# HfS Blueprint Report

## Utility Operations

BPO, IT and Engineering Services

Excerpt for Infosys

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# Executive Summary

# Introduction to the HfS Blueprint Report: Utility Operations

- The HfS Research Blueprint Report for Utility Operations provides a comprehensive overview of services for the utility industry. This Blueprint looks at business process services, information technology services, and engineering services across the utility value chain areas of generation, market operations, transmission, distribution and metering, marketing and retail, and cross-value chain BPO, engineering, and ITO services.
- This report analyzes and reviews how the market is evolving toward more business-outcome-focused, flexible, and collaborative services and how service providers are meeting the needs of utility organizations.
- The HfS Blueprint includes profiles and assessments of 14 service providers of utility operations services.
- Unlike other quadrants and matrices, the HfS Blueprint identifies relevant differentiators between service providers across a number of facets in two main categories: innovation and execution. The assessment of the 14 service providers is reflected on the HfS Blueprint Grid.
- The HfS Blueprint Grid recognizes up-and-coming service providers (High Potentials) that are scoring higher on innovation criteria than on execution criteria as the providers build these practices. The Grid includes a group of established, high-execution service providers (Execution Powerhouses) that have built effective delivery operations but need to innovate capabilities and offerings further. They are in addition to the rankings for highest overall performance (Winners Circle), and strong combined innovation and execution performance (High Performers).

# Utility Operations Value Chain: Business Processes, IT, and Engineering

| UPSTREAM | | | MIDSTREAM | DOWNSTREAM |
|---|---|---|---|---|
| **GENERATION** | **MARKET OPERATIONS** | **TRANSMISSION** | **DISTRIBUTION AND METERING** | **MARKETING AND RETAIL** |
| • Asset management<br>• Asset integrity management<br>• Engineering and R&D<br>• Production forecasting and optimization<br>• Plant maintenance<br>• Data management<br>• Generation asset development<br>• Planning and contract management<br>• Engineering, procurement, and construction (EPC) management<br>• Generation operations<br>• Distributed energy resources integration<br>• Holistic security services<br>• Real-time operations | • Supply planning and sourcing<br>• Trading and risk management<br>• Market integration<br>• Wholesale operations<br>• Market systems services<br>• Portfolio strategy<br>• Asset optimization | • Smart grid services<br>• Transmission planning and scheduling<br>• Ancillary services<br>• Infrastructure maintenance<br>• Load balancing and dispatching<br>• Energy storage integration<br>• Grid optimization<br>• Grid aggregation<br>• Asset performance management | • Distribution management<br>• Smart meter rollout<br>• Smart meter operations<br>• Demand response management<br>• Meter data management<br>• Asset performance management | • Customer acquisition<br>• Digital marketing<br>• Customer service<br>• Field service operations<br>• Metering and billing<br>• Exception management<br>• Debt collection and credit management<br>• Sales channel management<br>• Omni-channel management (voice, non-voice, social media, digital)<br>• Customer management<br>• Beyond the meter services<br>• Energy management<br>• Electric vehicle services |

**Cross Value Chain BPO and Engineering**

Analytics (customer, marketing, asset), capital project management, customer experience management, digital transformation services, document and print services, field force and workforce management, finance and accounting, HR and learning, knowledge management, legal services, MRO services, PLM services, procurement, product design and engineering services, sales and fulfilment services, supply chain management

**Cross Value Chain ITO**

Application development and maintenance services, end-user computing services, enterprise content management, environmental and health and safety systems, GIS services, IoT services, IT operations, IT/OT integration, IT security management, mobility services, SAP/Oracle ERP implementation and management

# Key Highlights – The Utility Industry

- **Dependency on the Utility Industry:** Electricity is the lifeblood of our economy and society. Electricity is what makes smartphones, computers, TVs, refrigerators, and lamps work. Many core processes in our lives are electricity dependent and electric appliances are everywhere. Gas, coal, oil, nuclear, water, wind, and sun – all of these resources are used to power the grid, the world's largest machine and one of mankind's greatest engineering achievements. The utility industry is synonymous with complexity and interdependency. Its vast geographic scope and pervasive infrastructure of power plants, wind turbines, solar cells, low-voltage power lines, high-voltage power lines, substations, transformers, meters, and sockets touch all of our day-to-day activities. A stable and resilient power grid is critical to an efficiently running economy; blackouts are costly and a threat to security.

- **The Utility Industry Is on the Cusp of a Significant Transformation:** The list of challenges the utility industry has to deal with now and in the near future is almost endless. Converging economic, societal, market, political, and regulatory pressures are bringing immense challenges for companies to solve through more effective and lower cost operations. The utilities industry has encountered disruptive forces over the last few decades and now faces a new wave of powerful forces. Progressing technology, growing demand, increasing costs, and changing expectations in conjunction with trends for distributed renewable generation, the Fukushima Daiichi nuclear disaster, and the climate change goals from the Paris COP21 Agreement are driving the next wave of disruption.

- **The Market for Utility Operations Services Consists of a Large Set of Diverse Organizations:** Players include monopolistic utilities operating in regulated markets to hypercompetitive retailers in deregulated and liberalized markets and everything in between.

# Key Highlights – Forces Disrupting Utilities

- **Perfect Storm:** The term "perfect storm" describes an event in which a rare combination of circumstances drastically aggravates the outcome. The utility industry is in a perfect storm. Rising social and political pressure in conjunction with technology advances and economic shifts are combining to create a positive atmosphere for addressing one of the biggest challenges of the coming decades.
- **Fuel Mix Changed for Good:** Natural gas has replaced coal as the cheapest source for power generation. Not only is it much cleaner, it's also cheaper. Solar and wind have become economically competitive alternatives, with many wind and solar projects now cheaper than generating power from coal, oil, and even natural gas.
- **Distributed Infrastructures Enable Sustainable Energy Ecosystems:** The current infrastructures are built for a bygone era. Utilities need smarter and seamlessly connected infrastructures that allow renewable production and local energy generation. For example, the emergence of micro-grids and residential- and utility-scale battery storage for electricity will give a push to local energy systems.
- **Digitally Enabled Grids Enable New Roles and Services:** The future of utilities lies in a more dynamic energy market with more interactive grids. Modernizing the power infrastructure to support renewable integration and optimization requires big investments. Storage will be a key component of this effort and will play a pivotal role in managing peak demand and developing new distributed energy resource services. New roles for utilities will evolve around the optimization of distribution platforms.

# Key Highlights – Forces Disrupting Utilities

- **Business Models Ripe for Disruption:** New energy technologies, moves to liberalize energy markets, changing consumer behavior and expectations, and new policy goals are forming a groundswell of change and potential disruptions to current utilities business models.
- **Competition from Outside:** New players have emerged in liberalized energy markets. In many countries, the energy value chain is unbundled and regulators' goals have shifted to more efficiency, optimization, and conservation in the energy system.
- **Changing Customers' Expectations:** Utility customers expect different experiences when dealing with utilities and prefer to use digital channels to interact. The growth of distributed energy assets is enabling energy consumers to produce energy, creating a new type of customer – "the prosumer."
- **New Customer Experience Expectations from Outside the Utilities Market:** Utilities need to align the experiences of their customers to their expectations, which have been changed dramatically by Internet companies as Google, Facebook, Netflix, and Amazon, in terms of user experience, mobility, simplicity, and on-demand, subscription based. Not only do utilities need to compete with each other for the core products they sell, they also need to compete with Internet companies for customers' attention and loyalty.

# Key Highlights – Forces Disrupting Utilities

- **Cyber Security Is an Increasing Challenge:** Utilities are targets for corporate- and government-backed hackers. There are tremendous vulnerabilities in energy systems. Behavioral models, advanced analytics, automated responses, and machine learning are key components of modern security measures designed to operate in a heightened threat environment. Security is recognized as a priority across the industry, but remains an area of concern and needs continued investment from utilities and utility operations service providers.
- **The Industry Is Legacy and Asset Heavy:** There is a lot of legacy in the utility industry, not just in physical assets such as plants, grids, and information systems, but also intellectual assets like processes and cultures. As legacy assets become a millstone around the neck of energy providers, utilities must write them off at a higher pace than anticipated.
- **Even the Largest Utilities in the World Are Prone to Disruption:** Two of the largest utilities in the world, E.ON and RWE, have carved up their organizations to deal with the new reality in generation, further unbundling the power supply chain and freeing themselves from costly conventional generation assets. RWE created innogy, which contains its retail organization and renewable energy assets separately from its conventional generation assets. E.ON separated its fossil-fuel assets into Uniper in a move that allows more agility and focus on energy efficiency services, renewables, and energy networks for E.ON.

# Key Highlights – Forces Disrupting Utilities

- **New Utility Commercial and Operating Models Are Essential for Survival:** Commercial and operating models that have been in effect for decades need to be overhauled as a result of the pressures of changing energy production and consumption. HfS sees major new opportunities for new services and revenue streams emanating from changing regulations. New commercial models will emerge, providing greater flexibility for disaggregated power generation and further unbundling of the energy stack.

- **Regulation Constrains Innovation:** Utilities experience adverse effects of regulation on their ability to innovate and respond to disruption. The various speeds of liberalization in energy markets across countries reflect in the sense of urgency utilities feel to change. Unbundling networks, generation, distribution, and retail capabilities led to new market models and new competitors entering the market. The emerging new reality for utilities forces a change-averse industry to reinvent itself for the benefit of the utilities and, more importantly, their customers and stakeholders.

# State of the Market: Service Providers

- **As-a-Service Winners** are service providers that are in collaborative engagements with clients and making recognizable investments in talent and technology capabilities to increase value, using BPaaS to deliver insight driven services.
  - **Accenture, Atos, Capgemini, Cognizant, IBM, Infosys, Wipro**
- The **High Performers** execute well and are investing in future capabilities.
  - **EXL, HCL, Tech Mahindra, Tieto**
- **TCS (Tata Consultancy Services)** is an **Execution Powerhouse** with strength in operational excellence, combining industry expertise, talent, and technology effectively. It is making investments and gaining traction with innovative industry-specific solutions.
- **High Potentials** **Luxoft** and **Cyient** are niche providers in specific areas of the value chain, scoring well on innovation with industry-specific solutions. Both have a good strategy, technology roadmap, and talent development plans, but should further incorporate As-a-Service in execution of existing services.

## AS-A-SERVICE ECONOMY

Use of operating models, enabling technologies and talent to drive business outcomes through outsourcing. The focus is on what matters to the end consumer.

HfS uses the word "economy" to describe the next phase of outsourcing as a new way of engaging and managing resources to deliver services.

***The 8 Ideals of the As-a-Service Economy:***

1. Write Off Legacy
2. Design Thinking
3. Collaborative Engagement
4. Brokers of Capability
5. Intelligent Automation
6. Accessible and Actionable Data
7. Holistic Security
8. Plug-and-Play Digital Services

*Source: Beware of the Smoke: Your Platform Is Burning by HfS Research, 2015*

# Key Market Dynamics in Utility Operations

# Key Highlights – State of the Utility Operations Market

- **As-a-Service Delivery Is Becoming the Norm, As-a-Service Pricing Is Lagging Behind:** In their quest to become more flexible and agile, buyers are warming up to As-a-Service delivery and engagement models. Lower capital requirements, focus on business outcomes, and plug-and-play services are attractive, but most engagements still start off with an FTE, time and material, or fixed-price model with the intent to introduce more transaction or outcome-based pricing during a contract's duration. Service providers show an appetite to experiment with As-a-Service pricing models, especially in new engagements or when new technology is involved. Many utilities struggle with the adoption of new commercial constructs – largely due to fear of the unknown.

- **Heterogeneous Providers Focus on Diverse Client Needs:** The 14 service providers covered in this Blueprint have a unique set of utility operations offerings and capabilities. Accenture, IBM, Atos, Capgemini, TCS, Wipro, Cognizant, and Infosys have large, growing utility practices. They bring together BPO, IT, engineering, and consulting expertise to offer services to the utility operations value chain. EXL and Tieto focus on distribution and retail (metering, billing, and customer care) with business process services, platform-based solutions, and strong consultative support. Cyient concentrates on distribution and transmission with technology services for GIS, smart metering, smart grid, and grid management. Luxoft provides highly rated software development capabilities, investing in utility-specific platforms. Tech Mahindra and HCL have growing utility practices and strong capabilities in customer information systems, focusing on industry-specific platform solutions and engineering services for Internet of Things (IoT), mobility, and IT/OT integrations.

