Industry 4.0 Awareness Seminars Reports

1.	Date of the Seminar	22/01/2020
2.	Organizers	CII
3.	Title of the seminar	Awareness Workshop on Industry 4.0 - Mangalore The Indian Perspective
4.	Programme	Annexure 1
5.	Report: suggested contents (1) Main takeaway / good suggestions (2) Clusters covered - **Mangalore** (3) Nos attended - **41** (4) Success stories that need to be compiled / shared • **Industry 4.0 / IoT** • **Smart Manufacturing /AI and IOT**	**(1) Main takeaways / good suggestions** • Majority of the deficiency in Industry is because of inability to find the inefficiency at places because of lack of data, Industry 4.0 can be helpful at these places. • If we could have similar talks at the incubation centers like K-Tech etc would be nice since there are small scales industry growing up from these centers it would be helpful to them • Understanding between industry 3.0 and 4.0 • Practical Demonstrations
6.	List of Speakers with contact details	Annexure 2
7.	Photographs	Annexure 3
8.	Resource persons for providing consultancy, skilling, guidance etc.	• **Mr. Narayanswamy M K** Founder & CEO METI M2M India Pvt. Ltd. • **Mr. Raghav Shetty** CEO Research Design Lab Technologies Pvt. Ltd.
9.	Presentations	Annexure 4

10.	Learnings from the seminar	• Time Management of the speaker • 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 requested for some takeaway's brochure or material with the gist of what's presented.

Annexure 1

Programme

Confederation of Indian Industry
Business and Beyond
125 Years: 1895-2020

Department of Heavy Industry
Government of India

Awareness Programme on

Smart Manufacturing and Industry 4.0 - The Indian Perspective

22nd January 2020, 1000 – 1300 Hrs, KSIA Association, Baikampady, Mangalore

Programme

0930 – 1000 Hrs	**Registration and Participants assembles.**

1000 – 1015 Hrs	**Welcome Remarks**	**Mr Ajith Kamath** Propeitor Ajith Enterprises
1015 – 1030 Hrs	**Theme Setting**	**Mr. K Prakash Kalbavi** Kalbavi Cashews
1030 – 1130 Hrs	**Industry 4.0 / IoT**	**Mr. Narayanswamy M K** Founder & CEO METI M2M India Pvt. Ltd.
1130 – 1200 Hrs	**Smart Manufacturing /AI and IOT**	**Mr. Raghav Shetty** CEO Research Design Lab Technologies Pvt. Ltd.
1200 – 1225 Hrs	**Q&A**	
1225 – 1230 Hrs	**Closing Remarks**	**Mr. Henry Britto** Propeitor Toyeez

1230 Hrs	**Lunch & Close**	

Annexure 2

List of speakers

S No	Name	Designation	Organization	Email
1	Mr. Ajith Kamath	Propeitor	Ajith Engineering	ajithkamath@yahoo.com
2	Mr. Henry Britto	Propreitor	Toyeez	toyeez@dataone.in

