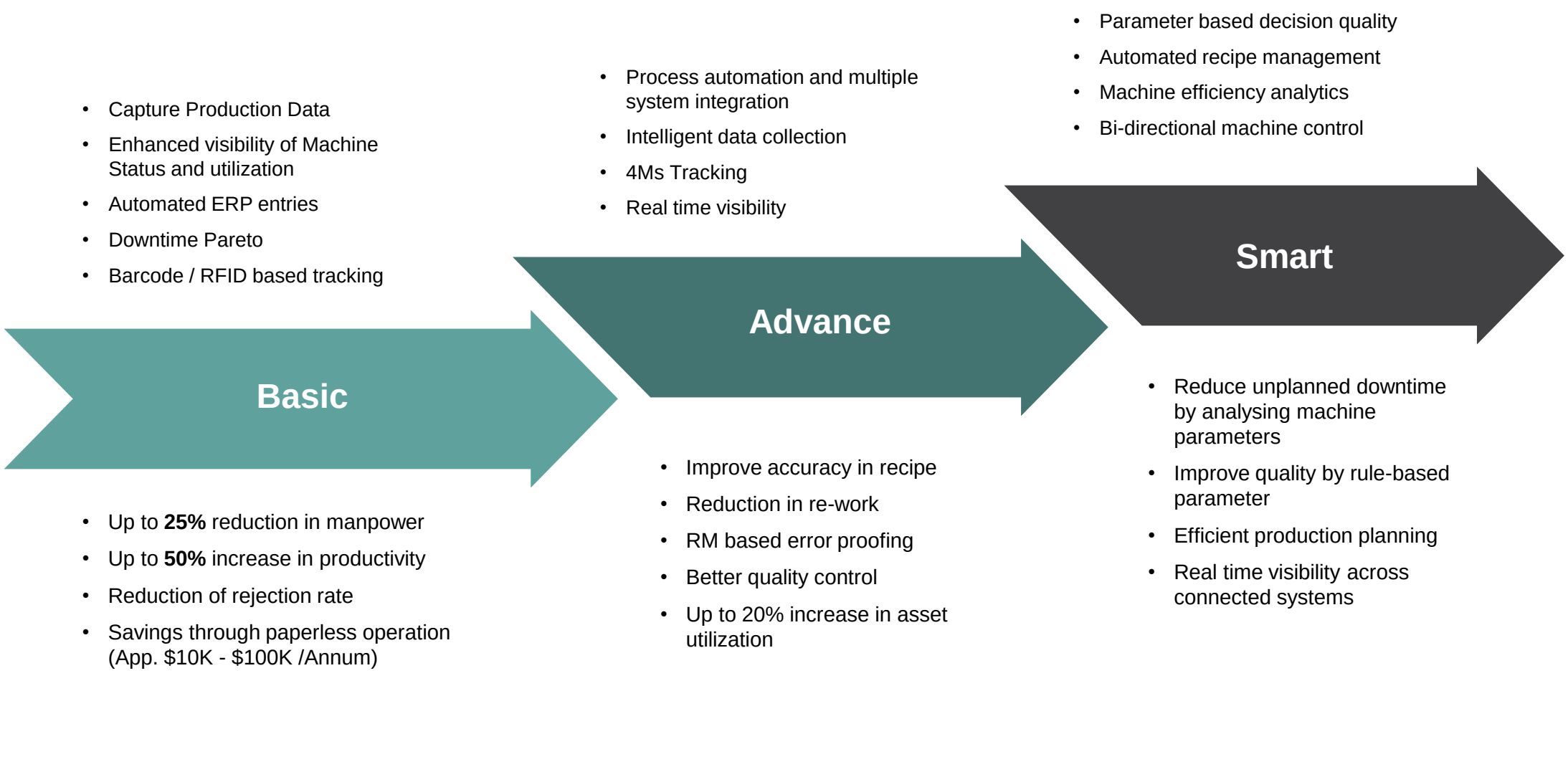
Core Emphases for Implementing a Smart Factory

	Products & Marketing	Manufacturing	Logistics
Focus Areas	Business Forecasts Efficient Reporting and Decision Making	High Utilization of Assets with Low Downtime Low Maintenance Cost and High Throughput Shop Floor 360º View High Quality Output	Accurate Traceability and On-Time Delivery
Enablers	User Experience and Digital Consulting Customer Data Platform for 360 view	Data Management Solutions AI/ML and Analytics Driven Decision Making IoT enabled Smart Manufacturing Solutions	Smart Logistics and warehousing Solutions Telematics Solution

Converting Focus Areas into Opportunities through our Smart Manufacturing Solutions

Opportunities	**AI/ML based models for accurate business forecasts enabling effective decision making**	**Enhanced Customer experience through Customer Data Platform which enables customer 360**	**Smart Manufacturing Processes for improved efficiency and reduced costs**	**Analytics/ BI Driven Business Solutions to bring-in Insights across the Value Chain**

Our Proven Three-Stage Transformation Methodology



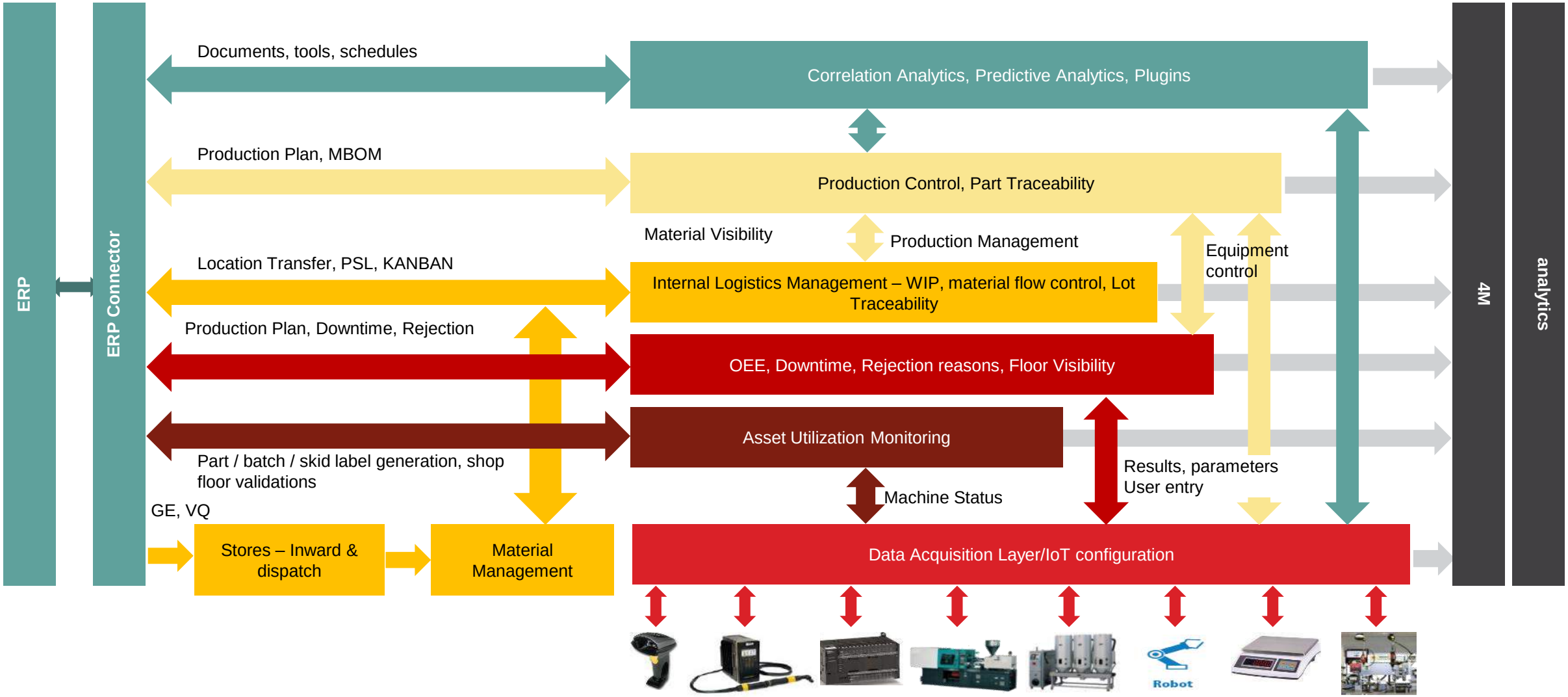
Focus Areas for Transformation - Expected Value Benefits

