

Vol. 25 October - December 2020

# INDUSTRY 4.0 FOR MINING

Unmanned Weigh Bridge

# TABLE OF CONTENT



**Editotrial:**  
Riding the  
Industry 4.0  
Wave

Industrial  
IOT  
for Smart  
Mining

**Big Data &  
Analytics for  
Mining Sector  
Transformation**

**Truly Digital  
Mining  
Enterprises:**  
ERP in a  
New Light

04

Page No

06

10

16

## Cover Story

**Industry 4.0:** Convergence  
& Collaboration for a Seamless  
Ecosystem

12

Tackling  
Cyber Security  
in Mining

CSM  
in News

Virtual  
Knowledge  
Exchange

On a  
Lighter  
Note

18

20

24

26



# RIDING THE INDUSTRY 4.0 WAVE



By Pradyut Mohan Dash

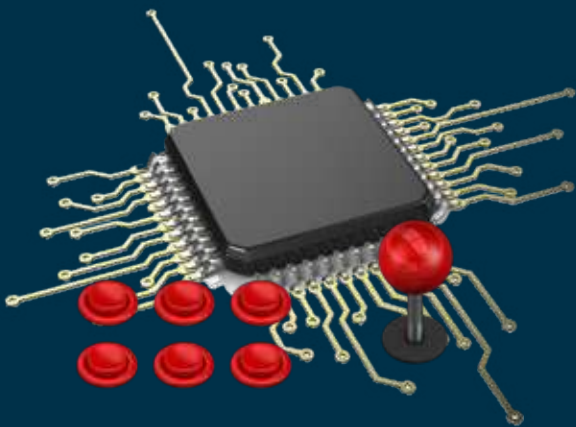
The First Industrial revolution happened in 1760 when mechanization happened through water and steam power. Since then, it has improved through mass production and assembly lines using electricity in the second, computerization in the third revolution.

The Fourth Industrial Revolution is the trend towards automation and data exchange in manufacturing technologies and processes which include cyber-physical systems (CPS), IoT, industrial internet of things, cloud computing, cognitive computing, and artificial intelligence.

When computers were introduced in Industry 3.0, it was disruptive as it was the addition of entirely new technology. Now a combination of cyber-physical systems, the Internet of Things and the Internet of Systems make Industry 4.0 possible and the smart factory a reality. As a result of the support of smart machines that keep getting smarter as they get access to more data, factories are going to be more efficient and productive and less wasteful. Ultimately, it's the network of these machines that are digitally connected & create and share information that results in the true power of Industry 4.0.

Even though some dismiss Industry 4.0 as merely a marketing buzzword, we can't close our eyes from the reality of what the smart industries can do. Industry 4.0 offers the opportunity for manufacturers to optimize their operations by knowing what needs their attention providing better analysis & insightful maintenance within a reasonable timeframe. And in some cases, auto-correct them. A gold mine in Africa could identify the root cause with oxygen level during leaching by analyzing the data from sensors and were able to increase their yield by 3.7% which saved 20 million dollars annually.

A connected manufacturing system can adjust to reality such as weather delay in shipment, and modify manufacturing priorities. Robots move goods around Amazon warehouses and also reduce costs and allow better use of floor space for the online retailer.



**In other words,  
Industry 4.0 optimizes  
the computerization  
of Industry 3.0**



There are shipping yards that are leveraging autonomous cranes and trucks to streamline operations as they accept shipping containers from the ships. Advances in the use of metal additive manufacturing (3D printing) have opened up a lot of possibilities for production. In the Mining sector, a whole lot of activities happens where Man-Machine combination is quite high.

From a survey, excavation, production, transportation to compliance according to the statutory laws of the land, a lot of manual efforts put in. However, there has been a lot of areas where the automation has taken place such as IOT based climate data collection, Drone-based survey, Automated Weigh Bridge, SCADA based transportation, contactless permit/pass generation etc.

However, these machines work in silos, once connected, the entire process can be transformed from Automated to Smart. Also, compliances to government regulations would be seamless. While Industry 4.0 is still evolving and we might not have the complete picture until we look back 30 years from now, companies who are adopting the technologies realize Industry 4.0's potential. In the mining sector, as in most other industries, the future of work is expected to look very different than it does today. Automation, analytics, and artificial intelligence (AI) are not only reallocating work between humans and machines but also generating greater insights into employee productivity and efficiency. However, the companies need to put the effort into upskilling their current workforce to take on new work responsibilities made possible by Internet 4.0






# INDUSTRIAL IOT FOR SMART MINING

By Tapaswini Swain



**The global smart mining market was valued at USD 6.8 billion in 2019 and is expected to reach USD 20.31 billion by 2025, at a CAGR of 8.2% over the forecast period 2020-2025.**

(Source; "Smart Mining Market - Growth, Trends and Forecasts (2020 - 2025))



The promising fourth industrial revolution – Industry 4.0 is defined by the use of “Internet of Things” capabilities and “Cyber-physical systems” in production processes in Industries. Industry 4.0 is a vision that evolved from an initiative to make the German manufacturing industry more competitive to a globally adopted term. The implementation of the Industry 4.0 project involves the creation of a smart industry that has evolved from the use of integrated information and communication control systems to digital systems.

The Internet of Things (IoT) has had a considerable impact on transforming multiple industries by forging real-time connections between machinery, environmental conditions, people, and business processes. This refers to the use of modern control systems, embedded with software systems and dispose of an Internet address to connect and be addressed via IoT (the Internet of Things). This way, products and means of production get networked and can ‘communicate’, enabling new ways of production, value creation, and real-time optimization.

