CGI

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NEW WAYS OF SEEING
NETWORK UTILITIES

In 1972, art critic John Berger wrote a book called Ways of Seeing. It has never been out of print and has been translated from the original English into languages as diverse as German, Russian, Italian and Japanese.

This groundbreaking work, written at a time of transition in the art world, unveiled new and completely different ways of looking at paintings, photographs and other images. Berger's views, although controversial at the time, have seeped into every area of society, and you are likely to have been influenced by them, even if you have never heard of the book.

Today, the utility industries—providers of the basic commodities of energy and water—are also facing a transition, driven by digitization, in which almost everything is changing. And new, far-ranging opportunities are becoming available for those who can see them.

At the heart of these industries are the transmission and distribution networks that link producers to consumers. To manage successfully the transition which is taking place, utility networks need to evolve their ways of seeing, just as the art world did in the 1970s.

Those who do so will understand that digital transformation is a driver of change, and respond positively to the far-reaching changes which are taking place across the entire physical and financial supply chains in their industry. The key to success will be the adoption of a holistic, end-to-end process approach that integrates systems and sensors, as well as people across the entire enterprise. For asset-intensive industries such as utilities, breaking down internal silos and integrating operational technology and IT will be critical.

Taking a holistic view to becoming a digital organization will allow them to exploit market opportunities at a time of uncertainty and enable them to balance many different stakeholder expectations. At the same time, while having the flexibility to alter tactics as opportunities and circumstances change—maintaining a clear strategy which will help them to achieve their long-term objectives.

Organizations that can move from experimenting with discrete digital projects to fully embracing digital transformation as a new business model will succeed in becoming Optimized Network Utilities, or ONUs.

Opportunity at a time of change

Utilities face unprecedented pressure from both consumers and regulators to reduce operating costs and improve the quality of energy services, while at the same time climate change is requiring new levels of operational flexibility. Continuous regulatory change complicates priorities and raises the cost of compliance. In Europe, new market entrants are intensifying the level of competition to retain customers and find new revenue sources. Underpinning all of these dynamics is the need to be vigilant against security threats. As a result, the form and structure of utilities will alter enormously— perhaps beyond current imagination.

Despite these challenges, CGI believes the next frontier is upon us…and with it comes a host of new opportunities for Network Utilities.

Utility networks have a larger role to play in the new energy system than just distributing a commodity. They have a responsibility to ensure that the future supply of energy and water is sustainable, reliable and affordable. They also have an opportunity to drive new collaborative business models while maintaining their relevancy in a market prone to change.

Utility networks will have a central role in improving society's quality of life without jeopardizing their own profitability, but only if they proactively prepare for coming market changes and seize opportunities as they present themselves.

We've seen a dramatic increase in interest in digital transformation as an area of promise for helping organizations better run, change and grow over the next decade. With that, comes the need to implement more expansive digital initiatives—connecting legacy systems with the new … with urgency.

All utility markets are facing a range of interrelated paradigm shifts: changes and trends that gradually but dramatically alter the circumstances, within which the markets, suppliers, grids and retail operations work. The timescale for these shifts may vary across different markets, but will eventually occur across all geographies as pressure to embrace digital transformation accelerates.

To deal with these shifts, forward thinking network utilities are adopting new mindsets as they evolve into becoming an ONU.

From centralized to distributed networks

Grids are moving from centralized to distributed networks. The rise of renewable energy and the emergence of the "prosumer"—the consumer who is also a micro-generator of energy—are having a major impact. As a result, network utilities will have to bring together disparate and often intermittent supplies of energy from a range of large and small sources and distribute them efficiently.

This will involve increased use of decentralized intelligent assets—advanced sensors and communications capabilities—working automatically to provide measurement and control at a more localized level.

From one-way to two-way flows of energy and information

Digitally connected and distributed intelligent assets will enable the two-way flow of energy and information, allowing utilities to efficiently manage increasing complexity. In the CGI Global 1000 outlook, utilities executives rated "connecting devices and assets through the emergence of the Internet of Things (IoT)" as a key trend. CGI believes this move into an "Internet of Things" environment will enable data from intelligent assets to be managed increasingly in real or near real time across end-to-end business processes. Utilities will move from a "siloed" business model where responsibilities and access to data are restricted to specific areas to a collaborative ecosystem of digital enterprises based on a holistic view.

Insight on the future from our clients

Every year, CGI interviews clients face-to-face to gain insight on their industry trends and business and IT priorities. In 2016, we interviewed 1,000 clients, including those within the utilities sector. According to the 2016 CGI Global 1000 outlook, utility executives agree that evolving the energy value chain by becoming digital organizations is a top priority. The need to ensure regulatory compliance and strengthen cybersecurity to protect data and assets also were cited as key priorities.

In response, executives plan to shift their organization's spend mix by reducing run costs and increasing investments to fund digital initiatives, such as smart devices and other Internet of Things technologies, data analytics and mobile solutions. They want to use digital technologies to drive multi-channel customer engagement and workforce productivity, with the overall objective of evolving to new customer-centric business models that deliver a superior customer experience while ensuring operational excellence.

From matching supply to demand to balancing both

With increased distributed generation and changing consumption patterns, there will be a need to move from matching supply to demand to balancing both. Demand will continue to grow, particularly with the more widespread use of energy-intensive devices such as electric vehicles, and utilities will need to move from providing supply whenever it is wanted to actively managing demand as well. Real-time, dynamic and customer-centric processes will be key to successful balancing.

From the grid to a more consumer-centric model, and from valuing only energy to valuing flexibility as well

The above shifts will require changing the focus from the grid to more consumer-centric models and moving from valuing only energy to valuing flexibility as well. Influenced by their digital experience in other industries, such as retail and finance, consumers will want to take control of their energy use. They will want, for example, options for limiting their intensive use to pre-defined hours and for offering their energy consumption flexibility to the provider giving the best deal.