	Supplier Management	Production Management	Warehouse Management
Basic	• Delays at supplier end are eliminated • Efficient management of last-minute changes • Transparency with Supplier	• Realtime production visibility to know the dispatch commitments • Manual entries eliminated • Improved machine utilisation	• Reduced manpower efforts through automation in receiving and binning • Realtime stock visibility to address dispatch challenges
Advance	• Dedicated manpower to carry gate entry operations eliminated. • Controlled material handling • Eliminating the quarantine material issuance • Eliminating manual ERP postings • Connecting production, sales to give a better visibility to the supplier	• Operator efficiency improvement • Realtime WIP status • Error proofing to reduce rework Parameter based quality	• Optimised storage space • Customer demand forecasting to reduce the dead inventory
Smart	• Traceability chain maintained • Cost optimization • Time criticality addressed	• Predictive quality to reduce the defects • Optimising WIP • Eliminate manual material handling	• Eliminating most of the manual operations – heavy reduction in manpower efforts • Traceability extended using Block chain

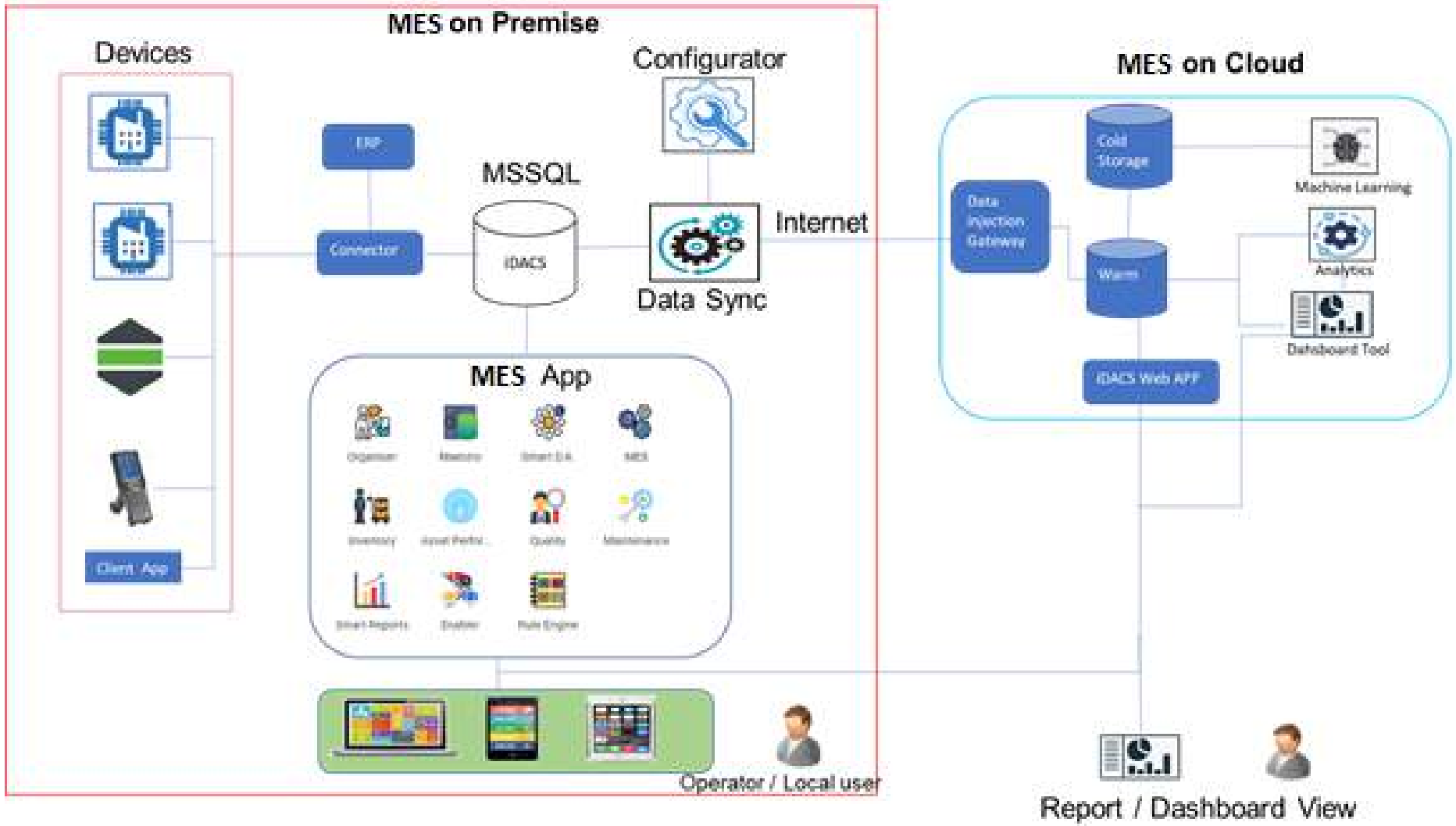
Focus Areas for Transformation

	Supplier Management	Production Management	Warehouse Management
Basic	• Barcode/RFID • Binning • FIFO Control • Visualization	• Connecting Assets • Data Acquisition • Asset Utilization • Real-Time Asset Monitoring • Alerts & Notifications	• Barcode/RFID • Binning • FIFO Control • Visualization
Advance	• Demand Broadcast • Material Management • Incoming Quality Check • Put-to-Light / Pick by Light • FIFO Enforcement • ERP Integration • Inventory Management • Visualization & Alerts	• Device Integration • Work Order Management • Production Monitoring & Control • Quality Monitoring & Control • Material Call/ WIP Monitoring • Poke-Yoke/Error Proofing • Real-Time Production Reporting • 4M Traceability • ERP/ Third Party S/W Integration • OEE Visualization & Reporting	• Receiving Tracking • Fixed /Free Location Storage • Efficient Picking & Dispatch • FIFO Enforcement • ERP Integration • Inventory Management • Alerts & Notifications • Reports & Dashboard • Real-Time Stock Visualization
Smart	• Supplier Performance • Vendor Ratings • Spend Analysis • Cost Optimization • Block Chain • RPA	• Real-Time Equipment Monitoring • Predictive Maintenance • AR/VR Based User Guidance • AGV	• ASRS • Inventory Analytics • Block Chain • RPA • Drone based Stock take

Proposed Functional Architecture



Reference Architecture



Business and Delivery Models.

Adaptable Frameworks for Collaboration

Consulting
- Automotive, Discrete, Process manufacturing domain experts
- Identify use cases
- Propose the Best-fit solution for your specific use cases

Turnkey
- Complete ownership on project
- One stop shop for - Hardware, Infra, Software, Installation, Support

Expansions
- Modular offering, easy to expand
- Server + Machine license to give better price to start

Business Integrations
- Single source of truth
- Seamless Integration with ERP (SAP, QAD, Oracle EBS, home-grown), PLM, Third party systems

Manpower
- Right combination of team for MES projects - PLC / SCADA, IoT, Networking, Software, Installation, Project Mgmt., Support
- Team deployment for handholding, onsite team to ensure smooth functioning of the system

Device Connectivity
- Right combination of team for MES projects - PLC / SCADA, IoT, Networking, Software, Installation, Project Mgmt., Support
- Team deployment for handholding, onsite team to ensure smooth functioning of the system

ROI

Long-term ROI
- Analytics to recommend productivity improvement, quality checks, Inventory optimisation

Immediate ROI
- Plant Visibility - Quicker actions, Elimination of all manual processes

Our Global Delivery Models

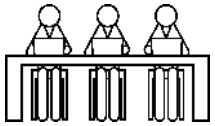
Dual shore

(Onsite- Offshore)

Key Features
- Compliance with SEI CMMI Standards
- Onsite Offshore Team Synchronization
- Lower costs, shortened project kick-off cycle

Best Fit Scenario
- Onsite Team focuses on Requirements Collection, Business Analysis and deployment
- Offshore Team receives requirements and works on design aspects and solving production issues
- Due to same cultural background of onsite and offshore teams communication is smooth

