
GadgEon
Engineering Smartness

Del IO Module

One of the main challenges in the factory digitization is collecting different types of data from existing, aged and heterogeneous machines in the factory floor. Gadgeon's flagship product provides a way out to this.

Project Size : 6 members
Project duration : 5 months
Technology used : PoE,TCP/IP, Web Server, Modbus TCP server, Modbus RTU Server
Interfaces available: 802.3af PoE, 10/100 Ethernet, RS-485, 1kV Isolated 8 Ch 24V Digital input, 4 Ch 24V Digital Output, 4 Ch 230V/2A Relay Output, 1kV Isolated 4 Ch 0-10V Analog Input.

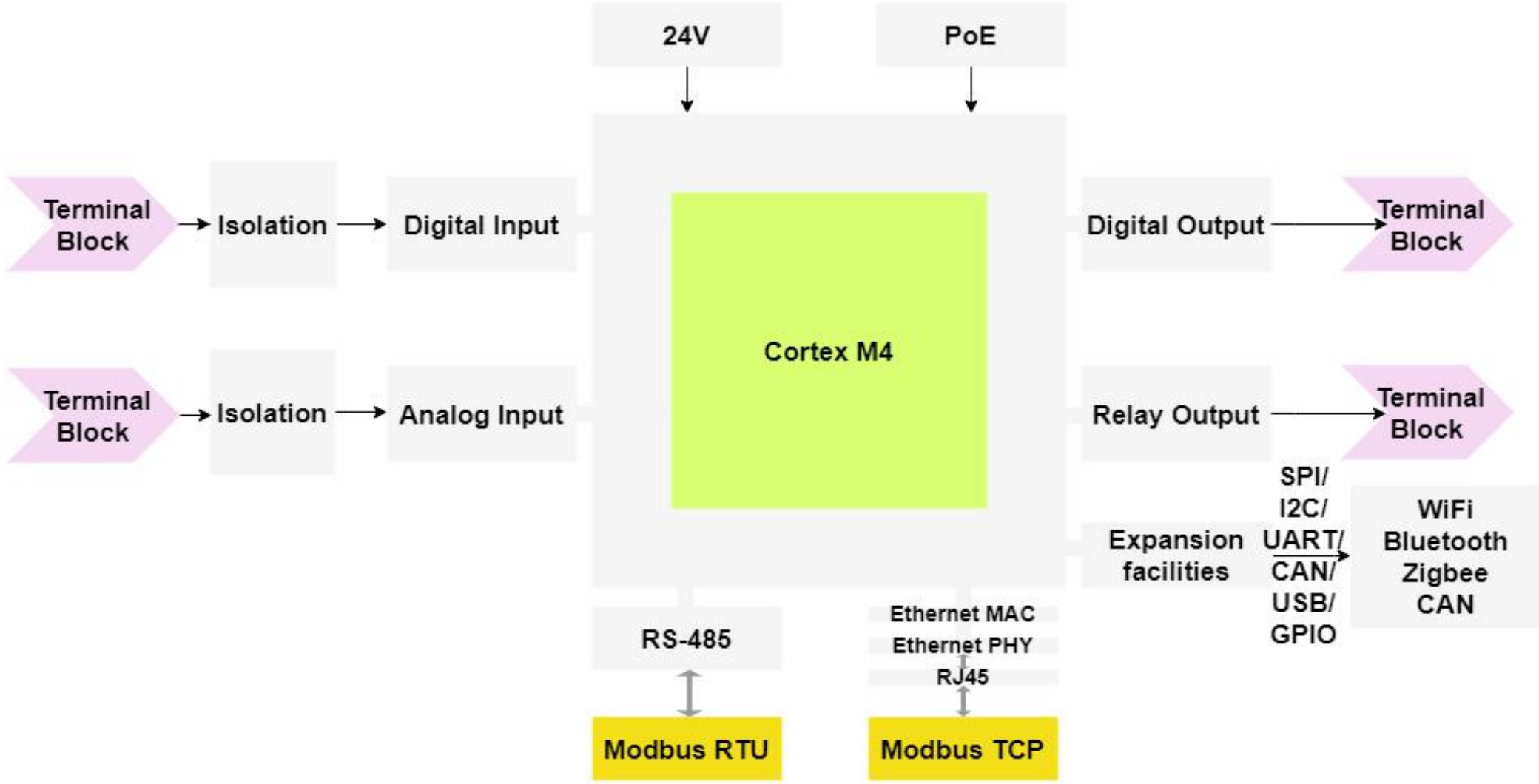
Challenges

- Bringing down the overall BOM cost to few 10 dollars

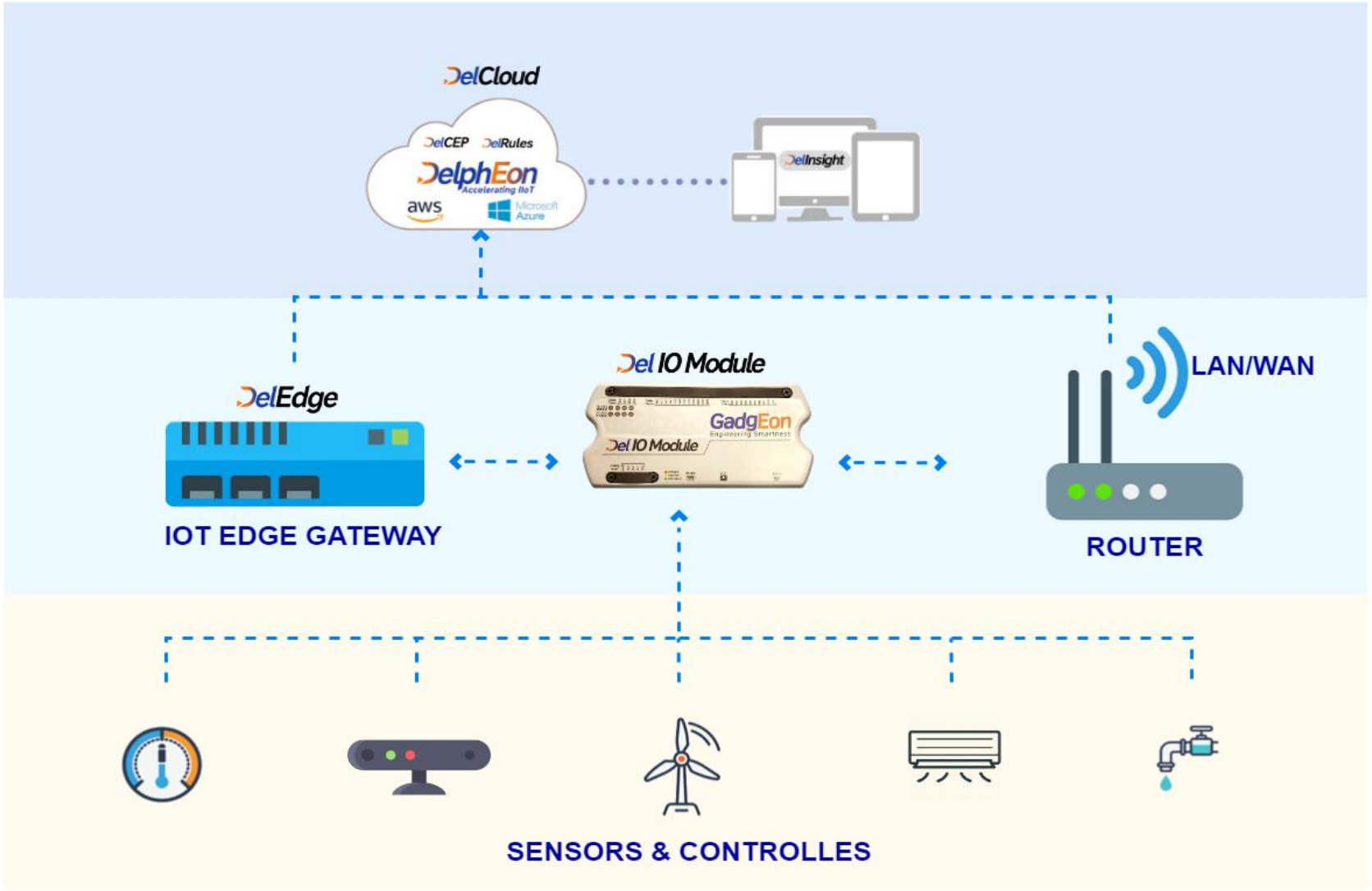
Outcome

- Reliable, Simple, Industrial standard IO module with rigid casing to operate in rugged environment
- Rich in external interfaces - Analog input, Digital Input & Output, Relay output
- HTTP Web server interface
- Optical isolation for Analog & Digital inputs

Del IO - System Architecture



Del IO - Use case



WHAT DID GADGEON DO?	PLATFORMS/ TECHNOLOGIES USED
1) Feasibility study and Documentation	▪ Requirements Gathering & Analysis, competitive product study, ▪ H/W Architecture development and finalization ▪ Component selection of all components and BOM management.