To meet these expectations, utilities will need to look beyond the grid and embrace IoT, cross-boundary collaboration, data analytics and mobile technologies to deliver a superior customer experience and the flexibility and choice consumers are benefitting from in other sectors.

An ONU addresses all of this in a way that does not cost the earth—literally or metaphorically—by adapting its approach to suit individual market circumstances.

The process will be a journey; its route set out by an ONU's broader vision of where it wants to be in the long term within its interconnected ecosystem. The ONU will continually adjust its tactics to make the most of new efficiencies, technologies and ways of working, as well as sometimes having to balance what might seem to be opposite expectations from different stakeholders.
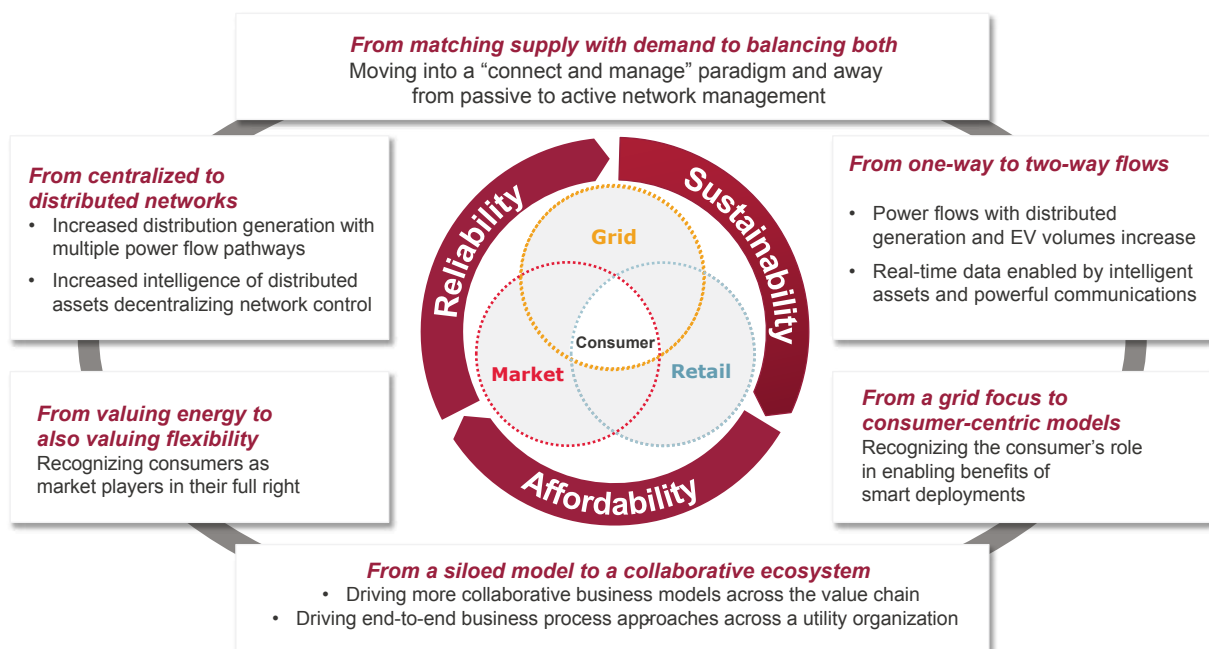
From matching supply with demand to balancing both
Moving into a "connect and manage" paradigm and away from passive to active network management

From centralized to distributed networks
- Increased distribution generation with multiple power flow pathways
- Increased intelligence of distributed assets decentralizing network control

From one-way to two-way flows
- Power flows with distributed generation and EV volumes increase
- Real-time data enabled by intelligent assets and powerful communications

Reliability

Sustainability

Grid

Consumer

Market   Retail

Affordability

From valuing energy to also valuing flexibility
Recognizing consumers as market players in their full right

From a grid focus to consumer-centric models
Recognizing the consumer's role in enabling benefits of smart deployments

From a siloed model to a collaborative ecosystem
- Driving more collaborative business models across the value chain
- Driving end-to-end business process approaches across a utility organization

Figure 01: Trends driving fundamental paradigm shifts

Becoming an ONU

How a network utility responds to these paradigm shifts will be driven by whether it has a holistic view of its role across the supply chain or not. For CGI, ONUs have such a view and are proactively working towards changing, rather than just improving, what they do, to achieve their long-term goals. They embrace digitalization, not just as an enabler, but as a driver of the ONU vision, moving beyond discrete digital solutions to broader digital initiatives — from smart grids and meters to shared energy services.

Three related ways of seeing will shape the attitudes that will enable ONUs to thrive in a utilities world buffeted by paradigm shifts. These ways of seeing will show them how a network utility can take advantage of change to bring greater value to all stakeholders, whether shareholders, suppliers, consumers or regulators.

Sustainability

Reliability

Optimized network utility

Affordability
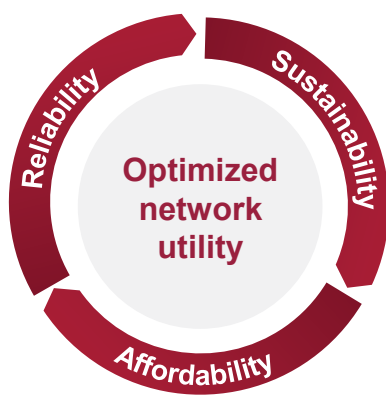
1 Embraces the bidirectional flow of energy and information, assuming a leading role in an interconnected ecosystem

2 Defines a journey of progressively rolling out technologies with clear ROI while building knowledge and flexibility

3 Exploits 360º control and visibility by driving end-to-end business processes enabled by automation and integration of OT/IT

Figure 02: In CGI's vision, the ONU follows three fundamental mindsets

ONUs within our vision of Smart Utilities

ONUs are part of a wider CGI vision of smart utilities that we have been developing with clients over many years. In this vision, we see "smart" as the creation of physical and commercial infrastructures that enable consumers to benefit from affordable, reliable and sustainable energy.