The intelligent networking of machines and processes for the industry is what IIoT is. It is characterized by, more automation, bridging of the physical and digital world through cyber-physical systems, enabled by Industrial IoT, where smart products define the production steps with closed-loop data models & control systems and personalization/customization of products.

## **How can IIoT leverage optimization in Mining?**

The adoption of emerging technological trends and applications of the Internet of Things (IoT) in the industrial systems lead to the development of Industrial IoT (IIoT). Industry IoT has far-reaching use cases for the mining industry. IIoT can help overcome shortcomings of the traditional monitoring and control system while enabling companies to establish a unified monitoring system to automate processes, provide a safe working environment, enforce compliance effectively and control environmental situations.

**The IIoT market is expected to grow from USD 77.3 billion in 2020 to USD 110.6 billion by 2025, at a CAGR of 7.4% during the forecast period.**

### **Industrial IoT (IIoT) Market by- Vertical, Region - Global Forecast to 2025:**

- Device & Technology (Sensor, RFID, Industrial Robotics, DCS Condition Monitoring, Networking Technology)
- Connectivity (Wired, Wireless, Field Technology)
- Software (PLM, MES, SCADA)



If one analyses the growing need & challenges in the mining landscape, IIoT has a crucial role to play. The increasing demands for production and cost reductions call for changes in the basic infrastructure, processes, and technology in the mining industry. The high penetration of advanced technology in the industry is projected to cut down significant costs of the workforce for the end-users, and hence, result in considerable cost optimization.

Further, advanced data analytics is being applied to the raw data to create visualizations, insights, and recommendations. This information is then delivered to mine managers and employees in real-time on their mobile devices.

For instance, CSM has been one of the first movers in the implementation of such solutions, since the past decade. It offers digital intervention and services for regulatory compliance. It has been a precursor in building operational infrastructure and showcase environmental value to our customers and stakeholders. In the course of actions, CSM has concentrated and provided solutions in Automation, Digitization and Robotics.







UAV based Surveillance Solution and Unmanned Weighbridge System are few of the solutions aimed at reducing human interventions and long Turn-Around Time (TAT) leading to a reduction in pilferage and revenue loss while facilitating enhanced productivity and monitoring.

The application of drones in the field of mining operations addresses gaps in the performance of periodic field activities, saves over 60-70% of man-hours while ensuring no data loss and minimal errors.

Unmanned Weighbridge System which has been implemented for stockyard management and automation at 6 weighbridges at Daitari Mines, Keonjhar, Odisha, facilitates and determines the weight of goods through the Tare & Gross weights of mineral carriers, without any human intervention. It controls the efficient queuing and vehicle management of the mineral carrying containers right from the management of the RFID tags & readers on the windshields of the mineral carriers to the Boom Barriers that check the entry of carriers on the weighbridge.

Innovative disruption is possible using IoT, augmented and virtual reality (AR and VR), drone technology, artificial intelligence (AI) and computer vision combined with analytics. CSM has several solutions that tie them all together to bring new efficiency to the business and the workers in the mining domain.



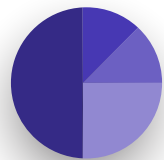
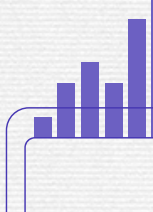


# BIG DATA & ANALYTICS FOR MINING SECTOR TRANSFORMATION

By **Samparna Tripathy**

Globally the mining industry has been grappling with a long phase of declining productivity. As per a 2015 study by consulting major McKinsey, worldwide mining operations are as much as 28 percent less productive today than a decade ago (even after adjusting for declining ore grades). At the centre of this productivity challenge is the high degree of variability & uncertainty associated with the mining industry – take for example, the nature of the resource being mined, the long hauls to move items from far flung mine pits to the destination plants & the frequent breakdown of vehicles in the tough terrains. Add to this is the fluctuating commodity prices (on a decreasing trend) that have squeezed margins of miners. In this context, there is an opportunity for miners to capitalize on the volumes of data generated in operations and leverage big data & advanced analytics to manage variability and enhance productivity.

With investments in mining automation and improvement in connectivity & speed (especially in the upcoming 5G era) enabling real time transfer of data from sensors, we can expect an explosion of mining related data. Modern big data platforms possess the ability to aggregate, cleanse and transform high volumes of data (structured and unstructured formats) available at different time frames from heterogeneous sources. Operational intelligence, predictive & prescriptive analytics gathered from this data holds great potential ability to ensure optimal ore extraction, uninterrupted flow of materials across the supply chain and reduce time lost in maintenance & delays. Going a step further, analytics can also be used for short term price forecasting and maximize revenues for commodity traders in mining companies.



## Efficiency in ore extraction

Using ore body modelling, sampling information and blast hole drill data, geoscientists are leveraging statistical techniques to improve discoverability of quality ore. Mining companies are also able to analyse variables in extraction processes and find out important drivers of yield. For example: small changes in the levels of dissolved oxygen in the leaching process have shown massive improvements in profit margins of gold mines.



## Efficiency in material movement

Typically, mining throughput relies heavily on the efficiency of the LHD (load, haul & dumping machines) and predictable performance of trucks carrying the ore. An analysis of available hours, scheduled hours and utilization percentage of LHD machines and its causality with tons moved or average cycle time can prove as critical inputs for decision makers. Similarly, analysing historical records of temperature points of engine oil, coolants & hydraulics vis-à-vis outages or breakdowns of vehicles can help identify patterns in advance and carry out maintenance activities even before schedule. In addition to this, correlating queuing or wait times of trucks with the chosen route can also provide cues for road maintenance or traffic management activities.