- **High Growth for Provider Utility Practices:** Several service providers report high growth rates for their Utility practice, in many cases outpacing the growth in other vertical and horizontal practices.

# Key Highlights – State of the Utility Operations Market

- **Client Communities:** Service providers organize client communities and events to facilitate knowledge sharing, peer connections, cross-client and cross-industry learnings, and new idea generation. Clients value these communities tremendously and say they help improve their relationship with the provider. Service providers have an opportunity to cater to these needs even more and make themselves more indispensable to clients, who are often struggling with questions about digital technology, intelligent automation, creating new business models, and leveraging advanced analytics. Utility clients are particularly interested in learning from their providers with experience in other industries, which have gone through similar transformations and are seen as ahead of the curve.

- **Partnerships:** No one company can deliver all of the services and solutions required for the transformation the utility industry is experiencing. In the digital age, breaking down silos, creating end-to-end processes and information flows, and unleashing the actionable insights derived from advanced data analytics are critical imperatives for survival. We see this in the convergence of operational technology (OT) and information technology (IT) and also in the increasing role of digital platforms across the value chain. Partnerships are therefore becoming a decisive source of value and competitive advantage for utilities, service providers, software vendors, and original manufacturing equipment providers alike. Partnerships, alliances, and joint ventures form the foundation for the Brokers of Capability role and engagements focused on collaboration and innovation.

# Key Highlights – State of the Utility Operations Market

- **Proactive Innovation:** Service buyers HfS interviewed during the Blueprint research process expressed a desire for more proactive innovation from their service provider. Clients want their service providers to be innovation partners, driving new ideas and engaging on all levels of the client organization.
- **Talent Is a Growing Concern and Service Providers Can Plug the Talent Gap:** Utilities have faced difficulties attracting talent over the past decades. Only a fraction of college graduates consider a career in the utility industry. Utilities have aging workforces and the digital transformation calls for newer skills, resulting in a qualitative talent gap. Service providers can play a role in solving the industry's talent problem. Data scientists, software architects, and engineers are not the traditional utility employee; service providers are able to attract and develop these talents.
- **Plug-and-Play Digital Services Are Starting to Emerge:** Utility operations service providers, with their clients and partners, are starting to develop and deploy plug-and-play digital business services. Current plug-and-pay services concentrate on analytics and retail platforms. Plug-and-play services are in the Initial stage of development with significant progress forecasted over the next few years as service providers become more comfortable with being platform developers.
- **Intelligent Automation:** Service providers help drive down cost to serve (a constantly rising expenditure for utilities) as well as improve customer satisfaction by taking utilities on the journey toward intelligent operations by looking at what rules-based processes can be automated further in the years to come.

# Key Highlights – State of the Utility Operations Market

- **Continued Growth for Utility Operations Services:** HfS forecasts a growth rate of 4.5% (CAGR) for utility operations services, with highest growth in application development and maintenance (ADM) at 8.2% CAGR. The rapid adoption of the cloud and the large number of cloud transformation projects are major factors for ADM growth.
- **As-a-Service Ideals Take Hold in Utility Operations Offerings:** Design thinking, intelligent automation, actionable and accessible data, and plug-and-play digital services are rapidly adopted in utility operations. Elements of As-a-Service ideals are becoming pervasive in new contracts. Clients are very eager to engage in more flexible, collaborative, and modular services and delivery and commercial models.
- **Big Opportunities in Big Data:** Advanced analytics is increasingly embedded in service providers' offerings, enabling the capture and integration of previously disconnected and disparate data in order to create accessible and actionable insights in support of business decisions. Data trapped in organizational and technological silos and problems with quality, consistency, accessibility, and availability of data are major factors hampering successful analytics projects.

# The Current Maturity of Utility Operations Offerings

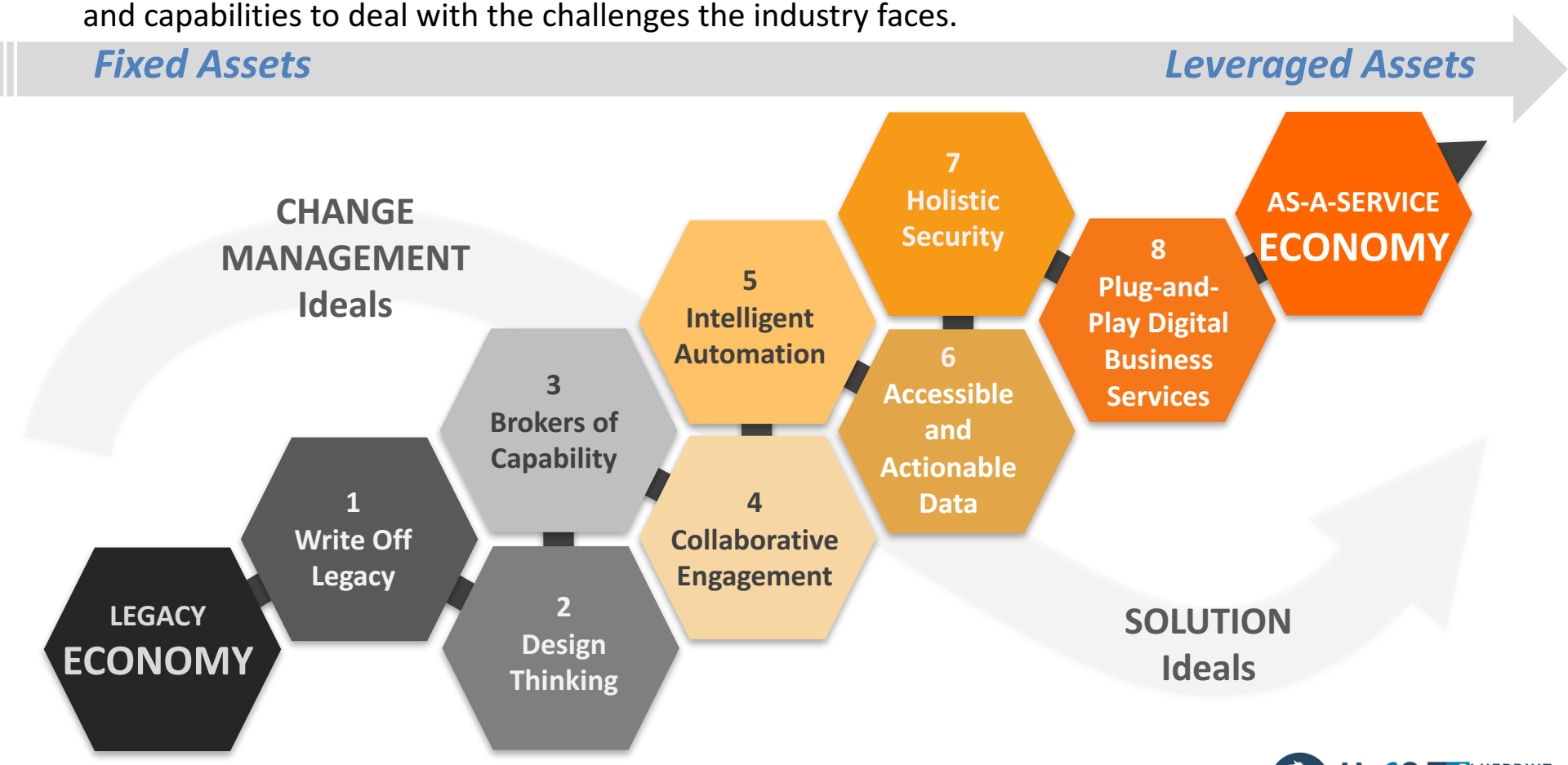
***Mature*** Competitive market with examples of service offerings and customer case studies from a large number of service providers

***Nascent*** Market in development with limited examples of service offerings and customer case studies

| Upstream | | | Midstream | Downstream | | BPO / Engineering / IT | | |
|---|---|---|---|---|---|---|---|---|
| Asset management | Supply planning and sourcing | Smart grid services | Market systems services | Digital marketing | Customer service | Analytics | Application development and maintenance | Product lifecycle management |
| Asset integrity management | Trading and risk management | Transmission planning and scheduling | Distribution management | Customer acquisition | Debt collection and credit management | Digital transformation | IT security management | Product design and engineering |
| Production optimization | Engineering and R&D | Ancillary services | Smart meter rollout | Omni-channel management | Sales channel management | Finance and accounting | Enterprise content management | MRO |
| Holistic security services | EPC management | Infrastructure management | Smart meter operations | Energy management | Exception management | Procurement | Environmental and health and safety systems | IT/OT integration |
| Plant maintenance | Real-time operations | Grid optimization | Demand response management | EV services | Metering and billing | HR and learning | IT operations | |
| Generation operations | Market integration | Load balancing and dispatching | Meter data management | Customer management | Field service operations | Supply chain management | SAP/Oracle ERP implementation and management | |
| DER integration | Wholesale operations | Energy storage integration | Asset performance management | Beyond the meter services | | Sales and fulfillment | Mobility and IoT services | |

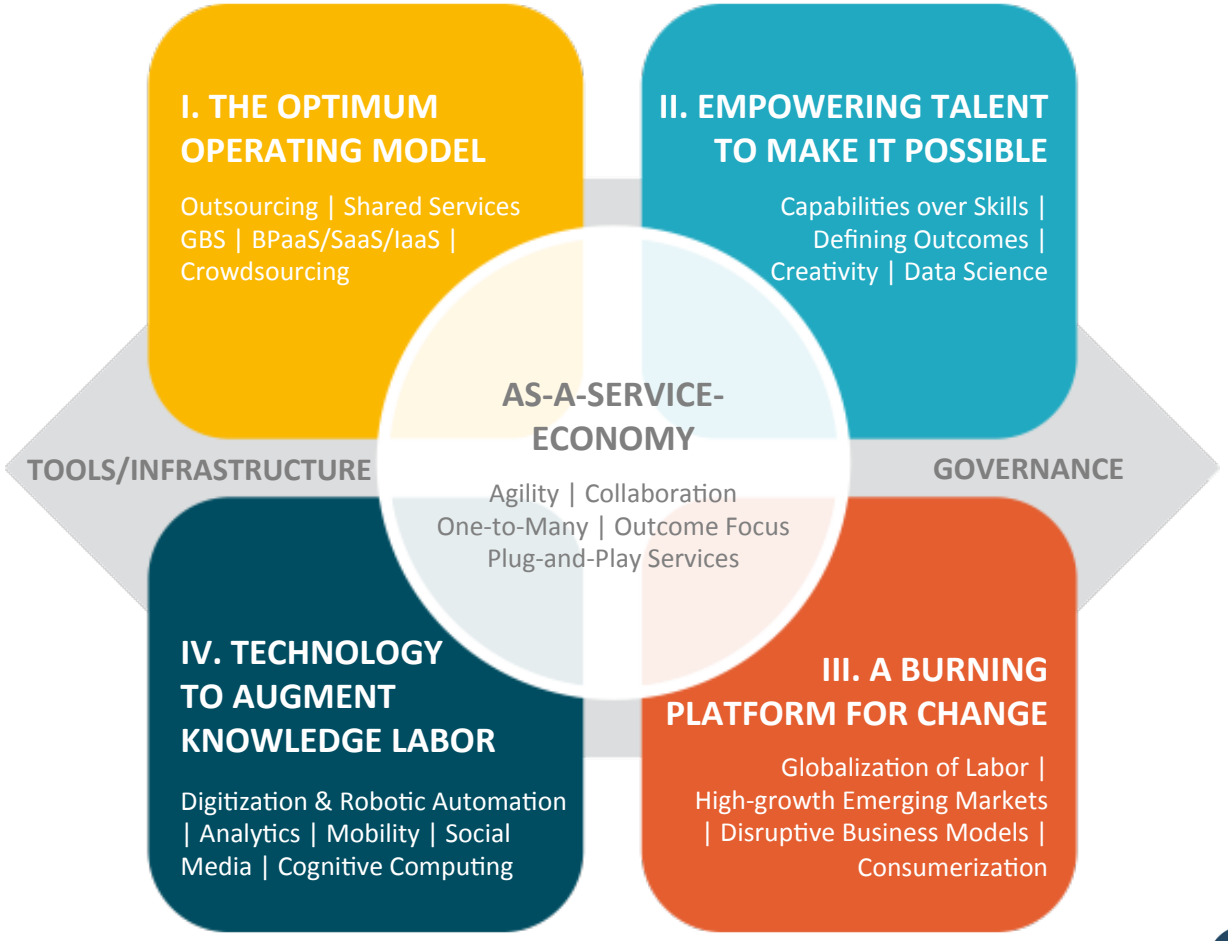
# Journey to the As-a-Service Economy

- Moving into the As-a-Service Economy means changing the nature and focus of engagement between enterprise buyers, service providers, and advisors.
- For utility operations, As-a-Service means engagements that are rooted in more collaboration and focused on bringing together people, process, and technology in services. It also requires leveraging analytics, plug-and-play platforms, and intelligent automation, and bringing outside-in perspectives and capabilities to deal with the challenges the industry faces.



