

W H I T E P A P E R



Utthunga's Industrial Solutions Including IIoT & APPLICATIONS



Executive Overview:

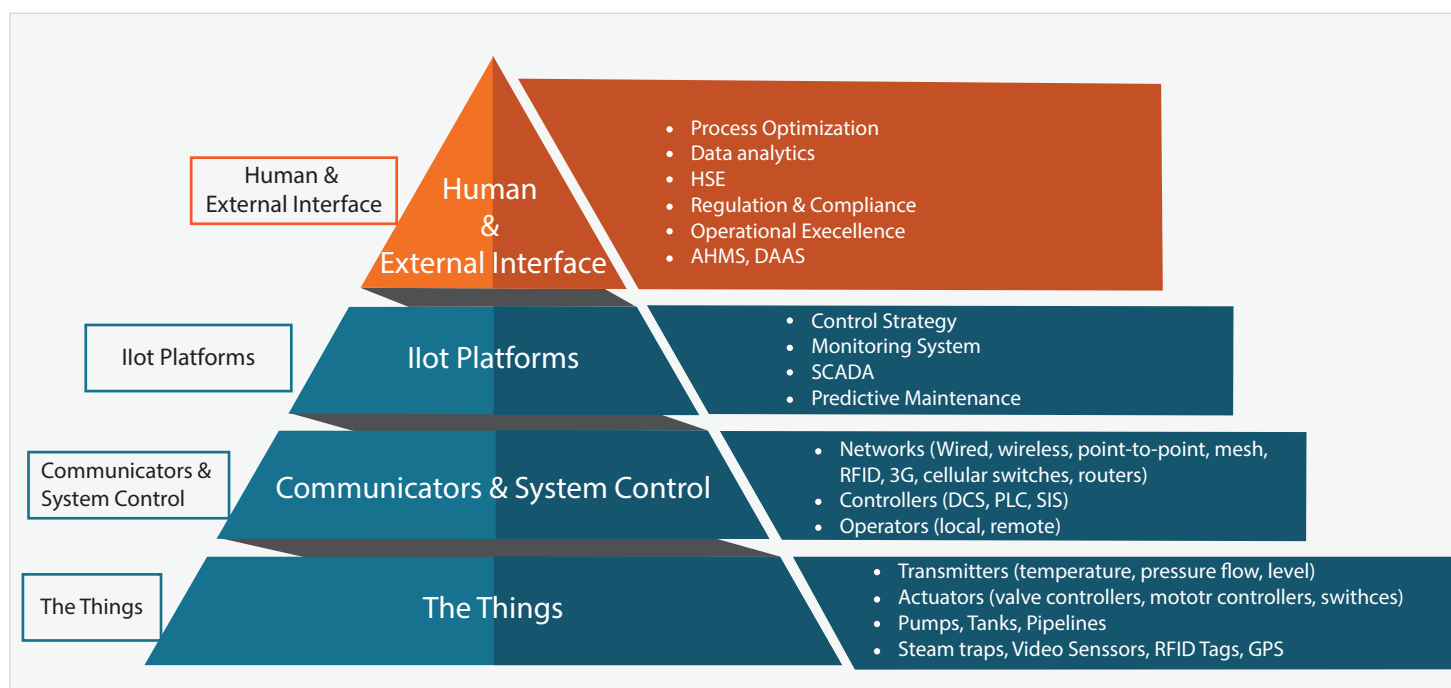
Utthunga Technologies is an industry focused Automation Software and Solution Provider Company with a single aim of adding value to all levels to their customer business. Utthunga is a team with 500+ technology specialists backed by domain knowledge in Industrial Automation. Utthunga Technologies has extensive experience in standards like OPC, FDI, EDDL, FDT/DTM, ODVA and IEC specification and more than 20+ communication protocols including HART, FF, Profibus, EtherCAT, ISA100 etc. Utthunga has delivered many solutions to global OEM's, thus adding value to their business lineup.

Utthunga has excellent OPC capabilities to offer, building on years of experience in industrial data connectivity. We offer agile solution development and provide services in and around our OPC products. With team of experts on OPC technologies and embedded engineers, Utthunga is the preferred and trusted vendor to provide OPC products and build custom solutions, applications and embedded servers.

