

# FORIS DIGITAL FACTORY QUICK DEMO



Sitronics Telecom Solutions Pakistan



- Product Features
- > FDF Architecture
- Development Technologies
- > Information Security
- > Solution Platform
  - > Virtual Architecture
  - Physical Architecture
  - > HW SW Components
- Operations
- > TCO
- > Q&A





### **FDF Product Features**

Real Time Insights

**End-2-End Visibility** 

**Connects, Collects Production Data & Plant Simulation** 

Quality, Efficiency & Safety Improvements

**End-2-End Visibility & Data Analysis for Better Insights** 

Digitally Integrated Smart Factory Network

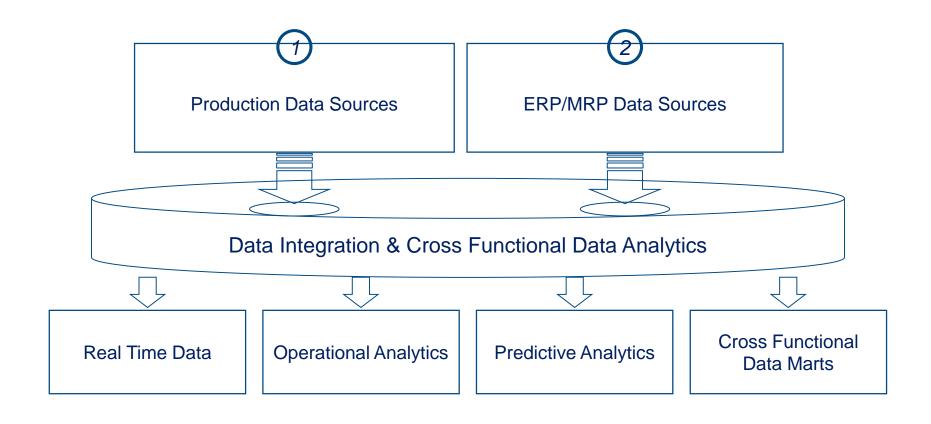
**Augments Human Intelligence with Machine Intelligence** 



**Digital Factory – A Solution based on Industry 4.0 Principles** 



# Implementation Methodology



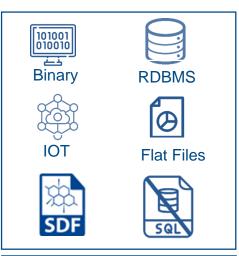
From Smart Connected Products through to Big Data Analytics, Process Optimization. FORIS Digital Factory enables manufacturers with services, systems and technology to reduce operating expenditures and achieve measurable efficiency.

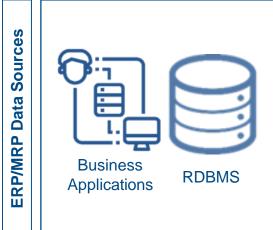


### Data Flow Architecture

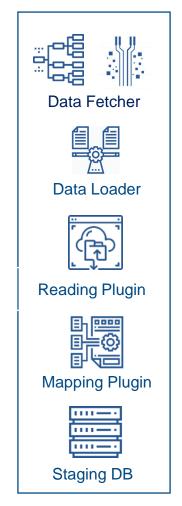
#### **External Data Sources**

Manufacturing Data Sources

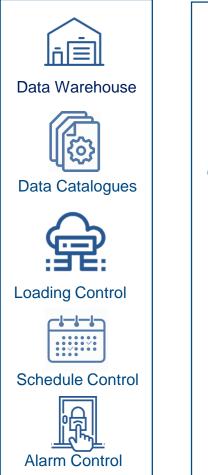




# Integration Control Engine



### Data Warehouse Utilities



### Metadata Layer & Data Marts



#### **User Interface**

View

Twin

**Digital** 

User

Based





# Application Modules & Technologies

### Integration Control Engine

- Data Ingestion
- Data Entirety
- Quality Assurance
- Data Validation
- Data Mediation
- Data Loading

# Data Warehouse Utilities

- De-normalization
- Partitioning
- Reconciliations
- Transformation
- Enrichment

