Defining future business operations

HfS Industry Blueprint:
Utility Operations 2018
Excerpt for NTT DATA

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What you'll read

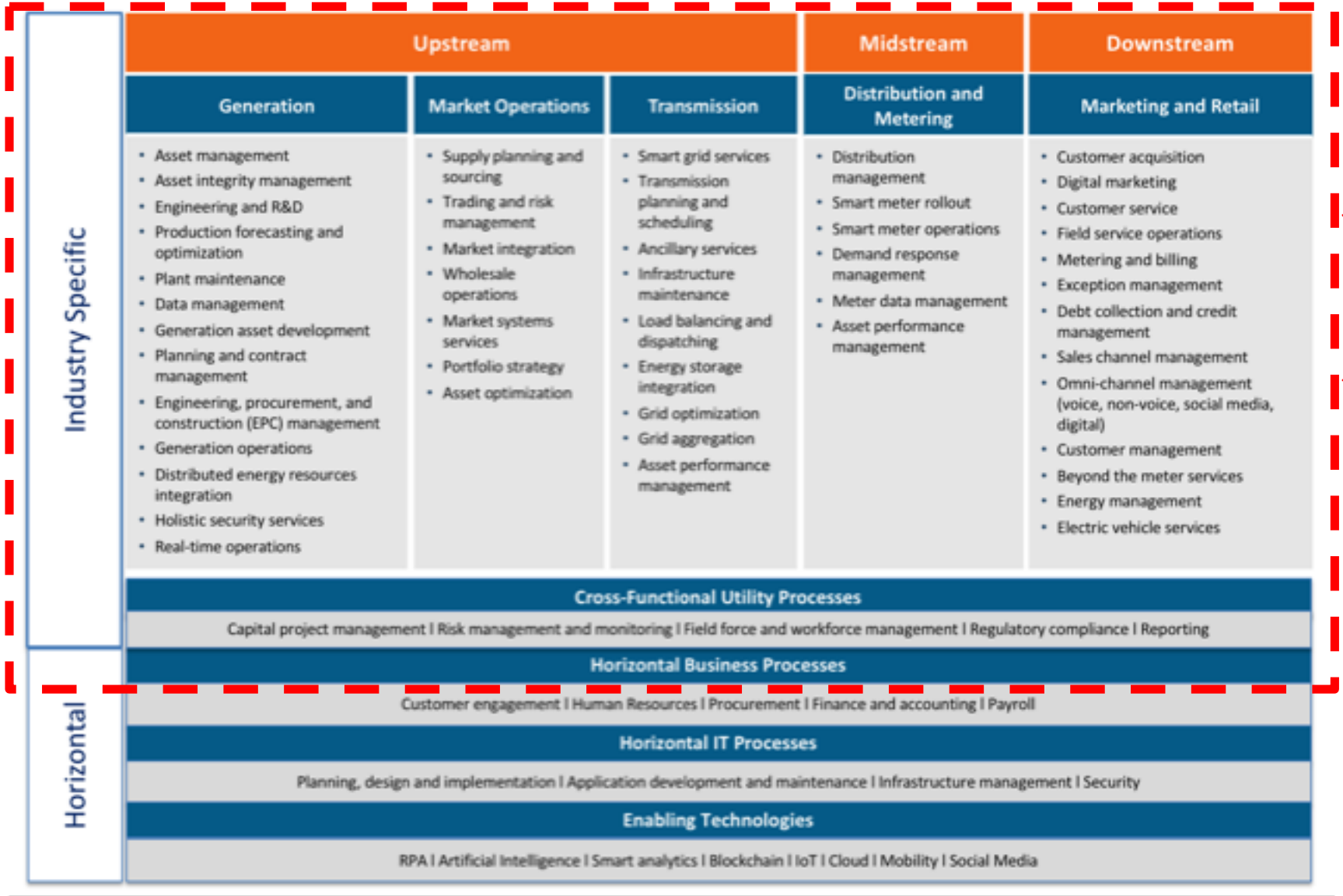
Industry Blueprint: Utility Operations 2018
Introduction and definitions

Introduction

- The utilities industry is experiencing a period of unprecedented change. After a good century of relative stability, the last two decades have been turbulent and if we are reading the signs right, this is only the start of a much bigger change in the way the world produces and consumes energy, particularly electricity.
- Utilities across the globe are struggling to drive growth and profit. Power demand is growing on a global scale, but locally—and especially in western nations—demand is flat or decreasing.
- Digital transformation is at the top of the agenda for utility executives. The traditional thoughtful and conservative approach to change and innovation has resulted in the industry lagging other sectors in adoption of cutting-edge technologies. Change agents are causing disruption in the industry and forcing utilities to speed up transformation.
- The *HfS Industry Blueprint: Utility Operations 2018* examines the state of the utility industry and investigates how the service provider landscape is supporting and enabling the digital transformation of utilities.
- We analyzed the capabilities of 18 service providers across the utility operations value chain to develop a comprehensive analysis of industry-specific services and solutions.
- The report quantifies the health of the utility sector, examines buyer objectives for digital transformation, provides emerging use cases for key change agents, reviews provider developments, and makes recommendations for buyers and providers of utility operations business services.
- Unlike other quadrants and matrices, the HfS Blueprint measures relevant differentials between service providers across various facets of innovation and execution.

Utility operations value chain

HfS developed the industry value chain concept to graphically depict our understanding of the processes and functions that specific industries engage in to operate their businesses. The industry value chain for utility operations provides a comprehensive overview of services for the utility industry. In-scope services for this study are identified below.