Annexure 3

Photo Gallery

Annexure 4

Presentations

An Industrial IoT company

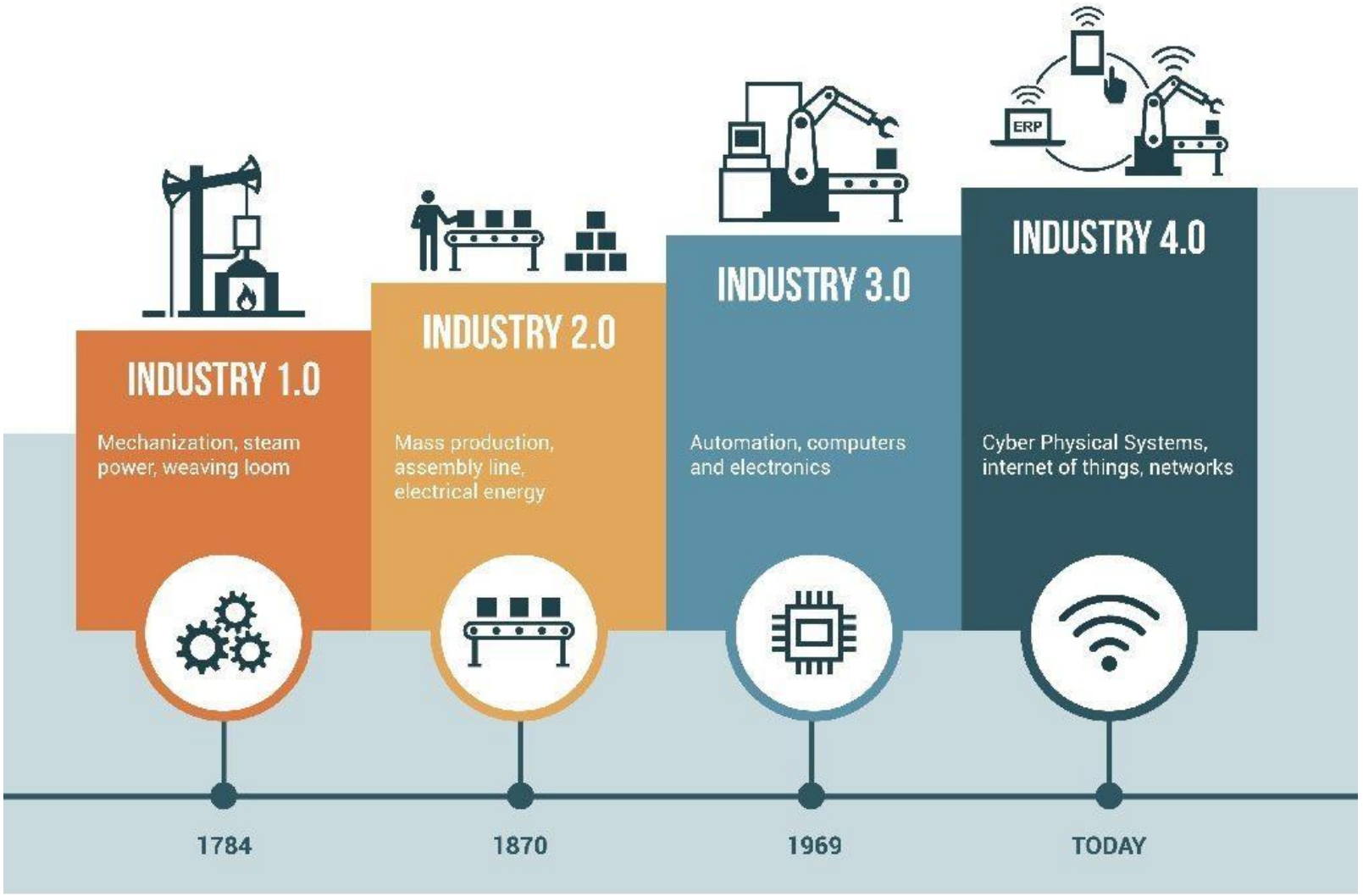
Industry 4.0 – The journey

M K Narayana Swamy

Agenda

- Industrial revolution
- What is Industry 4.0?
- The journey – so far
- Implementation challenges
- References & Credits

The Industrial revolution



Industry 4.0 ?

- Capture data from machines
- Convey insights to operators
- Make quicker and smarter decisions
- Minimize costs
- Optimize supply chains, factories and distribution
- Integrate, Improve and evolve.

Key components of Industry 4.0

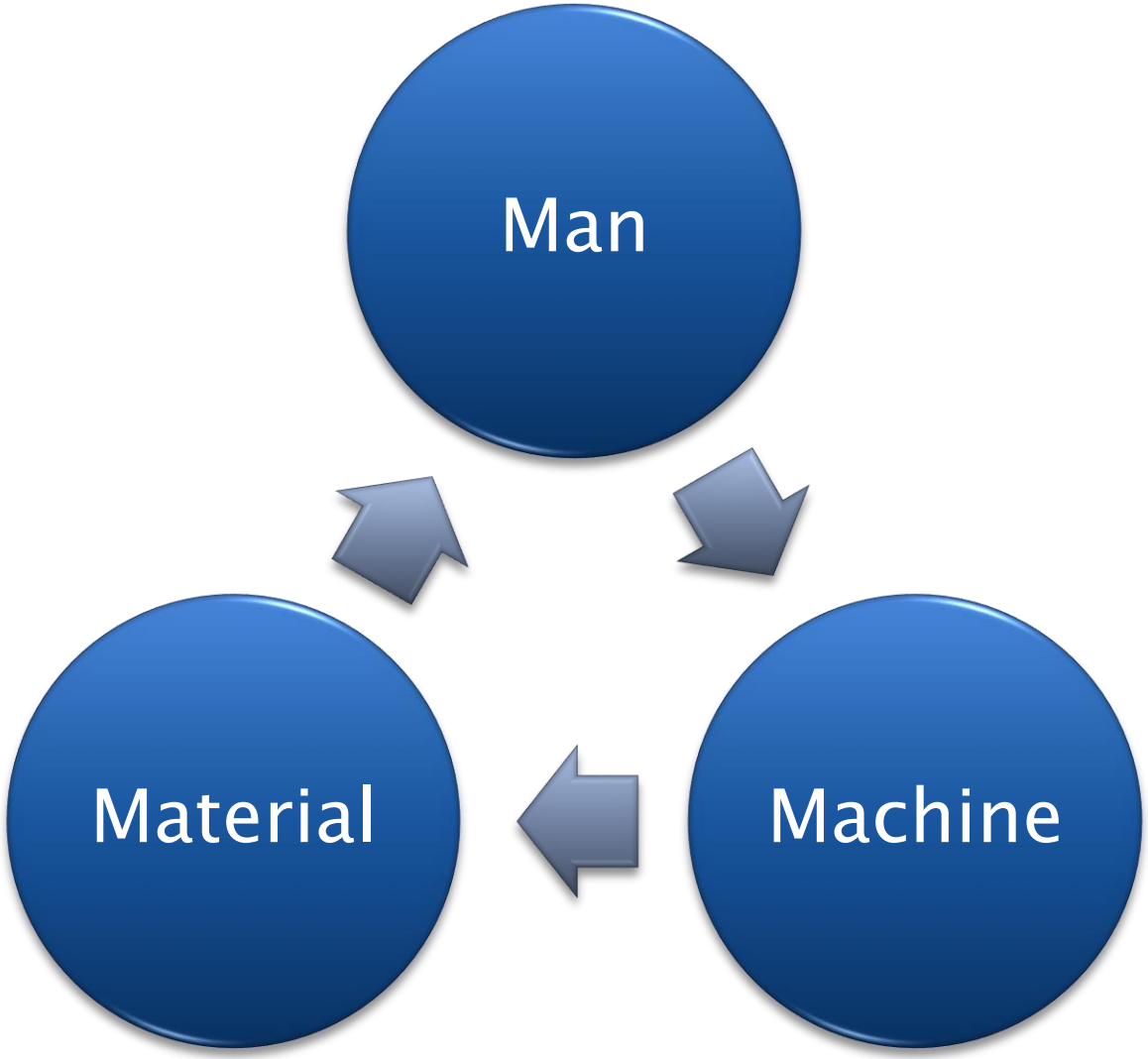
- Big data
- Cloud computing
- Internet of things (IoT)
- Autonomous robots
- Machine Learning & Artificial Intelligence
- Cyber security
- System Integration