#### **Data Warehouse**

- Meta Data
- Data Catalogues
- Aggregates
- Facts
- Processed Data
- Data Marts

#### **Front End Module**

- Admin
- Reports
- Dashboards
- Alerts
- Scheduling
- Case Manager



Service Oriented Architecture

Integration Services C++, Python, Kafka



Fully Web Based Application

Loading Services C++, Python, Zoo Keeper



Dot Net Framework

DWH, Data Lake Oracle, MS SQL, HDFS, NoSQL



Cloud Ready Windows

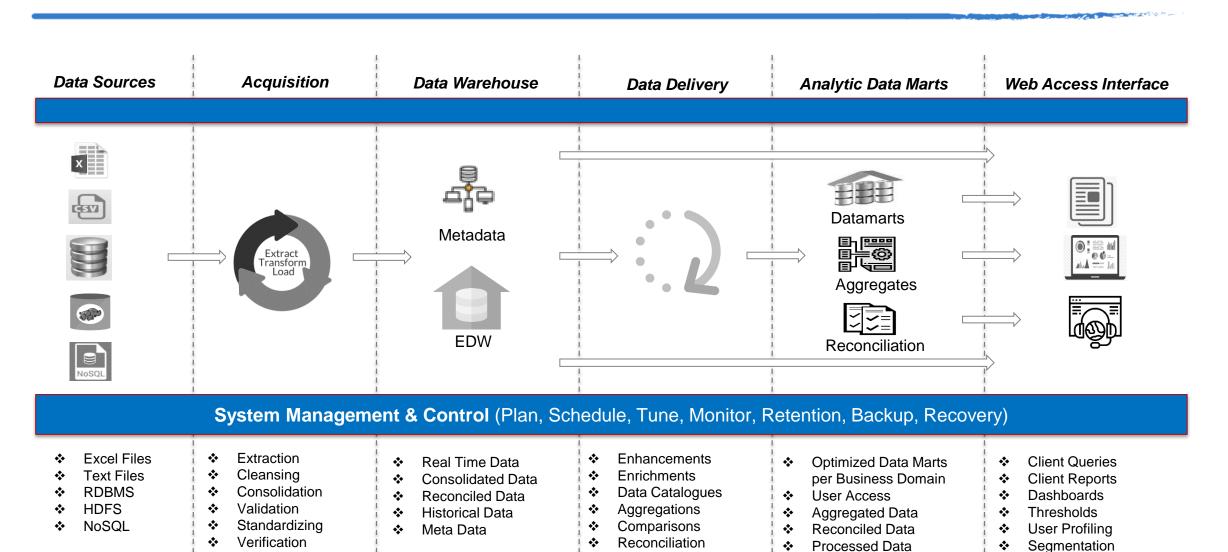
Front End C#
Dot Net Ext JS Framework



De-normalization

### Data Flow Architecture

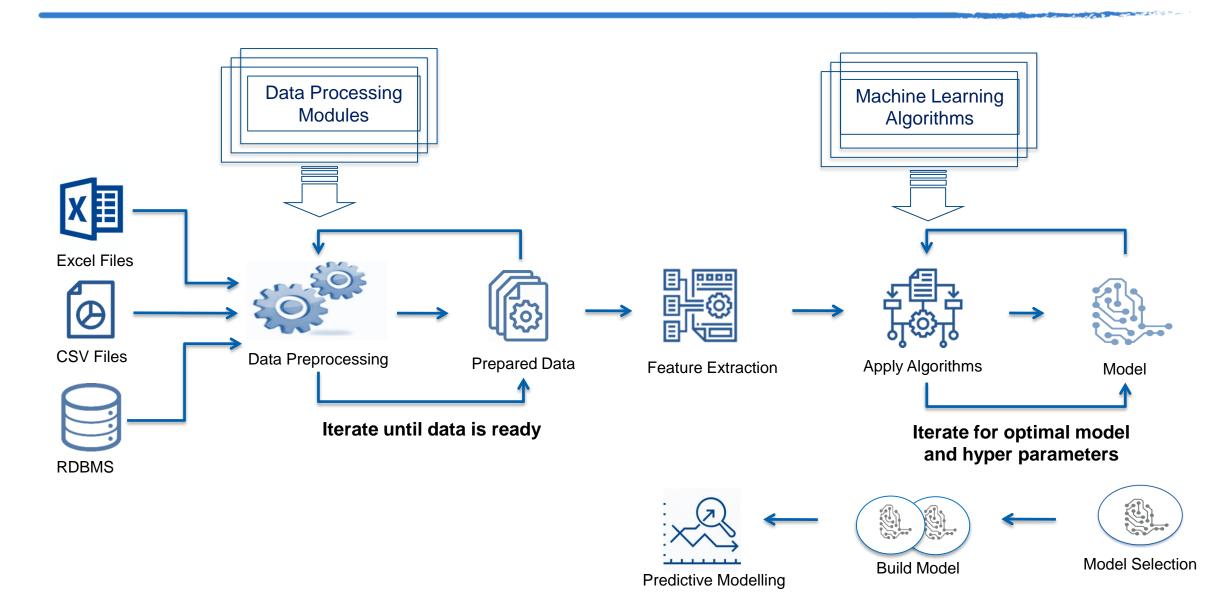
Score Cards