Goal
- Optimize TCO and productivity



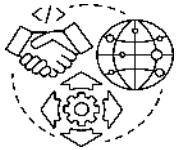
Offshore

Dedicated Centre

Key Features
- Dedicated Offshore Facilities
- Common Processes & Technology
- Lower cost, higher control

Best Fit Scenario
- An outsourced facility which mirror's customer's engineering organization with optimal cost of ownership from the customer side.
- Recommended Minimum Team Size 10+

Goal
- Cost minimization and ability to scale



Onsite

At Client site

Key Features
- Delivery team at client site
- Managed by client enterprise
- QA & Processes as per client

Best Fit Scenario
- Need to extend onsite team seamlessly with expertise not present in-house
- Work needs to be done in the same time zone

Goal
- Better coordination with clients and optimal project governance

MTS Enablers	**: Manufacturing Domain Expertise | Knowledge Repository | Training | Quality | Tool Group | Transition Academy**
Benefits	**: Proactive Planning | Committed Team | Predictable utilization | Augment ramp-UP/down (Core & Flexi)**
Commercial Arrangements	**: Fixed Price | Time & Material | Staff Augmentation**


Next Steps

Proposed Next Steps

Assessment

- Digital maturity assessment mapping across the value stream(s)
- Digital capabilities assessment by value-driver and areas of greatest opportunity

Improvement Identification

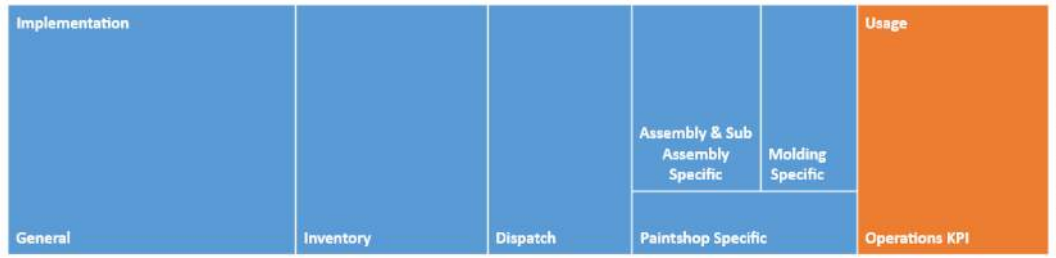
- ‘Bottom-up’ improvement ideas across near-term, mid-term, and ‘blue sky’ horizons
- Prioritization of ideas
- Deep-dive workshop to identify use cases with our proven ideation approach including success criteria
- Implementation of one of the identified use cases with a technical proof of concept (PoC)

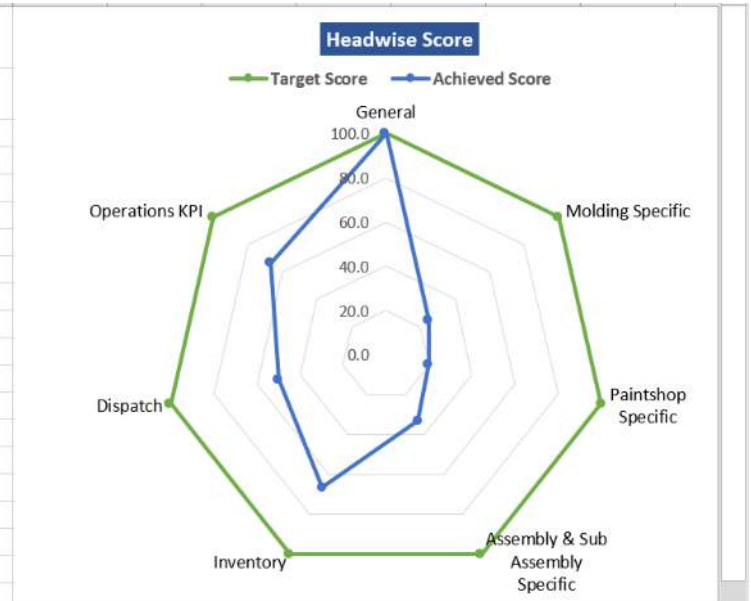
Commercial Planning

- Opportunity sizing for each future state improvement
- Aggregation of improvements into coherent concepts and net impact calculation

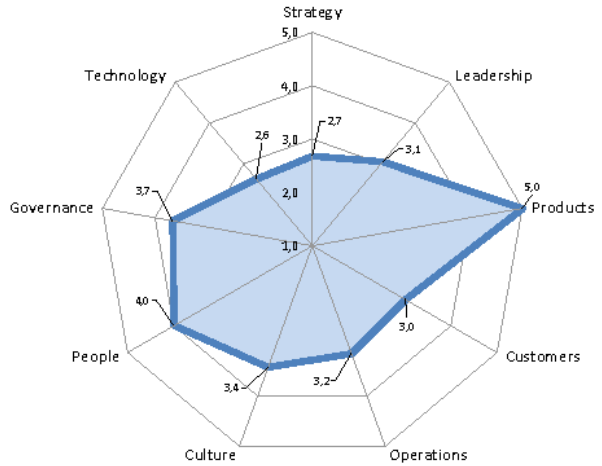
Sample : Assessment Outcome

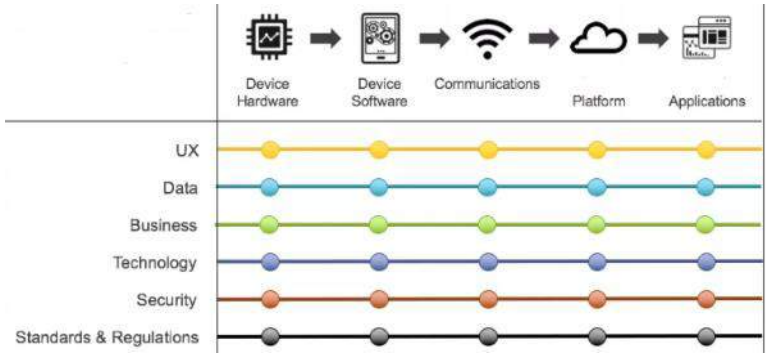
#	Area	Activity	Weight	Target Score	Achieved Score	Weighted Score
Overall Plant Score					51.7	
1	Implementation	General	0.14	100	100	14.29
2		Molding Specific	0.14	100	25	3.57
3		Paintshop Specific	0.14	100	20	2.86
4		Assembly & Sub Assembly Specific	0.14	100	33	4.76
5		Inventory	0.14	100	67	9.52
6		Dispatch	0.14	100	50	7.14
7	Usage	Operations KPI	0.14	100	67	9.52