Readiness: Industry 4.0

Smart factory	Smart products	Employees	Strategy and organisation	Smart operations	Data-driven services
• Digital modelling • Equipment infrastructure • Data usage • IT systems	• Communica-tion add-on functionalities • Data analytics in usage phase	• Skill acquisition • Employee skill sets	• Strategy • Investments • Innovation Management	• Cloud usage • IT security • Autonomous processes • Information sharing	• Data-driven services • Share of revenue

Note: The parameters/categories may vary based on type of industry

What gets connected?



Insights

Machine

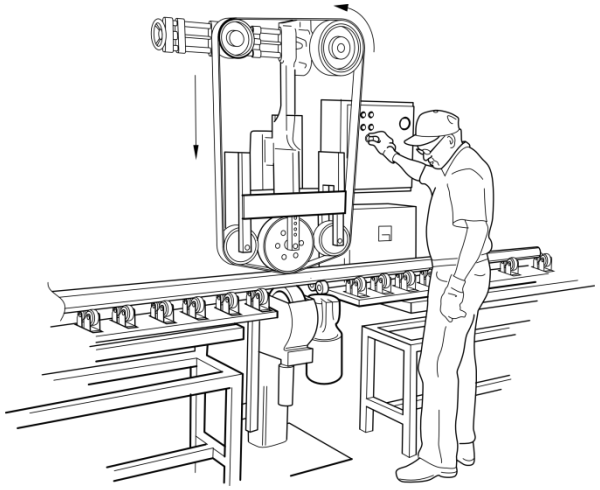
- Total production?
- Is data reliable?
- Good/bad parts? (Quality)
- Up-time (Availability)?
- Target Vs Production
- OEE (Overall Equipment Efficiency)?
- Down-time?
  - Reason?
  - Reason repeating?
- Energy cost of production per component?
- Process parameters (temp/pressure etc.,) maintained?
- And more…