Utthunga is an active member of the OPC Foundation. We contribute to the latest developments on OPC technologies and standards and keep our products in line with the new developments. We are one of very few vendors who also offer services to the OPC foundation. Our OPC products are ready to support OPC Pub-Sub and TSN network standards.

Productivity Management Platform ,also an IIOT platform called JAVELIN, a purpose-built framework to manage Industrial Data Lifecycle for Plant owners, Instrument suppliers, Equipment manufacturers, System Integrators & EPCs. It would provide proven Industrial Grade Data storage, in-built Data Analytics & secure Data communication.

Basic IIoT Architecture:



Javelin is a true productivity management platform developed ground-up by Utthunga Technologies with the needs and requirements of the discrete/process industries in mind. A very robust and scalable platform, Javelin can connect field devices and other industrial assets to generate rich visualization and analytics. Provides actionable insights to achieve operational excellence and productivity maximization.

Key Features:

- Asset Configuration
- Actionable Insights
- Real Stream Analysis
- Reports
- Alerts and Notifications
- Condition Based Monitoring
- KPI Management
- Predictive Maintenance
- Role Based Access Management
- Gateway Management
- Security
- Interoperability

Key Benefits:

1. **Ease Of Use** - Easy to learn, adapt and operate. Platform is built keeping shop floor people, management team, IT maintenance engineers, suppliers/vendors in some cases. Easy learning curve and an easy-to-maintain platform makes platform to use easily.
2. **Deployment Flexibility** - Based on needs from different organizations and their needs the platform could be deployed on premise or on cloud. An organization may need fully on premise deployment to as per their policies or may go with private/public cloud-based option to achieve higher efficiency and cost savings.
3. **Secure Data Transmission and Storage** - As data is a key asset to any organization, the platform ensures comprehensive security via TLS1.2 protocol when data in flight and AES encryption for data at rest.
4. **Improves Productivity** - Various insights provided by the platform helps to increase productivity of organization. Define KPIs and tracking those KPIs subsequently helps industries increase the performance.
5. **High Ingestion Rate** - Clustered architecture, multithreaded parallel processing helps to ingest sensor/device data into platform at a high rate.
6. **DMAIC** - Well-built compute framework helps to Define, Manage, Analyze, Improve and Control. Having history of the machine data helps us to understand the system when it was in a certain state. With real data streaming, state of a system can be monitored on dashboards and relevant alerts can be generated to take the actions. Rich historical data fed into machine learning frameworks provides actionable insights about the future so that the problems are identified and solved even before they appear.
7. **Open Architecture** - Factory/Organization data may reside in multiple systems and in various formats. Platform is open to integrate with IT systems such as ERP, CRM, QMS, planning, and scheduling, etc. This enables to feed real-time relevant machine data into critical IT systems to help to make data-driven decisions.
8. **Controlled Access** - Platform provides role-based authorization and authentication, which ensures controlled access of the data for different stakeholders of an organization.

What Utthunga Brings to the Table?

In the company's vision for the Industrial Internet of Things, Utthunga believes that it can add significant value in the operational technology (OT) domain, while helping to ensure the prerequisite integration of OT by working closely with both IT suppliers and end users.

In addition to supplying a wide variety of related industrial hardware, software, and services, this includes taking advantage of the company's deep knowledge of industrial organizational issues, real-time data processing, data storage, analysis and managing data from devices, machines, and other "things" in the plant and in the field.

Perhaps even more importantly, the company's Industrial Solutions business approach helps ensure the appropriate rigor required to make sure that IIoT solutions meet the demanding safety, security and availability requirements for mission critical industrial automation.

The company's specific strengths related to the OT side of the IIoT equation include:

Sensing:

Utthunga has also designed & developed some of the sensors required for Industrial IIOT. This includes wireless temperature sensors, vibration sensors. In addition, Utthunga is collaborating with sensor manufacturing companies to provide different sensors for various applications required to meet IIOT Industry 4.0 requirements.

Utthunga is also collaborating with suppliers for industrial wireless HART and FOUNDATION fieldbus technologies, both, which come into play for many IIoT enabled solutions. Data related to field Assets such as; Transmitters, Actuators, Pumps, Tanks & Pipelines and other assets are a key to enable IIoT applications.

