

Africa UTC – Promoting Telecoms & ICT – An Essential Ingredient in Energy Networks of the Future



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Introduction:

This paper for presentation at the 2014 annual convention of the AMEU sets out the case for establishing the Africa Utility Telecoms Council (AUTC) as an international division of the Utilities Telecoms Council (UTC) based in Washington DC in USA. At present there is no body or organisation within the utility sectors which addresses what is rapidly becoming a critical element in the energy and utility value chain. UTC is a global trade association dedicated to creating a favourable business, regulatory, and technological environment for companies that own, manage, or provide critical telecommunications systems in support of their core business. UTC has already established international divisions in America Latina, Canada and in Europe. UTC and the international divisions represent electric, gas, and water utilities; natural gas pipelines; critical infrastructure companies; and other industry stakeholders.

Business Drivers in the Energy and Utility Sectors

Energy and utility companies around the world are examining the traditional energy delivery cycle of production, transmission and distribution and are under pressure to reduce reliance on fossil fuels, increase the use of renewable sources of energy, improve demand management, ensure adequate supplies and minimise costs. Across the wider Africa region the need to rollout electrification dwarfs these other concerns but nonetheless existing energy businesses are being asked to address a range of business drivers by their governments, regulators and customers.

Typical of these are:

- Greater efficiency throughout the energy life cycle, production, transmission, distribution and in the way energy is used in businesses and in homes
- Emphasis on reducing fossil fuels and moving to renewable generation
- Introducing local generation and demand side management
- Introduce load balancing in distribution networks
- Improvements in quality of services, reduced outage times
- Improvements in energy network utilisation and management
- Implement smartmetering solutions to improve customer billing, protect revenue and improve returns on investment in energy
- Use of microgrids either as standalone units or running interconnected with primary grids

In addition utilities are being encouraged to develop International connectivity in transmission system power pools and in developing areas to use the telecoms assets of energy infrastructure to support the development of telecommunications services. Such business opportunities exist in transmission

networks to support a wholesale telecoms market and in distribution networks where there is the potential to also support the rollout of broadband to businesses and homes.

Whilst the initiatives identified above tend to be focused on the energy infrastructure and can largely be considered as operational, all utilities are large enterprise businesses and so need to implement and maintain large IT networks and the range of enterprise services needed for the business to function properly.

Many of these initiatives will rely on enhanced intelligence in all voltage layers of existing energy networks and extended use of many different technologies.

Reliance on Telecommunications and ICT

The traditional approach to the provision of telecoms services in almost all utilities has been to consider two service elements. Firstly there are the corporate telecommunications services which support all of the enterprise functions, providing communications between offices, supporting customer contact centres etc. Second there are the telecommunications which are essential for the control, monitoring and management of the energy networks, the operational telecommunications. These are critical to the safe operation of the energy network, have diverse routing, backup power and are specified with very high performance characteristics essential to maintaining safe, reliable high voltage networks. Most companies provide these telecoms services in support of their HV and EHV networks.

The majority of distribution businesses whether in the developed or the developing regions do not, today monitor, manage or control their medium voltage (MV) and low voltage (LV) distribution networks. The number of MV and LV assets is very high, they are distributed across relatively large geographical locations and to date, there has been no reason to consider the high level of investment required.

The evolution from dumb energy networks to smart energy networks is turning this principal on its head. The key enabler to all of the initiatives being implemented for smart energy networks is a reliance on an increasing level of intelligence not only in the higher voltage levels but also in the tens of thousands of assets in medium voltage and the millions of assets in low voltage networks.

Transmission and distribution companies across the world are being challenged to consider how they will provide communications systems and services to support the complex applications which are required to deliver on the challenges facing the energy sector.

There is no shortage of technology. Fixed networks have choices in optical fibre, microwave point to point and point to multi-point networks. Wireless technologies include traditional private radio in many forms, TETRA, P25, DMR and then there are new technologies such as mesh radio and most recently LTE all capable of operating in licensed and unlicensed spectrum bands.

The decision to build, own, operate utility telecommunications is no longer a forgone conclusion. Utility companies use public mobile phone services, there are competing providers and prices are driven down by competition. Some utilities look to specialist service provision companies to manage their operational telecommunications and some have fully outsourced their telecoms provision.

