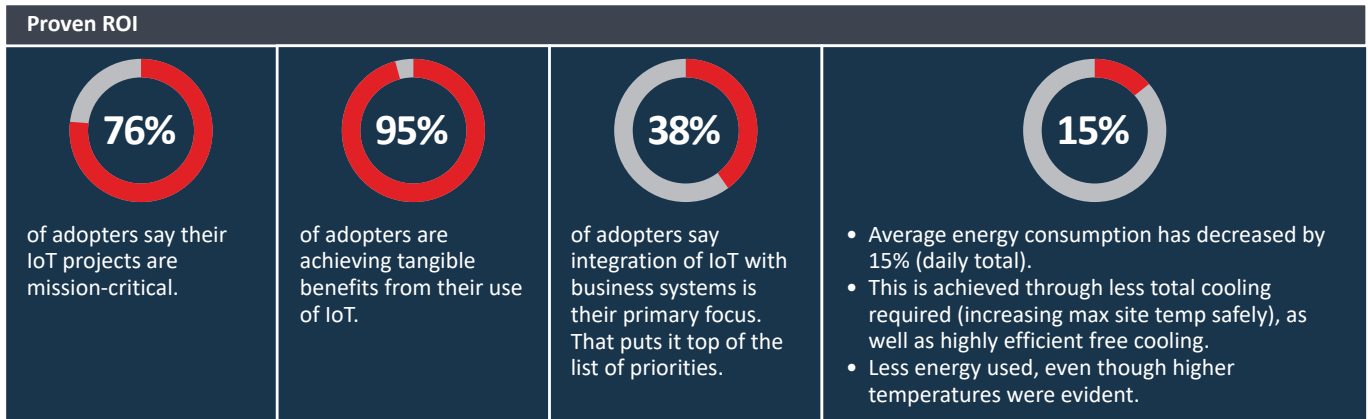


The base station of the future, right now.



Multiple legacy systems in telecommunications base stations fail to realise anywhere near full operational potential, creating frustration for operators. Advancements in the form of IoT platforms across a multitude of systems and sensor technologies available have resulted in a fundamental shift. As the gap between the edge and the core of organisations closes, intelligence is amplified to further streamline the relevance of interpreted data.

Correctly implemented, our solutions can increase a company's efficiency, productivity, and overall market performance. IoT.nxt offers companies the ability to create interconnected and interoperable business operations and improve overall performance.

When combined with a well-designed and perfectly executed solution, these technologies can address the following industry challenges:

- **Lack of visibility across all systems in a base station:** Poor visibility of energy management, condition management, equipment performance and security create great frustration and loss of revenue.
- **Legacy systems are dated, siloed and proprietary:** An integrated, single view of the entire base station seems out of reach because legacy systems are entrenched and often proprietary.
- **System inefficiencies and downtime are crippling:** Inefficiencies and unplanned downtime caused by equipment failure causes excessively high maintenance costs, as well as associated damage to expensive equipment that demands a stable operating environment to work in.

IoT.nxt, Dell and Microsoft technologies have joined forces to create an IoT solution that transforms the telco base station, creating a truly integrated view into all systems and devices. Things like rectifiers, cooling systems, batteries, various condition sensors including vibration, temperature and humidity, security cameras, door sensors and even RFID to monitor status of radio high value equipment- are all visible in real-time.

The solution enables base station owners to fully leverage off all critical data points with the purpose of improving the ecosystem in which they operate. Improved knowledge of what every asset is doing at any given time, unlocks insight into why they perform the way they do. From a remote dashboard, operators can actuate trigger events that change performance as needed.