# Welcome to the As-a-Service Economy

HfS uses the word "economy" to emphasize that the emerging next phase of outsourcing is a more flexible outcome-focused way of engaging and managing resources to deliver services. Operating in the As-a-Service Economy means redesigning increasingly mature operating models, enabling technologies and talent to drive targeted business outcomes. The focus is on value to the consumer.



# Moving to the Eight Ideals of the As-a-Service Economy

| LEGACY OUTSOURCING | Intelligent Simplification | AS-A-SERVICE ECONOMY |
|---|---|---|
| Legacy technology investments that limit agility and create masses of exceptions addressed through adding internal and external FTEs | 1. Write Off Legacy | Using platform-based solutions, DevOps, and API ecosystems for more agile, less exception-oriented systems |
| Resolving problems by looking first at the process as the source of the solution | 2. Design Thinking | Understanding the business context to reimagine processes aligned with meeting client needs |
| Focusing governance staff on managing to the letter of the contract and the decimal points of service levels | 3. Brokers of Capability | Orienting governance to source expertise from all available sources, both internally and externally, to address capability gaps |
| Evaluating relationships on baselines of cost, effort, and labor | 4. Collaborative Engagement | Ensuring relationships are contracted to drive sustained expertise and defined outcomes |
| Operating fragmented processes across multiple technologies with significant manual interventions | 5. Intelligent Automation | Using automation and cognitive computing to blend analytics, talent, and technology |
| Performing ad-hoc analysis on unstructured data with little integration or business context | 6. Actionable and Accessible Data | Applying analytics models, techniques, and insights from big data in real-time |
| Responding reactively with post-event fixes; little focus on end-to-end process value chains | 7. Holistic Security | Proactively managing digital data across service chain of people, systems, and processes |
| Undertaking complex, painful technology transitions to reach steady state | 8. Plug-and-Play Digital Business Services | Plugging into “ready to go” business-outcome-focused people, process, and technology solutions with security measures |

# Utility Operations Are Beginning to Incorporate the Ideals of the As-a-Service Economy

| IDEAL | AS-A-SERVICE IDEAL DEFINITION | NON EXISTENT | INITIAL | EXPANSIVE | EXTENSIVE | ALL PERVASIVE |
|---|---|---|---|---|---|---|
| **Write Off Legacy** | Using platform-based solutions, DevOps, and API ecosystems for more agile, less exception-oriented systems | | | 2017 | | |
| **Design Thinking** | Understanding the business context to reimagine processes aligned with meeting client needs | | 2017 | | | |
| **Brokers of Capability** | Orienting governance to source expertise from all available sources, both internally and externally, to address capability gaps | | | 2017 | | |
| **Collaborative Engagement** | Ensuring relationships are contracted to drive sustained expertise and defined outcomes | | | 2017 | | |
| **Intelligent Automation** | Using automation and cognitive computing to blend analytics, talent, and technology | | 2017 | | | |
| **Accessible and Actionable Data** | Applying analytics technologies, processes, and resources on relevant data sets to derive insights that can help improve an enterprise | | | 2017 | | |
| **Holistic Security** | Proactively managing digital data across service chain of people, systems, and processes | | 2017 | | | |
| **Plug-and-Play Digital Business Services** | Plugging into "ready to go" business-outcome-focused people, process, and technology solutions with security measures | | 2017 | | | |

# How As-a-Service Is Taking Shape in Utility Operations: Write Off Legacy

Legacy technology and physical distribution investments that limit agility and create exceptions addressed through adding internal and external FTEs

Using platform-based solutions, DevOps, and API ecosystems for more agile, less exception-oriented systems

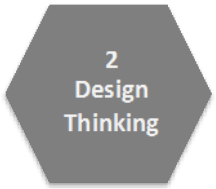

- Writing off legacy for enterprises and service providers in Utility Operations is in the Expansive phase. Significant investment has gone into implementing ERP systems and, in many cases, customizing them. We see a lot of application rationalization to drastically lower the complexity and number of ERPs in the organization. Lowering capital expenditure on legacy systems is an important driver for utilities, dealing with increased competition and decreased revenue. Writing off legacy is not about abandoning legacy systems; instead it's exploring and using platform-based solutions that integrate with the system of record, making the data more accessible and extensible and interfacing and integrating with other technologies. Service providers are forming extensive networks of partnerships and providing industry and functional platforms, expertise, and methodologies to enable both technological and change management capabilities and expand their ability to help clients change.

**Examples:**

- As a software engineering provider, Luxoft strongly focuses on DevOps and platform solutions in utility operations engagements.
- The new "lift and shift" in utility operations is cloud transformation: moving applications and infrastructure to the cloud. Several service providers are involved in large cloud transformations; Infosys is engaged with a UK water utility to move the entire infrastructure and application landscape into a private cloud. It leverages Panaya to help clients find deep insights in Oracle and SAP landscapes, clean up legacy code and complexity, and accelerate migration from legacy systems to the cloud.
- For two North American utilities, TCS applies a layered architecture to decouple the legacy systems from new cloud-based multi-channel services and facilitate the replacement of legacy systems without affecting customer operations.

# How As-a-Service Is Taking Shape in Utility Operations: Design Thinking

Resolving problems by looking first at the process as the source of the solution → Understanding the business context to reimagine processes aligned with meeting client needs




- Design thinking can be a valuable tool to address the tremendous transformational challenges utilities face from the energy transition, Paris Climate Agreement impacts, generation disruptions, customer expectations, and new technology opportunities. Design thinking provides a new way to think and engage as partners. It helps shift the focus of work and engagement from "inside out" to "outside in", starting from the end consumer. Design thinking can be applied to new engagements, existing engagements, or in search of next-level value. Most service providers have adopted design thinking in some way, shape, or form and have introduced clients to the concept. We believe this ideal is starting to become more prominent in utility operations engagements, but it is still in the Initial phase. Service providers and buyers can still work together to make design thinking an integral part of their relationship and day-to-day operations. Design thinking can be used to establish joint initiatives and change the fundamental nature of engagements, implementing design thinking as a new frame of reference for innovative thinking and development.

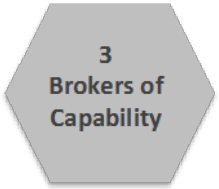
**Examples:**

- Infosys has put design thinking at the heart of the company's strategy for developing solutions and managing client relationships. We see evidence of this approach being used, to reimagine processes and service delivery with clients, who experience positive results and engaged stakeholders across their organization.
- Accenture has significant depth in design thinking capabilities and applies these in utility engagement. Bringing together its design studio Fjord, functional and industry experts, technology and operations experts, and client stakeholders, Accenture designed the next-generation bill with a North American utility. The goal of the exercise was to make it easy for customers to pay their utility bills with an intuitive self-service experience.

# How As-a-Service Is Taking Shape in Utility Operations: Brokers of Capability

Focusing governance and operations staff on managing to the letter of the contract and the decimal points of service levels

Orienting governance to source expertise from all available sources, both internally and externally, to address capability gaps




- Being a broker of capability is about articulating a business problem or opportunity and its desired outcomes, then coordinating and facilitating across internal and external entities to reach those results. This ability helps service providers to identify current and anticipated needs to deliver business results and to manage capability effectively to deliver those outcomes. Given service providers' internal utility industry expertise and the ecosystems of partners they have built, plus their ability and willingness to leverage capabilities from their ecosystems for clients, this ideal is in the Expansive phase in the current market.

**Examples:**

- A good example of service providers acting as brokers of a capability is GE Predix, GE's cloud platform-based operating system for the industrial Internet. TCS and Tech Mahindra developed solutions for enterprise asset management and asset performance management on top of Predix.
- Cognizant has a global innovation ecosystem with startups, venture capital, academic institutions, accelerators, and incubators to tap into external capabilities for clients. One example is its investment in a drone As-a-Service company measure to develop drone services and automate utilities' complex asset inspection process.
- After devastating power outages caused by ice storms, crippling the emergency response capability of the local government, Capgemini partnered with Schneider Electric, combining operational technology (renewable assets and battery storage), IT (IoT), and engineering technology to create an emergency energy resiliency solution, essentially an autonomous, mobile micro-grid.

# How As-a-Service Is Taking Shape in Utility Operations: Collaborative Engagement

Evaluating relationships on baselines of cost, effort, and labor → Ensuring relationships are contracted to drive sustained expertise and outcomes


- The key to a sustainable outsourcing engagement is collaboration: working together to produce a result. Traditionally, outsourcing work has been directive from service buyers to service providers and managed strictly by procurement organizations. As more business units and global shared services centers take responsibility for relationships, HfS is seeing a move to more collaboration where trust and experience are in place, often through shared outcomes and results. The adoption of practices of collaborative engagement is in the Expansive phase in utility operations today as a response to the orientation of the market on finding new ways of working, both in service delivery and commercial models.

**Examples**:

- There are several examples of service providers facilitating collaborative engagement between themselves and Utility clients and even bringing in other clients. Notable examples are Accenture's Energy Hubs, which are set up across the globe to serve as a showcase of (digital) technologies like smart grid and IoT and as inspiration for clients. Cognizant's Digital Works Collaboratory is its investment to accelerate digital aims to involve clients and partners in innovation.
- EXL offers clients hybrid pricing models – a mix of FTE-based, transaction-based, and outcome-based pricing – based on the maturity of processes covered under the contract. Most recently, EXL started the adoption of a customer outcome-based pricing model, which ensures that clients' spending is directly linked to end-customer experience. There is a fixed price-per-customer outcome, which is only paid for customers for whom all the outcomes have been met, incenting EXL to deliver superior outcomes, align with clients' strategic objectives, reduce capital expenditure for clients, and maximize customer satisfaction.

# How As-a-Service Is Taking Shape in Utility Operations: Intelligent Automation

Operating fragmented processes across multiple technologies with significant manual interventions

Using automation and cognitive computing to blend analytics, talent, and technology


- Intelligent automation is still in the Initial phase in utility operations. We see the application of robotic process automation (RPA) and autonomics in several business processes, IT infrastructure, and application management. Service providers across the board integrate automation in their service delivery. There is, however, a large diversity of automation usage in the industry; some utility companies have extensive, nearly decade long experience with RPA, others are just starting to orient themselves or have initial projects. Intelligent automation, which is using software and technology to do routine tasks, enhancing automation through machine learning and natural language processing, and moving up the curve with artificial intelligence, is far from pervasive at this stage. There are real opportunities in applying artificial intelligence and cognitive computing to utility operations.

**Examples:**

- Several service providers show real promise in intelligent automation, with TCS's ignio, Infosys' Mana, Wipro's Holmes, and IBM's Watson being applied to utility operations engagements. A good example of machine learning in the utility industry is IBM using Watson to handle visual recognition of aerial images by using drones for surveillance of pipelines or water usage, assisting effective maintenance and conservation programs respectively.

# How As-a-Service Is Taking Shape in Utility Operations: Accessible and Actionable Data

Performing ad-hoc analysis on unstructured data with little integration or business context

Applying analytics technologies, processes, and resources to relevant data sets to derive insights that can help improve an enterprise


- Analytics are key to transformation initiatives in the utility industry. Accesible and Actionable data is in the Expansive state. Utilities produce, collect, store, and analyze vast amounts of data. Data is everywhere in utility operations processes, which produce historical data, asset data, weather data, production data, process data, and project data – a list that is growing every day at an staggering rate. Having accessible and actionable data is the future of utility operations. Solutions include predictive operational analytics, predictive asset analytics, behavioral analytics in surveillance and security, and customer and marketing analytics. These analytics tie into utility operations areas where efficiency gains can have huge financial impact such as in predictive and prescriptive maintenance, distributed energy integration, production optimization, grid optimization, energy management, smart home, smart grid, smart meter, and customer operations.