Telcom companies are abandoning their traditional digital networks and moving to packet based solutions, so called Next Generation Networks (NGN). Public NGN networks cannot support the special characteristics demanded by the range of tele-protection services and so new investment is required to replace telcom leased lines.

The utility TDM/PDH/SDH telecommunication systems used today are being phased out by vendors and suppliers as they are also now promoting IP/packet based platforms which can deliver greater efficiencies by using a single platform where shared services for corporate telecoms and operational telecoms can exist on the same solution. The move to packet solutions raises the issue of cyber security, what are risks, how are they defined and then mitigated? When asked in a recent board of directors meeting of European UTC to name their single greatest concern, telecom directors and managers pointed to cyber security.

Utilities Telecom Council and The Global Advisory Council

For those operational directors, managers and engineers across the Africa region challenged with finding the most appropriate telecoms solutions for transmission and distribution businesses, UTC's utility members around the world provide a wealth of knowledge and experience willingly shared in peer to peer relationships.

Formed in 1948, UTC has, over the twenty years evolved into a dynamic organization that represents electric, gas, and water utilities; natural gas pipelines; critical infrastructure companies; and other industry stakeholders.

From its headquarters in downtown Washington, DC, UTC provides information, products and services that help members:

- Manage their telecommunications and information technology more effectively and efficiently;
- Voice their concerns to legislators and regulators;
- Identify and capitalize on opportunities linked to deregulation worldwide; and
- Network with other telecom and IT professionals.

Within the USA, UTC is also an authorized certified frequency coordinator for the Private Land Mobile Radio Services below 512 MHz and 800-900 MHz frequencies. UTC is also the sole frequency coordinator authorized to coordinate channels previously allocated exclusively to the Power Radio Service. In addition, UTC maintains the national Power Line Carrier (PLC) database for the coordination of PLC use with licensed government radio services in the 10-490 kHz band.

Serving the industry for over 60 years has given us a unique position as a market leader for utility telecommunication advocacy and education.

To support and enhance the sharing of knowledge and to promote education and development of skills in utility telecommunications, UTC, in February 2014 formed the Global Advisory Council. The council consists of all the leaders of the international regions, USA, Canada, Europe and Latin America. The council is an advisory body concentrating on adding value to all members of UTC around the world. In practice, such a process was already in place prior to forming the council albeit operating informally and it was agreed additional benefits would be gained by creating a formal structure to approve a programme of work, monitor activities and ensure the delivery of maximum benefit. The first formal meeting of the GAC will take place in Monaco in conjunction with the European UTC annual conference. The first Chairman of the GAC will be Mr Miguel Angel Sanchez Fornie, Director of Telecommunications of Iberdrola, Spain.

The leadership team of a future Africa UTC will sit at the Global Advisory Council and have equal rights and access to all the GAC activities.

The GAC have prioritised four initial areas of activity into an international programme of work. Each of the four activities was already work in progress and being managed within different international regions but without any central coordination from within UTC. A Director of Global Programs now coordinates effort from across the international regions.

The four activities for international collaboration are:

1. Packet/IP Networks Working Group – It is clear that there are UTC utility members that have made the decision to transition their telecom networks to a packet/IP based solution. The vast majority have not yet made such a decision and the UTC Packet/IP Working Group (WG) will be a peer to peer utility WG providing education and knowledge sharing on the issues, pitfalls and lessons learned in designing, procuring and implementing packet based services. The first activity of this group will be a webinar illustrating the experiences of three member utilities in Europe and North America.
2. Wireless Spectrum for Future Smartgrids – Many of the applications to be implemented in support of future smartgrids will rely on the medium of wireless in order to gather data and instigate network control functions. European utilities have been promoting the need for additional wireless spectrum for smartgrids with the central regulatory body in European Commission. A perceived weakness in the arguments has been that utilities have never been formally recognized in the World Administrative Conference (WARC) as users of spectrum in a similar way to the aeronautical industry or the maritime sector. UTC will coordinate the arguments which need to be made in different international jurisdictions to ensure utilities are recognized as users of wireless services in the WRC meetings scheduled for 2015 and 2018. This work is now progressing with UTC in USA, UTC Latin America and UTC Canada. Support is also being provided to EUTC utility members in Africa.
3. Cyber Security – Cyber security is rapidly becoming the number one issue for the world's energy and utility companies. Government bodies in the USA and in Europe already cooperate and share knowledge on all aspects of cyber security. UTC believes a utility based knowledge sharing forum discussing and addressing the specific issues faced by this mission critical sector will benefit all members. The work of the UTC Cyber Security Committee will be promoted to all UTC utility members and new alliances with European experts in under discussion within EUTC to consider collaboration on educational programs.
4. Utility Telecom Network KPIs - UTC has developed a draft document setting out the key performance indicators which could be used to determine the overall performance of utility telecom networks. This initiative was prompted by a request from a South African utility member who provided an initial draft document. An international review process with participation from all international regions has produced a final document which will form the basis of a data gathering exercise in the fall of 2014. The data provided by a selection of utility member companies from all regions will be analysed and benchmarked to show the range of performance of utility networks, identifying best in class and how such performance can be achieved. Data gathering will commence shortly, confidentiality of all data provided will be assured.