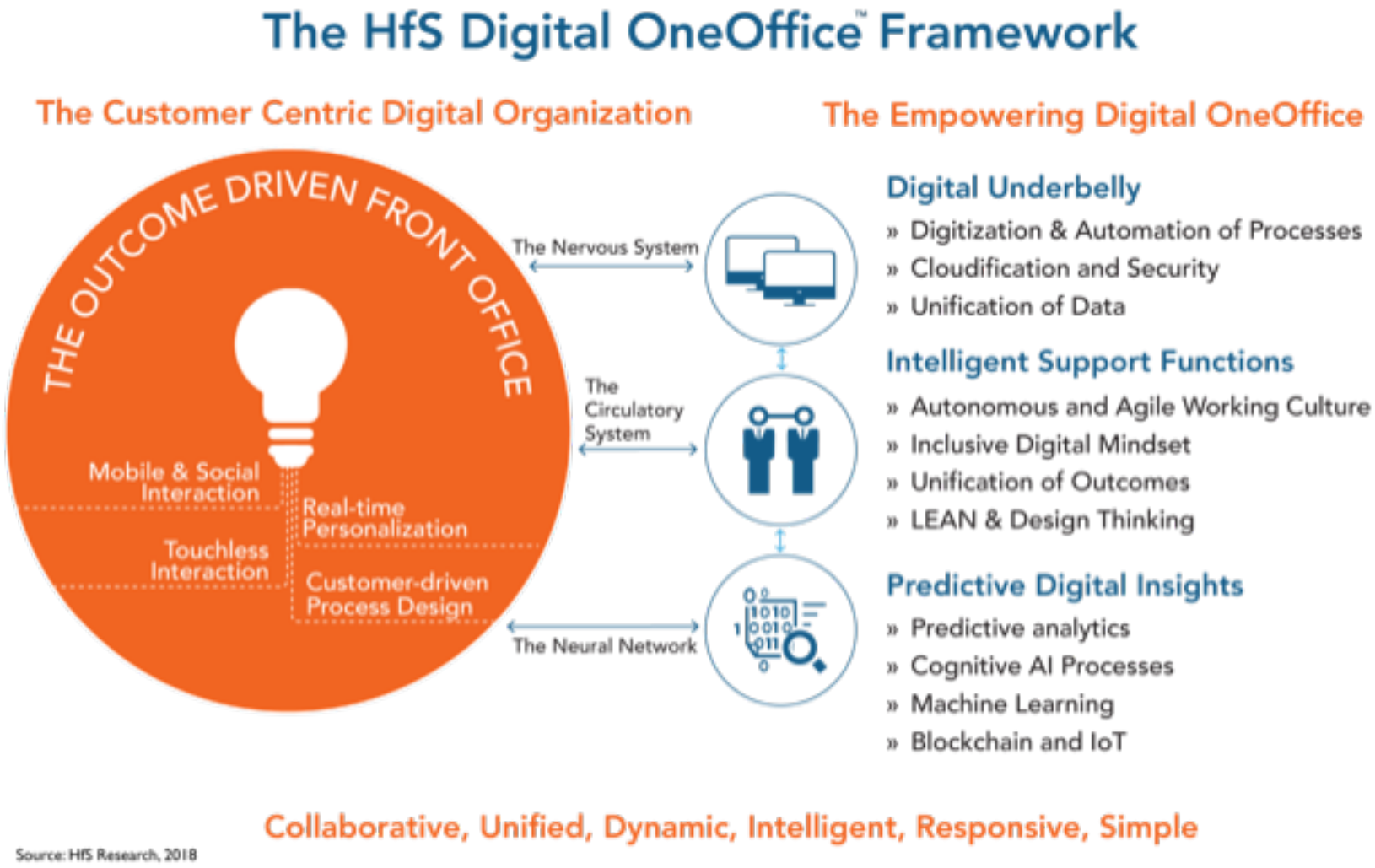


Utility operations value chain defined

- **The industry value chain for utility operations provides a comprehensive overview of services for the utility industry across the value chain segments generation, transmission, market operations, distribution and metering, marketing, and retail.**
- **Industry-specific processes.** Industry-specific processes are unique to the utility industry and are clustered in the value chain segments mentioned above. Utilities have various industry-specific functions that tend to run across multiple or all segments businesses, such as regulatory compliance, field force and workforce management, and capital project management; we have called out these functions as **cross-functional utility processes**.
- **Horizontal IT and business processes.** Enterprises in all sectors have a range of consistent business and IT processes that are essential to running their businesses but are executed similarly regardless of industry. We refer to these as horizontal processes and have segmented them by IT and business functions. Our industry-specific coverage of these areas will focus on instances where something unique has been developed for the industry, such as cloud-based customer information systems and distributed energy resource management systems.
- **Enabling technologies.** So much of the innovation and change taking place in the utility industry is driven by enabling technologies. They include elements such as RPA and AI, blockchain, and smart analytics. Our research on these topics will focus on how they are being utilized within utilities, which service providers are bringing them to the table, and what real business impact is being realized.