## Efficiency in Price Forecast

Most mining companies are comfortable with long term price forecasts. Traditionally based on demand supply models, traders in these mining companies factor mine development stage, capital expenditure, geopolitical stability and industry cost curves to forecast long term price trends. However, in the short term, the sellers i.e. mining companies heavily rely on experience based judgement and this can impact trading results (especially when the intermediary buyers i.e. trading houses rely on cutting edge analytics for this purpose). Even the most experienced sellers get it right 50% of the time (almost as good as making a random guess). The time has come for mining companies to explore usage of proprietary data (such as order volumes & stock levels) in ERP & CRM systems combined with third party data (such as satellite images on traffic & material flows) to predict market direction with higher accuracy.

The key to realizing such benefits of big data & advanced analytics lies in organization wide acceptance of digital transformation as a critical driver for mining sector growth. Seeing technological interventions as an end in itself and incorporating digital tools without a concrete vision in place may be myopic. The focus should always be on value creation and teams should be aligned to balance short term wins (plug and play deployments showing immediate results) and long term wins (scalability of benefits achieved by transformation in legacy systems and data architectures). Companies that can recognize the impact of this shift and embrace the inevitable change today will definitely rule the day tomorrow.



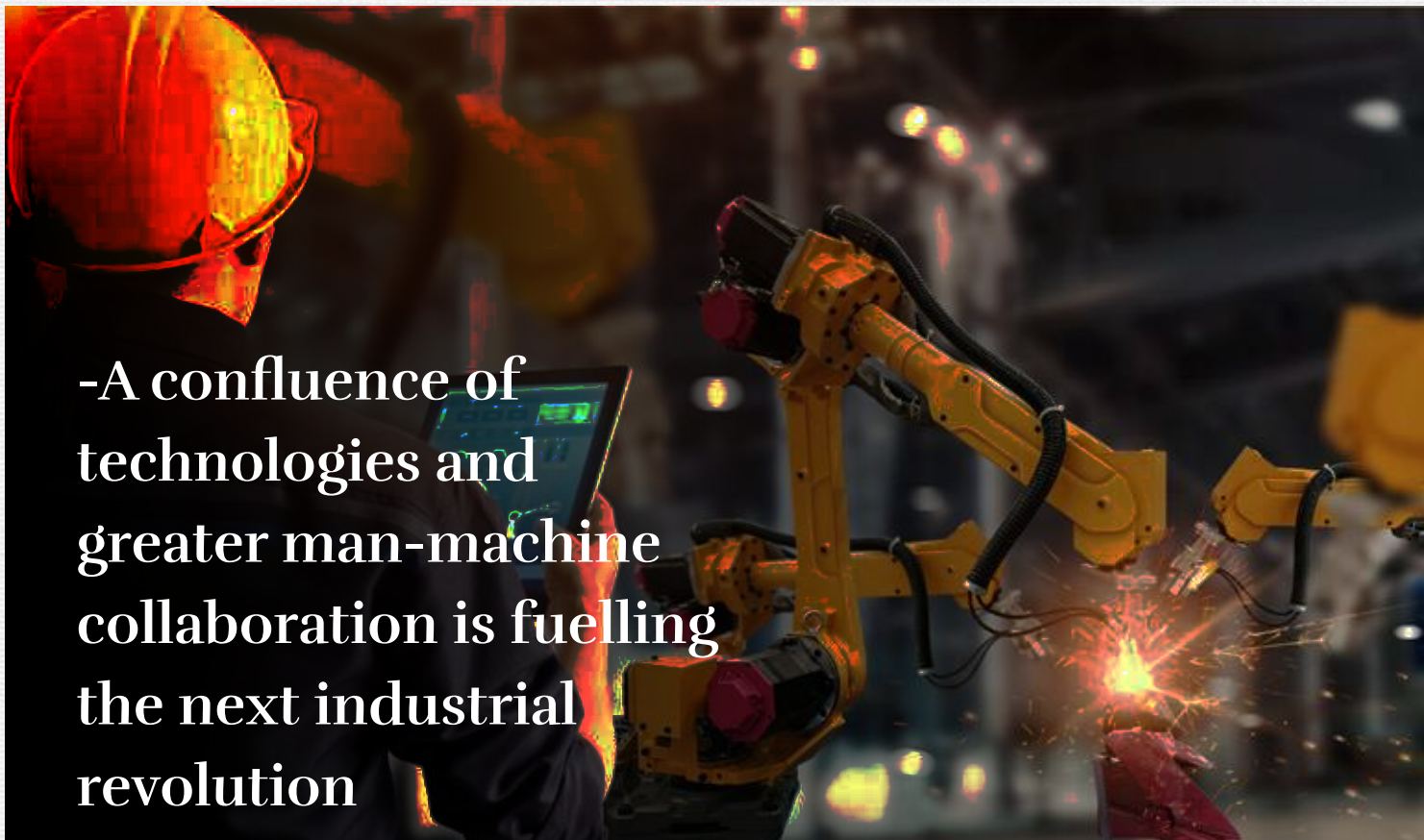


# INDUSTRY 4.0

Convergence & Collaboration  
for a Seamless Ecosystem

# 03

By Jayajit Dash



**-A confluence of technologies and greater man-machine collaboration is fuelling the next industrial revolution**

Industry 4.0 is not just another buzzword talked about volubly by the tech geeks. Nor is it an illusory overnight sensation! Industry 4.0 is a broad vision with a calibrated framework and architecture for bridging the digital and physical environments in any industrial ecosystem. It is viewed as the next stage of 'digital transformation' that automates and optimizes processes across the full life cycle of the value chain. Remember the Third Industrial revolution or Industry 3.0? That phase had everything to do with rise of computers, more connected computer networks, birth of the internet,