To make that happen, the conventional grid infrastructure needs to evolve towards a multi-directional digital network to manage intermittent supply and demand in real time. Market processes need to be reliable and secure, reducing barriers and costs of entry to the market and allowing retail markets to operate seamlessly across the physical grid.

At the center of this is the consumer. A consumer-centric retail market will bring end-users the ultimate benefits of smart utilities, putting consumer needs first while balancing supply and demand.

Helping ONUs get smarter

CGI has been a major support to the utilities sector worldwide for more than a quarter of a century. We've been working on smart grids and end-to-end processes for years, creating a portfolio of offerings supported by more than 6,000 professionals who work with more than 250 utility clients worldwide in long-term relationships based on mutual trust, expertise and shared aims.

We help to build the business case for a smart strategy to fit individual needs and market circumstances. We support identifying new markets and models and re-engineering organization processes. We have a proven track record in delivering systems—from managing customer interactions and the assets required to deliver energy to controlling and operating the grid. We design and deliver the solutions that integrate smart distribution network technologies with existing business systems. Our services allow our clients to scale and align their investments with future strategies and financial returns.

As a result, 12 of the world's 18 energy markets run on our systems. We have enabled smart grid projects such as Portugal's InovGrid and Low Carbon London and are the data services provider for the rollout of 53 million smart meters in the UK. Our Renewables Management System controls more than 6,000 turbines on nearly 300 wind farms in nine countries across three continents. And, 60 of the top 100 utilities in North America use us to provide their asset, workforce and outage management systems.

In short, we don't just have a future vision for utilities, we're already delivering on it.

Way of seeing 1: The market

An ONU embraces the bidirectional element of energy and information, assuming a leading role in an interconnected ecosystem
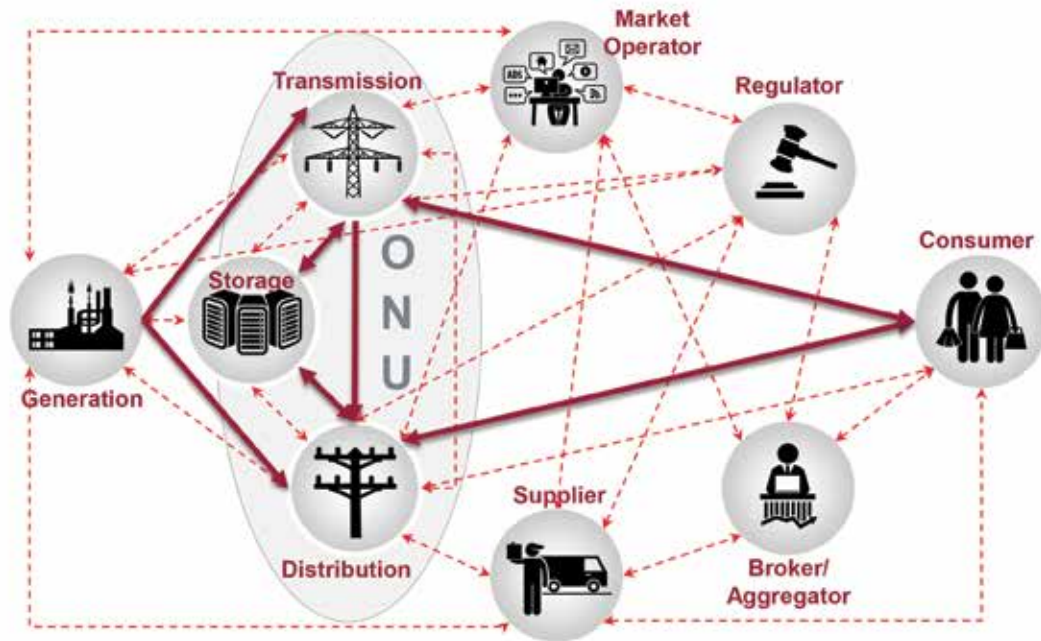

Figure 03: Actively managed systems: complex energy flows supported by extensive data exchange and collaboration with multiple players

An ONU drives change—anticipating events rather than following them. Paradigm shifts can quickly acquire the momentum to reach a tipping point, and an ONU recognizes that responses need to be planned early, with long-term objectives.

Understanding that new energy generation capabilities will come from multiple sources and will need to be balanced dynamically with demand, an ONU develops new, sustainable collaborative business models across the supply chain.

An ONU will actively bring grid operations closer to consumers and actively manage demand to make it much more flexible. The ONU will become an enabler of higher volumes of distributed generation and of energy-intensive devices such as electric vehicles, with minimized grid reinforcements and guaranteed supply reliability.

Such changes are a major opportunity for an ONU to improve the efficiency of the network, with digitalization enabling a two-way flow of information as well as energy.

As interconnections extend, an ONU introduces more collaborative business models throughout the value chain, across market stakeholders and even between the ONU's own departments.

The form these new business models take will depend on local conditions and vary from country to country, but they will shape an ONU's strategy, planning, organization and operations. ONUs welcome becoming part of a wider ecosystem of stakeholders involved in a smarter grid that more closely aligns generation and consumption by viewing the operation across the supply chain.

An ONU understands the critical need to forecast how consumers manage their demand and how and when "prosumers" produce energy. A real-time, end-to-end, 360° view of the grid and everything connected to it will gradually be developed to predict and shape demand as energy flows vary.