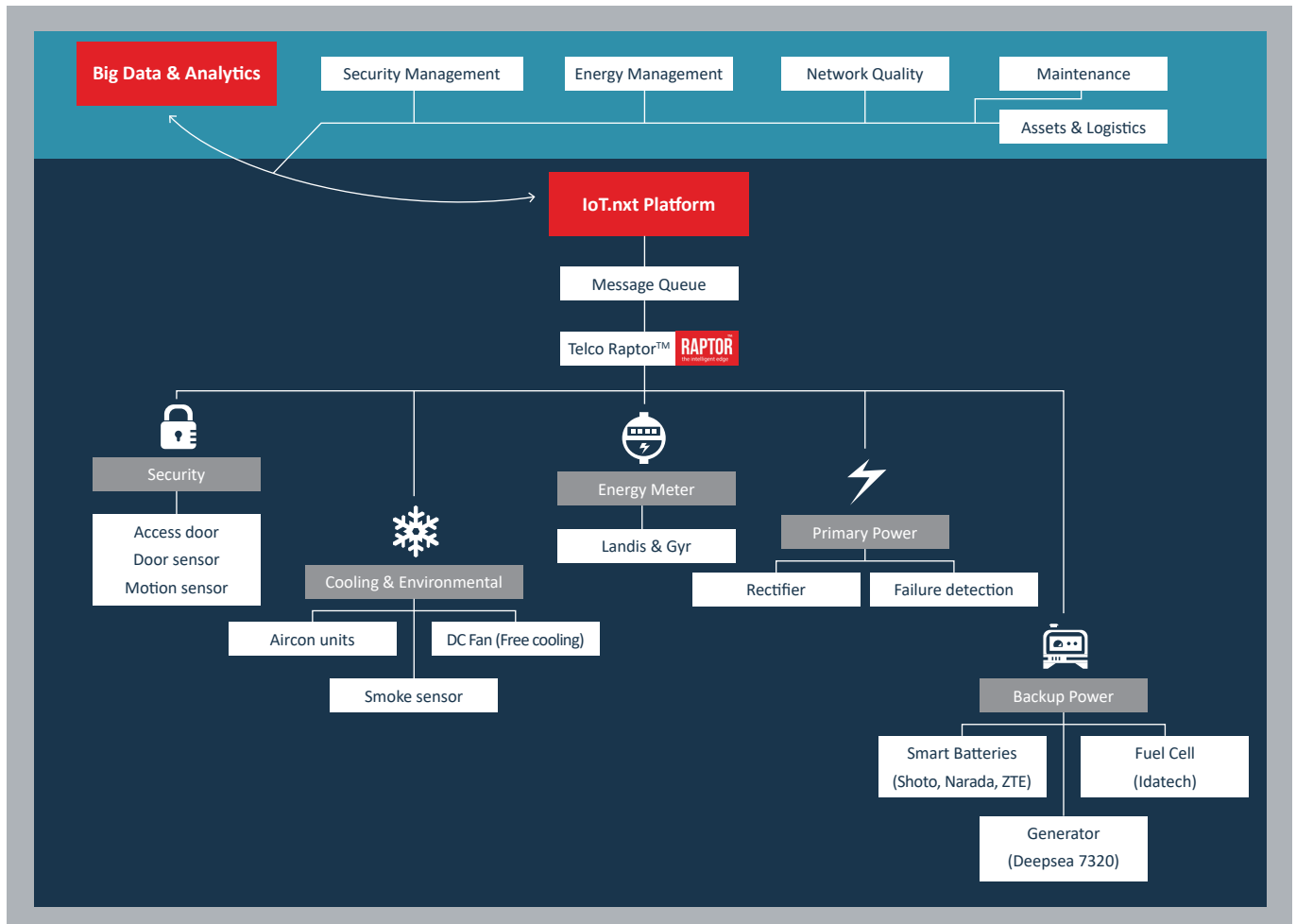
The IoT.nxt solution enhances existing ecosystems and enables companies to experience powerful resurgence with compelling benefits:

- The answer to complete base station management lies in having a single view of all connected devices within the ecosystem, enabling businesses to monitor, gain insights and learning from the data generated, unlocking improved utilisation and optimisation of areas like cooling and energy.
- IoT.nxt enables base station operators to protect investment into installed legacy equipment, transforming them into interoperable, interconnected, smart assets that can relate to everything else within the ecosystem. Imagine a world where only relevant alarms are raised when there is an issue, where all things are controlled at the edge and performances changed to match conditions.
- Knowing the status of all things in the base station ecosystem in real-time and building non-discretionary logic into this ecosystem fundamentally reduces waste at the source. The impact of this across the expansive value chain can be profound with large impact on the bottom line.

Solution Diagram

Offering a solution that has the flexibility to work with existing devices and services means the customer will derive immediate value. The following diagram illustrates how, correctly implemented, components of this solution can be used to unify an entire business ecosystem to achieve optimal results organisation-wide. Our core digitisation technologies lay the foundation required for true transformation, obviating risks and potential data overload on networks.

Open IoT and Digital Experience Platform Components



5 Steps: The path to success

1 | Reimagining business processes

Applying business analytical best practice, consider current SOPs, process and workflows that are performed across your business ecosystem to identify areas where standards and processes have not been optimised.

- Provide relevant insights and operational functionality to users.
- Leverage automation and integration to create a complete company overview and reliable, precise data collection.
- Enable primary business functions while accommodating anomalies that can cause down time.