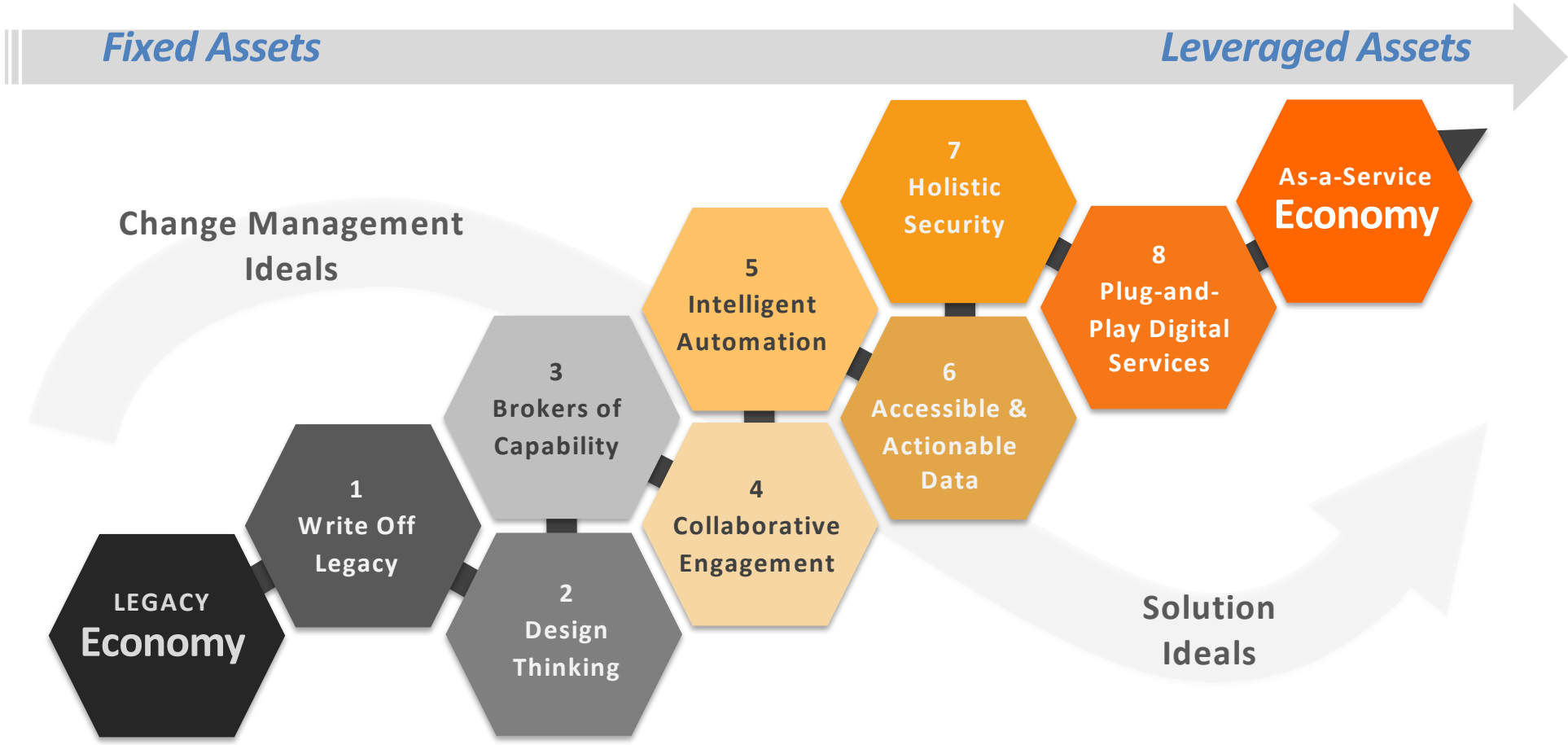
The Digital OneOffice framework is the end-state vision for transformation

The HfS OneOffice framework is the ultimate end-state for digital transformation in BFS. The eight ideals of the As-a-Service Economy offer a practical roadmap to the OneOffice that unites operations and IT transformation.



There are eight As-a-Service ideals to enable the journey to the OneOffice

- Realizing the OneOffice vision means changing the nature and focus of engagement among enterprise buyers, service providers, and advisors to be more agile and collaborative and focused on shared outcomes.
- "As-a-Service" unleashes people talent to drive new value through smarter combinations of talent and technology focused on business results beyond cost reduction.



Utility operations and technology transformation initiatives are increasingly coming together via the As-a-Service Economy framework to deliver true digital transformation

Operations transformation

- Business-led
- Optimize processes
- Innovate digital processes
- Customer journey and experience focus
- Intelligent automation
- Analytics
- BPaaS.

Technology transformation

- IT-led
- Modernize legacy
- Build digital infrastructure and apps
- DevOps
- Agile
- Microservices
- APIs
- Cloud.

Industry Blueprint: Utility Operations 2018
Executive summary

Executive summary (page 1 of 6)

- The HfS market size for IT and business process services for utility operations sits at $39.7 billion in 2017. Forecasted growth through 2022 is 5.4% CAGR, achieving a size of $51.7 billion.
- The utility operations business services market was worth $23.2 billion in 2017 and is expected to grow to $24.2 billion in 2018. IT Services account for $16.5 billion in 2017, with an expected growth to $17.6 billion in 2018.
- The HfS Health Rating for the utility industry shows a lagging sector with decreasing revenues and low single-digit profit growth. The rating takes into account revenue and profit data, M&A activity, and growth and IPO growth over the past three years. M&A activity is rising considerably and the deal value has increased 52%. The number and value of IPOs have decreased by 8% and 11% respectively.
- Flat demand coupled with growing decentralized generation by producing consumers ("prosumers") hampers utilities revenue growth and profit margin. European utilities have seen an approximately 33% decrease in revenue over the last decade. Revenue growth for US utilities has been around 6%.
- IT and BPO deal convergence is the result of many business process deals including elements of IT such as intelligent automation, smart analytics, and other digital change agents. Many IT deals are starting to require business process expertise in order to automate manual functions and build effective internal and external user experiences. We identify these as combined deals when we can, but increasingly deals identified as IT or business process will include elements of the other.
- We assessed 18 services providers across execution and innovation. IBM, Accenture, TCS, NTT DATA, Wipro, Cognizant, WNS, and Capgemini emerged in the Winners' Circle.

Executive summary (page 2 of 6)

- The market for utility operations services consists of a large set of diverse organizations: from monopolistic utilities operating in regulated markets to hyper competitive retailers in deregulated and liberalized markets and everything in between.
- Growing bottom-line profit is the major imperative for utilities; 30% identify this as the key business challenge, followed by improving customer experience (23%).
- This focus on customer experience translates to the business outcome that is reported as most critical to achieve business transformation; the alignment of front-office, middle-office, and back-office operations to create a better customer experience. One in five sees this as the key imperative.
- Improving the quality of operations talent and improving decision making to move from reactive to proactive are both seen as second-most critical (17%).
- Customers' expectations have drastically changed. 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 as well, creating a new type of customer—the prosumer—placing even more strain on utilities to improve customer experiences. Customer experience expectations are raised by players 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. Not only do utilities need to compete with each other for the core products they sell, they need to compete with internet companies for the attention and loyalty of customers.