Systems:

Utthunga is also working with many OEM suppliers on basic automation systems such as DCS, PLC, SCADA and Control Systems. A combination of both centralized controllers and remote field controllers make Utthunga well suited to supporting the OT side of many IIoT enabled solutions

The company also offers third party supervisory control and data acquisition (SCADA) systems and remote terminal units (RTUs) to support remote operations. This basic platform is well positioned to meet customers' remote data acquisition and analysis requirements.

As previously mentioned, safety is a key requirement in industrial process plants and other industrial operations. RTP's safety integrated system (SIS) meets the strict safety requirements of both the IEC 61508 and ANSI/ISA 84 international standards. For Oil & gas operations, both of which are particularly well suited for IIoT solutions, the RTP 3000 TAS-SIS, PLC & DCS systems with high integrity safety system to help meet the severe environmental conditions and mitigate risk in these operations.

Services:

Utthunga offers a variety of well-proven local and remote engineering services, performance services, asset management, and other services that span both the upfront (capex) phases of a project and the much longer (opex) post installation operations and maintenance project phase.

The company's various service capabilities can both contribute to and benefit from IIoT implementations. Good upfront engineering provides the foundation for any industrial automation solution, and IIoT enabled remote engineering services can help compress project schedules and reduce costs.

Remote performance services, that both support and are enhanced by IIoT solutions, can help industrial organization improve performance at the unit, plant, and enterprise levels. Moreover, as previously mentioned, predictive asset management services, enabled in part by IIoT connected sensors and analytics, represent a key value proposition for the IIoT.

Engineering Software Applications:

- Engineering Software Tools: Configuration, Device Diagnostic and Service tool development
- Device Management Applications
- Intelligent SCADA Development
- Operator Interfaces
- Control Software
- Real Time Data & Event Management
- OPC/DDS based solutions

Operations Management Solutions:

- Device Integration
- Asset Management
- Alarm & Diagnostics Apps
- Remote Configuration
- Visualization Apps
- Lifecycle support tools
- Cloud based dashboard configurator
- Custom IT/OT Dashboards

We blend our deep understanding of Automation / Operations Technologies and ready to use Frameworks to provide end-to-end software solutions to run Operations & Maintenance effectively and efficiently

Automation - Host & Device Integration

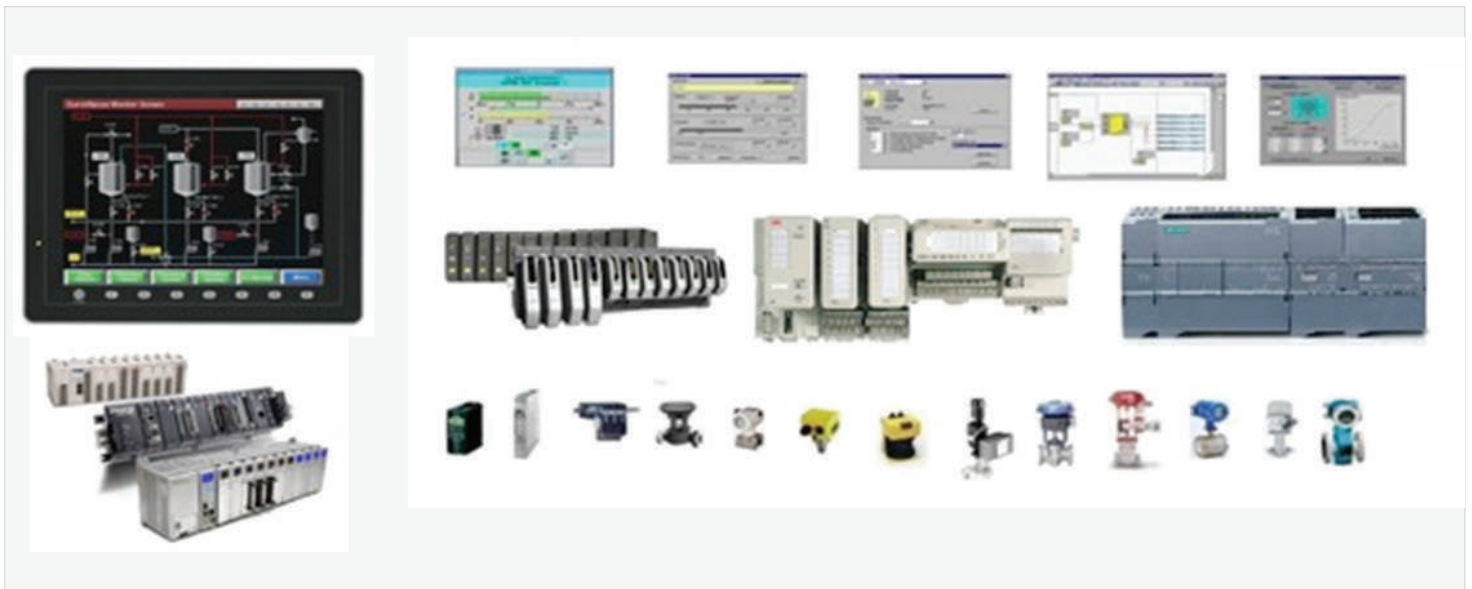
Utthunga is recognized as a leader in Host Development and Field Device Integration. Our accelerators help automation suppliers dramatically increase speed to market and reduce total cost of ownership.