emergence of robotics in manufacturing and evolution of 'brick and mortar' systems into 'e-anything' models. The fourth industrial revolution or Industry 4.0 is even more epochal- it moves beyond the internet and client server model to the convergence of disruptive technologies like Artificial Intelligence (AI), Robotic Process Automation (RPA), Cloud Computing, Augmented & Virtual Reality and Big Data & Analytics. When technologies converge, silos rupture, enabling an immersive, 'real time' experience.



## The Tech Triad- Data, AI & RPA for a 'Smart Anything' environment

The triumvirate of Data Analytics, AI & RPA is accelerating the 'Industry 4.0' revolution. It is envisaged that these niche technologies will lead to a 'Smart Anything' ambience- Smart Grid, Smart Energy, Smart Cities, Smart Buildings, Smart Manufacturing, Smart Mining and Smart Factories. These technologies are enabling industries in autonomous decision making processes, monitoring assets and processes 'real time' and leading to connected value creation through early involvement of stakeholders as well as vertical and horizontal integration. Further, these niche technologies are helping Industry 4.0 to leverage data including data from connected assets to sharpen efficiencies at multiple levels, transform existing manufacturing processes, create end-to-end information streams across the value chain and realize new services and business models.

The impact of these technologies is amply visible in Industry 4.0 applications. Today, if a weather delay ties up a shipment, a connected system can adjust to this reality and reset manufacturing priorities. There are shipping yards that leverage autonomous cranes and trucks to streamline operations as they accept containers from ships. Then, there are Robotics getting more affordable and available for organizations of any scale. To illustrate, robots move goods around Amazon warehouses, reducing costs and allowing better use of floor space for the e-retailer.

And, when it comes to Big Data & Analytics, Bosch has led the way, merging Industrial Internet of Things (IIoT) and Big Data to drive digital transformation of its automotive diesel system factory in Wuxi (China). The company has embedded sensors into its factory's machines which in turn are used to collect data about the machines' conditions and cycle time. The use of data analytics has contributed to more than 10 per cent growth in output in certain areas besides improving delivery and customer satisfaction.

Industry 4.0 has also spurred the rise of 'Advanced Robotics'. One area gaining significant traction is 'Cobots' or collaborative robots. As opposed to traditional robots, cobots are designed to work freely around people, substituting human interventions in repetitive and dicey operations. A DHL distribution centre in Netherlands uses Autonomous Mobile Robots to perform pick and place operations. The use of self-driven robots has cut order cycle time by up to 50 per cent and enhanced the picking productivity gains 2X. Alongside robotics and intelligent systems, Additive Manufacturing or 3D printing is accelerating Industry 4.0. Emerging as a valuable digital manufacturing technology, it promises to reduce transportation distances and costs and ease inventory management by storing digital files instead of physical parts.





2019



2020



2021

### Use Cases

- Mining Lease boundary inspection
- Land use pattern assessment
- Volumetric measurement/ validation of Stack

01

### Use Cases

- Tightly controlled automated weighbridge events and triggers for faster turnaround of weightment operations
- Using RFID cards, Sensors and RPA

02

### Use Cases

- Realtime Dashboards/Big data Analytics, Trends, Patterns and Prediction
- 3D Modelling, AR, VR along with GIS/Geospatial data for random sampling in stacks
- AI/ML/DL leverage

Q1 → Q2 → Q3 → Q4

### Milestone 1

UAV/Drone Intervention at "a Northern Odisha Leading Mines"



Q1 → Q2 → Q3 → Q4

### Milestone 2

Unmanned Weighbridge Management/ Stockyard Management System



Q1 → Q2 → Q3 → Q4

### Milestone 3

3D Modelling, AR, VR along with GIS / Geospatial data for random sampling in stacks



### Roadmap

AI/ML for Operational Efficiency



## CSM Roadmap For Industry 4.0 in Mining





→ **2022**

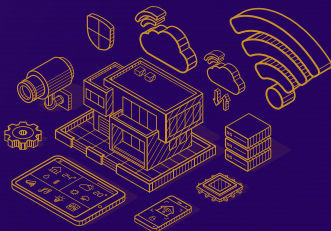
03 **Details**

- AI integrated cameras along with facial recognition.
- E2E automation and integration to eliminate theft and corruption in mining
- Sensor embedded loaders, trucks and rail

Q1 → Q2 → Q3 → **Q4**

**Roadmap**

AI integrated cameras. E2E Automation and Integration



Milestone

Roadmap

## The Future in Connected Systems and Shared Innovation

What disruptive technologies have hitherto done to shape Industry 4.0 may still be the tip of the iceberg. The possibilities are widening and a whole new world of connected systems is unwrapping. The future of Industry 4.0 will be of greater networking between man and machines to deliver the unimaginable. We hear of IIoT stamping its presence as a 'game-changer' and helping create factories of the future. IIoT already covers industries representing 62 per cent of the GDP in G20 countries. One industry estimates pegs the spending on IIoT at \$500 billion by 2020 end with the technology creating value worth \$1.28 trillion. KPMG estimates the components markets of Industry 4.0 at more than \$4 trillion in 2020. As the industry readies to invest on game changing technologies, 'Digital Twins' and 'Edge Computing' are seen as taking centre stage with their potential to transform people, processes and plants. Industry 4.0 is on the cusp of a synergistic evolution where people and technology commingle in a shared space for a 'disruption led precision'.