**Examples:**

- Atos sees the next frontier for utilities in business data services. Atos' Codex data analytics platform plays an integral part in its analytics offerings like predictive analytics for demand forecasting, billing analytics, and analytics for real-time scheduling and route optimization in workforce management. A high-impact example is advanced anti-fraud analytics. A Spanish utility suffered large gas losses due to theft. Non-technical loss is a challenge for utilities, amounting to approximate damages of €4 billion in Europe and €6 billion in North America. Atos developed a solution and dashboard to counteract gas theft. On the Codex platform, meter data, socio-demographic data, weather data, forecasting data, and gas transportation data are analyzed with a cognitive algorithm to pinpoint suspected locations of gas theft. The probability of detection increased from 4% to 20% in the first iteration, then to 39% in the second iteration.

# How As-a-Service Is Taking Shape in Utility Operations: Holistic Security

Responding reactively with post-event fixes; little focus on end-to-end process value chains

Proactively managing digital data across service chain of people, systems, and processes


- The assets in the utility value chain – power plants, transformers, electrical lines, wind turbines, pipelines, and the like – are considered the world's critical infrastructure. Damages caused by natural disasters, human wrongdoing, cyber threats, and accidents directly impact our electricity supply. With the pervasiveness of communicating meter infrastructure in smart grids and subsequent explosion data, the need for holistic security is growing. Physical and digital assets are abundant and need to be secured holistically, a requirement driven by the adoption of advanced metering infrastructure, the integration of information technology and operational technology (IT/OT), and maturation of IoT in the industry. Holistic security is, however, still a nascent As-a-Service ideal today in utility operations offerings. The distributed nature of assets and the sheer number of actors involved in day-to-day operations in the utility industry pose significant challenges for a holistic approach to security. This is not to say that there is no physical security or cyber security in place; the utility industry has a high security threshold, but in HfS' view there is an opportunity for service providers to expand their culture and infrastructure of holistic security to create this holistic view of the state of physical and digital assets and up the ante on security in the utility industry.

**Examples:**

- Several service providers, such as Accenture, TCS, Cognizant, Wipro, and Atos operate managed security operations centers for clients. Accenture recognizes the paramount importance of holistic security and builds capabilities internal and through acquisitions like Cimation. Wipro specifically has a strong vision for breaking down security silos in OT, IT, and IoT. Atos, with long experience in military grade security of nuclear plants, thoroughly understands the needs of managing physical, digital, and data security in utility operations.

# How As-a-Service Is Taking Shape in Utility Operations: Plug-and-Play Digital Business Services

Undertaking complex and often painful technology transitions to reach a steady state

Plugging into "ready to go" business-outcome-focused people, process, and technology with security measures

**8 Plug-and-Play Digital Business Services**

- Utilities are heavily invested in ERP systems. Plug-and-play digital business services can unlock value by interfacing with these systems and making them more extensible and valuable. Plug-and-play is also well positioned for smaller but growing companies and in support of replacing systems for companies going through mergers. Service providers in utility operations are beginning to partner with their clients in developing and deploying plug-and-play digital business services. In a conservative utility industry, innovations have been adopted slowly, which has created a sort of "innovation gap". Service providers now have the opportunity to leapfrog a generation of technology and services to drive new plug-and-play digital services. We see these services as being at the Initial stage of development with significant progress forecasted over the next few years as service providers become more comfortable with being platform developers.

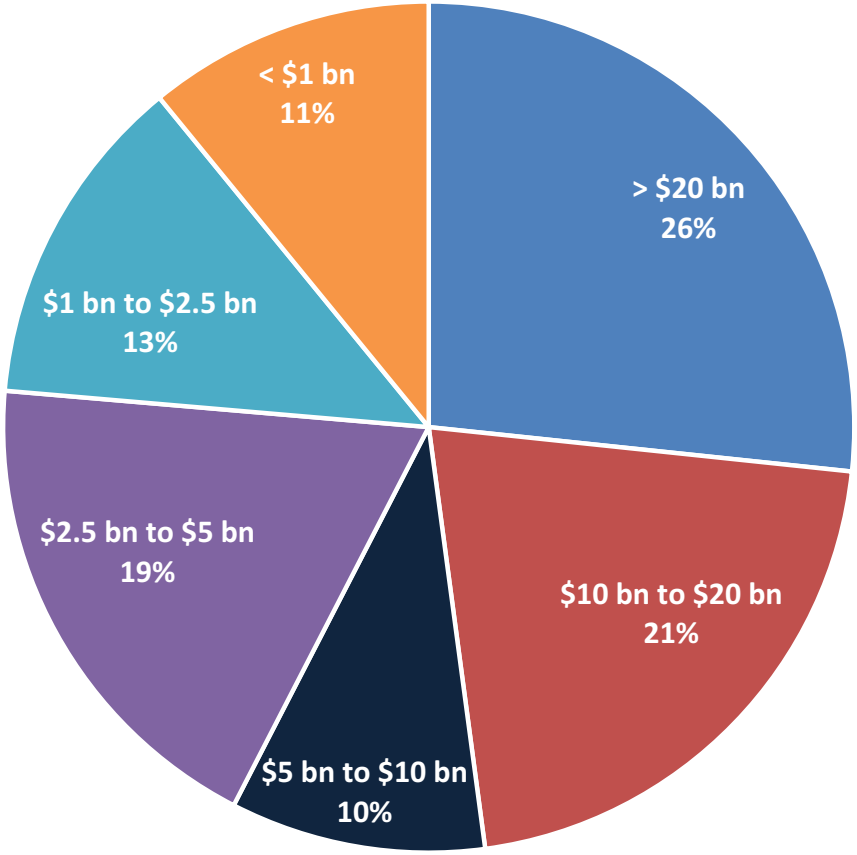
**Example:**

- Accenture's retail platforms for utilities provide clients with a modular, integrated, hosted solution that provides end-to-end digital, customer care, billing, and analytics capabilities. This helped a southern European utility with faster entry into new energy and service markets (boilers, solar, and connected home services). New products and service templates have been developed into the platform and a standard operation runs the manual activity to complete sales and servicing processes, including third-party vendor management (boiler installation and service repair).
- To comply with UK regulator Ofgem's requirements for logging customer dissatisfaction, EXL has created a plug-and-play solution for its customers, Complaints 360. This service enables efficient complaint tracking, correspondence, and resolution in the end-to-end complaint lifecycle. Complaints analytics help in identifying top complaint reasons and fixing upstream processes.

# Contract Data Analysis

# Large Utilities (> $5 bn) Dominate Utilities Operations Market; Over a Third Are Now Mid-Market

## Client Organization Revenue as a Percentage of Deals

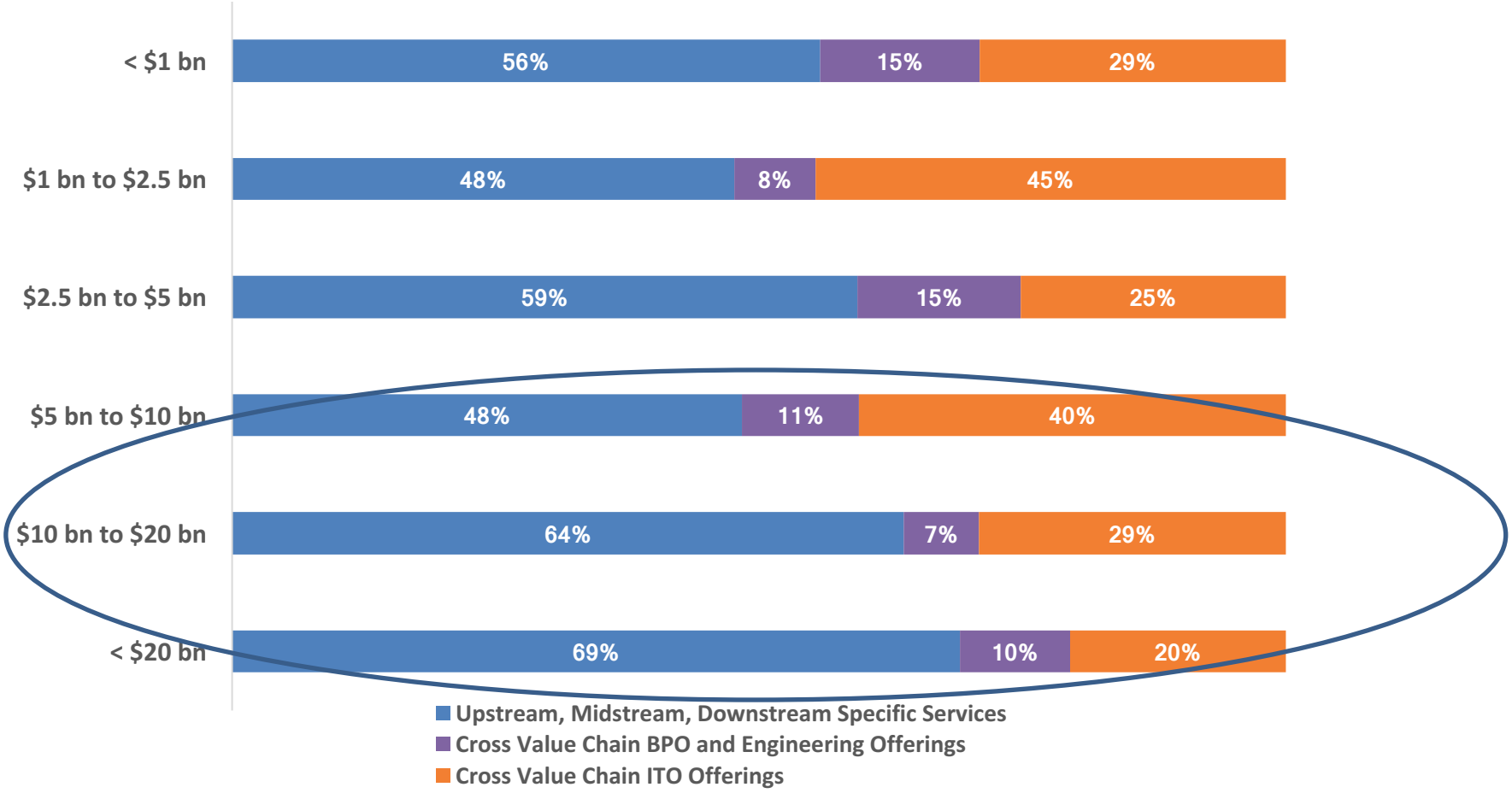



- Large utilities with revenue above US $5 billion (57%) leverage outsourcing to speed up the transformation process
- Outsourcing activity among mid-market to small utilities now comprises one-third of the entire market
- The large utilities are multi-sourcing and are more inclined toward IT and industry-specific services

*Source: HfS Research 2017, N = 190 live Multi-process, services Utility Operations Contracts*
*Based on live contracts which are over $1m in TCV and have a minimum of two core process bundled*