**Distribution Control** 

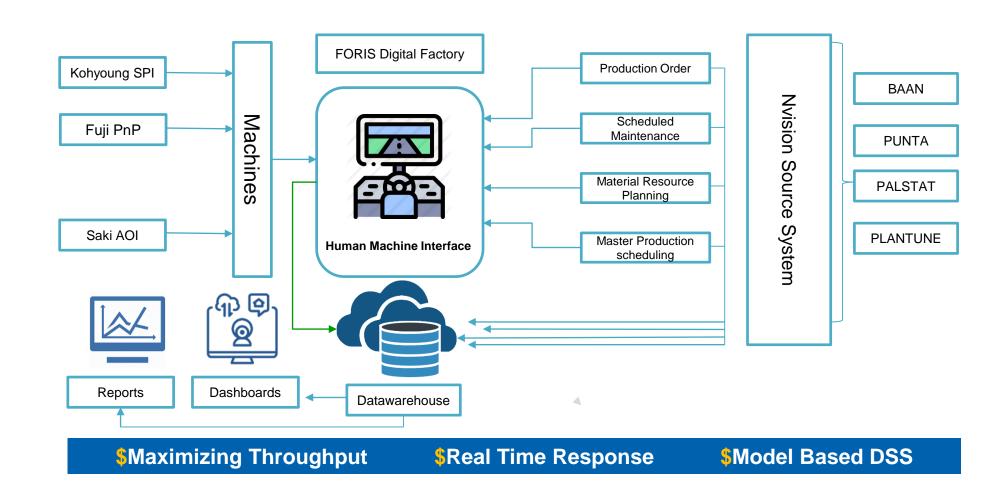


# Machine Learning Process



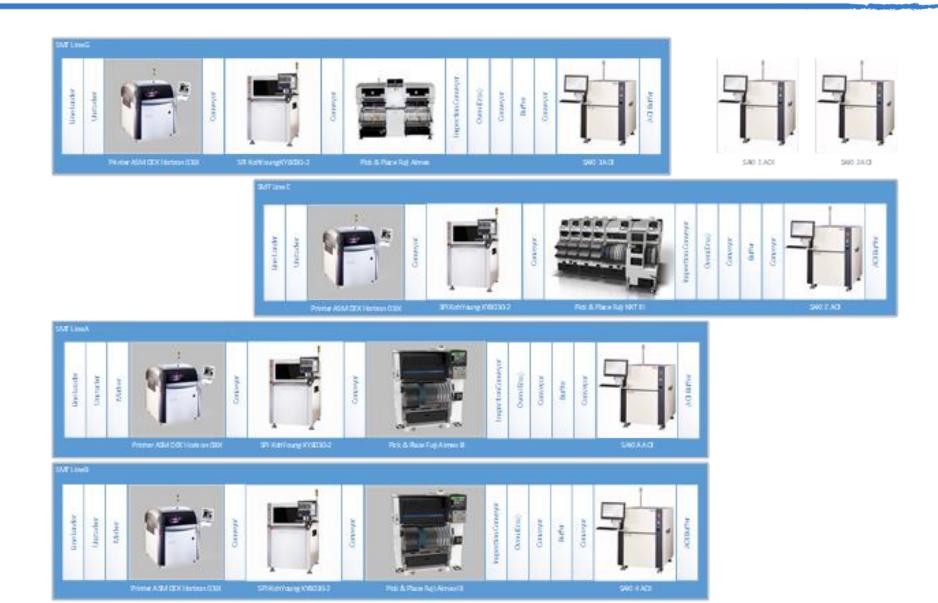


# FDF High Level Architecture @ Nvision Czech Republic Votice POC





### **Production Lines**

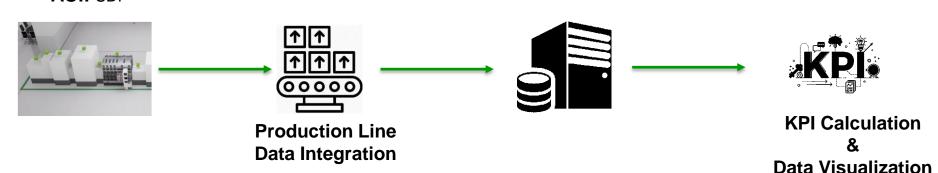






SPI: CSV Files & Data Collection & RP&P: Profiler, Fuji, Nexim AOI: SDF

**Nvision Votice Production Line** 



- Visualize historical and real time data from SMT lines
- Drill-down function to the details level
- KPI Calculations & Dashboards
- Visualization of production lines data e.g., analyzing error patterns
- 3D virtual factory view