Executive summary (page 3 of 6)

- **Domination of four d's: decarbonization, decentralization, digitization, democratization.** The big trends influencing the immense shifts in the energy world now and for decades to come are:
  - **Decarbonization:** the move away from fossil fuels as the primary source for generation of electricity and the primary fuel in transportation.
  - **Decentralization**: the shift to distributed energy resources, such as solar and wind, away from centralized power plants.
  - **Digitization**: the prevalence of digital technologies such as cloud, mobile, robotics, and sensors connected to the Internet of Things and the change and opportunities these brings to utility operations.
  - **Democratization**: the trend of dispersion of electricity generation asset ownership from a few specialist organizations (utilities) to many private citizens (prosumers). Think about the shift from one massive power plant to millions of 20 rooftop solar panel arrays.
- **Energy supply, energy access, and sustainability of energy are three main imperatives.** Demand might be flat or declining on both sides of the Atlantic in North America and Europe, bit with every increase in energy access (people getting access to electricity in developing economies) demand in other places rises. Large swaths of Africa don't have access to power, as is the case in Asia and Latin and South America. The International Energy Agency expects India to grow demand for electricity by 2040 to the same amount of electricity Europe consumes right now. China will add demand equal to the size of the US' electricity demand in the same timeframe. So overall, the quest to increase energy access for the world population leads to increased demand, with the supply of energy drastically changing as a result of the energy transition towards sustainable forms of energy.

Executive summary (page 4 of 6)

- **Renewables are winning at the game fossil-fuels dominated—economics**. Natural gas has replaced coal as the cheapest source for power generation. It's not only much cleaner, it's now 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.
- **When super capitalists pay to leave their utility in shift to renewables…you know things have changed.** Las Vegas casino MGM paid nearly $87 million in exit fees to be able to leave its utility, Nevada Power, and procure and build the renewable energy needed to power its operations. You know something has changed when a pure for-profit organization like MGM decides it is worth paying millions of dollars to hasten the move to renewable energy. MGM and renewable energy provider Invenergy are now building a 100 megawatt, 336,000 panel solar facility outside Las Vegas that will provide electricity to 13 of MGM's properties.
- **Consumers are fleeing their traditional large utilities, where they can**. The United Kingdom is a good example of a highly competitive, liberalized power market. In an extremely competitive energy retail market, with 58 active energy retailers, the Big 6 (soon to be Big 5 when SSE and npower join forces) have been under pressure from price fighting challengers. SSE and Scottish Power, two of the Big 6, reported losing 230,000 and 100,000 customers respectively in Q2 of 2017. Combined, the Big 6 lost 1.1 million customers in the first three quarters of 2017. Around 35% to 41% of the so-called switchers left SSE and Scottish Power for one of these smaller, more nimble challengers, which not only offer more attractive prices but, as many feel, also better customer experiences. New services such as Flipper help find consumers the best energy deal every single month and facilitate the switch to a cheaper plan.

Executive summary (page 5 of 6)

» **Re-jigging the operating model, business model, and asset portfolios to compete in the new energy world**. One of the most significant deals recently announced is the deal that sees E.ON, RWE, and Innogy completely revamp themselves. E.ON (which spun off its legacy generation business Uniper in 2016) is acquiring the retail and grid businesses from RWE's renewable generation and retail business spin-off Innogy. While RWE is acquiring E.ON's renewable generation assets and is holding on to Innogy's renewables business in a complex mega-merger asset swap. This deal is an example of the sweeping and titanic transformation needed for a competitive edge and viable future in the utility industry.

» **New competition is dipping its toes in the pond that utilities own(ed):**

- Major tech firms go 100% renewable. Google and Apple are generating or procuring the electricity needed for their operations—data centers, offices, and retail spaces—to be fully renewable today. Amazon is one of the largest developers and installers of solar and wind farms in the US. This means these tech giants are not only buying renewable energy certificates (RECs) and long-term power purchase agreements (PPAs) with solar and wind farms, but also building their own capacity, gaining experience, expertise, and capabilities in the process.
- A big fear of utility executives is one or more of these digital giants entering the electricity retailing game. A player with high name recognition, high customer loyalty, and a trusted brand could enter the retail market and take a large market share.
- Oil and gas super majors are investing in electrons. Oil and gas companies are plotting their move from hydrocarbons to electrons. Shell, Total, and Statoil are clearly playing their renewable cards right now, with others showing interest and an appetite to explore what the the new energy constellation could look like and their role in it. Statoil places focus on floating wind farms. Shell is looking at retail utilities (First Utility acquisition) and generation assets (MP2 acquisition and Silicon Ranch investment). Total is expanding renewable energy and energy efficiency business with acquisitions of solar and wind producer EREN and energy efficiency provider GreenFlex.

Executive summary (page 6 of 6)

» **Regulation and infrastructure in need of a makeover:**

- The current infrastructures are built for a bygone era. New infrastructures are needed that are smarter and seamlessly connected, allowing 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.
- Future-proofing energy market policy and regulations. Governments are ramping up investments in renewables and new technology. A good example comes from the United Kingdom. The government and energy regulator Ofgem introduce a £246 million investment in battery technology along with 29 actions to make energy regulation more friendly to demand response, storage, and renewable energy. The UK plan includes measures to enable consumers with solar panels to install battery storage and feed their overproduction of electricity back to the National Grid, for example in situations of peak demand. It also encourages services and incentives that rely on Internet of Things technology and smart appliances to deal with peak demand by remotely turning air conditioning down, running the washing machine only when the sun is up, or turning off the freezer for a couple of minutes to relieve the grid during peak demand.
- Cyber security is an increasing challenge. Utilities have become 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.

Industry Blueprint: Utility Operations 2018
State of the utility industry

The HfS utility industry health rating methodology

- **It is hard to find an industry with more challenges than the utility industry.** The list of challenges the utility industry has to deal with now and in the near future is almost endless. Economic, societal, market, political, and regulatory pressures are coming together, bringing immense challenges for companies to solve through more effective and lower cost operations. The utilities industry has encountered different disruptive forces over the last few decades and now faces a new wave of impactful forces. Technological progress, changing demand, increasing costs, and changing expectations in conjunction with the trends for distributed renewable generation, a different role for nuclear following the Fukushima disaster, and the climate change goals from the Paris COP21 Agreement are driving the next wave of disruption.
- **The economic environment has been tough for utilities.** Flat demand has led to slow revenue growth or even declines in revenues. Utilities across the globe are looking at mergers and acquisitions and split-offs as answers to the challenging environment. What is the impact on the industry's health?
- **In order to take measure of the state of the utility industry, HFS has developed its health rating approach—a methodology that draws on multiple measures of growth and industry fortitude to assess an industry's overall well-being. Measures include:**
  - Three years of **revenue and profit data** for the **top 50** publicly traded utilities worldwide.
  - **M&A growth** for utilities over the last three years to gauge climate and focus.
  - **IPO growth** over the past three years to understand expansion potential for the sector.
- **These elements are quantified and rolled up to provide an overall industry health rating.**
- **Data sources include:** Public financial filings, Institute for Mergers, Acquisitions and Alliances M&A statistics, PwC data, and EY IPO data.