# Industry-Specific Services Prevalent in Utility Operations

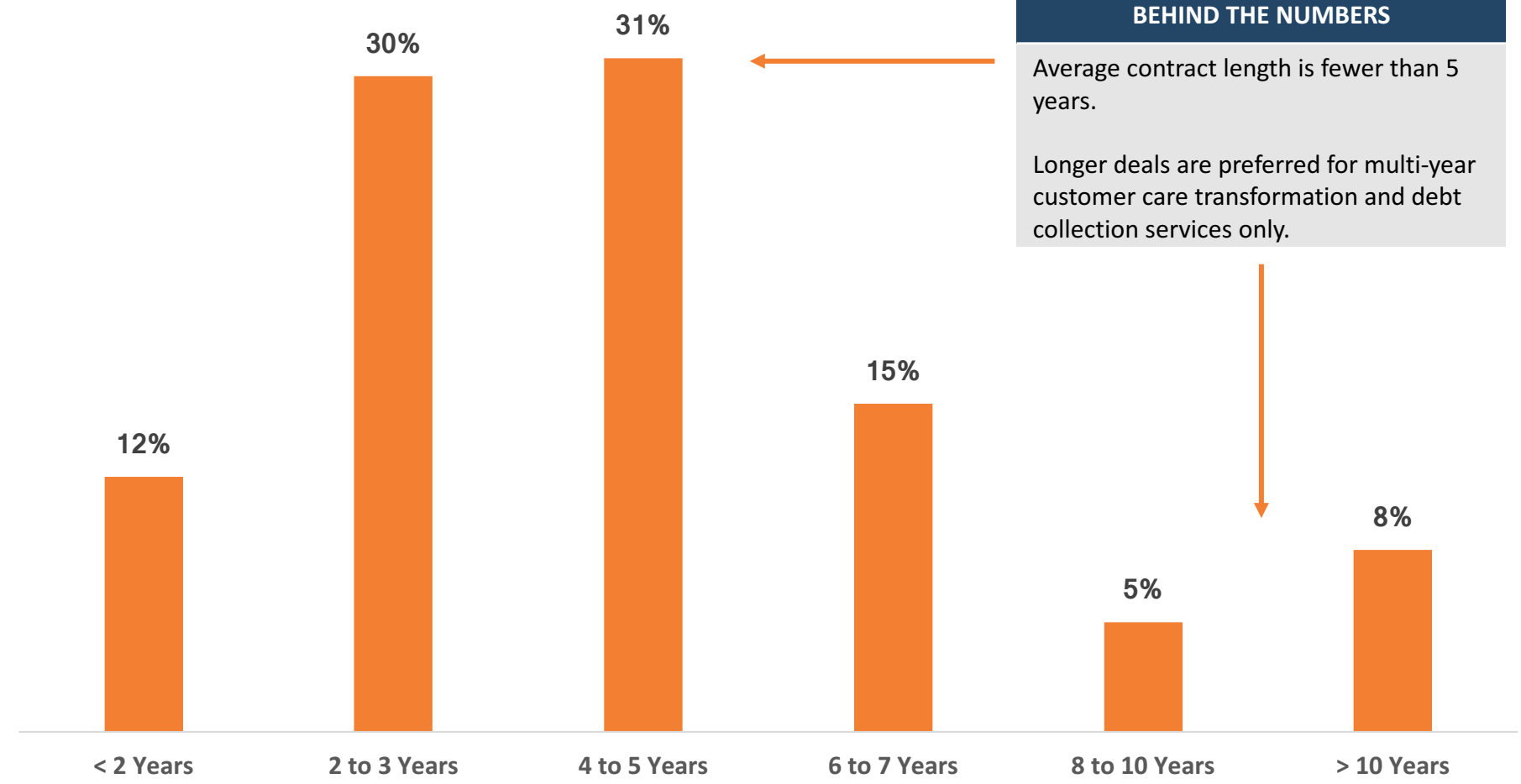
## Composition of Multi-Process Engagements by Size of Enterprises




*Source: HfS Research 2017, N = 190 live Multi-process, services Utility Operations Contracts*
*Based on live contracts which are over $1m in TCV and have a minimum of two core process bundled*

# Contract Length of Most Utility Operations Deals Is Fewer Than Five Years

## Length of Contract Term in Utility Operations



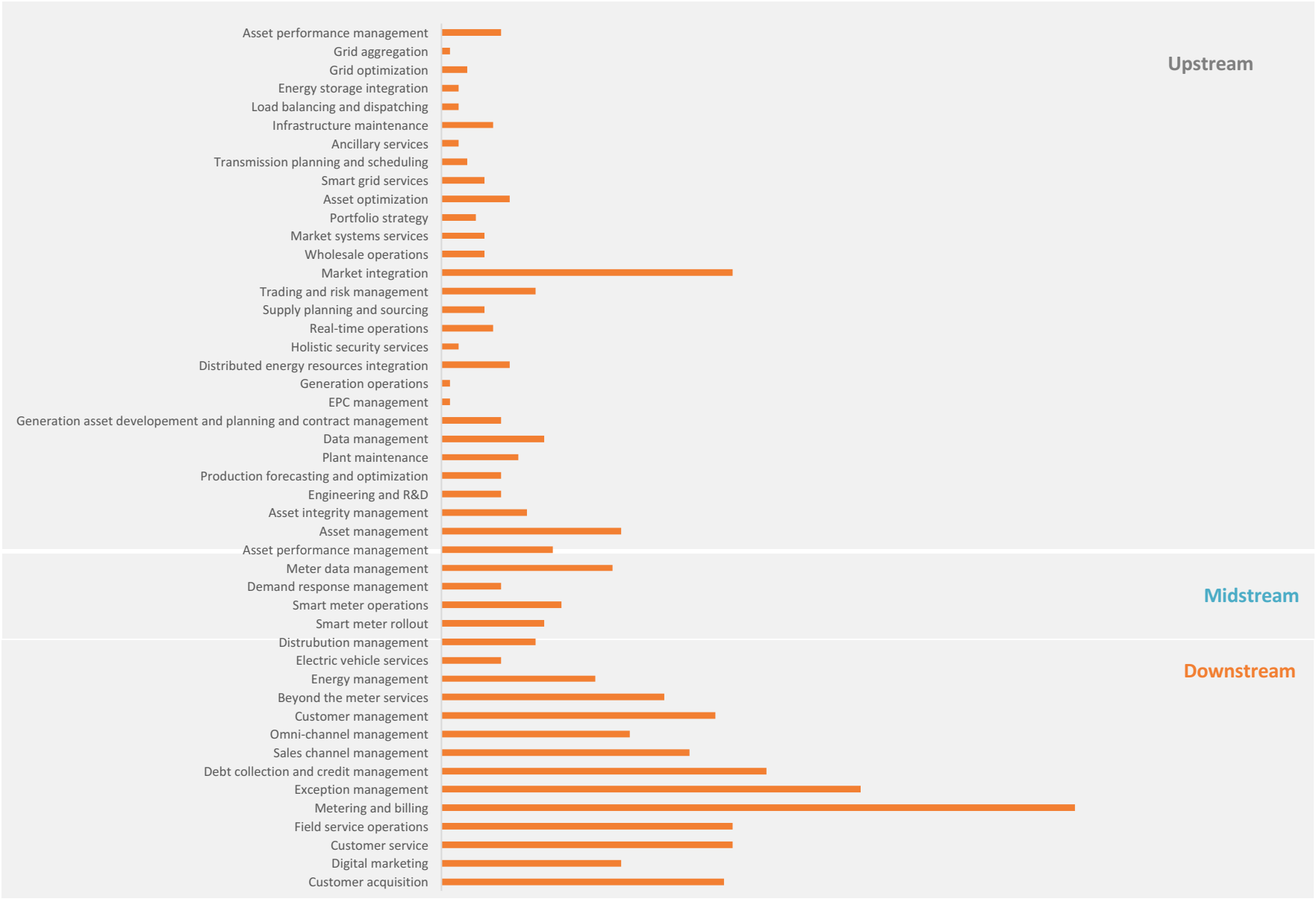

**BEHIND THE NUMBERS**

Average contract length is fewer than 5 years.

Longer deals are preferred for multi-year customer care transformation and debt collection services only.

*Source: HfS Research 2017, N = 190 live Multi-process, services Utility Operations Contracts*
*Based on live contracts which are over $1m in TCV and have a minimum of two core process bundled*

# Industry-Specific Services in Utility Operations Contracts

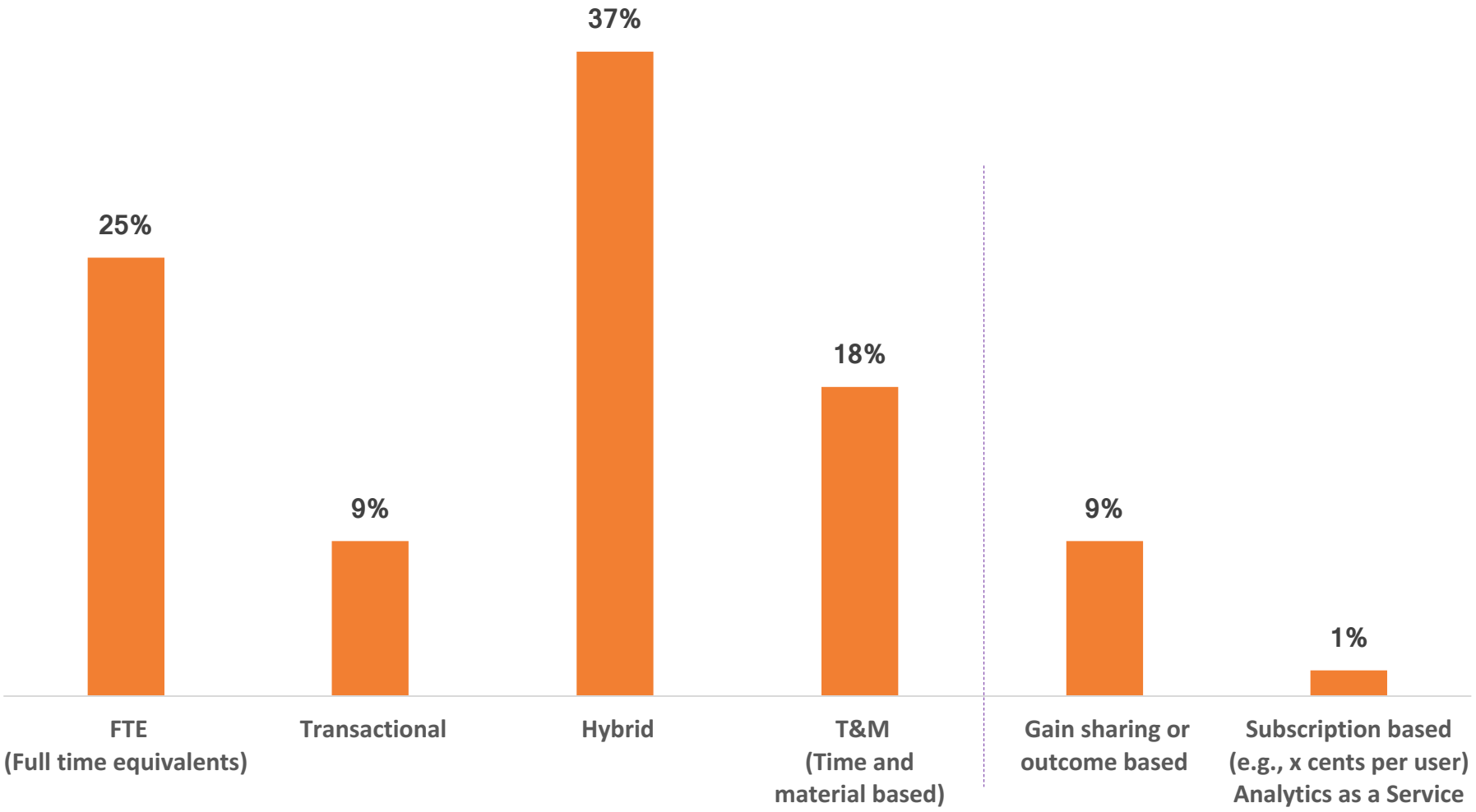



*Source: HfS Research 2017, N = 190 live Multi-process, services Utility Operations Contracts*
*Based on live contracts which are over $1m in TCV and have a minimum of two core process bundled*

# Hybrid, FTE, and T&M Based Pricing Models Dominant

## Fee Structures of All Contracts Until 2017

Percentage of Contracts




*Source: HfS Research 2017, N = 190 live Multi-process, services Utility Operations Contracts*
*Based on live contracts which are over $1m in TCV and have a minimum of two core process bundled*

# Market Forecast Through 2021

# Utility Operations Services Market Forecast Shows Continued Opportunity Through 2021 with 4.5% Compound Annual Growth

## 2015–2021 Utility Market Forecast ($ m)

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | CAGR |
|---|---|---|---|---|---|---|---|---|
| Application development and maintenance (ADM) | 1.501 | 1.611 | 1.731 | 1.862 | 2.019 | 2.198 | 2.393 | 8.2% |
| Customer relationship management (CRM) | 2.441 | 2.562 | 2.687 | 2.815 | 2.947 | 3.085 | 3.224 | 4.7% |
| Finance and Accounting (F&A) | 3.109 | 3.230 | 3.356 | 3.508 | 3.650 | 3.794 | 3.957 | 4.1% |
| Human Resources (HR) | 1.205 | 1.269 | 1.337 | 1.412 | 1.489 | 1.570 | 1.658 | 5.5% |
| Industry-specific | 14.276 | 14.924 | 15.569 | 16.211 | 16.846 | 17.475 | 18.086 | 3.9% |
| IT infrastructure management | 2.968 | 2.969 | 2.968 | 2.962 | 2.954 | 2.941 | 2.925 | -0.3% |
| Other IT services | 2.748 | 2.797 | 2.849 | 2.908 | 2.957 | 3.015 | 3.075 | 1.9% |
| Professional services | 7.456 | 7.952 | 8.489 | 9.066 | 9.698 | 10.443 | 11.239 | 7.2% |
| Total | 35.704 | 37.315 | 38.986 | 40.744 | 42.560 | 44.522 | 46.557 | 4.5% |

**Source: HfS Research, 2017**

# Research Methodology

# Blueprint Research Methodology

## Data Summary

- Data was collected in Q1 2017, covering Utility Operations services buyers, providers, advisors, and influencers.