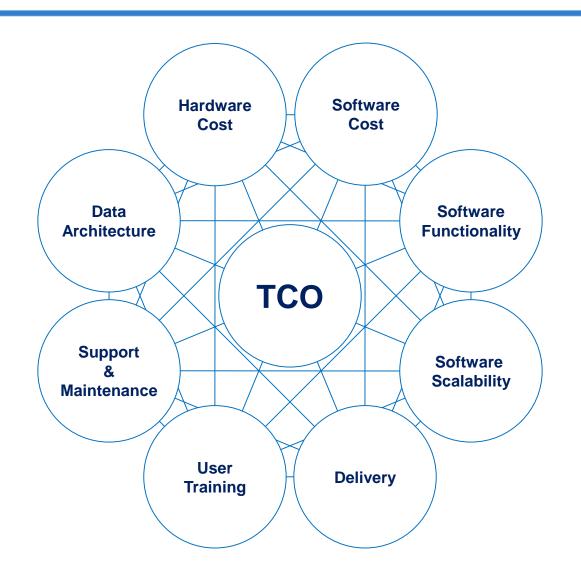
# Information Security

- Active Directory Integration
- Identity Access Management
- User Profile Controls
- Usage Monitoring & Tracking
- Document Locking and Check Out
- Data masking & encryption
- Table Level Security
- Column Level Security
- Row Level Security
- Protected Customer Information





# Total Cost of Ownership



#### **Integrating Physical & Digital Worlds**

- Sharing real-time data with humans as well as other systems
- Big Data Analytics
- Quality Assurance
- Production Line Simulation
- Smart Supply Chain
- Predictive Maintenance



# Operations - IT Service Management

- Standard Support
  - ✓ Timings: 9:00 AM 05:00 PM
  - ✓ Days: Monday Friday; Excluding Saturdays, Sundays & Public Holidays
- JIRA Service Desk
- FORIS Monitoring Panel
- Annual Maintenance Contract
- Service Level Agreements
  - ✓ 24X7X365 Support
  - ✓ Response, Resolution Time Matrices
  - ✓ Priority, Severity Level Definitions
  - ✓ Call Registration & Escalation Process

IT Service Desk

- IT Service Desk Support
- Trained Resident Engineers

Support Levels

- Level 1-Resident Engineers Customer/Partner
- Level 2-Super Users & IT Specialists Partner
- Level 3-Sitronics Pakistan

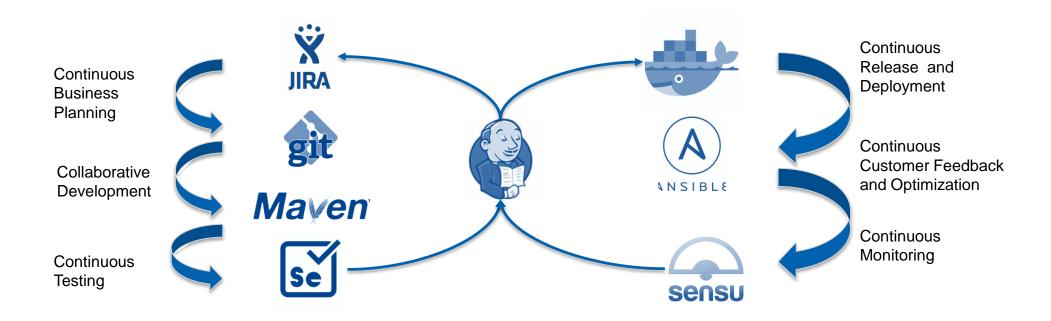
3<sup>rd</sup> Level Support

- Sitronics Service Desk/Support Team
- Service Level Agreements









- Software Development
- Committing Codes
- User Acceptance Testing & Quality Assurance
- Release Management
- Integrate testing phase to deployment
- · Tightly cooperate with developers to deliver faster