Material

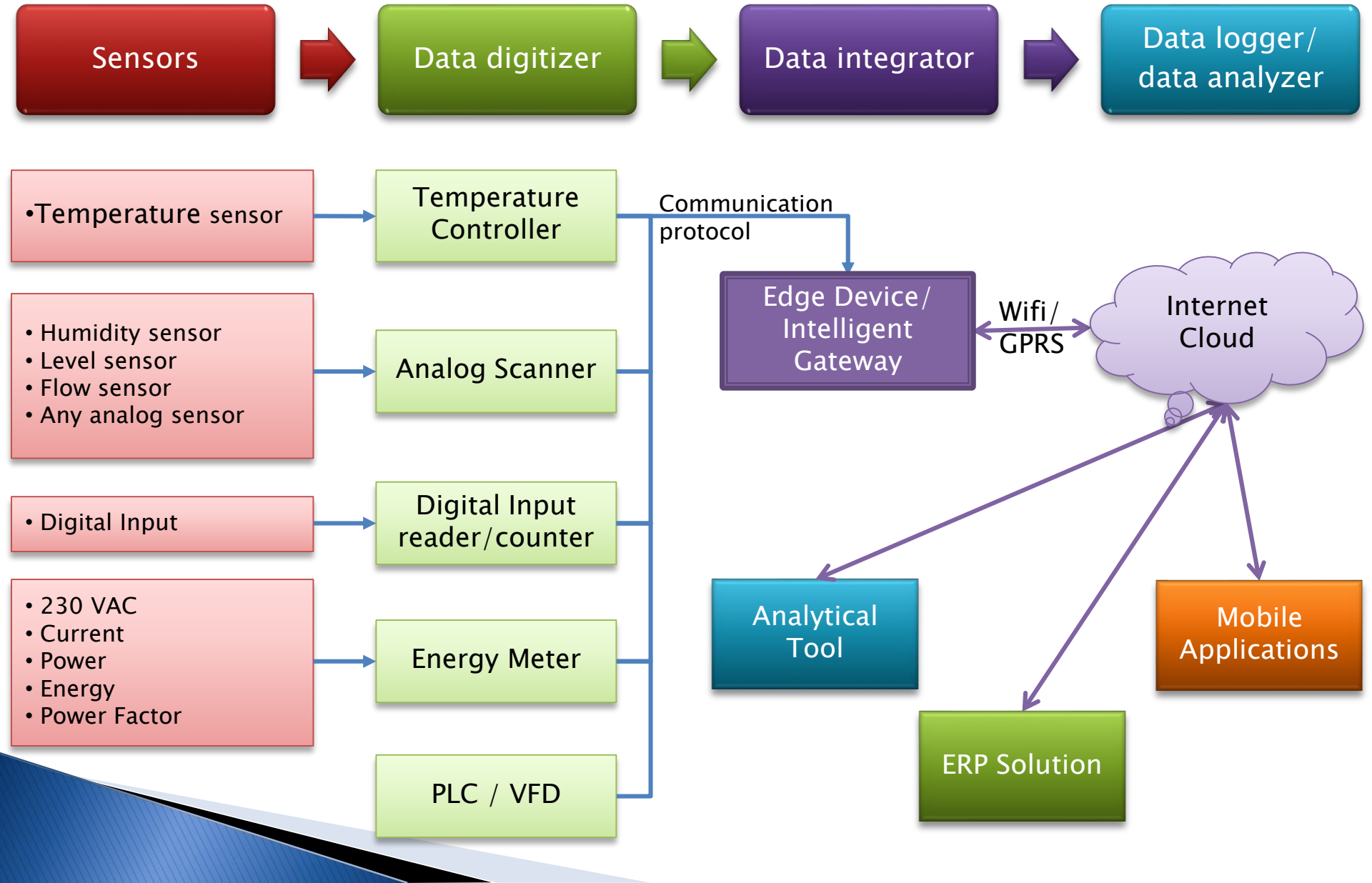
- Raw material Supplier?
- Batch?
- End product Traceability?

Man

- Machine operator?
- Shift In-charge?
- Efficiency?



Sensor to Analytics – Data flow



An Industrial IoT company

Implementation challenges

Implementation challenges

- New business models—the definition of a new strategy?
- Rethinking your organization and processes to maximize new outcomes
- Conducting successful pilots and POCs
- Helping your team to understand where action is needed
- Change management
- The genuine interconnection of all departments and other existing productivity systems
- Recruiting and developing new talent

Industry 4.0 – Technical challenges

- Which machines should I connect first?
- What communication protocol should be standardised across machines?
- What about legacy machines, can I get data from them?
- Will my machine OEM support with necessary details, what happens to warranty?
- What speed and how much data should I aquite?
- Should I go with a hardware/instrumentation company, software company or analytics company for implementing?
- Wired or wireless? Wifi/GPRS/Ethernet?
- Should I go for local server or cloud?
- What happens to data safety and security if I go to cloud?
- Do I have the infrastructure and bandwidth of IT team to manage this huge amount of data
- How to design dashboards, that not only gives the real-time/historical data but also gives insights and actionable items?
- How to Integrate with existing software systems like ERP/MES etc.,

References & Credits

- Grant Thornton (A Instinct for Growth) with CII
  - India's Readiness for Industry 4.0
- iiot-world.com