The Formation of Africa UTC

Six years ago, UTC/EUTC received an application for membership from Eskom Research & Innovation and it was decided they would become charter members of European UTC. Two years later, Ghana Grid became the second member of EUTC from the Africa region. In support of both of these companies, UTC/EUTC held utility telecom conferences in 2012 and again in 2013. The feedback from these events supplemented by research in South Africa and by very positive reactions from industry bodies including the AMEU, PIESA, SAIEE, AFSEC, SAPP, WAPP, FTTH Africa and SANEDI/SASGI has made UTC believe the time is right to launch Africa UTC using a similar business model to European UTC.

European UTC was formalised in October 2004 with five utility members. The budget allowed for the appointment of a European Director to develop and promote the activities of EUTC taking direction from an European Board of Directors. EUTC now has 23 charter members and seven associate members. The board of directors agrees on the activities and programmes that the association will provide for all members and the European Director is charged with delivery often through liaisons with other utility associations, energy & telecom regulators and the bodies within the European Commission.

All back office functions are provided by a contracted association management company who are responsible for finance, membership organisation, the annual conference and when appropriate project management of additional technical and business related projects. Management of an annual budget is the responsibility of the Director and the association management team. The budget is set by the European board of directors which includes the CEO of UTC in USA. EUTC is an operating division of UTC.

Technical support and resources from member companies are encouraged to participate in projects some of which may be funded by sponsors and/or the European Commission.

It is proposed Africa UTC will use the same business model and will have a board of directors drawn from utility members across the continent.

Africa Utility Telecoms Summit and Africa UTC

The launch event for Africa UTC will be the Africa Utility Telecoms Summit to be held in Sandton, South Africa on 17 – 19th November. The Summit is structured to promote debate on a range of telecom technical and business issues as they affect utility companies in the region. The content of these sessions has come from direct involvement of Africa energy companies and the municipal utilities of South Africa.

At the same time, two sessions in the Summit have been reserved for direct discussions on forming Africa UTC and these sessions will explain the proposed structure, organisation, governance and funding of Africa UTC. The benefits of membership will be explained together with a proposal for activities and deliverables for the short term. Once established the AUTC board of directors will set the direction and programme of activities for the association in accordance with the needs of the membership.



Summary

The energy and utility sectors around the world cannot ignore the demands for greater efficiencies and the challenges that will be placed on their businesses over the coming decade with the introduction of smartgrids. The key enabler to smart energy is telecommunications and information communications technologies. There is no single solution, what is best for any particular company is dependent on a number of local conditions, government and regulatory environment, appetite for

investment, securing return on investment, technology, availability of spectrum, the level of competition in the telecoms market all play a role in any decision.

Africa utilities have an opportunity to come together as part of the wider UTC community to share in a global forum of utility telecommunications whilst addressing local issues. Africa utilities can learn from other utility companies and can share their innovative ideas and solutions with others in UTC. Together the UTC international regions can influence the vendor communities to create and deliver suitable products and services that meet the exacting requirements of the energy infrastructure. All utilities will face the same challenges, the timescales for implementation may be different but we are all aiming to deliver reliable energy at an economical cost and under the best environmental conditions for our particular region.

Africa UTC is the opportunity for all those involved in delivering mission critical services to come together with a common aim of driving better value and improvement in quality of services for businesses through the use of new telecommunications technologies and services.