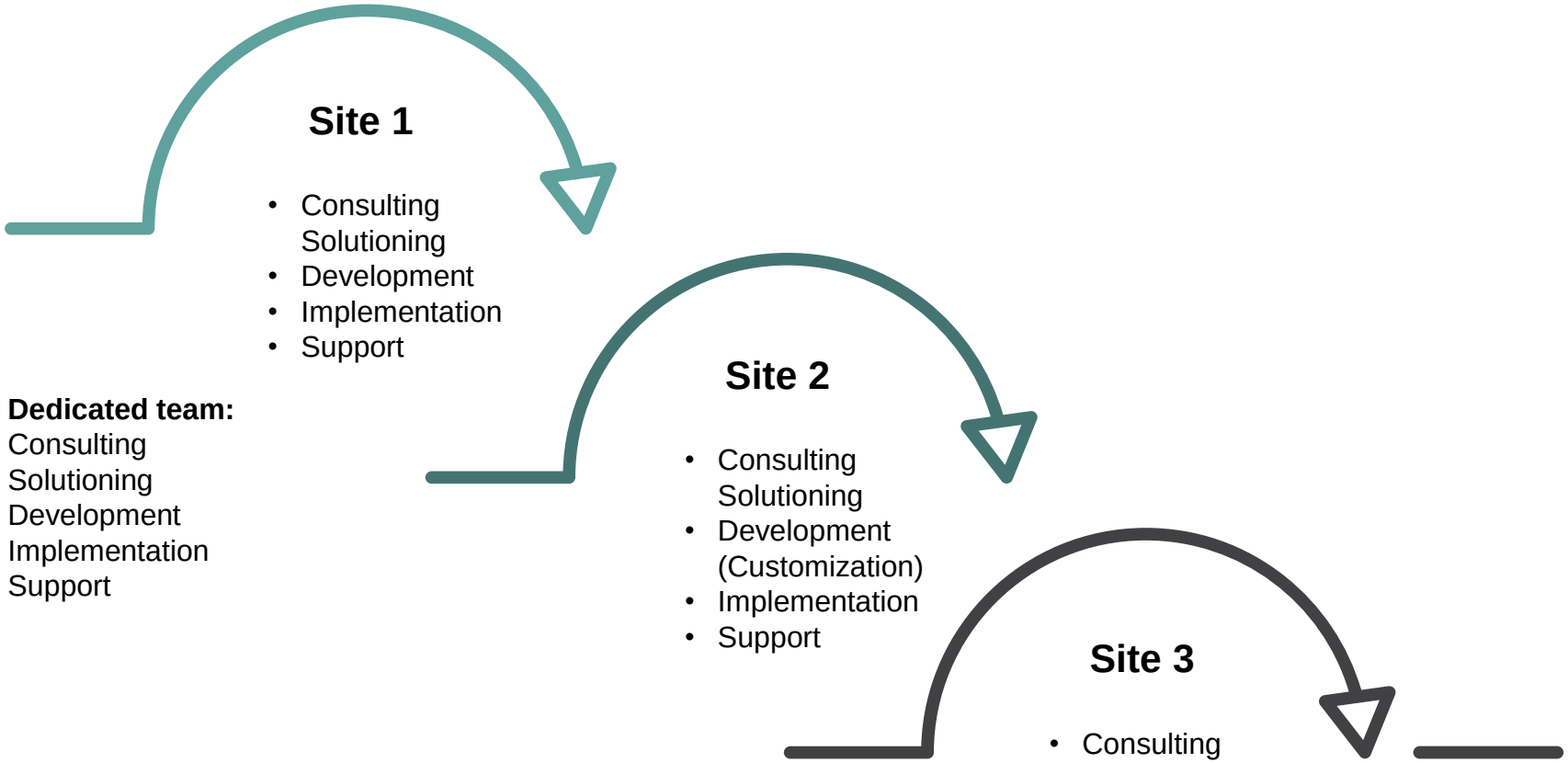


Overall Score | Implementation | Usage





Implementation Approach



Dedicated team:
Consulting
Solutioning
Development
Implementation
Support

Optimised resource
Dedicated team

Traditional

Design, develop, implement, support

Agile

Identify Usecases
Implement standalone modules
Integrate
Support


Our Solutions - Extract Real Value.
100111
001010
80%
88%
71%
46%
26%

Introducing iDACS

300+ Sites Supported Globally for Mfg. Systems

5000+ Devices Connected

A Smart Manufacturing Product Suite by MTSL

MTSL Has Developed A Product Based On Industry 4.0 Principles That Address…

- Complexities Arising Due To Rapidly Evolving Technological Advancements
- Increased Complexities In Supply Chain
- Growing Pressures To Deliver Cost Efficient Products With Short Turnarounds
- Organizational Realignment Challenges Resulting From IT And OT Convergence

Technologies

iDACS - Intelligent offerings from MTSL

OEE Analysis

Downtime Analysis

Efficiency Details

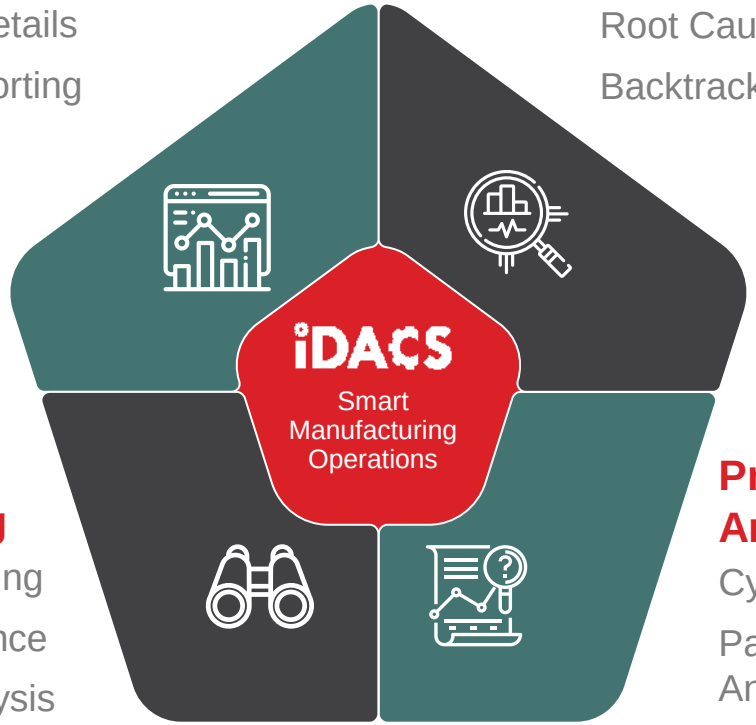
Quality Reporting

Quality Analysis

Cost of Quality Analysis

Root Cause Analysis

Backtracking Analysis



Asset Monitoring

Asset Health Reporting

Predictive Maintenance

Asset Lifecycle Analysis

Process Parameters Analysis

Cycle Time Analysis

Parameters Threshold Analysis

Anomaly Detection

Our Differentiators

Light, Simple and configurable

Highly flexible using IoT, Cloud & hybrid architecture

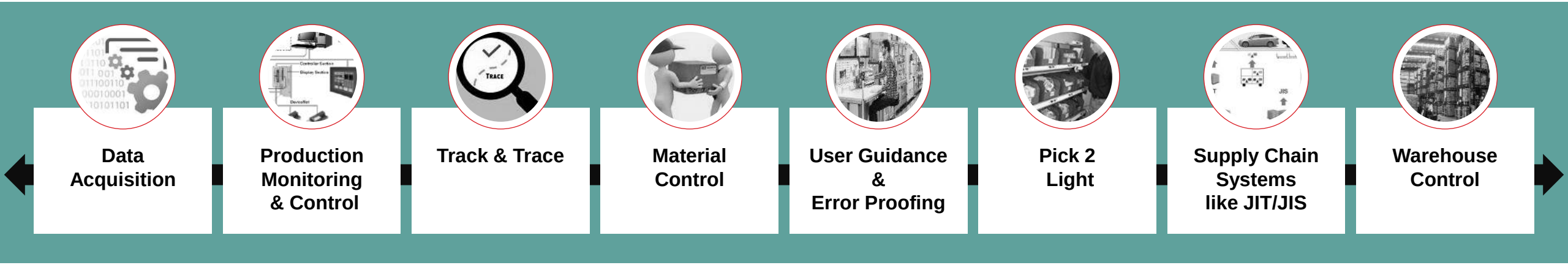
Nominal Integration Cost

Independent and Open to any OEM Hardware

Rapid Implementation times

Smart Reporting Analytics and Shop Floor to Top Floor Visibility

Smart Manufacturing - Module Stack

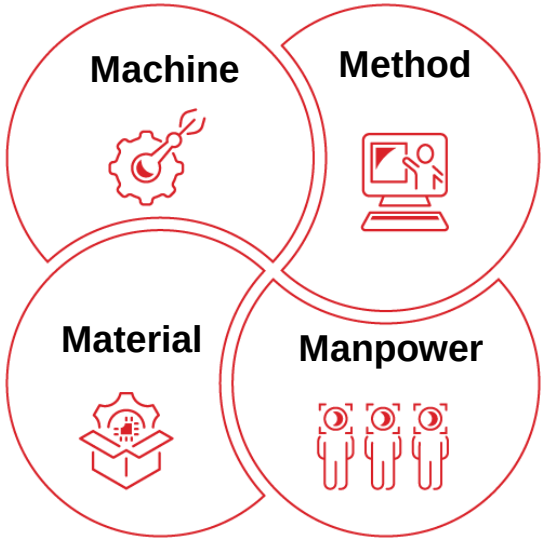


- Hybrid Architecture
- Simple Routing Definition
- Highly Configurable
- No code & DevOps
- Hardware, ERP agnostic
- Gate IN to Gate OUT Control
- Easy Interface
- Rapid Implementation
- Dynamic Dashboards