Sensors to Analytics

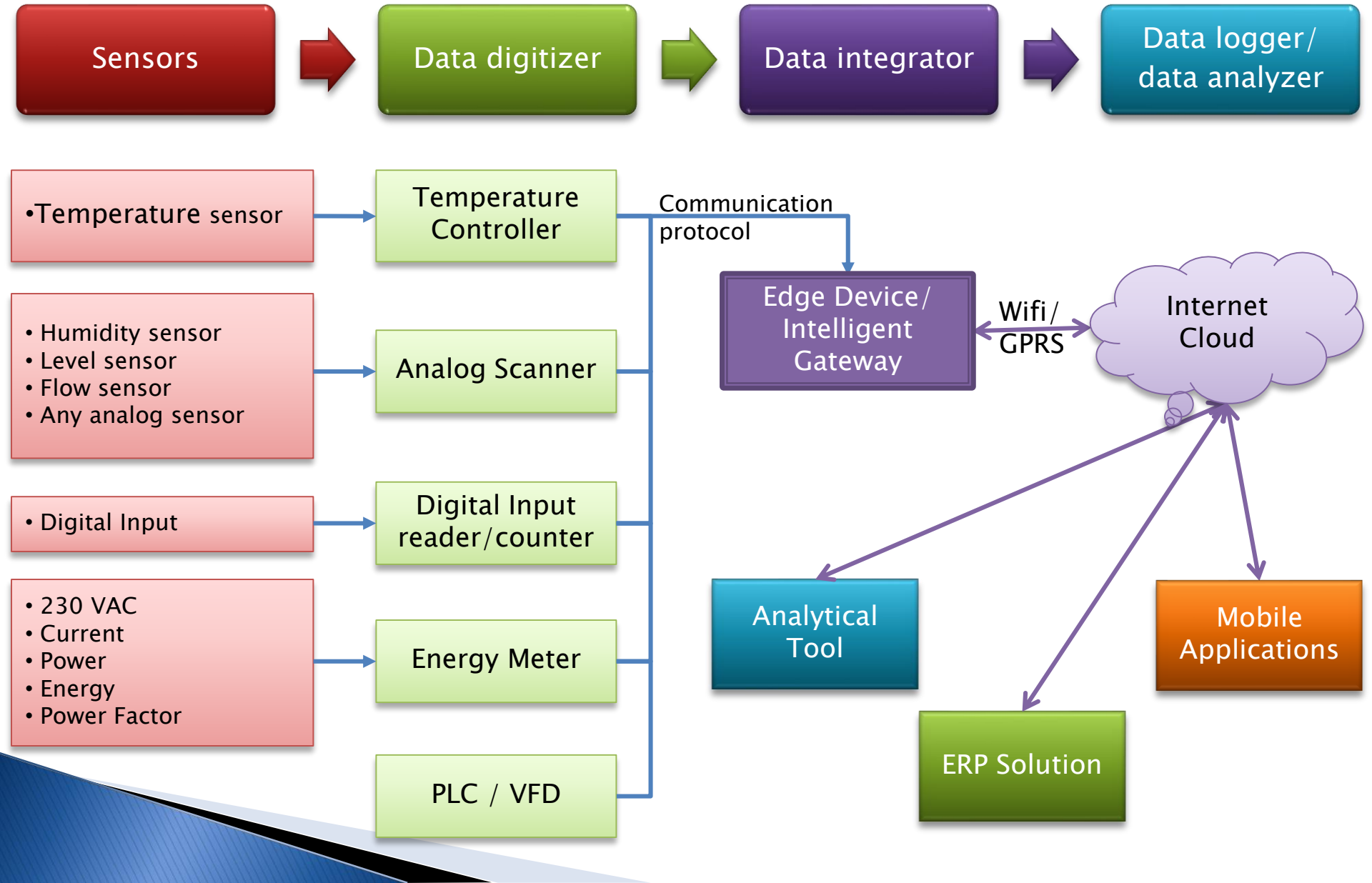
M K Narayana Swamy

September 20, 2018

Agenda

- Sensors
- Hardware
- Software
- Data

Sensor to Analytics – Data flow



Analytics

Sensor?

- A device* to detect events or changes in its environment and send the information to other electronics,

* (device, module or a subsystem)

Types of sensors

- Temperature Sensor
- Pressure Sensor
- Proximity Sensor
- Ultrasonic Sensor
- Humidity Sensor
- Accelerometer
- IR Sensor (Infrared Sensor)
- Smoke, Gas and Alcohol Sensor
- Touch Sensor
- Colour Sensor
- Flow Sensor
- Level Sensor
- And more…

Proximity sensors

- Optical
  - Infra-red, Laser, photocell-reflective
- Inductive
- Magnetic
- Ultrasonic
- Capacitive
- Radars
- Sonars
- Hall-effect

Industrial Sensors Types and output

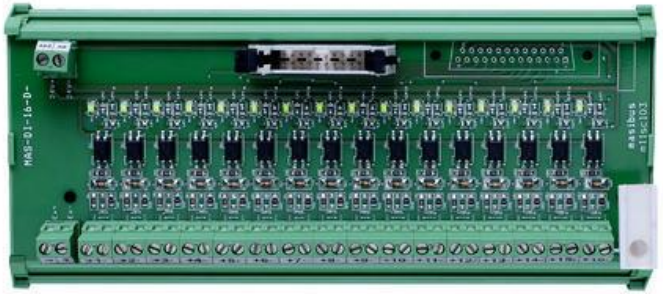
Sensor Types
Analog
Digital
Counters

Sensor Outputs
Current (4-20mA, 0-20mA, 0-5A)
Voltage (0-5V, 0-10V, 0-50mA)
Frequency/Pulses
Pulse-width variations
Capacitance