This means that an ONU will align value streams in the grid, while building sustainable, collaborative business models to maximize capacity at minimal cost.

Bidirectionality gives ONUs the opportunity to shape and control both demand and generation, putting them at the heart of the energy system and in charge of their own destiny.
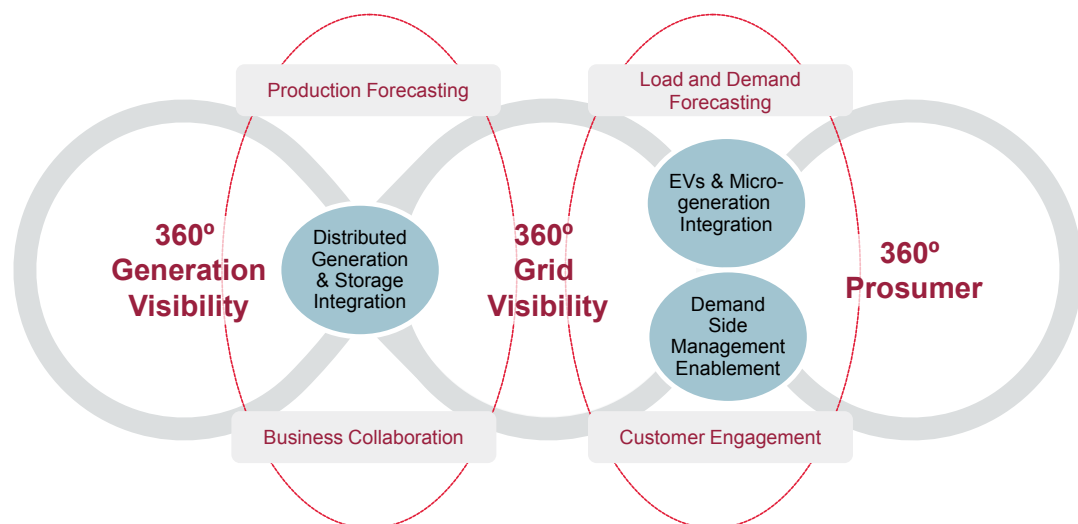

Figure 04: Making demand go flexible as generation goes inflexible through increased visibility and control

Helping network utilities to think- and act- bidirectional

CGI utility consultants are known for their insight. We understand our clients' end-to-end processes and their need for 100 percent reliability in terms of changes and integrations. Many of our 6,000 professionals joined us from utility companies and now work with our clients in their own environments as well as ours.

We build and deliver central market systems. In fact, we have built and run 12 of the world's 18 central market systems. Developing these required an in-depth understanding of market regulation, information management and security. We have been at the heart of successfully deregulating energy markets worldwide for many years.

Our Smart Data Services platform is a core system for many of the UK's energy market players, enabling interconnections across the value chain in probably the most complex market in the world.

Our central energy management solution, CEMS, enables demand response management by allowing the creation of new models of collaboration between the grid operator, the energy supplier and the central market operator, while involving consumers as market players in their own right. For example, it supports dynamic tariffs and provides tools to consumers allowing for the development of new energy services to enhance customer value, while enabling better grid management.

Today, CGI's CEMS solution facilitates two innovative projects in the Netherlands, where more than 400 smart homes are equipped with photovoltaic (PV) generation, heat pumps, smart appliances and a home energy management system.

CGI's electric vehicle (EV) charging station management system, known as CiMS, also extends this open approach for building additional energy and non-energy services, thereby allowing market players to develop new business models.

We are also experts in the other areas which impact an ONU, from regulation, information management, cybersecurity and consumer engagement to telecommunications and financial services.

Way of seeing 2: The journey

An ONU is on a journey, progressively rolling out technologies with a clear return on investment (ROI), while building knowledge and flexibility

The journey towards the ONU vision will not be a "big bang" transformation. Instead, it will be considered progressive and thoughtful, following a clear strategy and roadmap that focuses on operational optimization, cost reduction and the customer. It will be one that connects both legacy and digital to generate insights, enhance the customer experience and drive value, with each step building on the last and defined by the benefits that smart technologies can deliver.

Utilities are in a state of continual change, so an ONU will seek to build in flexibility as it evolves legacy systems by innovatively exploiting new technologies and develops agile information systems.

The challenge lies in identifying the optimum sequence for such smart-related projects so as to balance risk, the pace of technological change and ROI.

Each ONU's journey is unique, taking into account factors such as its current organization, local market conditions and technological maturity, as well as the cost of installing new layers of technology, consumer attitudes, industry policies and the views of regulators.

A functioning ONU makes extensive use of trials and pilots to prove technology concepts and new, collaborative business models, along with new energy services which help address the increasing complexities of local grid management.