# TRULY DIGITAL MINING ENTERPRISES

# 04

## ERP in a new light

By **Upasana Mohapatra**

Natural resource extraction and their utilization – both in terms of their scale and expanse, has witnessed a sea change over the past several decades. Today, the metal and mineral mining industry forms the backbone of practically all major direct and indirect contributors to the GDP. Operations that were deeply fragmented and in-silo couple of decades ago, are now part of the well-oiled large scale enterprise structure of most mining and metal industry major. In such a scenario, the ERP requirement for the specialised needs of the M&M industry has witnessed a huge uptick.

Today, according to 53% of the key IT-related decision makers feel that ERP implementations are one of the priority investment areas for the enterprises. As the penetration of digital technologies continues in the mining and metal industry, it is imperative that the ERP solution offerings for mining domain will continue to absorb, evolve and streamline the mining-specific processes within their ambit.





Here are some of the areas that are quintessential to creation of truly digital mining enterprises:

- Connected and real-time operations: point to point data synchronization between the various modules if ERP, conventionally, has remained only near real-time. But with the advent of Industrial Internet of Things (IIOT), greater dependence on connected systems starting from the weighbridges to the shop floor, ERPs tailor-made for metal and mining industry are expected to work in such thickly connected environs.
- Workforce deployment planning and management: Human resource management in mining enterprises are no more restricted to the core HRMS processes only. As the M&M industry players aim at greater efficiency, lower cost of manpower and operations, workforce planning and management becomes an integral aspect of truly Digital Mining enterprises.
- In-built intelligent dashboard and analytics: In M&M industry, ERP systems become a crucial hub for all enterprise data – transactional, analytical and master, ready-to-go dashboards with actionable insights are a must-have for digital mining enterprises.
- Digital-first approach to customer management: gone are the days when Customer Relationship Management (CRM) and ERP were treated as areas subject to optimized integration at a later point. With digital touchpoints for mineral and metal industry sales at an all-time high, out-of-box connectors and templates for creating a “CRM-ERP utopia” are indispensable.



As the needs of the mineral and metal industry segment grows and refines itself into even more digitally-enabled, the ERP systems are bound to become expansive and respond to these paradigm shifts. And perhaps, a couple of years and few transformative industry adoptions later truly digital mining enterprises become commonplace.



# TACKLING CYBER SECURITY IN MINING

# 05

By **Samparna Tripathy**

With the adoption of Industry 4.0 standards (such as Robotic Process Automation, Internet of Things & multiple third party systems), the operational environment in mining industry is now highly interconnected. This in turn has increased the vulnerability of the connected network to various kinds of cyber-attacks – often driven by financial, political or competitive objectives or simply by a desire to disrupt.

Securing digital environments from cyber threats is now a business priority for companies & regulatory authorities in the mining sector.

Common Threats in the Mining Industry:

- 1. Cyber Espionage:** Aimed at gathering business critical information such as geological exploration results (on location & value of mineral deposits), proprietary technology used in extraction or pricing strategies. Could be leveraged by competitors (companies or nation states) to gain an upper hand in Mergers & Acquisitions or Bidding for a scarce, high value resource.
- 2. Phishing Attacks:** Aimed at stealing private data from companies (payroll information, bank account specifics, employee passport scans) and extorting money from companies in exchange of keeping information confidential. So rampant are these attacks today that there are business models emerging to negotiate with hackers and ensure that they don't post hacked data on the dark web.
- 3. Third Party Access:** Aimed at entering interconnected network through vulnerable systems of third party vendors (support services, IOT devices, network connectivity providers). Weakly enforced user rights, access control regimes or other cyber security standards at the vendor level can make it easy for malicious software to crossover and attack the mining companies' core systems.







## CSM Approach for Cyber Risk Management in Mining:

### 1. File & Database Encryption:

- a). Implementation of encryption & decryption to protect on premise data from theft and misuse without compromising system performance.
- b). Highly scalable solution in heterogeneous environments ensuring compliance with global regulatory standards (such as GDPR).

### 2. Data Protection for Databases:

- a). Automated sensitive data discovery and classification
- b). Real-time data activity monitoring, cognitive analytics to discover unusual activity around sensitive data
- c). Generation of alerts to block access for suspicious activities in alignment with security policies

### 3. Vulnerability Assessment:

- a). Scan of data infrastructures (databases, data warehouses and big data environments) to detect vulnerabilities (such as weak passwords, unauthorized changes and misconfigured privileges)
- b). Identification of behavioural vulnerabilities such as account sharing, excessive administrative logins and unusual after-hours' activity
- c). Remedial action to address vulnerabilities as per best practice standards

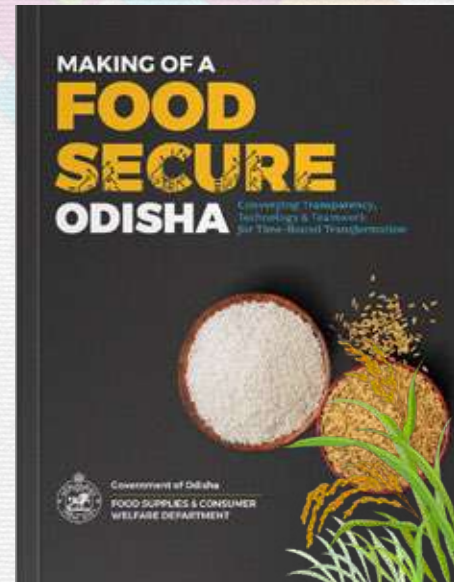
Certified Partners  
of IBM Guardium





## Book Launch by CM: Making of a Food Secure Odisha

**Bhubaneswar 23rd October 2020:** Partnering in Odisha's food security journey, is something CSM takes immense pride in. This incredible story of how tech of food can be tech for good is illustrated in the publication named - 'Making of a Food Secure Odisha', which was unveiled by Hon'ble Odisha CM Shri Naveen Patnaik on 23rd of October 2020. The book contains all the information about the massive digital transformation that has taken place to ensure "food security" in Odisha over the last 20 years.