Digitizers

PROGRAMMABLE TEMP. CONTROLLER
1235
PV
ALPHA
SV
R1
1285
R2
SET
ENT
ATC-2201

16 CHANNEL UNIVERSAL INPUT DATA SCANNER
MODEL NO.: TC - 1600
DATA SCANNER
HORIZONTAL SIZE
DATA SCANNER



OMRON
SYSMAC
CP1H
BATTERY
PERIPHERAL
DC24V
COMM
COMM
EXP

DIGITAL OPERATOR
WARNING

selec
MFM384
230.0
4.999
1.000
50.00
12345678
V
A
PF
Hz
kWh
PRG
AM
V
I
VAF
PF
P
E

Digitizers

Digitizers	Input type
Digital Temperature Controllers	Voltage/Current
On/Off Controllers	Voltage/Current
PID Controllers	Voltage/Current
4 Channel Scanners	Voltage/Current
8/16/24 Channel Scanners	Voltage/Current
Totalizers	Freq / Pulse
Digital Input Cards	Digital Input
Energy Meter	Voltage & Current

IoT Gateways

Front View

Back View

Hosting types

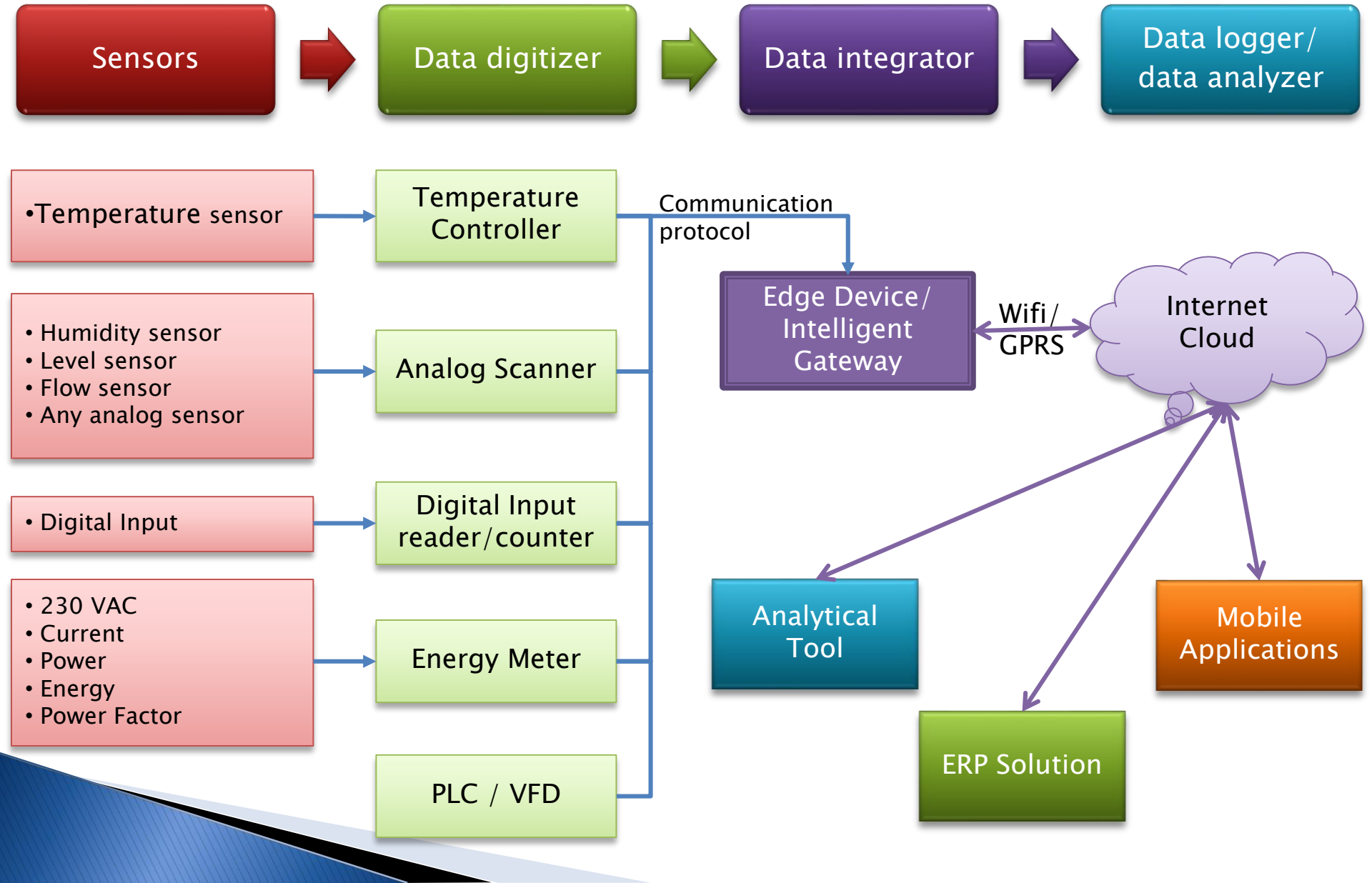
- Shared Cloud hosting
- Dedicated Public Cloud hosting
- Private cloud hosting
- Private Server (On-premise) Hosting