300+ Sites
Satisfied customers Globally

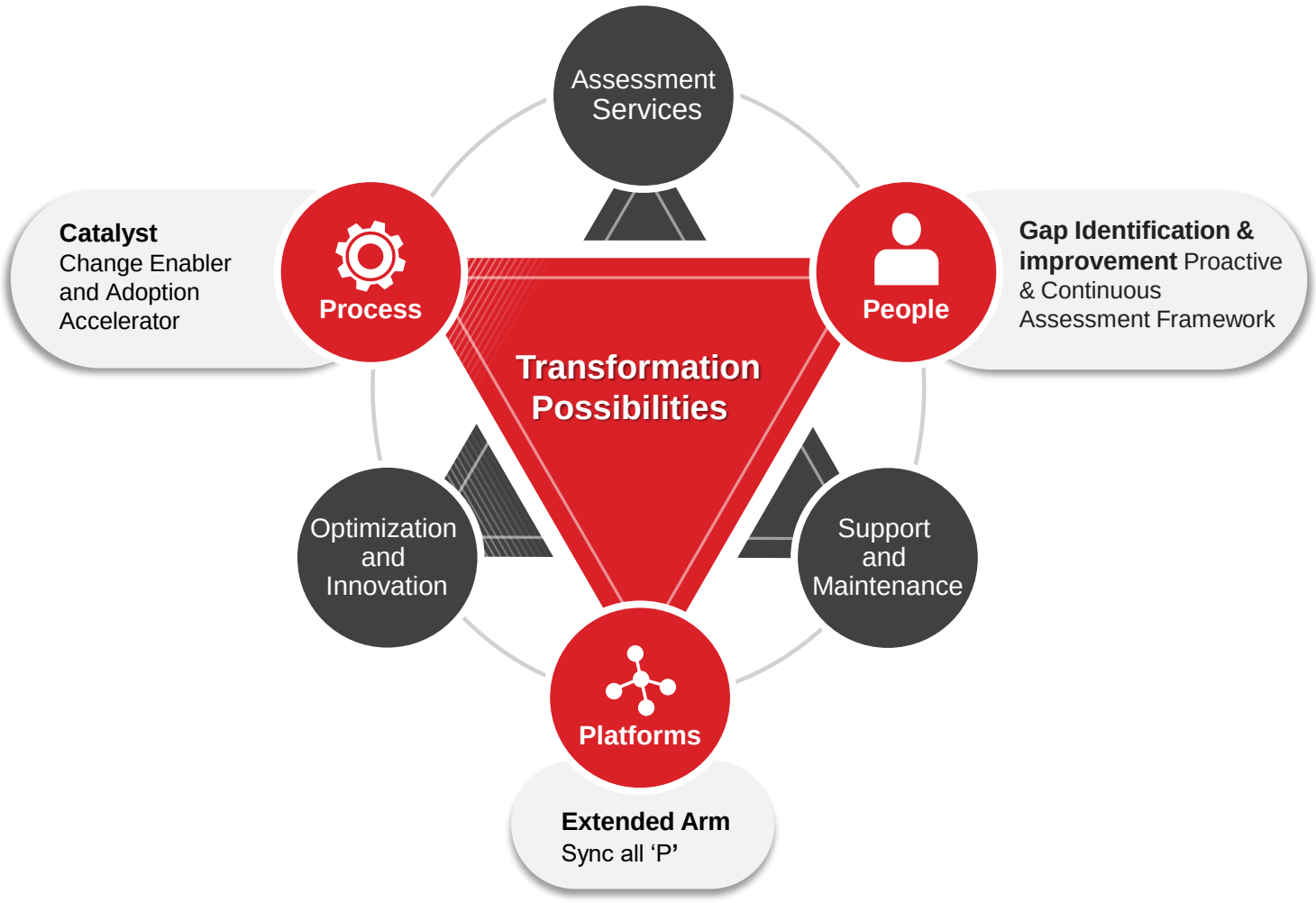
5000+
Devices Connected

AWS, Azure…
Cloud, Edge Validated Architecture



Become Intelligent with our SAP Practice

Our Approach.



Our Accelerators.

Master Data Management (MDM) Tool
- One Centralized tool
- Plug & Play, no separate license
- Workflow based

ITGC Compliance & Audit Tool
- Self-explanatory report
- Promotes sound IT controls
- Get Insights ready

E-Way Bill and E-invoice Solutions
- Real-time seamless integration
- Short payment cycles
- Improved Supplier/Customer management

Digital Signature Solution
- Seamless integration with SAP
- Compliance enhancement
- Reduce costs and carbon footprint

BOTS
- Automatic service request
- Active Monitoring

MOTIF - Factory Analytics

A SMART Factory Solution which enables 360o view of key KPIs driving Operational Improvements and enhances Plant productivity using the power of Data and Advanced Analytics.

Business Problem	Operational inefficiencies	Low Productivity Levels	Multiple data sources (MES, ERP, SCADA)	Manual efforts to analyse Performance	Data driven insights are missing	Difficulty in action prioritization	
Solution Capability	Production Performance Monitoring	Quality Analysis	Downtime Analysis	Inventory Analytics	Real Time Asset/ Condition Monitoring	Predictive Quality	Predictive Maintenance
Value Proposition	Monitors Real time production performance providing opportunities of Improvement	Provides Root Cause Analysis to operate at high levels of productivity and minimal rejection rates	Provides alerts & recommendations to improve Asset Utilization & reduced breakdown events	Recommends Optimal Inventory Levels & Dead Stock to free up the blocked cash	Real time condition monitoring detects Anomalies through CPP* using IoT & Analytics	Provides insights of Product Quality & indicates specific process parameters for quick actions	Detects any required maintenance activity, to ensure seamless operation of production lines

** CPP: Critical Process Parameters*

Success Stories.

Case Study iDACS : HVAC Assembly Traceability

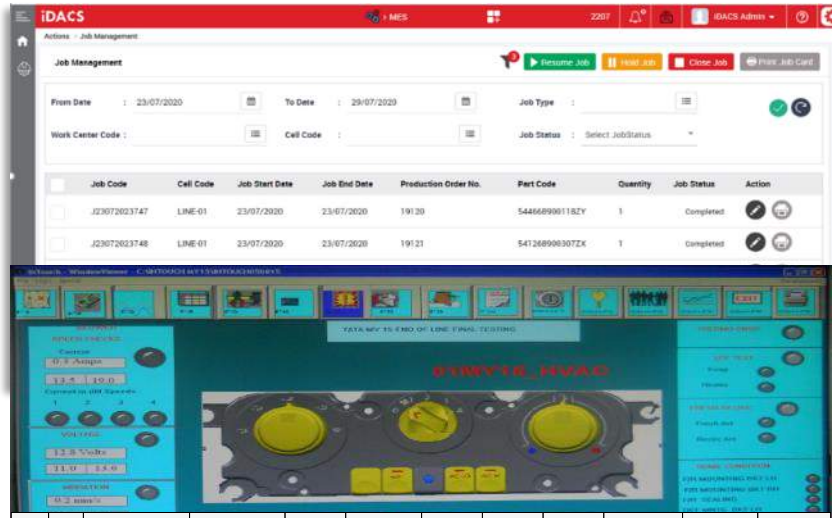
iDACS – Smart DA module was established for production go live with 2-months in 2016 as brown field

Challenges

- 4M traceability raw material inception from SFG & Kitting to finished goods dispatch visibility, Sequence based production execution
- Critical / Quality process parameter real time digital data logging availability.
- Real time Production status dashboard availability

Solution

- iDACS Data acquisition module provide the integration their equipment and device CTQ parameter like Screwdriver, Vibration, Evap Assy & Heater Leak, Balance value, airflow, blower motor current & etc.
- IDACS Traceability module provide the Poke yoke validation for SFG, implementing 4 M traceability.
- iDACS – USG module supports the EOL operator to guide the check points and publish the captured CTQ parameter values.