The process will be incremental and involve accumulating new knowledge to overcome uncertainties as the marketplace changes, allowing an ONU to exploit every opportunity offered in the new world of utilities.
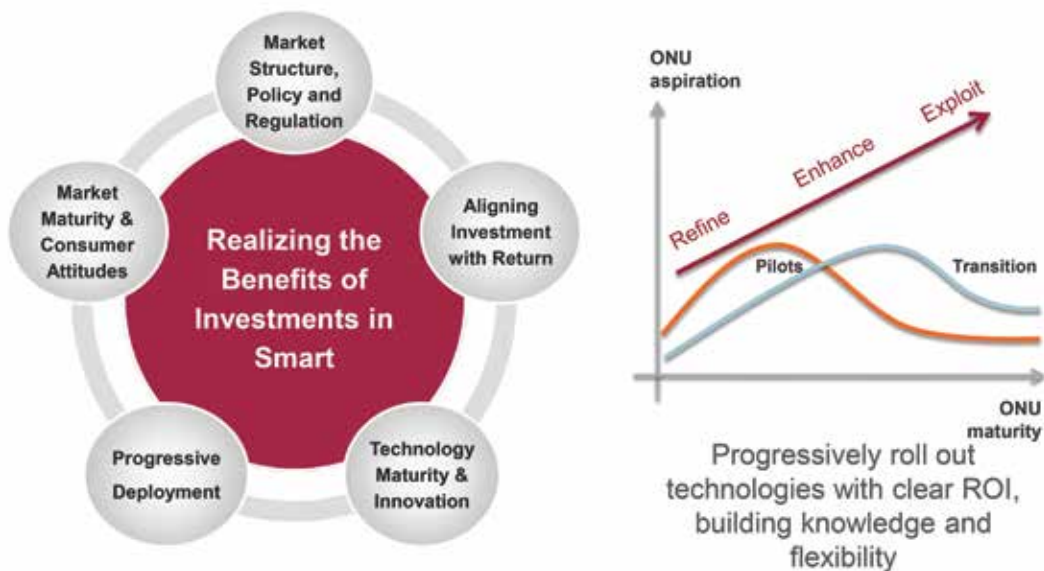
There is no single recipe to becoming an ONU

Figure 05: A unique ONU journey and a multi-dimensional challenge

Helping network utilities to roll out new technologies

At CGI, system flexibility is a key consideration when developing and integrating applications. In our solutions development work, we use service-oriented architectures and web services to simplify integration with legacy systems, as well as application program interfaces (APIs) that align with the world's leading software. This is the case with our more mature solutions such as ARM, for asset and work management, and PragmaLINE, a leading outage management system. Today, Con Edison saves US$45 million annually by deploying CGI's ARM solution for their electric business.

This approach also supports our portfolio of innovative intellectual property (IP) solutions, which facilitate the evolution of smart grids with core functionality that is easily configurable and can be integrated into legacy systems. This is supported by a network of partners, including leading third-party software vendors and innovative, niche providers.

Our ONU solutions and commercial models are specifically designed to allow clients to test and scale their investments, aligning them to their strategy and the financial returns they expect. Integration with existing business systems is considered essential to optimizing the investment made in enhancing grids.

For example, we have worked with UK Power Networks and other partners to deliver the Low Carbon London program. This is a series of interlocking trials looking at the interactions between commercial innovation, low carbon technologies and customer behavior. The program is designed to establish the best ways to build and manage power networks for Britain's low carbon future.

In addition, our Instant Energy platform has given network utilities a simple and low cost way to pilot smart metering investments, allowing them to see how smart technologies affect their businesses while earning a good return on investment.

Way of seeing 3: Taking action

An ONU aspires to 360° visibility and control by driving end-to-end business processes enabled by automation and the integration of OT and IT

Data in isolation is meaningless. It needs to be interpreted, so decisions can be made and acted on. An ONU needs to be able to see supply and demand data from every link in the two-way chain and then act on it. An ONU will actively and incrementally introduce long-term automated routing of supply and control of demand.

That means marrying operational technologies (OT), information technologies (IT) and other enterprise data sources to create an organization that is truly agile and responsive. It also means ensuring departments, processes, people, systems and data are integrated in line with long-term strategic objectives and market conditions.

Removing silos will allow a smooth flow of information which will increasingly enable automatic control of the distributed network. Supply can be automatically routed to demand, and demand managed to fit the available supply. The result: greater efficiency, less waste, and cheaper, sustainable supplies for end users.

To achieve all of this, effective change management will be crucial. Many organizations focus on technology in pursuing strategic transformation, but must also consider cultural change that encourages a digital mindset to discover new ways of working and new digital business models.

An ONU's aim is to turn data into information, information into knowledge and knowledge into action. Action is where the value of smart automation lies.
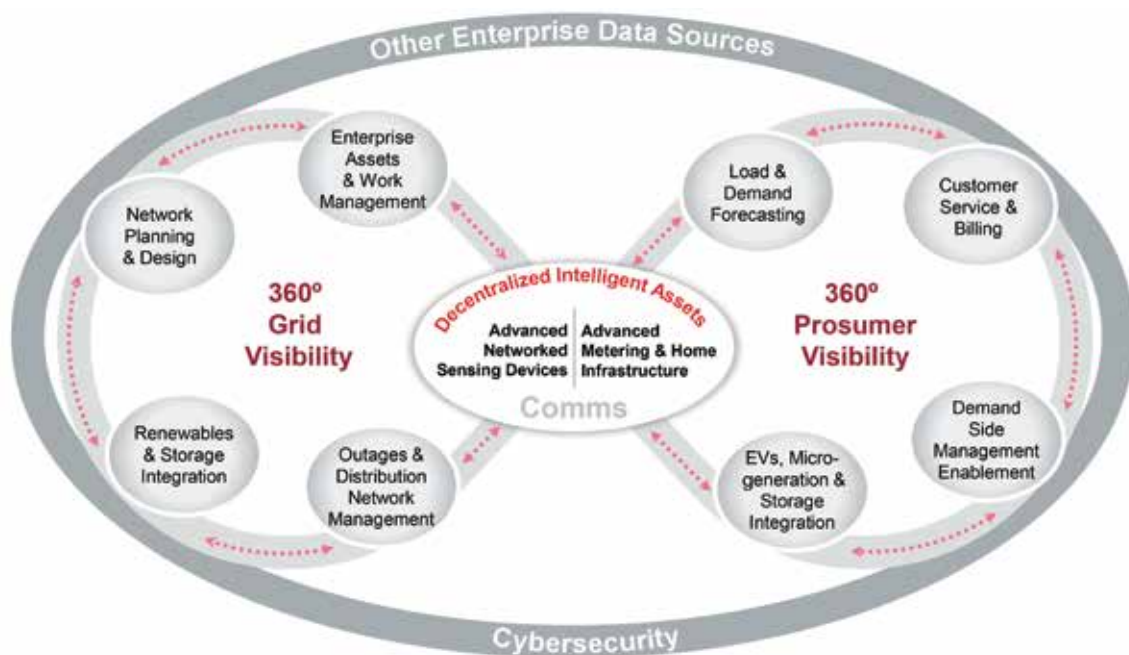