Automation Host Systems

- Industrial Control System – Controller, IO Modules, HMI Development
- Protocol support for Control systems - HART, FF, Ethernet IP, DeviceNet, Profinet, etc.
- DD/FDT/FDI Host Support for HART, FF, Profibus, Ethernet IP, custom protocols.
- DD Services, SDC625 related offerings.
- Handheld host, configurator, calibrator support.

Field Device Tool – FDT

- Device DTM, Communication DTM & Gateway DTM
- Supports FDT 2.x, 1.2.x standards, complies to FDT style guide
- Migration of DTM to FDI UIP
- Easy migration to build PC / mobile apps
- DTM certification, Workshop & Consultation



EDDL

- DD Development(HART, FF and Profibus)
- Legacy DD conversion and maintenance
- DD to FDI Migration
- EDDL Certification, Workshop & Consultation

Typical Applications & Solutions for Manufacturing Industries:

Sensor Layer:

The field sensors, field instrument controllers, valves, pumps & other equipment's play a critical role in the manufacturing process. When a field equipment malfunctions, troubleshooting may take a few hours to days for resolution. Production is then seriously affected.

IOT applications, including analytics, help in troubleshooting & identifying any problem & when a failure occurs, it is quickly identified to source. Hence, outages can be controlled. Utthunga can help provide solutions for *Parameter Monitoring, Control Valve & Control Loop Diagnostics, Machine Diagnostic, Fault Monitoring Diagnostic, Field asset KPI report, Instrument Diagnostic report at the sensory layer.*

Control Layer:

DCS / PLC / SCADA are very reliable. The problem at this layer is more in terms of the performance of the systems related to Alarms & alarm handling loops & control loop handling, human reliability & efficiency. Most DCS / PLC / SCADA systems are used for controlling & operating plant keeping the parameters within permissible limits. But the point of contention is how efficiently the system is used to attain Operational excellence?

Utthunga can support customers in improving productivity by a variety of services in this layer like base layer tuning, alarm rationalization services etc.

MES layer:

It is an optimization layer where the applications for productivity enhancement is incorporated. A lot of applications like Operation Log Book, SOP, Shift Reports, Management of Change, Maintenance Planning & Co-ordination, HSE & Compliance reporting, permit to work, Compliance Management, Plant Operations & Health Dashboards can be built by Utthunga.

High-end applications like, Workflow management, Scheduling & job assistance, Tracking analysis, production KPI & reporting are some of the services Utthunga can provide at this business layer. Integration to CMMS, LIMS, Planning & Scheduling, remote plant performance monitoring & optimization including Supply chain visibility & collaboration solutions are the areas where Utthunga can contribute to specific requirements in enabling IIOT Industrie 4.0. **Utthunga's R&D team can customize to meet any of customer special requirements.**

Platform Level:

At the platform level, Utthunga can help build application for Asset Health, Operational Excellence, Data as service & Predictive analytics.