2) Hardware design(Schematics)	▪ Part selection to minimise noise interferences to inputs and output. ▪ Isolation of analog, digital input and output sections. ▪ Design done in view of passing certifications with proper EMC guidelines. ▪ Protection from ESD ▪ Tool: Cadence OrCAD Capture CIS
3) PCB design(Layout)	▪ Complex 4-layer PCB design of form-factor of 146x79mm. ▪ Intra and Inter Length matching and spacing for all critical interfaces. ▪ Critical placement & routing analog input and digital output to ensure optimum performance. ▪ PCB trace width to drive AC voltages and large current.
4) Fab and Assembly House co-ordination	▪ DFM and DFA ▪ Preparing low cost CBOM's with low cost alternates identified for high cost parts. ▪ Life time check for components in BOM.
5) Bring-up and Testing	▪ Initial bring-up of the board followed by detailed Electrical interface verification and validation(EVT). ▪ Testing the firmware and web server application. ▪ Deployed in Delpheon platform ▪ TBD - Thermal testing
6) Firmware	▪ Web server with configuration, IO status and firmware upgrade ▪ Modbus with multiple connection support. ▪ Modbus TCP/RTU slave/master support.
7) Mechanical enclosure & 3-D design	▪ Rigid Plastic enclosure with proper vents ▪ L*B*W = 170*90*50mm

GADGEON SMART SYSTEMS PVT LTD
VI 405/E1, FATHIMA TOWER, MALEPPALLY ROAD,
THRIKKAKARA PO,
KOCHI, KERALA, PIN: 682021, INDIA
CONTACT INDIA
HARI NAIR : +91 9895 01 58 80 SREENANDH : +91 9747 08 66 88
GADGEON SYSTEMS INC
881 YOSEMITE WAY, MILPITAS, CA 95035, USA

CONTACT USA
WES SCHROPP VP SALES : +1-408-621-2570

sales@gadgeon.com