Lagging growth metrics for global utilities industry

-4.4% Revenue growth for top 50 utilities companies worldwide 2013–2016

1.2% Profit growth for top 50 utilities companies worldwide 2013–2016

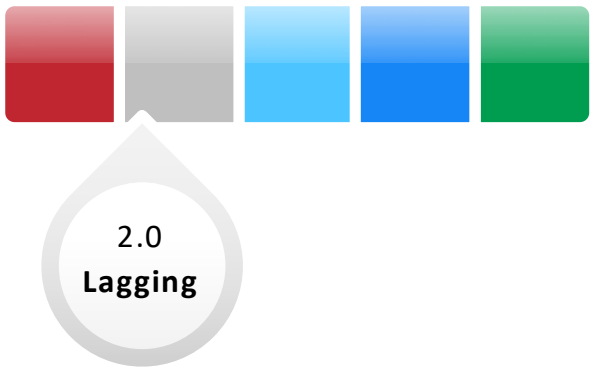
17% M&A utility deals worldwide growth 2014–2017

52% M&A utility deal value growth worldwide 2014–2017

-8% Utility IPOs count worldwide 2014–2017

-11% Utility IPOs value worldwide 2014–2017

Utility industry health rating



declining	lagging	satisfactory	healthy	hyper
< 0	0–4	5–9	10–24	24 >

The HfS health rating methodology draws on multiple measures of growth and industry fortitude to assess an industry's overall well-being. Measures include three years of data on:

1) **Revenue and profit** for the **top 50** publicly traded utilities company worldwide.
2) **M&A growth** for utilities overall.
3) **IPO growth** to understand expansion potential for the utilities sector

These elements are quantified and aggregated to provide an overall industry health rating.

Source: Public financial filings, Institute for Mergers, Acquisitions and Alliances M&A statistics, EY and PwC data.

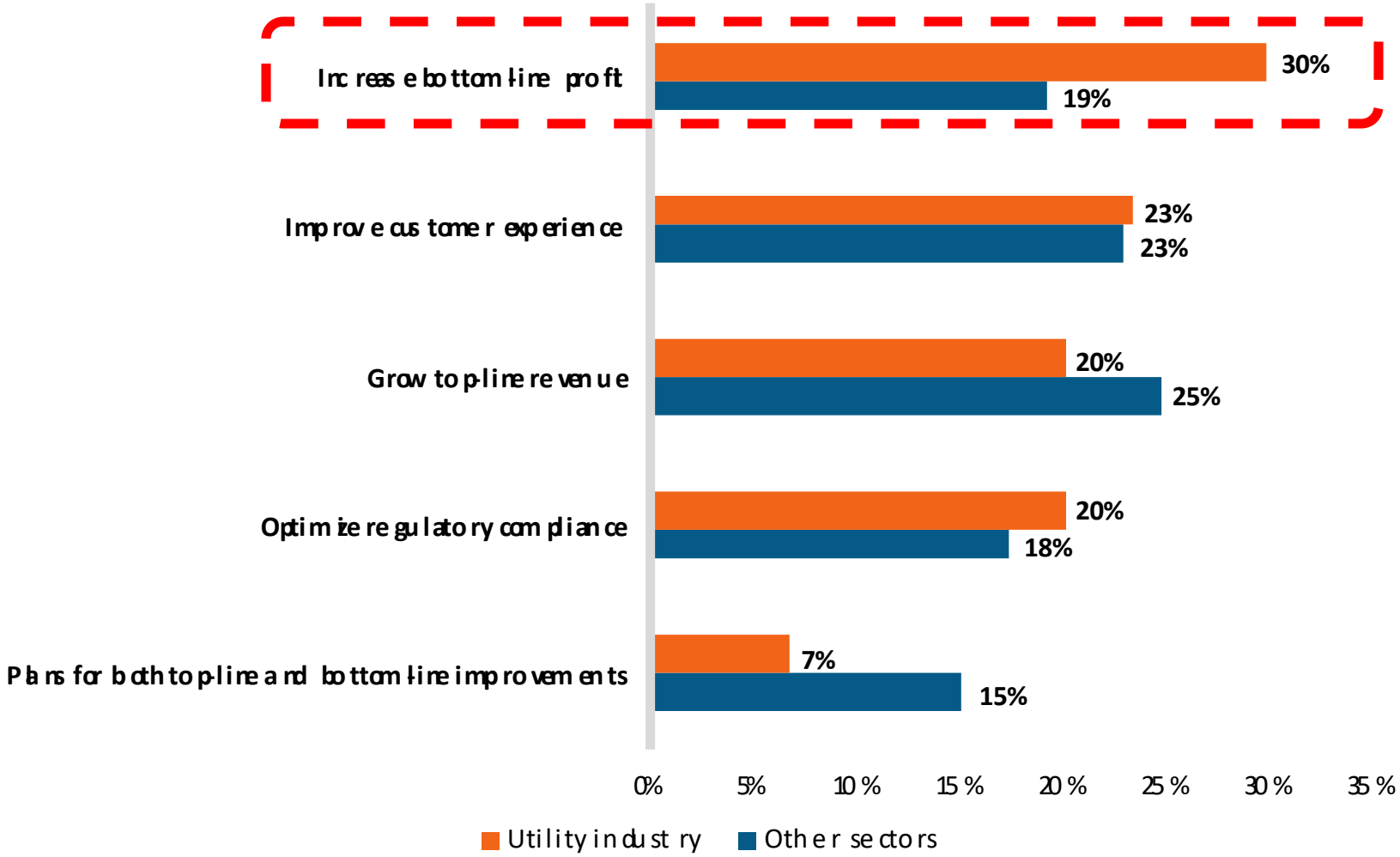
Utility industry health rating analysis

declining	lagging	anemic	healthy	hyper
negative	0 – 4%	5 to 9%	10 to 24%	25%+
1	2	3	4	5