## Participating Service Providers


## This Report Is Based On:

- **Tales from the Trenches:** Interviews were conducted with buyers who have evaluated service providers and experienced the services. Some were supplied by service providers, but many interviews were conducted by HfS Executive Council members and participants in our extensive market research.
- **Sell-Side Executive Briefings:** Structured discussions with service providers were intended to collect data necessary to evaluate innovation, execution and market share, and deal counts.
- **Publicly Available Information:** Financial data, website information, presentations given by senior executives and other marketing collateral were evaluated.

# HfS Blueprint Scoring Percentage Breakdown

| EXECUTION | 100% |
|---|---|
| Quality of service provider's account management team | 15% |
| Integration of customer feedback and collaborative models of engagement | 10% |
| Flexibility to deliver end-to-end and point solutions and integration of supporting technology | 10% |
| Actual delivery of services (upstream, midstream, downstream, cross industry) | 25% |
| Depth of industry-specific capabilities (services, domain expertise, tools, platforms) | 20% |
| Talent development and ability to attract and retain key industry skills | 10% |
| Models for continuous improvement | 5% |
| How is the service provider becoming a broker of capability for the client | 5% |

| INNOVATION | 100% |
|---|---|
| Vision for utility market evolution and services | 20% |
| Models for co-innovation and collaboration for solution design | 15% |
| Innovation in commercial models to help clients write off legacy | 15% |
| Use of partnerships, alliances, and joint ventures | 10% |
| Strategy for the deployment of intelligent automation (RPA, autonomic platforms, cognitive computing) | 5% |
| Investment in utility market services related plug-and-play digital services | 10% |
| Vision for holistic security of critical infrastructure | 10% |
| Investment in and implementation of IoT capabilities in the utility market | 5% |
| Programs for developing industry talent | 10% |

# Execution Definitions

| EXECUTION | How well does the service provider execute on its contractual agreement and how well does the provider manage the client/provider relationship? |
|---|---|
| *Quality of service provider's account management team* | How engaged is the executive and management team in defining and managing the delivery of services? |
| *Integration of customer feedback and collaborative models of engagement* | How has the service provider taken feedback and incorporated it into the solution and delivery? How has the service provider maintained a collaborative engagement? |
| *Flexibility to deliver end-to-end and point solutions and integration of supporting technologies* | When looking at a client's utility operations issues, can the service provider offer various solutions (point and end-to-end) to create a flexible and configurable (or customized) response? |
| *Actual delivery of services (upstream, midstream, downstream, cross industry)* | What are the clients' and market's overall impression of the quality of service across the value chain from this service provider? |
| *Experience in delivering industry-specific solutions (services, domain expertise, tools, platforms)* | How deep is the domain expertise (talent and solutions) in understanding and then addressing industry-specific issues? Is this domain expertise limited to a single industry area, or is it widespread? Is the service provider organized around industry-specific knowledge development and delivery? |
| *Talent development and ability to attract and retain key industry skills* | Does the service provider employ talent with utility industry specific skills and experience? What is the service provider's vision and strategy to attract and retain industry talent? |
| *Models for continuous improvement* | What methodologies and processes are implemented to continously improve service delivery? How effective are these models? Do clients notice the existence of these models in the day to day delivery? |
| *Becoming brokers of capability for clients* | Is the service provider able to act as a deep partner in meeting clients' specific and varied talent and technology requirements over time? |

# Innovation Definitions

| INNOVATION | How well does the service provider innovate its offering(s) in response to market demand, client requirements, and its own vision for how the utility market will evolve? |
|---|---|
| *Vision for utility market evolution and services* | What is the service provider's vision for the evolution of the utility market and utility operations services? Is there a clear strategy for delivering utility operations As-a-Service, and are there identifiable investments in place to realize this strategy today? |
| *Models for co-innovation and collaboration for solution design* | What are the main areas of innovation customers are asking for from service providers? What models are service providers experimenting with? |
| *Innovation in commercial models to help clients write off legacy* | How does the service provider use and introduce new commercial models to give clients new ways of working with the service provider? How are new commercial models used to help clients write off legacy, provide flexibility, or need less capital requirements up front? |
| *Use of partnerships, alliances, and joint ventures* | What partnerships, alliances, and joint ventures does the service provider have with providers of technology, tools, platforms, and domain expertise in utilities? How does the service provider use partnerships, alliances, and joint ventures to build and expand capabilities for service delivery? |
| *Strategy for the deployment of intelligent automation (RPA, autonomic platforms, cognitive computing)* | What is the service provider's approach to using intelligent automation platforms (RPA, autonomics, and cognitive) to improve the efficiency and effectiveness of delivering utility operations process? How mature is the service provider's strategy for intelligent automation? |
| *Investment in utility market services related plug-and-play digital services* | What digital platforms does the service provider use to deliver utility operations services? Are they integral to the service provider's offering(s) or add-ons? How pervasive is the uptake of these digital platforms by clients today? What is the service provider's future digital platform strategy? |
| *Vision for holistic security of critical infrastructure* | How do service providers deal with security of the physical and digital environment? How is holistic security part of service delivery and platforms? Is holistic security integral to the service provider's offering? |
| *Investment in and implementation of IoT capabilities in the utility market* | What investment has the service provider made in IoT capabilities? How does the service provider implement IoT capabilities for utility clients? Is IoT a strategic imperative in the service provider's offerings? |
| *Programs for developing industry talent* | What does the service provider do to attract and develop industry talent? Are there identifiable investments made to develop industry talent and expand domain expertise in the utility practice? |

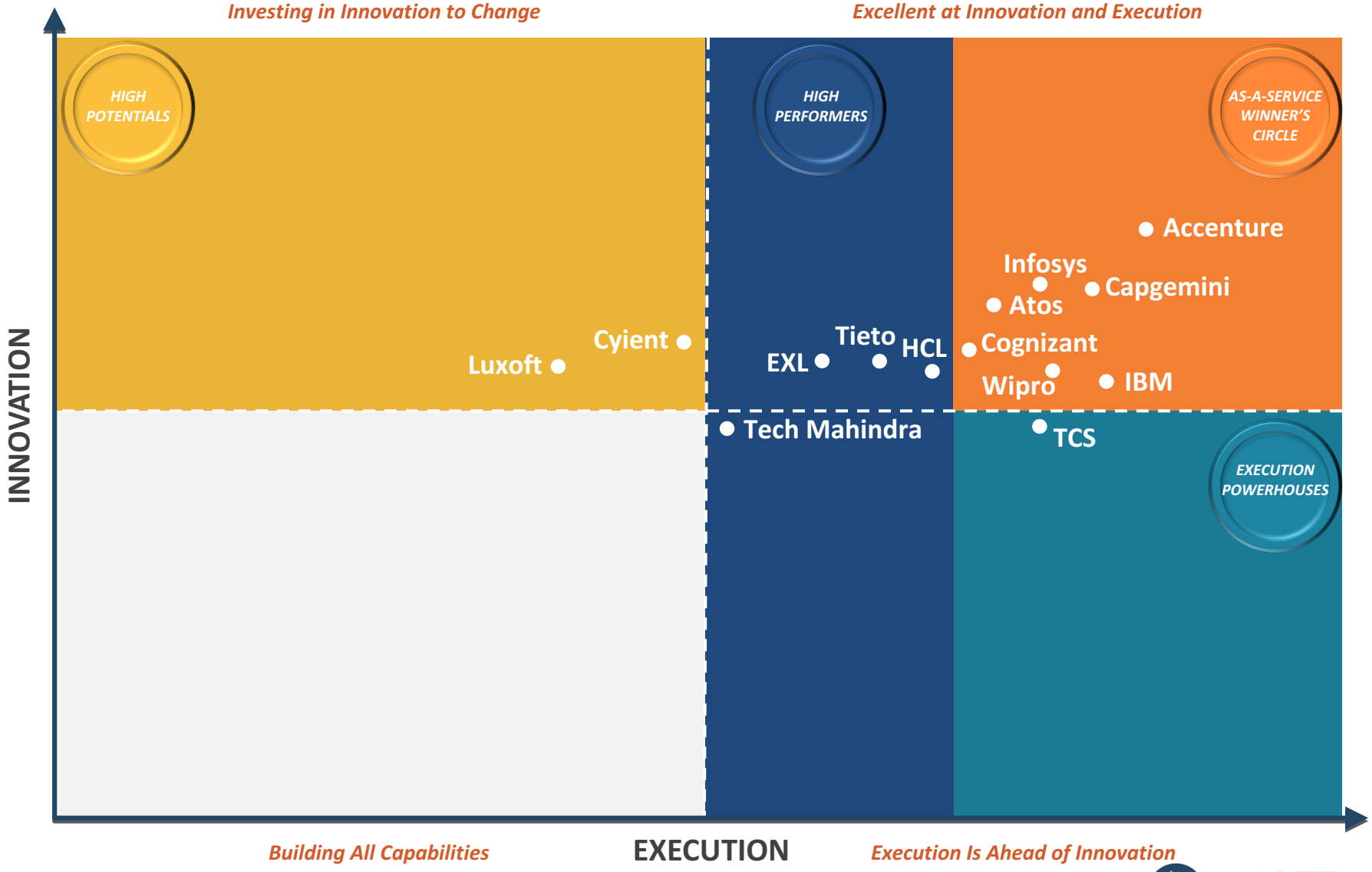
# Service Provider Grid

# Guide to the Blueprint Grid

To distinguish service providers that show competitive differentiation in a particular line of delivery with progress in realizing the "As-a-Service Economy" of business outcome-oriented, on-demand, talent + technology services, HfS awards these providers the "As-a-Service Winner's Circle" designation.

| | EXECUTION | INNOVATION |
|---|---|---|
| ***As-a-Service Winner's Circle*** show excellence recognized by clients in the 8 Ideals in execution and innovation | Collaborative relationships with clients, services executed with a combination of talent and technology as appropriate, and flexible arrangements. | Articulate vision and a "new way of thinking", have recognizable investments in future capabilities and strong client feedback, and are driving new insights and models. |
| ***High Performers*** demonstrate strong capabilities yet lack an innovative vision or momentum in executing the vision | Execute some of the following areas with excellence: worthwhile relationships with clients, services executed with "green lights" and flexibility when meeting clients' needs. | Typically describe a vision and plans to invest in future capabilities and partnerships for As-a-Service and illustrate an ability to leverage digital technologies or develop new insights with clients. |
| ***High Potentials*** demonstrate vision and strategy but have yet to gain momentum in executing them | Early results and proof points from examples in new service areas or innovative service models, yet lack scale, broad impact, and momentum in the capability under review. | Well-plotted strategy and thought leadership, showcased use of newer technologies or roadmap and talent development plans. |
| ***Execution Powerhouses*** demonstrate solid, reliable execution, but have yet to show significant innovation or vision | Evidence of operational excellence; however, still more of a directive engagement between service provider and its clients. | Less evident vision and investment in future-oriented capability, such as skills development, "intelligent operations", or digital technologies. |

# HfS Blueprint Grid: Utility Operations 2017



# Major Service Provider Dynamics: Highlights

## EXECUTION

- **Industry-Specific Capabilities and Expertise:** The value of deep industry domain expertise in Utility Operations is resonating through interviews with utility clients and market experts. **Infosys**, **Capgemini**, **Atos**, **Cognizant**, **Wipro**, **IBM**, **EXL**, and **Accenture** lead the way here. **TCS**, **Tieto**, **Luxoft**, **Cyient**, and **HCL** are making significant industry investments.
- **Brokers of Capability:** Enterprise clients are becoming much more demanding in the type of roles and skills they want to acquire from service providers in utility operations processes. The days of large transactional sourcing and staff augmentation are starting to wane and are being replaced by agile skill sourcing. Service providers, including the **As-a-Service Winners EXL** and **TCS**, are adapting to this new dynamic by diversifying their skills offerings, including technology and expertise from their partner ecosystem, and building more flexible commercial structures to provide access highly skilled talent and capabilities from sources outside of the providers' organization.
- **Actual Delivery of Services:** This Blueprint places a lot of value on excellent service delivery. Feedback from clients and the market on delivery excellence was especially positive for the service providers in the **As-a-Service Winners Circle**. Highlights in feedback are: Providers have introduced more flexibility in service delivery and contractual arrangements and combine industry expertise, consultative capabilities, technology leadership, and consistent delivery.
- **Talent:** The ability to attract, retain, and develop domain talent is a key ingredient for a utility practice. The providers showcase excellent programs for Utility Operations talent development and we see very serious efforts to meet future demand for talent in the industry.