All you need is an IP address

Data Security

- Data acquisition (Wired/wireless)
- Data transmission from Gateway to Server
- Secured Storage
- Retrieval consistency
- Analysed data transmission from Servers to end-users
  - Web-front end
  - Mobile Apps
- API exposure for integrating with other systems

Sensor to Analytics – Data flow



Questions?

DIPP20272

RDL Technologies Pvt Ltd

MSME Best Product Innovation Award

CII-Best IP Portfolio Award

AIAF Achievers Award

ELEVATE100 Winner IT/BT Gov. of Karnataka

Who we are..

Incorporated on May 16th – 2016

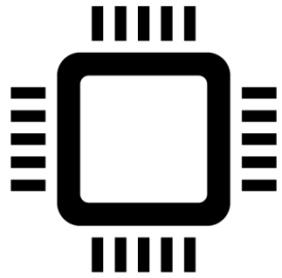
Man Power - 30

Patent
- 201841015125
- 201641033858
- 201841009816
- 201841048617

Industry & Academia
- 2064/CHE/2014
- 1767/CHE/2014

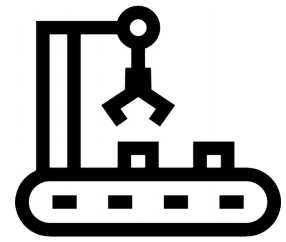
R&D Center/Production Mangalore

Embedded Systems & Design house having expertise in

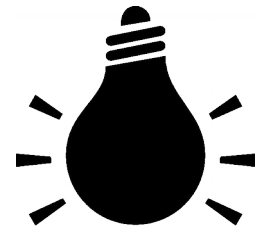


Embedded Systems

Internet of Things



Industrial Automation



LiFi

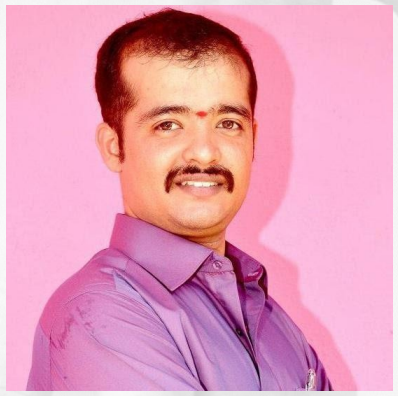
Total Integration Company – End to End Solution Provider

- ✔ **CII Best IP Portfolio Award 2019**
- ✔ **SILICON INDIA – BEST ORIGINAL DESIGN MANUFACTURER AWARD** – 2019
- ✔ **IESA – MAKEATHON** – 2018
- ✔ **BEST PRODUCT INNOVATION AWARD** – MSME – 2018
- ✔ **PITCH ELEVATE WINNER** – 2017

TEAM

Raghavendra G Shetty
Founder Director & CEO
Embedded Architect
Designer

Kanwal Karkera
Technical Director



Ganapathi Aithal
Sr Manager - CAD

Pradeep Kumar C, M. Tech
Machine Learning Expert

Dr. Ashwath Rao, PhD (Ext.Consultant)
VLSI Design & Fabrication

Dr. Anush Bekal, PhD (Ext.Consultant)
Micro Electronics & VLSI Design

Sandeep S Pai, MBA
Business Development

Ramachandra Shetty, BE
Project Manager

RDL Products Portfolio

INDUSTRIAL DATALOGGER 4.0

CLOUD PLC 4.0

ACCESS CONTROL SYSTEM

INDINO 4.0

R-LiFi

RDL Products Portfolio

LiFI V2

Vehicle Tracking and Monitoring system -VTMS

Automated Machine Fault Alerting system

Long Range UHF RFID Reader

Datalogger 4G

Digital Checksheet

RDL Shop Floor AI 4.0

RDL Shop Floor AI 4.0 bundled with software and hardware deploying to the industry

- ✔ Process Effectiveness and vulnerabilities
- ✔ Impact of the individual step on the process
- ✔ Online records of audit items
- ✔ Data Analytics/ML enabling continuous evaluation
- ✔ Automatic triggers for escalations
- ✔ Predictive analytics and reducing down time
- ✔ Optimized resources utilization