MODEL NO	SERIAL NO	TRACE SERIAL NO	DATE & TIME	AST FOOT AIR FLOW (CMH)	VENT AIR FLOW (CMH)	VIBRATION VALUE(G)	DR FOOT AIR FLOW (CMH)	DEF AIR FLOW (CMH)	INTAKE ACTUATOR POSITION (V)	MODE ACTUATOR POSITION (V)	MIX R ACTUATOR POSITION (V)
02	1	0704215201DATC00142	8-APR-2021 07:38:30	190.3034515	468.9280396	0.188571438	175.1999969	364.6343689	0.268281251	1.963281274	0.29078126
02	2	0704215201DATC00147	8-APR-2021 07:42:03	198.4717255	504.4762878	0.074285708	182.7200012	368.7347107	0.29859376	1.956562519	0.269843757
02	3	0704215201DATC00148	8-APR-2021 07:44:02	208.8993073	557.4117432	0.017142856	192.3200073	387.1860352	0.282499999	1.92015624	0.258749992
02	4	0704215201DATC00149	8-APR-2021 07:45:41	198.4717255	536.6560669	0.637142837	182.5599976	374.5922852	0.335312486	1.901093721	0.283281237
02	5	0704215201DATC00150	8-APR-2021 07:48:42	199.5144958	535.086792	0.614285767	183.6800079	383.6715088	0.354218751	1.954687476	0.27953124
02	6	0704215201DATC00152	8-APR-2021 07:53:59	197.6027679	536.8024902	0.290000021	181.9200134	374.2993774	0.270937502	1.948281288	0.264999986
02	7	0704215201DATC00153	8-APR-2021 07:55:22	201.4262085	545.2972412	0.536666632	185.4400024	379.8640747	0.272968739	1.928750038	0.311718762
02	8	0704215201DATC00154	8-APR-2021 07:56:34	192.3889618	530.1489258	0.140000001	177.1200104	359.9483337	0.273593754	1.933750033	0.292656243
02	9	0804215201DATC00001	8-APR-2021 07:57:47	204.9020691	541.3009033	0.168571427	188.6399994	380.7427063	0.269843757	1.922031283	0.272812486
02	109	0804215201DATC00002	8-APR-2021 10:06:30	225.062088	589.5286255	0.511428654	207.1999969	411.2021484	0.276562512	1.953437448	0.296718746
02	10	0804215201DATC00003	8-APR-2021 08:00:11	196.3862	532.4086304	0.445714265	180.8000031	374.2993774	0.272343755	1.922187448	0.295937508
02	11	0804215201DATC00004	8-APR-2021 08:01:53	199.8620758	510.397583	0.45714283	183.8399963	364.3415222	0.283593744	1.88843751	0.284375012
02	12	0804215201DATC00005	8-APR-2021 08:02:57	198.2979431	523.5581665	0.637142837	182.5599976	375.7637634	0.275468737	1.921875	0.292499989
02	13	0804215201DATC00006	8-APR-2021 08:04:05	197.9503479	528.7052002	0.2057143	182.2400055	378.6925659	0.285937488	1.862499952	0.31812501
02	86	0804215201DATC00007	8-APR-2021 09:38:31	213.0703583	599.1741943	0.082857139	196.1600037	385.4288025	0.315625012	1.890937448	0.28515625
02	88	0804215201DATC00008	8-APR-2021 09:42:35	213.4179382	582.7285767	0.257142842	196.480011	390.1148376	0.28687501	1.921249986	0.247500002
02	87	0804215201DATC00008	8-APR-2021 09:39:44	201.2524261	524.2486572	0.151428565	185.2799988	355.8479919	0.273281246	1.882656217	0.309843749
02	188	0804215201DATC00009	8-APR-2021 12:33:14	218.1103516	614.6154175	0.942857146	200.8000031	407.1018372	0.317499995	1.842656255	0.273593754
02	89	0804215201DATC00010	8-APR-2021 09:43:43	195.8648376	526.8012085	0.149999991	180.3200073	357.3123779	0.264687508	1.851250052	0.275937498
02	90	0804215201DATC00011	8-APR-2021 09:44:54	204.2068939	541.2590942	0.89142853	188	365.8059082	0.270624995	1.905937552	0.282499999
02	91	0804215201DATC00012	8-APR-2021 09:46:17	206.9875946	543.3513794	0.43428573	190.5599976	379.2783203	0.281406254	1.908750057	0.24609375
02	92	0804215201DATC00013	8-APR-2021 09:47:35	204.7282867	528.1612549	0.25666666	188.480011	374.2993774	0.278437495	1.798125029	0.262499988
02	93	0804215201DATC00014	8-APR-2021 09:48:52	215.1558685	534.7729492	0.25333333	198.0800018	377.2281799	0.302812487	1.890625	0.22265625

Benefits

100% ↑ Real time plant visibility.

100% ↑ Provide data for process contextualization and analysis.

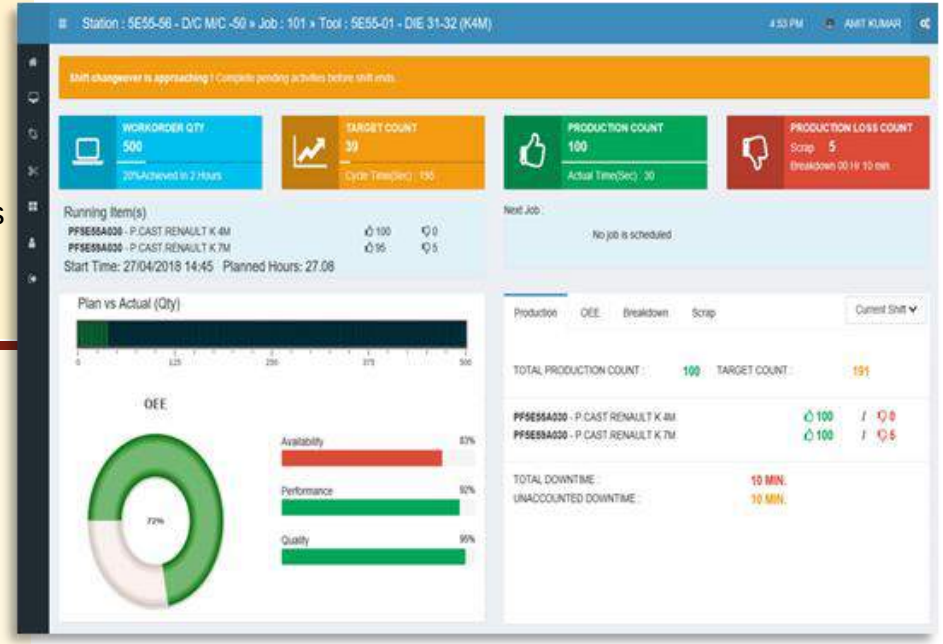
100% ↑ Visible with torque, dB, vibration etc., parameter for traceability

Case Study iDACS : Line Efficiency Monitoring

iDACS – DA module was established for production go live in 2-months

Challenges

- Real-time implementation of value-stream validation
- Capturing real-time process & quality data.
- Paper or verbal based production order management provide less visibility among business unit & value-stream(s) for real -time verifications



Solution

- iDACS, DA Module is offered for their pilot line molding machine to Compute OEE % = Availability X Throughput X Quality
- iDACS – SmartDA module provide integration platform the data acquisition from different control system.

Benefits

100% ↑ Real – Time visualization of the production metrics

99% ↑ Eliminate production batch lot suspect, on any field returns

100% ↑ Improve Production Plan Vs Actual

Case Study iDACS : Pick to Light

iDACS – User Guidance and Pick to light modules implemented in a brown field environment.

Challenges

- Floor space occupancy child parts at assembly line.
- Maintain consistency for right kit to right Finished good at right sequence.
- Eliminate 100% production outage due to wrong supply of kit to assembly line.

Solution

- iDACS User guide module is proposed along with light module(s) integration to activated those pigeonhole window system (their existing rack), to assist operator through illuminating the respective pigeonhole to pull out the required child part, for the required kit, for the required sequence.

Benefits

100% ↑ Elimination of production outage due to wrong kitting.

100% ↑ kitting operation deskilled, reduce operator stress.

100% ↑ removal wrong child part kitting.

Case Study iDACS : CockPit Assembly & Testing Unit

iDACS – MES production control module with smart DA module was established for production go live with 2-months in 2018 as brown field and Expanded implementing another Green field line 2021.