- **Declining revenue and lagging profit growth.** Between 2013 and 2016, aggregate revenues of the top 50 global utilities declined by 4.4%. Profit was slightly higher, with an aggregate performance of 1.2% growth over three years.
- **Utility M&A activity showed healthy growth**. The global M&A volume for utilities has grown 17% since 2014. Deal size has been growing even more, 52% larger in 2017 than in 2014. Many deals are focused on mergers to create new capabilities in renewable energy, notably the formation of Innogy and Uniper in Germany—both aimed at creating a renewable energy business separate from the legacy generation business. Innogy is the new energy unit spun out of RWE, Uniper is the business focused on the legacy generation assets, and parent E.ON is the renewable energy business. There is also focus on divestiture activity to narrow focus. The 2018 agreement between RWE and E.ON to sell Innogy to E.ON is a divestiture on RWE's part. E.ON's sale of its share in Uniper to Nordics based utility Fortum is another divestiture.
  - **Notable M&A deals**. The biggest M&A news comes from Germany, where the two mammoth utilities E.ON and RWE have announced a deal that sees E.ON acquire the RWE split-off Innogy in a $27 billion deal. Another notable acquisition is Royal Dutch Shell buying a UK-based utility, First Utility.
- **Utility IPO growth is declining.** The number of initial public offerings has declined 8% in the period from 2014 to 2017. The IPO value has also declined by 11%, indicating a tough market climate for utilities to raise money. Against the backdrop of declining revenue and lagging profit growth, investors' reluctance for IPOs is understandable. Investment focus has shifted to the renewable energy space, where solar and wind investments in particular have exploded the past few years. However, the industry has seen a number of significant IPOs. Innogy's IPO in 2016 at $22 billion was Germany's largest IPO in 16 years. Denmark's DONG Energy IPO in 2016 valued the company at $16.5 billion, one of the largest IPOs of 2016. E.ON spun off Uniper, valued at $4.4 billion at IPO in 2016 and is now valued at $10 billion by Fortum's takeover bid.

Utilities want to increase bottom-line profit with business transformation

What are your top objectives for business operations transformation over the next three years?



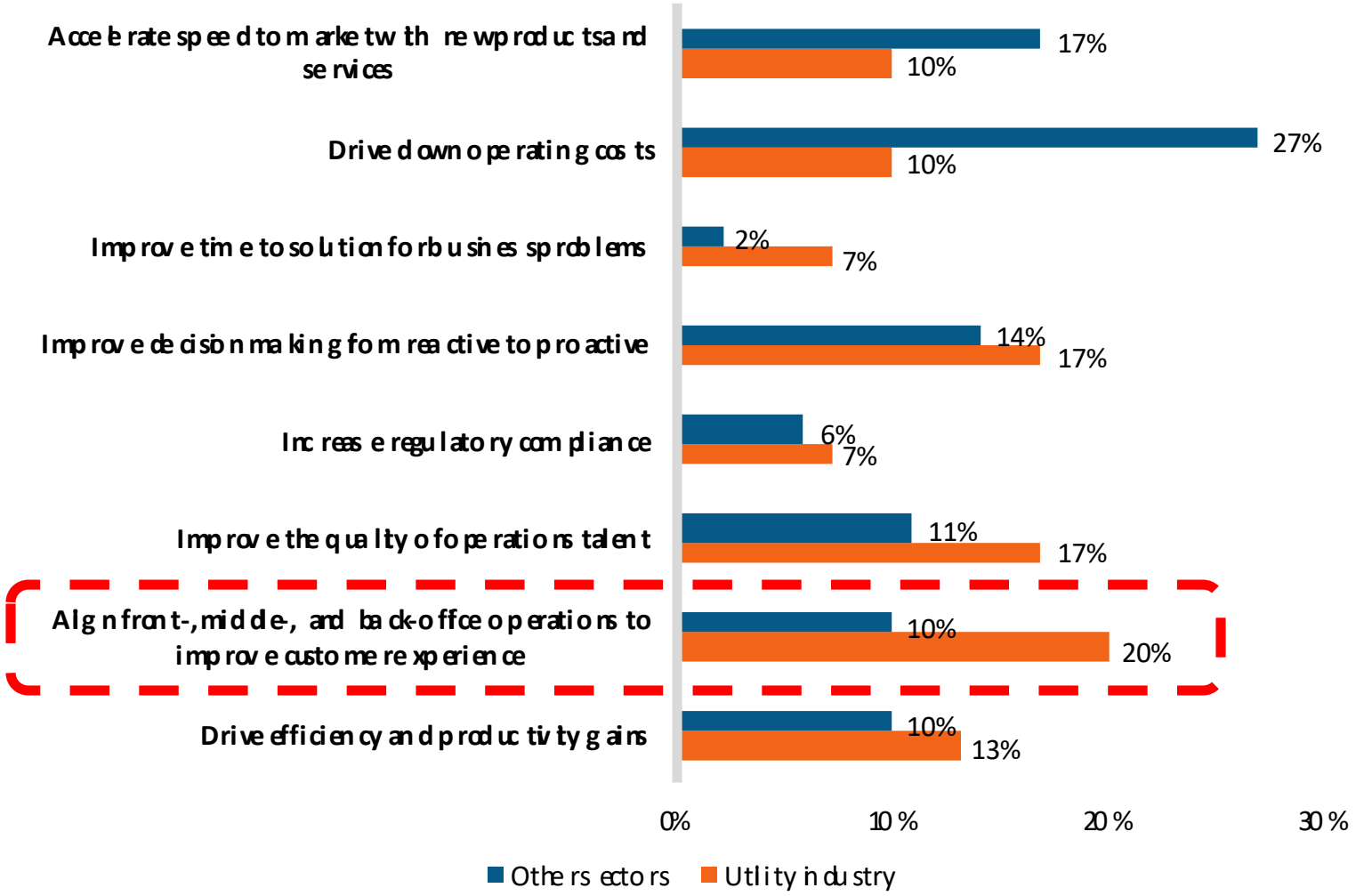
Why transform?