On this occasion the CM also launched Citizen-Centric online Services of Food Supply and Consumer Welfare Department. Under this initiative, the farmers' registration for the sale of paddy, Ration Card Management, payment of license fees for affordable shops and payment of food grains by affordable shops will be carried out online. CSM as a proud tech partner has facilitated the state government to cover more than 3.5 crore people under the food security scheme.

## Student Scholarship Portal launched by Odisha CM

**Bhubaneswar 26th October 2020:** It was a proud moment for CSM as a tech implementation partner, when Odisha Chief Minister Naveen Patnaik launched 'Odisha State Scholarship Portal' to facilitate eligible students of the state to avail scholarship benefits in a seamless and transparent manner. The portal would offer 21 scholarships by eight state departments and more than 11 lakh beneficiary students from Scheduled Castes, Scheduled Tribes, Other Backward Classes, and educationally backward classes would benefit from the scholarship portal.



Through the State Scholarship Portal, scholarships will be credited directly to students' bank accounts as the portal is linked to the state treasury. Moreover, professional programs of the SC and ST Department, Higher Education, Schools and Mass Education, Labor and ESI, Skills Development and Technical Education, and Agriculture Department will be administered on the portal.



## Women lead way in paddy purchase in Odisha

**Nuapada, 25<sup>th</sup> November 2020 :**

A special story on women leading digital transformation in agriculture in Odisha got featured in Indian Express, one of the leading Indian daily. It showcased how for the first time , 22 women self-help groups (SHGs) have been entrusted with the task of procuring paddy during the kharif season in the district of Nuapada this year.

They were acquainted with the P-PAS system (Paddy Procurement Automation System) developed by CSM before being given charge of different PPCs (Paddy Procurement Centers). This is inspirational as to how technology has enabled and empowered women to lead farm revolution in Odisha.



## Odisha CM Launches OMC's CIMS & SMS

**Bhubaneswar, 1<sup>st</sup> December 2020:** Chief Minister Naveen Patnaik, launched the Customer Integrated Management Services (CIMS) and Stockyard Management System (SMS) applications developed by CSM for OMC (Odisha Mining Corporation). The two applications are designed to transform online sales process and despatch management with transparency and efficiency taking root in the system under the 5T framework.

The CIMS facilitates the customers to get access to a separate dashboard for registration, evaluating order and stocks, get weekly dispatch report, order status, region wise total sale, grievance status and mineral wise dispatch history. While the SMS has been deployed at OMC's Baliparbat stockyard within its flagship Daitari iron ore mines, it includes key components as unmanned weighbridges, transport scheduling, digital identification, parking management, weighment automation, real time reporting, multi-point mobile applications for real time data reconciliation.





## Seed Certification, Kenya Goes Live

Mombasa, Kenya, 8th December 2020: The Kenya Plant Health Inspectorate Service (KEPHIS) officially launched the Seed Certification & Plant Variety Protection portal developed by CSM, marked as a great milestone in the digital transformation journey of agriculture in Kenya.

As tech implementation partners, CSM Technologies is proud to be associated with this project that completely digitizes the procedures for seed certification outlined in the Seeds and Plant Varieties Act (Cap 326) and is compliant with international standards defined by OECD (Organization for Economic Co-operation & Development) and ISTA (International Seed Testing Association). The robust ICT enabled mechanism promotes access to high quality seeds (w.r.t. purity, germination capacity & resistance to pest & diseases) which paves way for food security, biodiversity & agricultural export growth in Kenya.

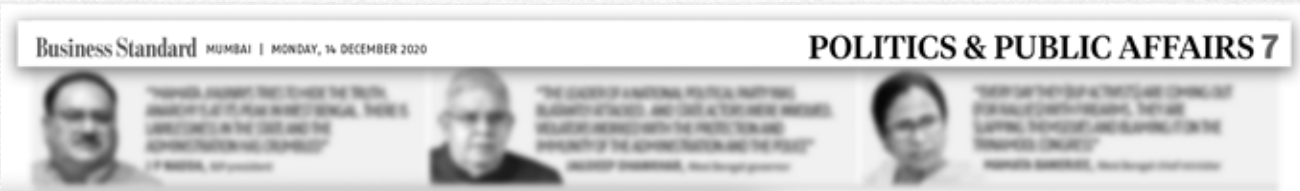




# Odisha Model of decentralized procurement as an Alternative to APMC

Bhubaneswar 13th December, 2020: Business standard featured Odisha Model of decentralized procurement as an alternative to APMC (Agricultural Produce Market Committee). CSM's Paddy Procurement Automation System stand as an alternative model that facilitates transparency for decentralized procurement without the interference of the middlemen.

This enables Odisha government to rely on a sustainable system that promotes steady growth in procurement without depending on the complex web of traditional mandis, middlemen and commissioned agents.