Challenges

- 4M traceability raw material inception to finished goods dispatch visibility, Sequence based production execution
- Critical / Quality process parameter real time digital data logging availability.
- Real time Production status dashboard availability

Solution

- iDACS, complete Manufacturing Execution & Control system is offered as a solution to overcome their business challenge.
- iDACS Data acquisition module provide the integration their equipment and device for real time critical to process & quality parameter data logging.
- IDACS Production module provide the pre-stage and post stage online validation , implementing 4 M traceability

Benefits

100% ↑ Real time plant visibility.

100% ↑ Provide data for process contextualization and analysis.

100% ↑ Poka Yoke value stream Pre stage validation & implementation

Case Study iDACS : Recipe Management

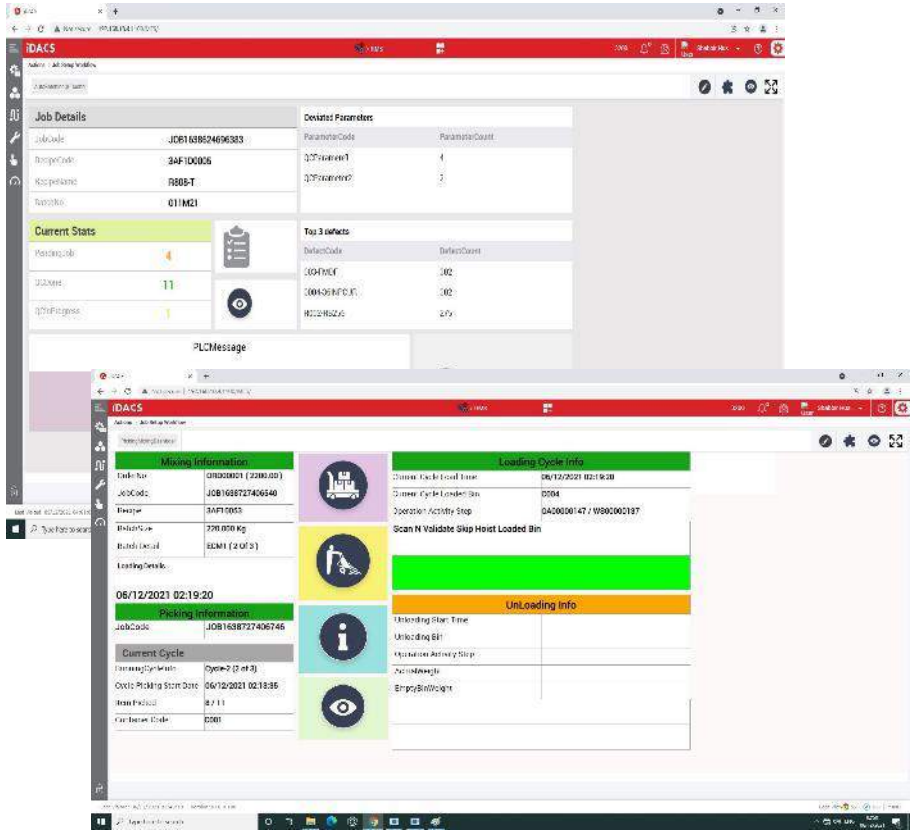
iDACS, MES platform inclusive of Recipe module is proposed for deployment.

Challenges

- Consistency of the quality due to manual weigh verification
- Manual effort for process data and their traceability on demand.
- Non availability of conditioned data for reach & development for chemical engineering.

Solution

- Recipe module shall take care of the Mix recipe formulation and interface with the auto batching weigh system for proper dispensing of the raw material as per their standard recipe weight and batch weight.
- Implement batch cycle sequencing , to create a homogeneous mix as per their best standard methods.



Benefits

100% Eliminate Manual error in maintenance of mix consistency

100% Formulation secrecy and IP protection

100% Genealogy tracking

Customer Journey – Factory Analytics

Using Factory Analytics Solution to build inventory efficiency for a Discrete Manufacturing Company which accounted to $1 million Annualized Savings

Industry

Automobile Manufacturing

Challenges

- Higher Inventory levels which caused blockage of cash flow
- Increased Days in Hand Inventory which impacts the costs of the company
- High Slow and Non-Moving Inventory

Solutions

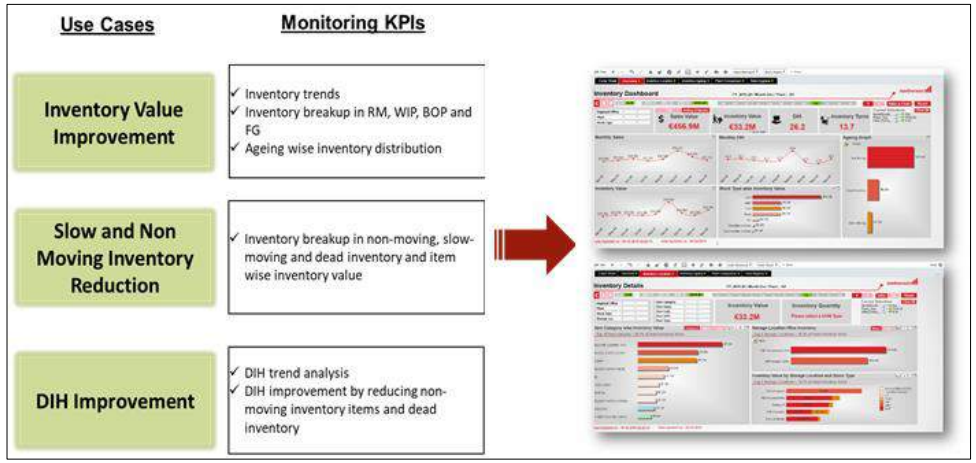
Analyzed data from ERP System to look for opportunities to reduce inventory value and slow & non-moving inventory

- **Advanced Analytics** model to identify problem areas by using historical inventory data
- **Real Time Monitoring solutions**
- Provided insights onto Inventory and Ageing Analysis, slow moving, non-moving and dead items with values

The organization is a 11 Billion $ (approx.) revenue company with global operations across 40+ countries and 200+ operating plants. It is a leading expert in high quality automotive components industry. MTSL is the key technology partner enabling it to make fact-based decisions.

Services

- Data Engineering
- Visualization
- Data Science
- Application Development
- Real-time Analytics



Technology Used

Java, Qlik, mongoDB, MySQL, Power BI

Impact

The monitoring dashboard enabled all the stakeholders to keep a close eye on the Inventory KPIs to improve the cash flows

$1 million Annualized Savings

Reduction in Days in Hand Inventory by **8%**

Reduction in Inventory values by **5%**

Case Study iDACS : Leading Pharma Manufacturer

IDACS : MES Platform

A leading pharmaceutical manufacturer in India having plants

established at various places in India, approached for a cost

effective solution to bring the real time asset utilisation and

capture the batch data seamlessly.

Challenges

- No real time visibility of asset utilisation
- Reliability of data to meet statutory documents
- Machine integration challenges

Solution

- iDACS, complete Manufacturing Execution & Control system is offered as a solution to overcome the customer pain areas.
- Hardware agnostic, was able to integrate all sorts of hardware without adding any major investments.
- Different methods of integrations with hardware
  - PLC
  - SCADA database
  - IoT device
- Generating the batch reports from single source
- Proactive alerts on machine parameters & utilisation

Varieties of Machine integration, Connected 135 Machines, IoT device supply & installation, Consulting

Benefits

Eliminating all manual activities to generate batch report

Real time plant visibility

Complete material visibility – low WIP – Inventory cost saving

Batch traceability

Case Study : Sorting System

The skilled labor is not required as PTL system can be used by anyone and everyone..

The working hours to complete the PPC work is reduced (lead time).

And if compared with the paper assortment ,it shows an improves of the system by about 1.5 times

Decrease in sort mistake

Compared with the paper-based sorting, the proposed system performs 20 times faster.

Shortening and simplification of shipment working hours (lead time)

Improvement of handling of the parts due to readiness of the sorting information to the operator on the line.

Picking the parts from the main warehouse based on orders RS wise.

Moving the Boxes to a sorting location.

Sorting area- where parts are sorted and barcodes are pasted on ever Box or sack to identify them.

Barcodes are printed for SKU's.

Barcodes are pasted on the Boxes.

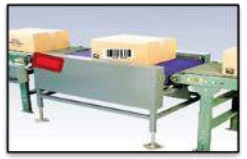
SKU's are docked in the Pre- shipping area.