Figure 06: Visibility and control across end-to-end processes enabled by decentralized assets automated by integrated OT/IT

Helping network utilities gain visibility and control, end-to-end

We develop solutions and services that ONUs need. Many of our solutions were developed because clients needed to link disparate legacy systems. In each case, we worked collaboratively with clients to achieve business outcomes, defining end-to-end processes and then developing the solutions to make it all happen.

CGI is recognized as a systems integrator with extensive experience in OT software and back-end systems, and we work to develop hybrid IT/OT solutions with a business process view that delivers a measurable return on investment. In 2015, backed by this expertise, CGI was named a "market leader" for its best-of-breed utilities IT and OT integration services by Ovum[1].

With skills covering OT, IT, systems integration and IP (our own as well as that of our partners) and a reputation for innovation, we are the partner of choice for utility networks around the world as they develop their own approaches for becoming an ONU.

CGI is the lead integrator for designing and implementing SMECO's enterprise smart grid infrastructure, which covers areas from grid operations to customer service and connects more than 12 different enterprise applications. We support SMECO in leveraging new technologies to improve operational efficiency and save money for its customer-members. We are helping it to meet stakeholder expectations of a 15 percent reduction in total electric usage on a per capita basis by 2015.

[1]Ovum Decision Matrix: Selecting an IT-OT Integration Partner, 2014-15.

The three ways of seeing together

An ONU continually seeks to balance its responsibilities of providing society with an affordable and reliable supply of sustainable energy, exploiting automatically gathered information made available through the integration of IT and OT in end-to-end processes. This approach allows an ONU to balance supply and demand based on its intelligent assets, its grid connectivity, and the people who work together to make it happen.
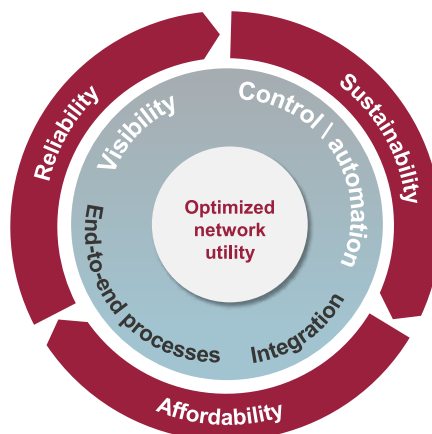

Figure 07: The circle represents what the three ways of seeing the future of utilities bring to an ONU

ONU aspirations

This chart shows what an ONU will aim for in the longer term or, in other words, its key aspirations. ONUs will concentrate on areas most relevant to their circumstances and the returns needed to justify their investments, always balancing business opportunities, market stakeholder expectations, regulatory obligations and risks.

The business opportunities

In turning aspirations into reality, an ONU will realize strong business benefits covering all areas of the supply chain.

Active Consumer
- Enables consumer inclusion, allowing them to control the way they use and produce energy
- Handles take up of EV volumes

Intelligent Assets
- Intelligent automated assets operated at optimal capacity in real time based on clear risks, an investment policy and minimized maintenance costs

Productive People
- Efficient workforce, with right sizing and skills, balancing stakeholders' expectations
- Automated procedures in a safe, integrated business environment

Grid Connectivity
- Resilient to extreme weather conditions with minimized outages and optimum time response
- Reliable and efficient supply system with marginal distribution losses
- Optimum power quality, balancing costs and customer satisfaction objectives
- Operational costs and quality of service in balance

Distributed Generation
- Incorporated generation mix with high % of renewables and micro-generation volumes
- Optimized network balance efficiency with proactive management of increased demand and intermittent supply
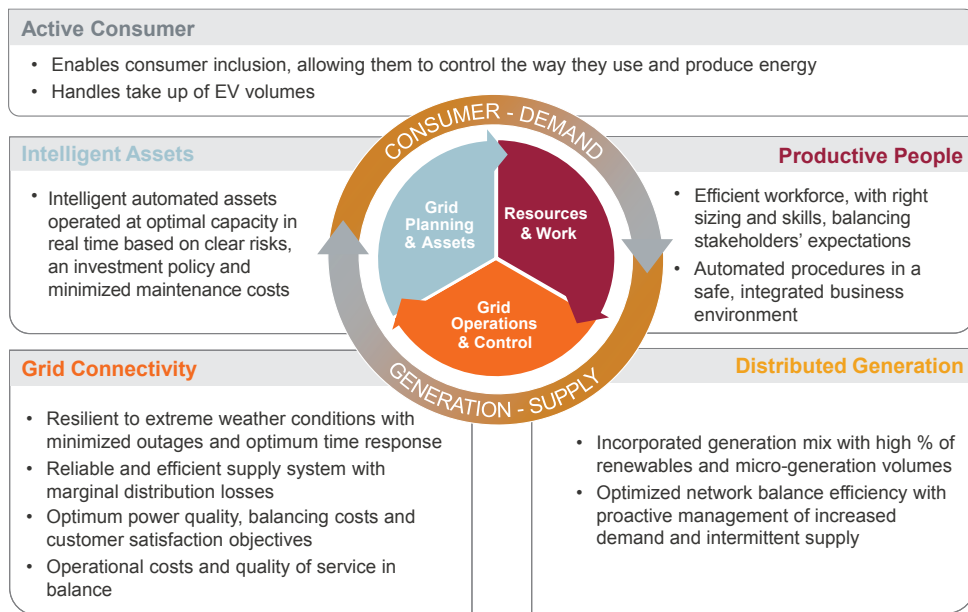
Figure 08: An ONU's aspirations across its Intelligent Assets, Grid Connectivity, the people who work to make it happen, as impacted by Supply & Demand