Despite multiple benefits, the Odisha model is facing criticism for not accounting for a surge in production

## The APMC alternative

Sanjeeb Mukherjee looks at how the Odisha model of decentralized procurement has a few key advantages, but certain challenges, too

Farmers in several parts of India are fiercely protesting the three new farm Acts and the common complaint is: As the pieces of legislation come into play, mandis will gradually wither away, having a direct impact on the minimum support price (MSP)-based procurement mechanism.

But, there are ample examples to show how states that don't have a well-entrenched procurement system managed to boost their purchases in the last few years.

No doubt, a robust mandi system is the cornerstone of a strong procurement as shown by Punjab and Haryana over the years, that there are alternatives, too.

States such as Madhya Pradesh, Chhattisgarh, and Odisha — have shown while the network of mandis does have its advantages, it is not always a pre-requisite for improved procurement at MSP.

In the decentralised mechanism, the state government undertakes direct purchase of paddy or rice and wheat, and allocates and distributes foodgrain under the Food Security Act and other welfare schemes. The Centre meets the expenditure incurred by the state on procurement. It also monitors the quality of foodgrain and reviews the arrangements made to ensure that procurement

operation are carried smoothly.

In a paper published in the Economic and Political Weekly in 2012, Mekhala Krishnamurthy, associate professor of Sociology at Ashoka University, said Madhya Pradesh and Chhattisgarh emerged as major regional players on the wheat and paddy procurement landscapes over the years by buying through state agencies and marketing societies across mandis. This, on one hand, ensured high rates for farmers and, on the other, lowered PDS prices.

Odisha is another example of how steady growth in procurement can be sustained on a decentralised basis without relying on the complex web of traditional mandis, middlemen, and commission agents. The commission is paid to primary agriculture cooperative societies (PACS) and others for the procurement.

The Paddy Procurement Automation System (PPAS) of Odisha, many experts said, is a model which shows how decentralised procurement can be carried on in a transparent manner without the interference of middlemen.

### THE ODISHA MODEL

- 1.47 million registered farmers
- 7.08 million acre of verified land
- 10.53 mt paddy surplus
- 1,347 millers, 280 certified transport contractors
- 2,606 PACS
- 50,000+ villages, 12,378 fair price shops.

Source: Odisha Government

involved. In the 2019-20 kharif and rabi seasons, the data shows 58 Gs accounted for around 3 per cent of paddy produced by state agencies; PACS facilitated a majority of the rest.

The keystone of this process is a highly automated system of farmer registration, which is matched with land records and then multiplied with the average yield of the area to come up with a fair idea of the amount of surplus paddy that each farmer can sell to the state agency. The sale takes place at a designated time supervised by officials of the

state civil supplies corporation who also ensure that millers accept paddy in their presence.

Earlier, PACS used to avail loans from cooperative banks to make MSP payments to farmers, but in the last few years, this has been automated to ensure farmers don't have to rely on cooperative societies to get their payment.

As soon as paddy gets accepted by the miller, the payment process gets triggered in a centralised database and MSP gets credited into the bank account of the farmer within a certain period.

"It's a process of decentralised procurement but centralised payment method," said Pradyut Dash, associate vice president—solutions at CSM Technologies, the agency handling the backhaul of this system.

He said in the past few years, even share-croppers and those who have authorised someone to look after their land can sell their paddy through the system. In the case of share-croppers, they need a consent letter from the landowner; for a nominee, he/she needs a nomination letter.

Dash said when the system was introduced in 2012-13, around 0.7 million farmers had registered the number has now risen to over 1.47 million.

"The percentage of people who have registered and people who have actually sold their paddy is growing over the years as farmers see value in the system and appreciate its transparency," Dash said. In 2005-06, Odisha procured around 3.2 million tonnes (mt) of paddy; this rose to over 6.5 mt by 2018-19.

But, every system has its flaws. The PPAS has come under criticism in the last few years. One big criticism by several western Odisha farmers has been that because of the centralised system of yield determination, growth in production isn't adequately taken care of, leaving them with large unmet paddy surplus.

In the last few years, Odisha has witnessed good paddy output because of good rainfall, narrowing the gap between the average yield in irrigated and unirrigated areas. But the average yield determination for procurement hasn't kept pace," said Surendranath Pishapatak, former vice-chancellor of Odisha University of Agriculture and Technology. He said the average yield determination for procuring the marketable surplus should be done.

Sarej Mohanty, a farmer leader, believes Odisha's procurement model cannot be compared with that of Punjab and Haryana as the state never had a robust mandi mechanism.

"In Odisha, mandis don't have proper infrastructure and lack even basic facilities. Their number is also less... Also, PACS do procure from market yards but the only difference is there is no tax and arbiyas," Mohanty said.

## CONSIDER THE EVIDENCE

### Pawar's Dalit-OBC outreach is a concern for Sena & Cong



The article discusses the political implications of the Odisha model, particularly focusing on the outreach efforts of the Shiv Sena and Congress parties towards Dalit and OBC communities. It mentions that the Odisha model is being seen as a challenge to the traditional APMC system, which has been a stronghold for certain political groups. The text highlights the concerns of the Shiv Sena and Congress regarding the impact of the Odisha model on their voter base, particularly in rural areas. It also touches upon the broader political context of the time, including the state of the economy and the impact of the COVID-19 pandemic on the agricultural sector.



# VIRTUAL KNOWLEDGE EXCHANGE

Staying Connected, Staying  
Informed, Staying Empowered!