## INNOVATION

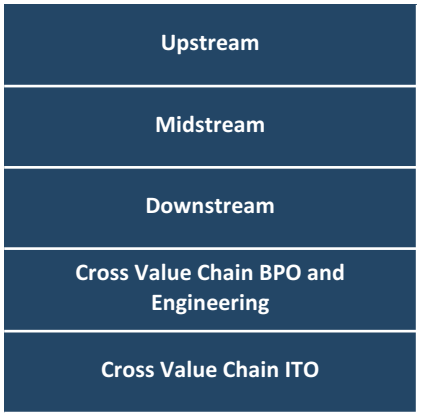
- **Vision for Utility Operations Market Evolution and Services:** In the challenging market environment, creating a strong vision for the utility market, how client needs are evolving and the services needed to facilitate meeting these needs are more important than ever. Clients expect much more than just cost savings by labor arbitrage. Multiple providers stand out with their vision for the role of service providers will play in helping utility clients in the energy transition, especially the providers in the **As-a-Service Winners Circle**, **EXL**, and **TCS**.
- **Partner Ecosystems and Alliances:** Partnering is the key to being Brokers of Capabilities, bringing new value to engagements, and being drivers of innovation. This translates into investments in industry-specific and technology partnerships by almost all service providers in this Blueprint. The breadth of partner ecosystems, joint ventures, and alliances of **Accenture**, **Cognizant**, **HCL**, **Atos**, **Wipro**, and **Infosys** stand out.
- **Investment in Industry-Specific Plug-and-Play Digital Services:** Providers are investing and focusing strategy on plug-and-play services delivered via digital platforms. Plug-and-play digital services are used to unlock and bundle data and processes from legacy ERP systems, abundant in the utility industry. And as truly As-a-Service offerings aimed at delivering business outcomes, wrapping expertise, process, and technology together. **Accenture**, **EXL**, **TCS**, **Atos**, **Wipro**, and **Infosys** stand out.

# Service Provider Profile

# HfS Utility Operations: Key to Profiles

- Value chain coverage is indicated in the profiles, with full coverage in blue shading. A light-orange shading indicates the service provider partially offers this service today or it is in a growth stage. A white box with black lettering indicates that the service provider does not offer this service today.

**Full Value Chain Offered**




**Key**


- All profiles include some facts and statistics about each service provider's utility operations practice.
- The list of partnerships is not comprehensive, as some service providers have many partnership arrangements.
- The number of clients and engagements are guidelines for buyers, as service providers may count these differently. For example, some are more strict about only counting client numbers rather than separating individual engagements with each client.

# Infosys

## Winner's Circle

*Strong vision for utility market underpinned with deep domain expertise and a consultative, innovation rich approach*

### Blueprint Leading Highlights

- Vision for utility market evolution and services
- Depth of industry-specific capabilities
- Models for co-innovation and collaboration
- Quality of account management
- Actual delivery of services

**Value Chain Services Maturity**

- Upstream
- Midstream
- Downstream
- Cross Value Chain BPO and Engineering
- Cross Value Chain ITO

### Strengths

- **Investment in Clients:** Infosys clients tell HfS they appreciate the willingness to invest in the relationship and introduction of innovative solutions, tools and methodologies. "One team, one goal" is mentioned by several clients describing the engagement, and Infosys invests significant effort and money to create this feeling. It could add some more organizational sensitivity and savviness regarding client governance processes to bring the client and Infosys team even closer.
- **Understanding of the Utility Industry:** Infosys has a deep understanding of the utility industry and business challenges utilities face. Clients find its technology prowess combined with deep industry expertise a valuable combination in large transformation engagements and business model innovation projects.
- **Proactive Account Management with Technical Expertise:** Clients praise the proactivity, engagement, and technical know-how of Infosys account managers.
- **Consulting Focus:** Infosys has a significant utility industry consulting capability, and is viewed as a committed partner by clients. Infosys is commended for going the extra mile in the bid process, with very thorough, detailed bids including the team structure and collaborative methodology to execution, where the original team often stays intact for the duration of the engagement.
- **Design Thinking and Digital a Big Hit with Utility Clients:** Several clients have commented on the value Infosys' Design Thinking efforts has brought to the engagement. Infosys' digital capabilities enable clients' online channels and migration to cloud-based services.

### Challenges

- **Adding Talent and Capabilities to Support Vast Growth Ambitions:** Infosys is very ambitious in the utility market. The utility practice has achieved tremendous growth over the past years, and the ambition is to double the practice in the coming three years. Infosys has successfully scaled the utility practice and capabilities over the last three years of high growth and has the foundation to continue to scale. The challenge would be to continue adding industry talent and capabilities to support this push-with the same eye for quality.
- **Bring Innovations from Investments to Utilities**: Infosys is betting big on new value drivers based on cutting edge technologies and platform based solutions. Going forward, it will need to to create circumstances for clients to experiment and embrace the new opportunities and tap into Infosys' innovation capability.
- **Taking Relationships to the Next Level**: Clients expect Infosys to evolve as a consulting and advisory partner, proactively providing them with roadmaps based on a global view of strengths and weaknesses derived from its utility experience, cross0industry experience, and wealth of data it collects on client processes, resources, and organization.

### Relevant Acquisitions and Partnerships

**Acquisitions**:
Skava (2015), Panaya (2015), Noah Consulting (2015)
**Investments**:
Trifacta: data wrangling software
Waterline Data Science: data discovery and data governance software
Airviz Speck: air particulate sensor that provides insightful analytics on air quality
Whoop: wearable technology that continuously measures key strain and recovery variables, and actionable analytics that generate intensity and recovery scores for pro athletes
CloudEndure: enterprise grade cloud migration and cloud-based Disaster Recovery (DR) software
**Partnerships**:
*Technology*: SAP, Oracle, Microsoft, IBM, OSISoft, ESRI, GE, Alstom, clicksoftware, SAS, HP, OpenText, TIBCO, EMC, KEMA, Cisco, Teradata, EY, ExcImp, Tableau
*Industry*: AMI/MDM, NIST, Centric Consulting, USP (Utility Solution Partners), OLAV, Itron Utility Week, Energy Pulse, IEC, Distributech, Microsoft SERA, NIST, OpenSG, CS Week
*Consortiums*: OpenAI, IIC, Industry 4.0, Water UK, European Utility Week

### Key Clients

Sixty clients globally including:

- Seven of the top 10 Utilities in USA
- Six of the top 10 Utilities in Europe
- National providers of electricity and gas
- Major investor-owned utilities
- Large electricity and gas producers and retailers in APAC

### Global Operations

**Headcount**: 5000

**Locations**:
- North America: 63% (Los Angeles, Newark [CA], Atlanta, Plano, Phoenix, Houston, Fremont, Bellevue, Lisle, Hartford, Bridgewater)
- LATAM: less than 1% (Sao Paulo)
- EMEA and UK: 33% (Amsterdam, Glastonbury, London, Dusseldorf)
- India: 3% (Bangalore, Hyderabad, Pune, Bhubaneshwar, Chennai, Chandigarh, Trivandrum, Mysore, Mangalore)
- Other APAC: 1% (Melbourne, Sydney)

### Proprietary Technologies

- *Infosys Mana: Knowledge based artificial intelligence platform*
- *Skava: mobile-first, digital platform*
- *AssistEdge: scalable automation platform that helps enterprises modernize customer service, improve business processes, and enhance operational productivity*
- *Panaya: ERP change analytics and cloud-based enterprise application testing*

# Market Wrap-Up and Recommendations

# Where To Next for Utility Operations?

We see the following as the major trends that will foster the future evolution of utility operations over the next two to three years:

- Customer experience continues to be a top priority for utilities as they fight off competition and seek improved customer satisfaction. Digital platform-enabled omni-channel marketing, customer acquisition, customer service, billing, and energy management processes will become the norm.
- Utilities adapt to new roles in the market. Utilities can assume that several models will crystalize in the next couple of years, for example, focusing on generation aggregation, development of grid infrastructure and services, and retail service bundling.
- The race to find and implement new business models heats up as traditional utility revenue streams stagnate. Ancillary services and beyond-the-meter services will be a focal point, driven by storage technologies, analytics, and further proliferation of renewable energy resources.
- As the utility market continues to experience economic and competitive pressures, expect transformation of the front-office and back-office to be high on the agenda as new ways to achieve efficiency and effectiveness.
- Demand and take-up for digital services that directly contribute to improved operational efficiency and agility will grow significantly.

# Where To Next for Utility Operations?

- The digital footprint will increase in utility operations. In generation, transmission, distribution, digital twins (or digital clones), and virtual power plants will change the nature of operating models and increase DER integration and efficiency of power generation significantly.
- Mobility combined with other digital technologies like drones, social, virtual reality, and augmented reality will further change the world of maintenance, repair, and installation workforces.
- 3D simulations will become more prevalent in solution design, training, and process planning across utility operations.
- Digital fabrication, including 3D printing, will take center stage in utility MRO.
- Integration of asset data in cloud platforms enables a unified view of generation, transmission, and distribution assets and operations, leading to better planning and use of resources in the utility industry.
- Predictive and prescriptive analytics will enable more real-time decision making, which will have a tremendous impact on operating models across the value chain.
- Engineering services will see tremendous growth. IT/OT integration projects, grid modernization, and smart grid initiatives will accelerate demand for engineering talent, solutions, and services.

# Where To Next for Utility Operations?

- Uptake of utility operations services in small and medium utilities will grow and service providers are in a position to deliver more modular, on-demand, As-a-Service services to these utilities, taking away capital expenditure burdens and allow for more (co-) innovation and investment.
- Blockchain enters the energy arena and will become an integral part of the future of energy trading. Investments in use cases of blockchain like smart contracts, peer-to-peer trading, micro-transactions, micro-grids, and micro-generation will skyrocket. There are many hurdles to jump, from regulatory to tax challenges, but Blockchain holds the promise to underpin a new era of energy supply and consumption.
- The (industrial) Internet of Things holds tremendous promise for many industries. To utilities, the concept is not new and in many countries smart meter infrastructure roll-out is firmly underway. As we expect IoT adoption to accelerate, the impact of IoT derived data, insights, and services on utility operations will be pronounced and far-reaching.
- Increasing efforts to write off legacy and usage of new digital platform capabilities facilitates more integration of core industry platforms with digital (industry) solutions.
- Intelligent automation, and particularly machine learning, artificial intelligence, and cognitive computing, is deeply integrated in service delivery, reducing the size of current labor arbitrage–centric contracts further.