Define a roadmap of incremental initiatives with justified ROI, including evolving legacy systems, managing risk, and balancing investments needs with the expectations of stakeholders

Manage and exploit data, infusing integrated information into business processes

Operationalize analytics to improve network supervision

Improve network visibility and control for better and faster storm management while improving customer engagement

Reduce operational costs while improving quality of service

Pursue grid-driven energy services and the consumers to support smart meters rollouts

Optimize the workforce, eliminate organizational siloes and develop combined skills of OT and IT

Exploit the benefits of new technology and OT and IT convergence

Prepare for increased threats to physical and cyber infrastructures

Increase control of complex energy flows, minimizing grid reinforcements

Understand adoption rates of low carbon technologies, consumer acceptance and technology commercialization
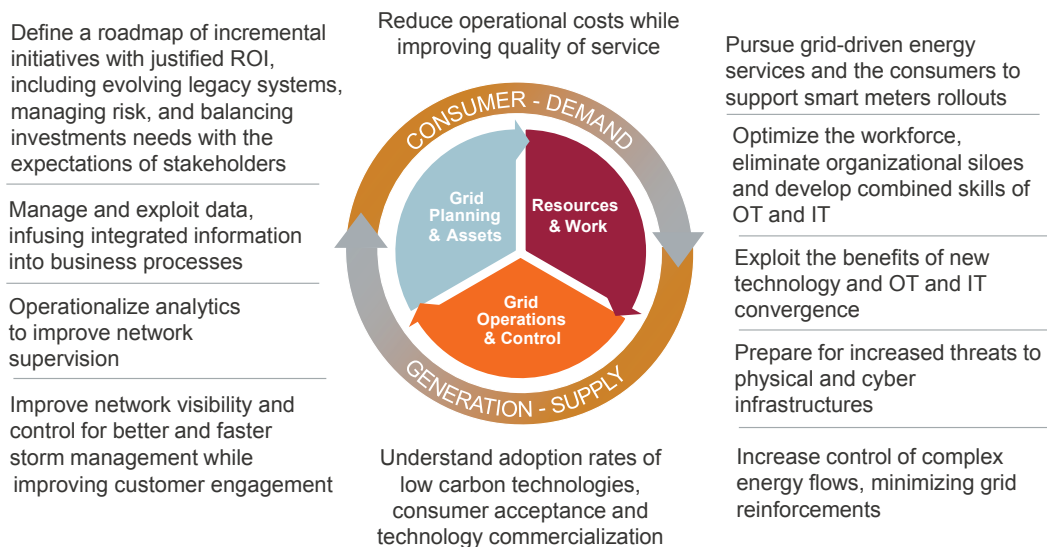
Figure 09: The journey towards an aspirational ONU translates into some key business priorities

Utilities are being asked by their stakeholders to do more with less and, at the same time, move toward low carbon economies—and still meet the need for reliable, quality supplies.

In balancing the expectations of all interested parties, ONUs will seek out ways of reducing their operational costs, while at the same time guaranteeing service quality to meet ever-increasing consumer expectations. They will also make investments to bring aging infrastructures into the digital future, so that they can shape both supply and demand efficiently and effectively.

ONUs understand that a roadmap for their journey will help them to:

• Prioritize initiatives with a justifiable return on investment

• Manage risk and ensure security

• Balance investment and stakeholder expectations

One fundamental priority will be projects that merge OT and IT, making it possible to manage data in real time through re-engineered business processes. This will lead to increased network visibility and the ability to control events much more closely.

For example, the capacity to manage the impact of extreme weather events can be greatly improved. As a result, damage to mission-critical infrastructures can be reduced and consumers can maintain access to energy supplies under circumstances that would previously have led to outages.

There can be no single way of making the ONU journey. Investments will be made as relevant business opportunities, technologies and regulations present themselves. In each case, trials and pilots will help to define and prove business cases and to develop new business models based on cooperation and integration among all parties throughout the supply and demand chains.

Our clients are already taking their first steps on the journey, and some are beginning to change how they operate. In each case, CGI innovations and market insights are helping them to build business cases and develop new business models. As a consequence, they are building new organizational capabilities, integrating operational domains, managing risks, and controlling information flows through our software and services.

In fact, we are involved in every part of the ONU journey. We share the new ways of seeing.

Helping network utilities on their ONU journey

As we have said, being an ONU involves a state of mind where the three ways of seeing inform decisions about where to deploy converged digital technologies to develop new capabilities and unite historically "siloed" operations. This will involve exploiting very large volumes of data—in real time and over time—and exploiting expertise from other sectors, such as telecommunications and financial services.

CGI is a trusted partner with more than 40 years of experience in delivering innovative, client-inspired business solutions. Our solutions drive forward clients' digital transformation through a practical and innovative approach that enables them to achieve their goals faster with reduced risk and enduring results. Clients benefit from the full scope of our expertise and global delivery capabilities to achieve digital transformation and deliver greater value to their customers.

As one of the world's top five independent IT and business process services companies, and a specialist in both systems integration and the utility industries,

we are helping clients around the world to realize their network business vision.

We use a wide range of applications—both our own and those of our partners—which have been tried and tested in real-world networks. We are experts in converging and integrating technologies so that they are not only functionally effective but also meet future needs for cybersecurity, another area in which we specialize.