71	61	51	41	31	21	11	1
72	.	.	.	.	.	12	2
73	.	.	.	.	.	13	3
74	.	.	.	.	.	14	4
75	.	.	.	.	.	15	5
76	.	.	.	.	.	16	6
77	.	.	.	.	.	17	7
78	.	.	.	.	.	18	8
79	.	.	.	.	.	19	9
80	70	60	50	40	30	20	10

FOR the Functioning of the SPM please refer to Annexure 2

Boxes are scanned and required quantity are indicated retailer wise on the racks and the respective qty is picked and put into the bin.

Boxes are opened scanned and loaded on to the manual conveyor for loose quantity.



Boxes are scanned weighed and barcoded.

Full boxes are loaded on to the motorized – cross dock conveyor.

OR

Move manually the full Boxes to pre shipping area to cross dock.

Case Study - iDACS MES, SMT PCB Assembly Utility (Automotive) – Tier I

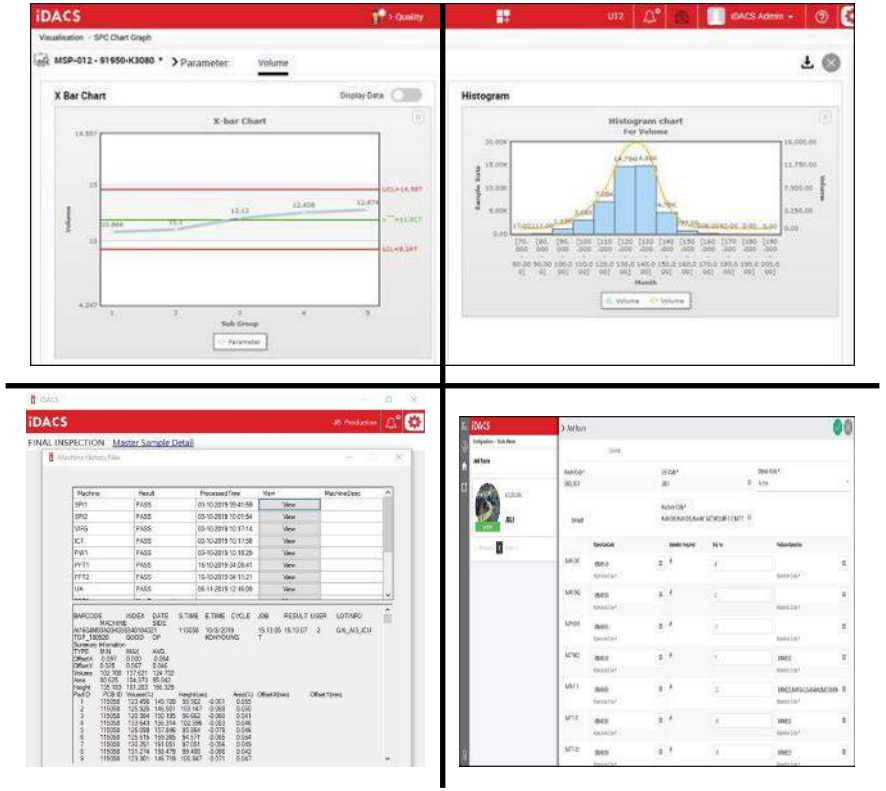
iDACS – MES production control module was established for production go live with 4-month 0n 2019 and Expanded the implement for another line 2020 , with of live lesser than 3 months.

Challenges

- Real-time implementation of value-stream validation
- Capturing real-time process & quality data .
- Implement backward traceability for 4 M .
- Single bridge platform service for multiple machine integration.

Solution

- iDACS – MES provides the complete production control between value and implement systematically the business rule(s) digitally interlocked.
- iDACS – SmartDA module provide integration platform the data acquisition from different machine source like AOI , Laser machine , SPI to name some.
- iDACS – Quality Module using SPC optimistically predict the solder screen outage for better solder volume control.

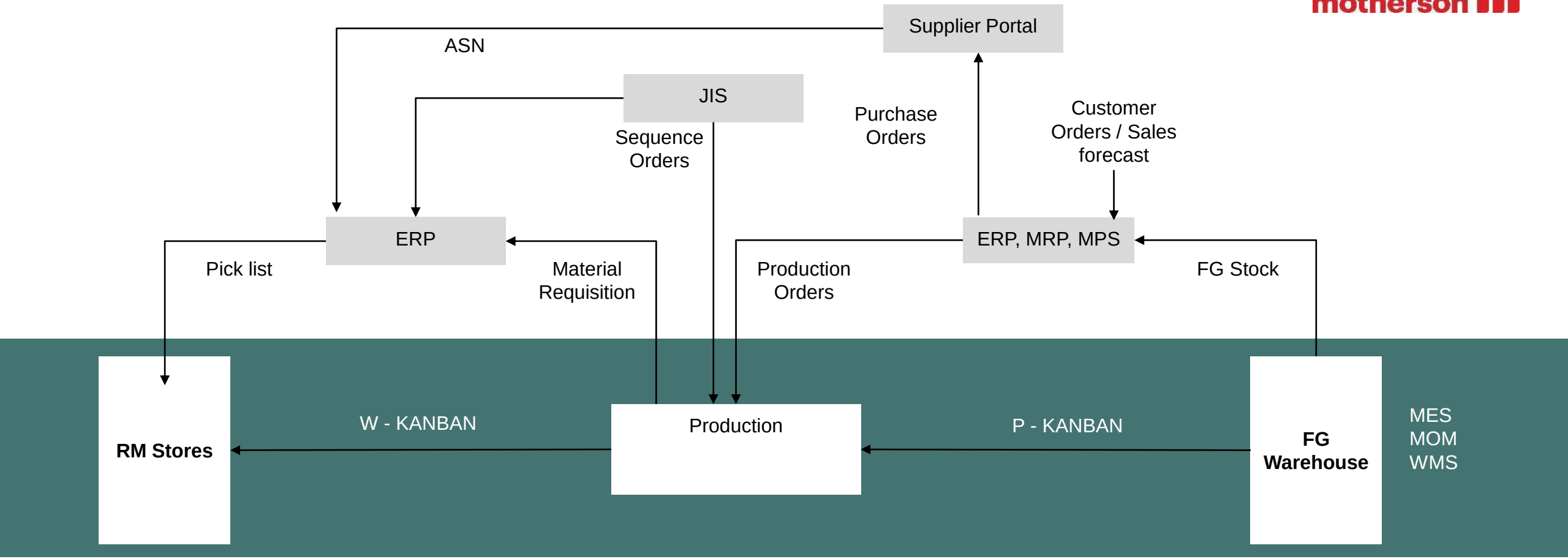


Benefits

100% ↑ Eliminate Defect Dispatch

97% ↑ Defect ratio reduction

100% ↑ Poka Yoke value stream Pre stage validation & implementation



Input :
Kanban or Picklist from ERP

Business Process:
Consolidated picking

Output:
Material Issuance

Input :
Production order ERP, Kanban, Sequence

Business Process:
Produce in batch or piece

Output:
SFG / FG production

Input :
Sale order

Business Process:
Consolidated picking

Output:
Invoicing & material issuance

Our Customers.

Founded in 1975, Motherson Group is an industry leader and one of the world's largest manufacturers of components for the automotive and transport industries. The group's diversified portfolio makes it a complete solutions provider across the globe. Motherson Group serves its customers with a wide array of products and services through multiple business divisions including wiring harness, vision systems, modules and polymer, technology & software, aerospace, health & medical, logistics, retail and metal products.

Motherson Technology Services Limited (MTSL) is a global technology company that offers a consulting-led approach with an integrated portfolio of industry-leading solutions that encompass the entire enterprise value chain. Our technology- driven products and services are built on two decades of innovation, with a future focused management philosophy, a strong culture of invention and co-innovation, and a relentless focus on customer-centricity. An SEI CMMI Level 5 company, MTSL has delivered best-in-class services to over 200 customers in 47+ global locations across all continents. MTSL is a division of Motherson Group, one of the largest manufacturers of components for the automotive and transport industries worldwide with 135,000 employees across the globe.

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Proud to be part of samvardhana motherson

Thank you.