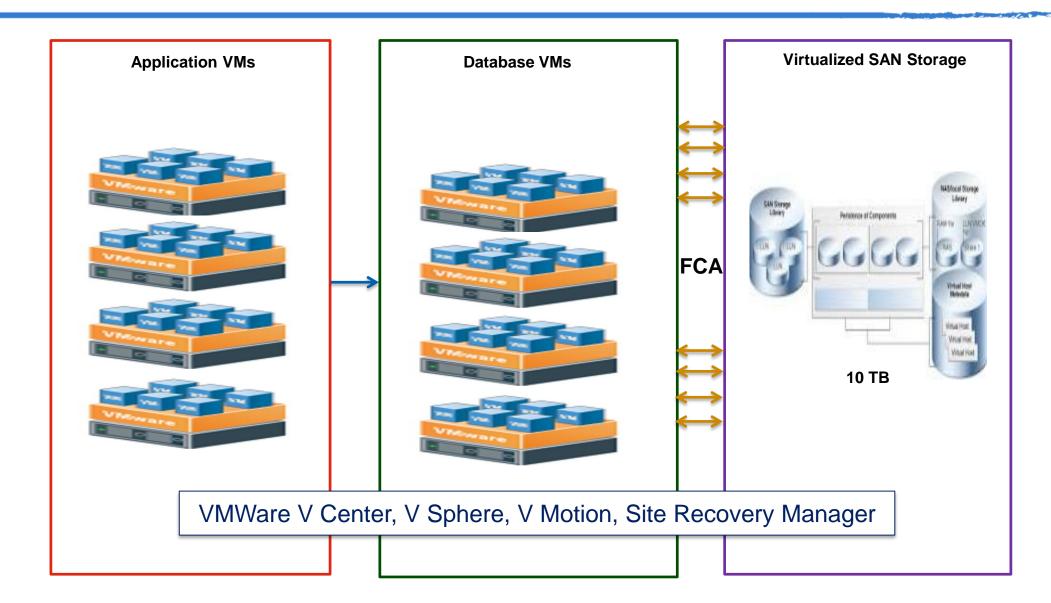
- Prepare Infrastructure as a Code
- Automatically deploy infrastructure to environments
- Build stable platform for deploying applications
- Prepare CI/CD pipelines
- Integrate monitoring and security requirements
- Measure and improve pipelines

Development

**Operations** 

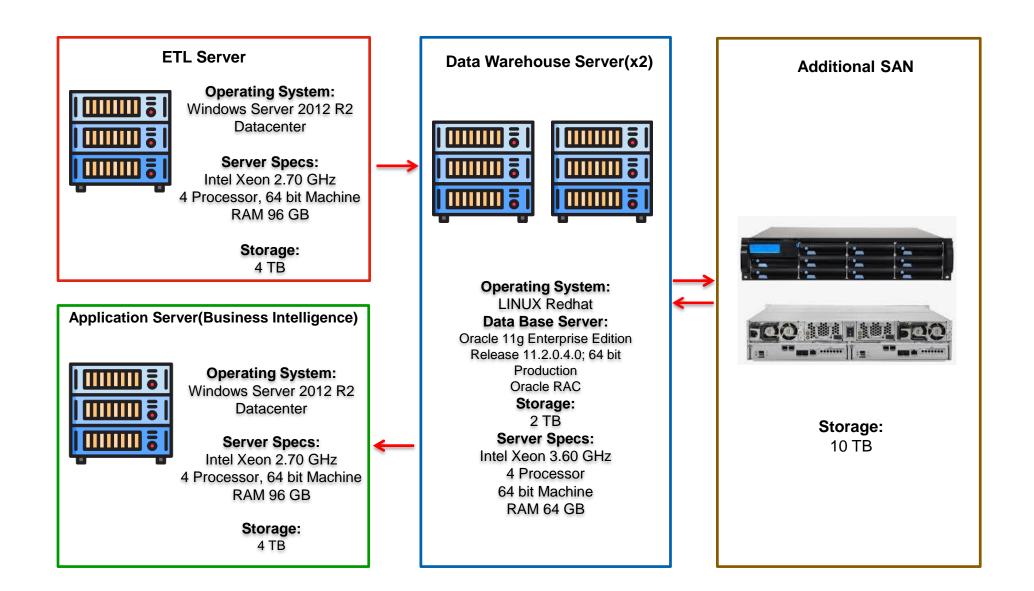


### **Virtual Platform Architecture**





# Physical HW SW Platform



### **Thank You!**



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