The emerging paradigm shifts will transform network utilities over time, not in a single step but through a series of organizational changes. This transformation will be guided by a carefully thought-out development plan, which CGI has extensive experience in delivering.

We can advise on the technologies to be deployed and the expected benefits from building a business case and ensuring a proper return on investment. We also build in flexibility, so our ONU clients can accommodate uncertainties and adapt to change in their specific circumstances by adopting new and innovative technologies as they become available.

Realizing the vision

Our smart grid customer base is highly diversified. We are geographically present on four continents, serve utilities from large to small, and have a diverse portfolio of projects. These range from generation to the customer, as well as encompassing adjacent energy providers such as electric vehicles and independent renewable generators. CGI is a services firm with a truly global strategy and delivery capability.
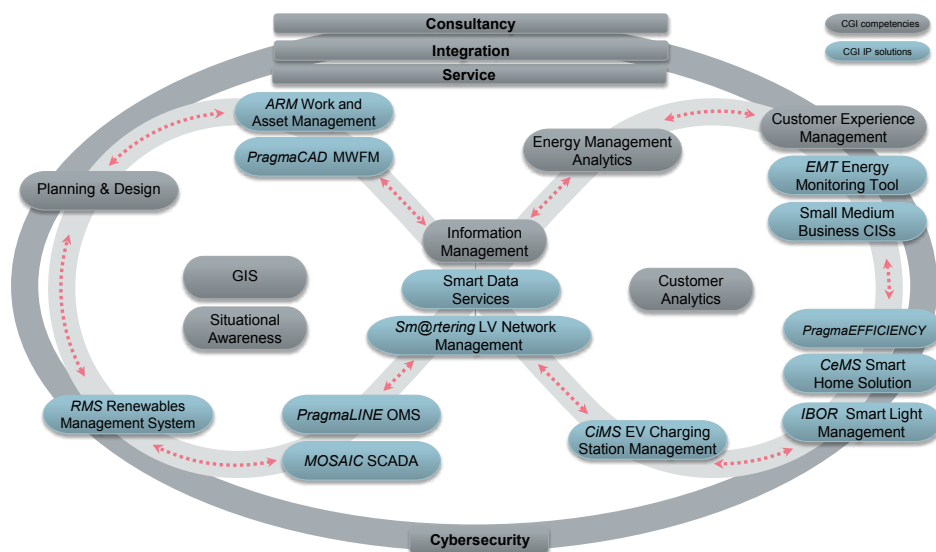

Figure 10: CGI provides a uniquely broad portfolio of IP Solutions and other competences across OT and IT domains

We are already helping many ONU clients define and realize their vision, as the two examples below show. The results speak for themselves. Thinking—and acting—like an ONU really works.

Inovgrid: Towards active network management driven by digital transformation

A smarter distribution grid, developed gradually and consistently

The project

Over the past two decades, EDP has invested in transforming its business and, today, is a recognized digital leader among utilities across Europe and around the globe, largely due to its smart grid initiative. EDP saw the need to increase intelligence, supervision and control of their network. They wanted greater efficiency and quality of supply, and to allow for distributed generation and electrical vehicles. They branded this effort InovGrid and sought to introduce advanced metering infrastructure improvements to their network management capability. This project was in consortium with two other technology providers.

CGI's contribution

CGI was responsible for the delivery of the new advanced metering infrastructure (AMI) platform using our innovative solution, Sm@rtering. We collected and stored all meter readings from 150,000 smart meters, provided an effective services platform, supported event and incident management for new infrastructure monitoring, and provided support for network management functionalities.

The benefits

- Fewer outages and faster response times
- Real-time and relevant information sent to update consumers on power outages
- 12% reduction in trouble calls
- Improved operational efficiency
- Power optimization and effective quality management
- Reduction in energy and revenue losses

This project was selected by EU and Eurelectric, out of 220, as a prime smart grid case study for the Business Case assessment methodology.

Low Carbon London: A learning journey

Collaboration to define how to get into a future smart grid

UK Power Networks (UKPN) is one of the largest electricity distribution network operators (DNOs) in the UK, managing the distribution system for customers in London, South East of England and East of England. As energy use is expected to change over the coming years through the progressive adoption of low carbon technologies, DNOs have been able to apply for innovation funding through the Low Carbon Network Fund.

The project

UKPN's Low Carbon London (LCL) secured funding through the 2010 Low Carbon Network Fund Tier 2 competition. The project investigated the impact of a wide range of low carbon technologies on London's electricity distribution network. It also looked at how customer demand profiles could be influenced to support the effective delivery of electricity. CGI was a partner on the project from the pre-award stage through to the delivery and dissemination of the final reports.

CGI's contribution

The LCL program was scoped with a clearly defned set of learning objectives. CGI's inputs included providing access to smart data and communications for more than 5,000 smart meters and delivering the carbon accounting analysis and tools used to calculate projected carbon and fnancial savings from the trials. CGI also provided program management support, and detailed the impact of smart grid technology on IT systems, which was a major contribution to the report.

The benefits

CGI played a vital role in supporting UK Power Networks and its partners during the LCL program. For the longer term, CGI has designed, demonstrated and trialed many IT-OT solutions and architectures that are needed for effective smart grid management. These enabling technologies will have significant value in network monitoring, smart meter deployment and demand forecasting.

"CGI was a partner in the LCL program, and played an important role in the program's success." Martin Wilcox, Head of Future networks, UK Power Networks.

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Founded in 1976, CGI is one of the largest IT and business process services providers in the world, delivering high-quality business consulting, systems integration and managed services. With a deep commitment to providing innovative services and solutions, CGI has an industry-leading track record of delivering 95% of projects on time and within budget, aligning our teams with clients' business strategies to achieve top-to-bottom line results.