# Utility Operations Is Beginning to Incorporate the Ideals of the As-a-Service Economy

| IDEAL | AS-A-SERVICE IDEAL DEFINITION | NON EXISTENT | INITIAL | EXPANSIVE | EXTENSIVE | ALL PERVASIVE |
|---|---|---|---|---|---|---|
| **Write Off Legacy** | Using platform-based solutions, DevOps, and API ecosystems for more agile, less exception-oriented systems | | | 2017 | 2020 | |
| **Design Thinking** | Understanding the business context to reimagine processes aligned with meeting client needs | | 2017 | 2020 | | |
| **Brokers of Capability** | Orienting governance to source expertise from all available sources, both internally and externally, to address capability gaps | | | 2017 | 2020 | |
| **Collaborative Engagement** | Ensuring relationships are contracted to drive sustained expertise and defined outcomes | | | 2017 | 2020 | |
| **Intelligent Automation** | Using automation and cognitive computing to blend analytics, talent, and technology | | 2017 | | 2020 | |
| **Accessible and Actionable Data** | Applying analytics technologies, processes, and resources on relevant data sets to derive insights that can help improve an enterprise | | | 2017 | 2020 | |
| **Holistic Security** | Proactively managing digital data across service chain of people, systems, and processes | | 2017 | | 2020 | |
| **Plug-and-Play Digital Business Services** | Plugging into "ready to go" business outcome-focused people, process, and technology solutions with security measures | | 2017 | 2020 | | |

# 2018-2019 Recommendations: Enterprise Buyers

- **Select Providers That Show New Business Model Acumen:** Finding new streams of revenues and designing business models to 1) monetize existing assets such as data and 2) new services that utilities can offer, is top of mind for many Utility executives. Service providers can play a role here with advanced analytics capabilities to unlock the value of your data with digital platforms, streamlining operations, implementing new services, and supporting operating models. Look for those providers with a clear vision on utility industry business models, willingness to invest, and proven solutions.
- **Push Your Provider on Holistic Security:** The utility industry harbors a lot of critical infrastructure. Securing this infrastructure against increasingly frequent cyber attacks is only becoming more challenging and important. Risks increase with the IT/OT integration and growth of networks of connected assets. Ask your service provider(s) for their vision and strategy for holistic security. The service provider's culture and infrastructure of security is critical for their ability to keep your operations secure.
- **Create New Distributed Energy Market Models to Allow New Business Models and Value Creation:** The evolving role of utilities in the energy value chain (which will increasingly be dominated by distributed renewable energy sources) calls for a more flexible market model. Players should be able to adopt new roles in matching new supply and demand, optimize energy use, manage peak demand, and provide information and advice to energy consumers.

# 2018-2019 Recommendations: Enterprise Buyers

- **Prepare for Radical Change:** If you thought your world changed significantly over the past years, you are in for a ride. Radical change is on the horizon; IoT adoption is about to accelerate and deeply change processes in your organization. Blockchain will fundamentally transform relationships between buyers and suppliers in the energy and support secure, transparent, and open value chains. Choose a service provider that can support you to understand and embrace these radical changes, that helps innovate internal processes, and that provides external plug-and-play services that address the impacts of digital technologies, finding a new balance and interplay between internal and external capabilities.
- **Move Faster and Deeper to As-a-Service Offerings from Service Providers:** As an enterprise buyer, keep pushing your service providers to move to an As-a-Service model that goes beyond labor arbitrage to include and offer you a broader set of choices for what solutions you adopt and how they interact with your own retained organization. Don't settle for a long-term fixed model of solution delivery for utility operations services, but push your service providers to be flexible and agile so that future services offerings better align to your own potential future needs. As part of the As-a-Service push, opt for plug-and-play digital services like BPaaS where you can, especially for standardized, commodity services.
- **Push the Automation Envelope:** Automation is an important lever to create new efficiencies and improve quality in many standardized processes. The adoption of automation by the utility industry is unevenly distributed; some utilities have a decade of experience, others just start to experiment. Make intelligent automation a central anchor in your operations strategy. Make it clear that you expect service providers to pull every lever available to achieve more simplicity, cost savings, quality, flexibility, accuracy, and speed in procurement processes, and balance it with a joint automation strategy.

# 2018-2019 Recommendations: Enterprise Buyers

- **Adopt Design Thinking:** Don't dismiss design thinking as a fad with little benefit for your own operations. The opportunities to sit down with your service providers to better understand the business context in which your current processes operate and what can be done to realign or reimagine these processes to achieve better results is always an exercise worth undertaking.
- **Articulate Innovation Ambitions:** Be clear about what you expect for your service providers when it comes to innovation. Many buyers expect service providers to help them innovate. Put this innovation ambition at the center of the engagement and select providers based on their innovation merits with other utility operations clients and other relevant areas.
- **Take a Co-Investment and Partnership Approach to IoT:** IoT has the ability to underpin major transformations across the utility operations value chain. IoT is not a new concept for utilities; in many regions smart grid and smart meter projects have already been running for years. No service provider has all of the IoT puzzle pieces. Look for service providers that can partner with you, act as brokers of capability, and have a good partnership strategy.
- **Focus on Big Data Opportunities:** Data, more specifically the insights you are able to derive from your data, will impact your future ability to compete. Select service providers based on their ability to provide you with deep expertise and capabilities in data and information management, advanced analytics, and the ability to translate your data into actionable and accessible insights supporting your entire organization.

# 2018-2019 Recommendations: Service Providers

- **Drive Commercial Model Innovation:** New commercial models promote utilities' flexibility and agility. Keep addressing the new commercial models you can offer utility clients, even if this in the short term deteriorates your revenue security. Utilities have been traditionally conservative, but indicate a big appetite for on-demand, As-a-Service delivery as it helps them become more nimble and resilient to the competitive pressures that face them. This in turn allows for more investment in innovation, which will benefit the truly innovative service providers. Transaction-based, subscription-based, and As-a-Service-based commercial models lag the adoption of As-a-Service delivery; as a result, clients can't yet fully leverage the benefits.
- **Support the Quest for New Business Models and Revenue Streams:** Smart service providers position themselves as key allies in the search for new revenue streams and business models. Utilities around the globe are frantically looking to find new ways to make money, offsetting some of the losses in revenue they incur from falling margins and demand, and increased competition. Support clients in finding long-term additional business such as behind the meter services like solar leasing, EV charging, and energy management, or from capturing new mandates for smart cities, smart lighting infrastructure, and management.
- **Catch Hold of the New Gold Rush - Data Analytics:** Utilities have amassed tremendous amounts of data; on consumption, production, customers, operations, assets. And are now trying to leverage and monetize their data. Service providers must focus advanced analytics capabilities to create valuable insights from the data, both for internal and external use, and to create business models for data monetization, focusing on joint value creation and increasing the stickiness in the relationship with the utility client.

# 2018-2019 Recommendations: Service Providers

- **Co-Invest in Innovation:** Proactively and aggressively push the innovation agenda around DER integration, IT/OT convergence, automation, analytics, predictive maintenance, drones, 3D printing for MRO, simulating with digital twins, machine and deep learning, cognitive computing, and Blockchain. Show your willingness to put your skin in the game.
- **Focus on Digital Customer Experiences:** Customers' expectations of the simplicity and efficacy of their interactions with utilities have drastically changed. Marketing, customer acquisition, billing, and customer care are processes that need to be optimized for digital engagement. The emergence of prosumers who have a dual relationship with their utility require utilities to create new experiences faster, simpler, and more flexible than ever before. Service providers must fill this gap and be the go-to party to enable digital customer experience.
- **Use Intelligent Automation to Create New Efficiencies:** Utilities show very dispersed maturity when it comes to automation. However, buyers expect service providers to use automation in service delivery. It is paramount for service providers to leverage automation for clients and take the maturity up a notch in the coming 12 to 24 months, from RPA and autonomics to artificial intelligence and cognitive computing to make sure you are not left out of the automation race.
- **Be on the Leading Edge of Blockchain:** Blockchain technology and smart contracts have the ability to play a significant role in energy trading and transactions. Peer-to-peer trading is already a reality. Blockchain can be the connecting tissue for energy trading in a world of de-centralized, distributed energy resources and large-scale electricity storage, changing the dynamic of the energy market. Invest in experiments, expertise, use case development, proof of concepts, education, and thought leadership around Blockchain, its impact on energy trading, utility operations processes, and platforms and your utility operations capability stack.

# 2018-2019 Recommendations: Service Providers

- **Invest in Industry Talent:** Industry talent and capabilities form the heart of the leading utility operations practices in this Blueprint. Shore up the investment in attracting, developing, and retaining people with deep domain expertise and experience.
- **Place Platforms at the Center of Your Strategy:** Underpinning As-a-Service delivery are full-stack platforms that enable end-to-end services combining people, technology, and processes. Continue to invest in the development of proprietary platforms with embedded advanced analytics capabilities to position your practice to seize opportunities from digital technologies and the wave of data enabled transformation in procurement.
- **Move Further to As-a-Service Offering Design and Execution:** At HfS, we are strong believers in the rapid move away from legacy "lift and shift" models toward an As-a-Service solution design and delivery world. We have seen significant progress from service providers in this Blueprint in their move to As-a-Service as well as rising demand for new engagement models from buyers. There is nevertheless significant opportunity to move this further forward and bring a more modular yet end-to-end solution stack to utility operations and bring more integration, innovation, flexibility, and agility into the engagement.

# About the Author

# Derk Erbé

## Research Vice President, Supply Chain, Procurement and Energy

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### Overview

- Derk Erbé is Research Vice President, Supply Chain, Procurement and Energy. Derk is responsible for a compelling, leading-edge research agenda covering the core topics of interest for buyer and vendor communities in the areas of digital business transformation services and business operations, with a specific emphasis on key vertical markets, namely Energy, Utilities, and Resource Industries.
- He works with the HfS research team on key research areas that are impacting HfS clients, such as automation, SaaS, and workforce transformation.
- Derk is responsible for Custom Research at HfS, working across the commercial and analyst team and client organizations developing and executing research deliverables.
- Derk has a keen interest in Business Transformations, new business models, Digital, Mobile, and IoT from a technology and change management perspective.

### Previous Experience

- Most recently, Derk was Co-Founder and CEO of Kea Company. He held several roles at Kea Company, serving as EVP Strategy and leading business advisory and consultancy. He was part of the team behind the annual global Analyst Relations Forum.
- Throughout his career Derk had a wide variety of leadership, consultancy and advisory roles with emphasis on business processes, operations, enterprise architecture, change management, and crisis management. He was a management consultant and interim manager at energy companies like RWE/Essent and a natural gas giant, NGO's, government agencies, tech startups, large technology vendors, and service providers.
- Derk is known for his ability to rapidly distill the top priorities in difficult circumstances and fluid, complex situations and executing on these priorities with his "getting things done" mentality.

### Education

- Derk holds a Master’s of Science in Sociology from the University of Amsterdam.

# About HfS Research

HfS Research is The Services Research Company™—the leading analyst authority and global community for business operations and IT services. The firm helps organizations validate and improve their global operations with world-class research, benchmarking and peer networking. HfS Research was named "Independent Analyst Firm of the Year for 2016" by the Institute of Industry Analyst Relations which voted on 170 other leading analysts. HfS Chief Analyst, Phil Fersht, was named Analyst of the Year in 2016 for the third time.

HfS coined the terms "The As-a-Service Economy" and "OneOffice™", which describe HfS Research's vision for the future of global operations and the impact of cognitive automation and digital technologies. HfS' vision is centered on creating the digital customer experience and an intelligent, single office to enable and support it. HfS' core mission is about helping clients achieve an integrated support operation that has the digital prowess to enable its organization to meet customer demand - as and when that demand happens. With specific practice areas focused on the Digitization of business processes and Design Thinking, Intelligent Automation and Outsourcing, HfS analysts apply industry knowledge in healthcare, life sciences, retail, manufacturing, energy, utilities, telecommunications and financial services to form a real viewpoint of the future of business operations.

HfS facilitates a thriving and dynamic global community which contributes to its research and stages several OneOffice™ Summits each year, bringing together senior service buyers, advisors, providers and technology suppliers in an intimate forum to develop collective recommendations for the industry and add depth to the firm's research publications and analyst offerings.

Now in its tenth year of publication, HfS Research's acclaimed blog Horses for Sources is the most widely read and trusted destination for unfettered collective insight, research and open debate about sourcing industry issues and developments.

HfS was named Analyst Firm of the Year for 2016, alongside Gartner and Forrester, by leading analyst observer InfluencerRelations.