Knowledge sharing is considered a critical condition for every organization for not only fostering vision in others, it helps in improving individual & organizational efficiency and also built great relation with partners & clients to strengthen professional ties.

A leader is one who must stand up and be vocal about what it has to offer. Success isn't just about what you accomplish in life. It's about how you inspire others!

CSM as a harbinger in GovTech space has inspired others through its digital disruptions. As a thought leader, it has adopted new practices to break through thought barriers. Making the best use of the alternative virtual medium it has successfully organized two Webinars for knowledge sharing and initiated a Town Hall series for the employees.

## 1<sup>st</sup> Webinar – on 'The New Era of DXP (Digital Experience Platform)'

During this volatile times of Covid-19, what's needed are speed, convenience and right information at the right time. This is where digital experience suite of solutions & services ensure that "all is well" with the customer, besides providing a perfect blend of platform, solution and services, put together in one platter.

Through this Webinar "The New Era of DXP (Digital Experience Platform)" held on 7th October 2020, the domain expert of CSM, Neha Arora addressed questions through its package of Digital Experience on the AEM platform of Adobe: Designing; Content Management; Targeted Analytics and Overall Management. The success story of Odisha Tourism inspired the participants & partners to think of all such amazing stories that can be co-created using the power of DXP.





## 2nd Webinar on “e-Auction and Online Commodity Trading Platform- Driving Optimal Market Outcomes”

In these changing times, a massive leap & push of digital revolution has been felt in the agricultural commodities trading division, with the adoption of e-auction platforms that have been demonstrating stark benefits, outweighing traditional processes. Digitization was imperative to promote efficiency in supply chains and achieve optimum price realization.



The second webinar on “e-Auction and Online Commodity Trading Platform”, held on 2nd December 2020, presented by our domain expert Avinash Mallick enlightened the audience about e-Auction platforms & its several opportunities to ease herculean process by harnessing innovation & technology. Over these years, CSM has been continuously collaborating with commodity exchanges and trading bodies in Africa and SE Asian markets.

## Town Hall – Voices; Crafting Dialogues to Build the Future

CSM had its first Town Hall-VOICES on November 13, 2020 and it was full of information, exchange of knowledge and great visioning exercise for all. A promising interface which proved to be both intuitive and participatory with an illuminating Q&A session with the CEO.

When remote working and virtual synergy are the new catchwords. The crisis has reset us in the way we live, communicate and deliver. And we have successfully taken the 2-decade old ‘CSM Workplace’ to ‘Work-from-Anywhere’; and Home is the first pit stop. However, easily said than done, we have had quite too many challenges with this new normal. The pandemic has rekindled the spirit of ‘togetherness’. And, the need to share the ‘oneness of vision’. This shared spirit has prodded the company to host ‘VOICES’ or Town Hall meets to be staged every Quarter.

‘VOICES’ is an outlet to help fast-track our vision to fruition. A platform where our CEO takes everyone - on the ‘idea odyssey’ and talks on ‘growth hacks’; on the evolution of CSM and the marriage of many minds to deliver some ground-breaking solutions; a peek into over two decades of ‘digital disruption’, and the road ahead.





By Nidhi Lohia



When your boss comes around the corner and you grab the closest thing around you to look like you're working



When your co-worker asks a question that makes the meeting go on for 25 more minutes.





Spot The Difference



Sudoku

					6	8		
			7	3				9
3		9				4		5
4	9							
8		3		5		9		2
							3	6
9	6				3			8
7			6	8				
	2	8						

SPOT THE DIFFERENCE ANSWER



SUDOKO ANSWER







[www.csm.co.in](http://www.csm.co.in)

## India

### CSM Technologies

Corporate Office (HO)  
Level 6, OCAC Tower,  
Bhubaneswar-751013  
Odisha, India  
Tel: +91-674-663-5 900

### NCR

### CSM Technologies

A-1030, iThum Corporate Park  
Plot No. A-40, Sector-62, Noida UP  
Landline 0120-6618156,159, +91-93111 06633  
Mail Id : anand.madhukar@csm.co.in

### Patna

### CSM Technologies

First Floor, STPI  
Near Govt. Polytechnic College,  
Rajeev Nagar Road, Patliputra Colony,  
Patna-800013, Bihar, India  
Tel:+91-9798306100  
Mail Id: s.sinha@csm.co.in

### Ranchi

### CSM Technologies

Level-1 MFC, STPI,  
Namkum, Ranchi-834010  
Jharkhand, India  
Tel: +91(0)-9798306100  
Mail Id : vikash.kumar@csm.co.in

### Chandigarh

### CSM Technologies

#293, Sec 124, Sunny Enclave (Kharar)  
Back Side HMS Hospital, Punjab-140301  
Tel: +91(0)-98155 36679  
Mail Id: abhinav.thakur@csm.co.in

## Overseas

### Dubai

### CSM Technologies DWC-LLC

Business Center,  
Dubai World Central,  
P.O. Box: 390667, Dubai, UAE

### Kigali

### CSM Technologies Africa Limited

Plot Number 7, Kibiraro Village,  
Nyarutarama Cell, Remera Sector, Gasabo  
District, Kigali City, Rwanda  
Tel: +250786405864,+91 706449300  
Mail Id : prem.acharya@csm.co.in

### Addis Ababa

### CSM Technologies Africa Limited

EthioICT Park, Block-1,  
Ground Floor, Addisababa, Ethiopia  
Tel: +251922728834, +971504372126  
Mail Id : subhendu@csm.co.in

## Copyright © 2020 by CSM Technologies

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the publisher.