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IT in Africa's construction industry

An integral component of today's construction industry is Information Technology (IT). Utilising the data it generates, IT contributes significantly to meeting industry needs and adapts to and supports construction trends. It is in fact one of the core utilities or services that support an infrastructure. This results in tremendous risk to the business should there be any IT downtime. To mitigate downtime, it is necessary to build resilience into IT components and design.

Industry context and trends

How does IT support construction industry trends? "Some of the trends Africa is currently experiencing are increasing industrialisation and urbanisation. Related to this is a rise in energy demands. These trends lead to the need for increased access to, usage and sharing of data which is generated or 'pulled' by IT," says Jaco Cronje, Operations Director for EES Africa (Pty) Ltd, an ISO 9001:2008 certified company.

EES provides management, engineering and auditing services to a range of industries throughout Africa. It specialises in the integration of multiple system infrastructure including ICT, data centres, audio visual, life safety, security and building automation systems.

Construction industry trends and requirements lead to IT-specific trends, the first of which is 'connectivity'. "Connectivity, especially via mobile communication devices, is accelerating and a rapidly increasing number of people in Africa are becoming connected. An example of connectivity is the fast growing use of broadband in Kenya, while that of mobility can be seen in MTN and the rise of its mobile phone penetration throughout Africa," explains Cronje.

In 2010 the world's population was 7 billion and there were 12 billion connected devices. It is estimated that there will be an impressive total of 25 billion connected devices by 2015.

Relevant to this is a second trend, which is coined the 'Internet of things'. "Lifestyles are increasingly being lived in a virtually connected fashion. Fundamental to this is making connectivity simpler, easier and faster."

The third trend is 'energy management' which addresses rising energy demands. IT monitors energy usage and manages how it can most effectively be utilised. An example here is the

energy grid. IT is essential in the implementation of a Smart grid. This unlocks numerous benefits related to the managing of energy generation and consumption.

IT components and design of an infrastructure

The core utilities or services that support a facility or infrastructure today are not only water, electricity and gas, but also the data which is generated by IT. "Data has long passed the point of being a requirement, and is now a distinguishing factor in buildings," Cronje emphasises.

Data, as the fourth utility, enables more efficient management of:

- Office services which include e-mail, internet and telephony;
- Security which includes access control, CCTV and alarms
- Building intelligence which make use of sensors to monitor and manage the infrastructure. For example, generator fuel levels and the number of cars in the parking area can be monitored;
- Power which is run over ethernet, enabling monitoring and management of lighting and other power usage.

This is done by means of convergence. Convergence, which is the combination of multiple functions by means of only one cable, can achieve a 20% capital saving in buildings.

Convergence of services also covers energy efficiency services and this can pro-actively contribute to maintenance offering a 30% operational saving.

Increasing the resilience of your IT system

It is necessary to build resilience into IT components and design in order to mitigate risk, which IT downtime can present to organisations, resulting in serious cost implications.

Cronje explains that the primary focus with regard to building resilience should be on the data centre, which is the heart of IT in a building or smart city. The data centre is evaluated based on its resilience to risks and is then rated accordingly.

"To ensure it has optimal resilience, the data centre must also have an uninterruptible power supply (UPS) which is achieved by back-up power and generators as an example of power supply, among many other environmental dependencies. It must be operated efficiently and be properly equipped with necessary monitoring systems. Additionally, its location and access must also be secure."

Vital to the IT system is not only the physical equipment and installations, but the system architecture too, which needs active-active resilient and redundant systems for continued operations and reduced risks. Load must be spread to create resilience throughout the entire IT system.

Resilience should also be increased in cabling and routing, which must be installed according to industry guidelines and shielded from power cables.

Cronje adds: "Furthermore, to achieve optimum IT efficiency IT requirements must be analysed for each individual project in order to meet specific client needs. As it is a core service, IT should be included in the construction process from day one as opposed to retrofitting."

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EES company profile:

Established in 2001, [EES Africa \(Pty\) Ltd](#) specialises in the integration of multiple system infrastructure including ICT, Data Centres, Audio Visual, Life Safety, Security and Building Automation Systems. As an ISO 9001:2008 certified company, our vision is to be Africa's management, engineering and auditing professional service provider of choice. The EES Value Proposition focuses on translating technology into tangible deliverables for clients through the experience of a talented team of Engineering and ICT Consultants and Project Managers. With offices in Cape Town, Johannesburg and Stellenbosch, EES operates predominantly in the Financial Services, Hospitality, Infrastructure, Mining, Oil & Gas, Renewable Energy, Retail, Telecoms and Utilities sectors.

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