- Utilities want to **increase bottom-line profit**—the number-one driver for business transformation.
- Other sectors are focused on **growing top-line revenue**.
- **Improvement of customer experience** is the second-most important driver and goal of business transformation for utilities, on a par with other sectors, in regards to the importance of this imperative.

Source: HfS Digital Transformation by Industry 2018; utilities n= 30; other sectors n= 322; other sectors include BFS, manufacturing, energy, healthcare, pharma, retail/CPG, high-tech, insurance, telecommunications, and travel

Improving customer experience by aligning front-, middle-, and back-office operations top of mind for operations transformation in utilities

Q: Which business outcome is the most critical to achieving your operations transformation objectives?



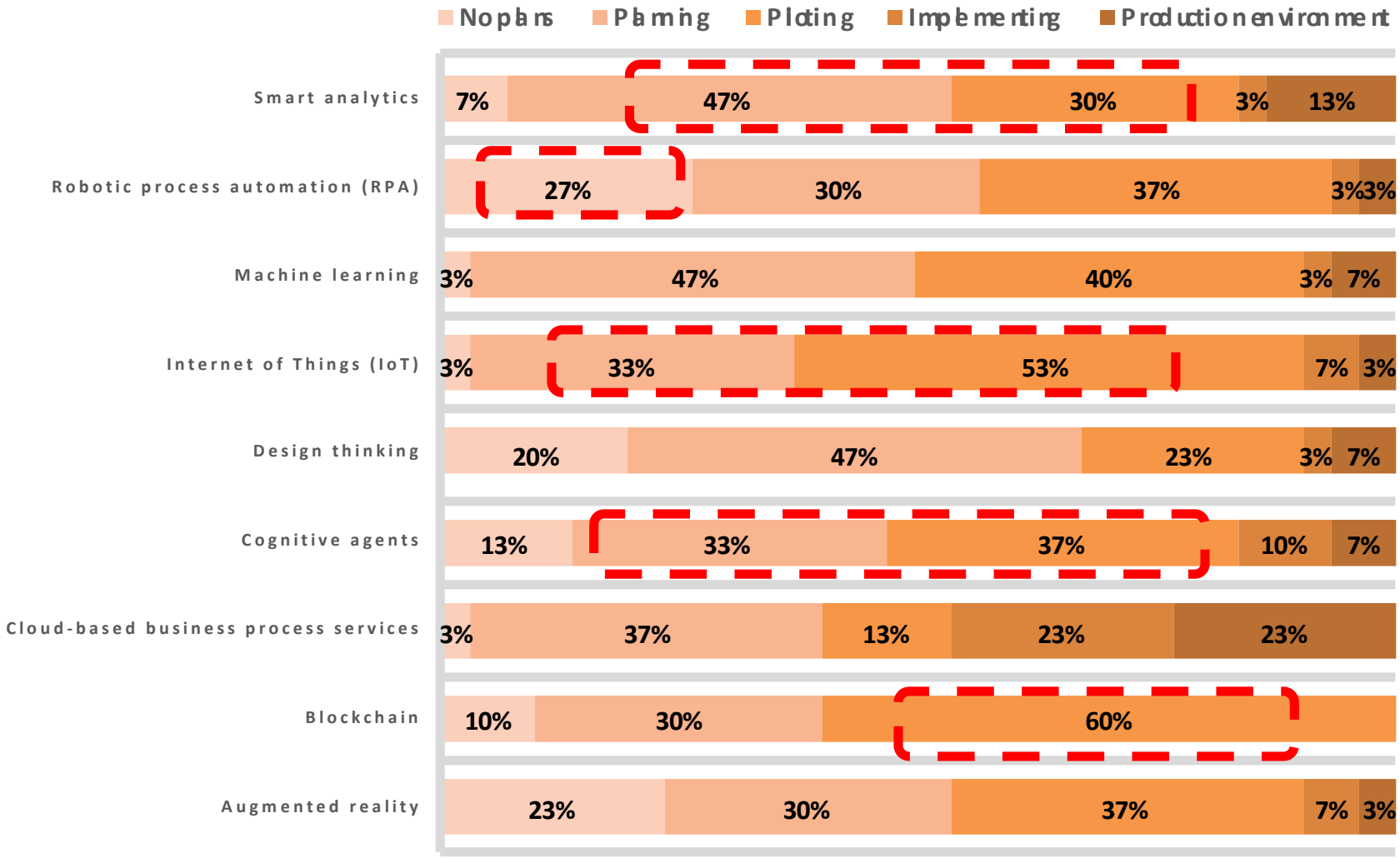
What will be achieved with transformation?

- When asked what they would focus on to achieve their desired business transformation objectives, Utilities indicate aligning front-, middle- and back-office operations to improve customer experience is twice as critical than it is in other industries.
- This focus demonstrates a link to the top priorities for business transformation—improve bottom-line profit and improve customer experience. Customer acquisition and customer service are substantial cost categories impacting the bottom-line of utilities, and areas they can influence by improving processes and aligning operations.
- All other sectors cite driving down operating costs as the critical outcome for achieving transformation objectives.

Source: HfS Digital Transformation by Industry 2018; utilities n= 30; other sectors n= 322; other sectors include BFS, manufacturing, energy, healthcare, pharma, retail/CPG, high-tech, insurance, telecommunications, and travel

Piloting is the name of the game with change agents like RPA, AR, and IoT

Q: Please characterize your organization's current use of the following value creation levers to achieve the business outcomes described in the previous question.



How will you achieve transformation?