Industry Operations - Challenges

Accountability

- Audit – Process and Plant
- Accurate issue reporting
- Timely and Authenticity in reporting

Availability

- Resources – Machine, Human
- Usage of consumables, tools,
- Preventive maintenance
- Warranty, guarantee management

Resilience

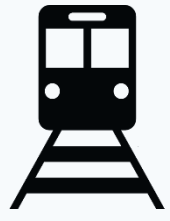
- Issue resolution time
- Alert right person at right time
- Predictive issue detection and resolution

Industries

Airport

Public Places

Hospitals & Health Care Centres



Railways

Defence

Banks

R&D

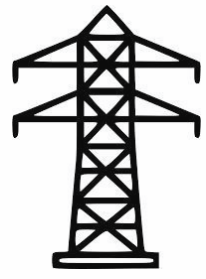
Oil & Gas

Digital Checksheet– Target Industries & Applications

PAPERLESS

Paperless Offices ISO Process

PERIODIC CHECKSHEET



Smart Grid

Water Pump House

AREA & BORDER PATROLLING

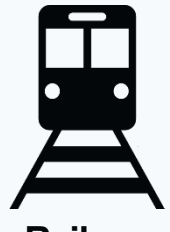
Patrolling

CLEANLINESS CHECKSHEET

Airport

Public Places

Hospitals & Health Care Centres



Railways

SAFETY & SECURITY CHECKSHEET

Defence

Banks

R&D

Oil & Gas

SHOP FLOOR AI SOLUTIO N

Application Layer

ERP Integration

Mobile Alerts

HMI Indications

Data Ingestion Layer

Public / Private Cloud Analytics

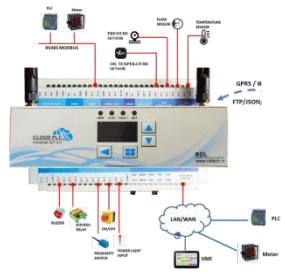
Device Layer

Digital Checklist

- Lubricant leaks
- Residual Cleanliness
- Tool kit availability
- CNC Jaw Misalignment

Automatic Condition Monitoring

- Resources – Machine, Human
- Usage of consumables, tools,
- Preventive maintenance
- Temp, Pressure, Oil Level, Vibration

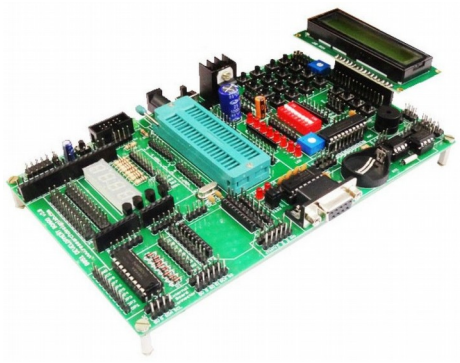


Shop Floor

Human Visual inspection

Sensor based inspection

3 Year Summary of Evolvement in Customized Hardware & Software ,Design & Development



Board Level
FY 2017-18

Product Level
FY 2018-19

Industrial Panel System Design
FY 2019-20

- Devices
- Dashboards

- ✔ Authorized Mobile
- ✔ Secure HMI

Business Model & Strategy

Value Proposition:

- Industry 4.0
- Optimization, Higher Utilization and Productivity
- Predictive performance and lack human error

Strategies

- Sales – Push strategies
- Marketing – Pull strategies
- Social Media Marketing
- Exhibitions
- Other conventional way of promotions

Revenue Model

Revenue Model

- Subscription / Contract period (3-6-12 months)
- AMC
- OEM & ODM services

Customers/Target Segment

- Automotive
- Manufacturing
- Food & Beverages
- Aerospace
- Healthcare
- Logistics
- Retail

Clientele.

-

TOYOTA

BOSCH

HONDA

CANARA Lighting

भारत इलेक्ट्रॉनिक्स BHARAT ELECTRONICS

इसरो isro

TEL Turbo Energy Ltd A Unit of TVS Group

ROYAL ENFIELD

ZestIOT TECHNOLOGIES PRIVATE LIMITED

MANIPAL GROUP Generations of faith

Mahindra

LOGICAL WINGS Our Logic, your Wings

NudgeNext Ideate.Innovate.Integrate.

HYSITRON

Ralco Industries Inc. ISO/TS 16949 Registered

RDS Reckitronic Devices and Systems

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR योगः कर्मसु कौशलम्

BITS Pilani K K Birla Goa Campus

MANGALORE UNIVERSITY

Wavelinx Identify Innovate & Inspire

ARAANTO

AUDIOPLUS www.audioplus-india.com

THANK YOU

Web: https://rdltech.in/

Head Office: 5th floor, Sahyadri Campus, Adyar, Mangaluru, 575007 Karnataka.

Number: +91-7411001407, 0824-2988407.

Email: support@researchdesignlab.com