2 | Avoiding an information overload

As businesses digitalise, caution should be paid to not overloading operators with information. Having insight into down-the-line effects of activity may boost efficiency and the business bottom line. To ensure effectiveness, work to provide the right information to the right people to drive better decision making and improve employee accountability.

	IoT	Operational	Transactional
Example	Aircon performance against conditions in and outside of BST, Vibration alerts on equipment, door use, physical monitoring of events	GPS positioning, all integrations via DELL Raptor™ gateway from BTS to cloud or core to Ops	Set point values to determine all thresholds for equipment, conditions under which alarms created, business SOP and rules
Sources	Sensors- vibration/ temperature/ humidity, batteries, inverters, CCTV, aircons	IoT.nxt Commander visualization, ERP integration, analytics, protocol manager	MQTT data from Raptor™ to Cloud
Destinations	Asset management, ERP, Commander visualisation and control, analytics	Asset maintenance, performance enhancement, scheduling, procurement, maintenance	ERP, SAP, event triggers from IoT.nxt

3 | Ready, set, configure

Ruggedised to suit an industrial environment, designed to endure even the harshest condition and proven effective in the fields, the IoT.nxt technology stack is the answer to ensuring competitiveness, and relevance, in the years to come. Quick to install and easily customisable in any industry, an entire business ecosystem is connected into a centralised Commander dashboard and accessible remotely enabling real-time visibility and in-shift optimisation without disruption.

4 | Connected your way, from edge to cloud

This flexible end-to-end solution connects non-IP based devices (2-wire and similar) through Raptor™, our intelligent edge gateway, and connecting IP enabled devices directly to our IoT platform, Commander. Once connected, data is consolidated from all devices and systems to provide a single horizontal view of your systems and devices entire business ecosystem.

Raptor™ technology creates a normalised, edge layer of physical and virtual intelligence that can be retrofitted, deployed and connected seamlessly into an ecosystem of existing technologies and things, radically reducing the cost of having to develop multiple edge integrations into disparate cloud applications.

Being able to retrofit onto all deployed devices, whether analog-, or IP-based reduces

- disruption to business processes
- cost of implementation
- cost of training
- cost and impact of enterprise-wide change management
- vulnerability at the edge
- technology disparity at the edge
- data strain on - and therefore costs of - networks
- processing required at the cloud platform level
- cost of edge integrated gateway maintenance

Real-time subsystem integration allows cloud platforms to be leveraged as the up-, and down- stream effects of an event-triggered occurrence are recalibrated throughout all edge-connected devices. The pieces of any business puzzle are in the box, and ready to be pieced together to create a big picture.

5 | Operationalise and reap the benefits

Surpassing industry benchmarks globally, this technology-agnostic solution can be implemented in any industry, on any system and in any process leading to the collection, normalisation and aggregation of unbiased, actionable data and real-time business intelligence. The knock-on effect of complete visibility into all operations, the knock-down of operational silos and minimisation of down-time and incidents across the business ecosystem can be felt almost immediately.

Implementing without disruption

IoT.nxt technology can be overlaid onto organisational infrastructure, underpinning rapid digitalisation and ROI, without disruption to operations.

An entire ecosystem, in your hands

Implemented anywhere, this solution becomes an enabler for optimal results across the rest of your business. Operational requirements, tied in with big data and market shifts unlock the opportunities for organisations to move into the future - and beyond - with agility, dynamically shifting with supply and demand, resource availability and, ultimately, growth.

Demystifying IoT

IoT.nxt is a unique rapid digitisation technology enabler that future-proofs enterprises, helping them leverage existing infrastructure investment and integrate into new technologies. The resulting interoperability and interconnectivity break down data silos and cuts out vendor lock-in.

Our IoT solution allows our clients to rapidly transform their businesses and move into the digital age quickly, and without disruption to operations.

Together with our solution partners, we work with businesses to design digitalisation strategies that are deployed in line with business goals, harnessing the magic that makes each organisation unique.



Value adding

- Reduced energy consumption/opex costs due to better aircon remote threshold management.
- Reduced maintenance costs/calls due to better visibility of site information.
- Battery-life extension by not overheating sites due to failed free cooling/poorly working aircons.
- Ability to keep track of Li-ion BMS battery assets via Raptor™.
- Improved access to analytic site environmental data – Able to do detailed reporting on all environmental aspects of sites including monitoring the impact of maintenance done or neglected.
- Integration of legacy as well as new site controllers.
- Accurate battery life expectancy to predict site failures when power goes down.
- Quantify wastage on sites running outside of parameter.
- Improved security.

It's your business. Only better.

To learn more, visit www.iotnxt.com

Contact IoT.nxt Sales to learn more about our ecosystem and to deploy this solution today.