Smart Gateway:

To ensure complete connectivity from sensor to cloud, Utthunga have designed & developed wireless gateways, which can uplink the sensor data to cloud. uConnect is a powerful yet simple gateway/edge device used for any IOT platform, developed ground-up with the needs and requirements of the discrete and process industries in mind. Being a robust and scalable platform, it can connect to field devices and other industrial assets. uConnect enables comprehensive customization to suit specific needs. It uses the developing power of IOT devices to filter, pre-process, aggregate or score IOT data, while maintaining its privacy. It utilizes the power and resilience of Cloud services to run complex analytics on such data, also support decisions and actions on the physical world. It not only minimizes latency but also ensures that the applications are uninterrupted in case of limited or irregular network connectivity.

Conclusion:

As digital transformation ensues to disrupt, transform and reshape industries – the imperative to change for industries is clear and present. Customers will need to shift their focus from reactive operations to proactive, predictive and profit optimizing operations. In order to achieve this stage of maturity, data and data quality is important and the consistent use of it from the Operating Room to the Board Room. The ability to extract the right data to drive value creation will set companies apart in the future. Customers who leverage data as a critical asset will maintain a competitive advantage. The automation of data→knowledge→insights is an area of focus in the immediate future. In-order to get to this stage of maturity, Utthunga can significantly contribute from their expertise. Often, customers replace existing big data technologies and the culture has not yet transformed to leverage data as a critical digital asset. Some of the other critical issues in transforming an organization to become data driven include organizational alignment on analytics, overcoming existing master data issues, recruit new talent (data scientists, machine learning experts) and best-in-class data governance practices. In essence, organizations should leverage data as a pathway to drive operational efficiency, growth and sustained operational value improvements. Utthunga shall facilitate such improvements at any customer place.

In order to build a more comprehensive & robust IIoT applications is very challenging. The major challenge is data. Some off the data challenges in the industries are:

- Poor Calibration
- Duplicate Value
- Wrong Engineering Units
- Network Errors
- Bad Data
- Entry Error
- Defective Meter
- Missing Data
- I/O Timeout
- Unit Mismatch
- Bad Formula
- Meter Out of Service
- Corrupted Data
- Compensation Error
- Data Loss

Therefore, in order to have an IIoT system & applications, customers have to deal with data variability, data complexity and break the bad data habit creeping into the system

There are two interesting moments in the lifetime of a piece of a data & that is:

- The moment it is created
- The moment it is used

Quality of the data & the degree, to which data is fit for use, is judged at the moment of use. The whole point of data quality management is to connect these moments in time so everything goes well at the moment of use. If the data were not taken care of, the IIoT solutions would be deficient in quality, inferences & analytics. Utthunga will provide IIoT solutions ensuring the data quality of highest order.

While there are many solution providers in this market-offering piece meal offerings, customers prefer an integrated solution offering and a trusted partner approach. As data complexity differs for each company, the imperative is to co-create solutions that fit the needs, requirements and budgets of customers. The journey to reach this future state of operational profit driven operation is not easy and is filled with challenges, but Utthunga's approach, solution portfolio, continuous innovation can lead our customers to enhanced performance & that performance will be sustained throughout the life cycle.

Utthunga's automation philosophy creates sustainable value by connecting everything in our customers' organization. To realize this, Utthunga integrates its business and domain knowledge with digital automation technologies, and are prepared to co-innovate with customers to drive their business process transformation.

About Utthunga:

UTTHUNGA is an Industrial Automation Software Services and Solutions Provider Company headquartered in Bangalore, India with registered offices in Germany, USA & Japan.

Since its inception in 2007, Utthunga has been a global engineering house providing automation solutions across diverse industry verticals having acquired experience in the field of industrial automation, plant intelligence, MES & ERP- plant data integration. We ensure high productivity and consistent quality while sustaining our resources and lowering costs.

With end-to-end automation services, we serve diverse domains including Process, Power, Factory and Building with industry focus on Manufacturing, Energy & Power, Oil & Gas, Pulp & Paper, Metals & Mining and Automotive. Our high skilled teams of domain experts have rich experience across major technology platforms and knowledge base around platforms from Emerson, *Siemens, Rockwell, Schneider Electric, Honeywell, ABB, amongst others.*

With our portfolio of services, products & solutions from sensor to business layer, Utthunga will provide a complete & comprehensive end-to-end solution to the customers across the globe.

For more information:

Please visit our website www.utthunga.com