- The majority of hyped change agents are still in planning or pilot stages, true to their nascent stage.
- IoT, blockchain, augmented reality, RPA, smart analytics, and cognitive agents are the leading focus areas for planning and pilots. Notably, 60% of utilities indicate they will have pilots underway exploring blockchain technology.
- Despite initial privacy related worries and regulatory challenges, cloud is conquering ground in the utility industry.
- Augmented reality is seen as a very promising technology, for instance supporting the field force use cases and with digital twins of power plants. There are many utilities planning or piloting augmented reality and virtual reality.
- A staggering 27% of utilities report no plans for using robotic process automation, with only 6% implementing RPA or having it in the production environment.

Source: HfS Digital Transformation by Industry 2018; utilities n= 30

Change agent spotlight—Internet of Things

- **Internet of Things (IoT)** devices are critical for the creation of a more intelligent and transactive grid, the integration of distributed energy resources, and the energy services of the future.
- The **value proposition of IoT services** is two-dimensional: saving money by maximizing productivity and reducing cost and waste and making money by improving demand forecasting, enhancing customer experience, and enabling faster time to market.
- In utilities, **IoT has been a focus area for the good part of a decade**, with smart metering, smart grids, and smart thermostats the best known examples to the wider public. These connected devices collect and transmit data on energy demand and supply, conditions of the grid and play a role in a growing awareness of and engagement with energy consumption and possibilities for more energy management energy by consumers. Other use cases related to business services are in supply chain optimization, remote fleet monitoring, logistics tracking.
- The total IoT professional services market was worth **$10 billion in 2017** and is expected to grow by 30% in 2018.
- **Fifteen percent of the IoT engagements** are in the energy and utilities industries, the HfS Blueprint for Internet of Things Services 2018 finds.
- **Platforms standards have not yet emerged**. The Internet of Things has experienced tremendous advances in the past 18 months in every aspect: standards, platforms, techniques, infrastructure, devices, architecture, security, ecosystems and partnership networks, communications standards, acquisitions, practical project experience, diversity of application, and integration with "new" technologies.
- **We are light-years away from the world of PCs and IT in standardization**. Service providers indicated that they had used over 30 different IoT platforms last year.
- **For more on Internet of Things services and development, please read: *HfS Blueprint Internet of Things Services 2018***

Change agent spotlight—blockchain

- **Blockchain** is a distributed ledger used to maintain a continuously growing list of records, called blocks. Each block contains a timestamp and a link to a previous block. By definition, blockchains are inherently resistant to modification of the data. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks.
- **Energy blockchain is quickly gaining popularity.** Blockchain use cases and projects are abundant in the industry—think peer-to-peer trading, asset tokenization (shared DER assets), EV charging, IoT and DER security, grid security, wholesale trading, grid flexibility services, decentralized energy exchange, and demand response.
- There is potential **to use blockchain in back-office processes** in utilities to streamline retail billing, payments, settlement, asset management, and compliance processes.
- Utilities are **researching and experimenting with blockchain use cases**. There are several consortia that focus on energy related blockchain use cases and projects including the Energy Web Foundation, of which Wipro is a member, and the Enerchain project, Electron's energy blockchain consortium that has EDF Energy, National Grid, Siemens, and Shell as well known participants.
- There is a **boom of startups focusing on blockchain for energy industry projects**. There are around 120 startups that raised over $300 million dollars in capital not only through traditional ways like venture capital, but also increasingly via initial coin offerings. Utilities are also investing in projects and startups.
- This is an incredibly vibrant and nascent space. Use cases have yet to crystalize and prove their value in the real world, particularly at scale.
- **For more on enterprise blockchain services and development, please read: *HfS Blueprint Enterprise Blockchain Services***

Change agent spotlight—artificial intelligence (AI) and machine learning

- **Artificial intelligence (AI)** aims to automate intelligent activities that humans associate with other human minds through a combination of reasoning, knowledge, planning, learning, natural language processing (communication), and perception (aka cognitive).
- AI refers to the **simulation of human-thought processes** across enterprise operations, where the system makes autonomous decisions using high-level policies, constantly monitoring and optimizing its performance and automatically adapting itself to changing conditions and evolving business rules and dynamics. It involves self-learning systems that use data mining, pattern recognition, and natural-language processing to mimic the way the human brain works without continuous manual intervention.
- Artificial intelligence and the building of an internet of energy are inextricably linked. Here are a few use cases:
  - Predictive analytics in plant operations—predictive analytics look for patterns and anomalies, triggering actions.
  - Managing energy demand and load balancing—analyzing data from smart meters and wholesale market price signals to predict electricity demand and outages.
  - Monitoring and management of wind turbine farms—using data from wind turbines to predict outages and manage shutdowns in case of equipment failure.
  - Collections—using ML and AI to understand consumer behavior, smart grid data, and sensor data to create better, personalized collection processes and more insight into potential defaulters.
  - Consumers' energy management—providing insights to consumers and courses of action based on data about consumption patterns, price signals, and time of use rates to manage consumption and save money.
- **For more on artificial intelligence, please read:** ***HfS Blueprint: Enterprise Artificial Intelligence Services 2018***

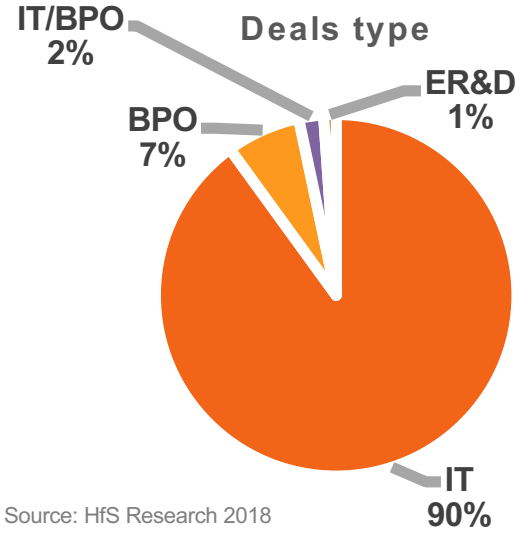
Utility operations services market forecast shows continued opportunity through 2022 with 5.4% compound annual growth

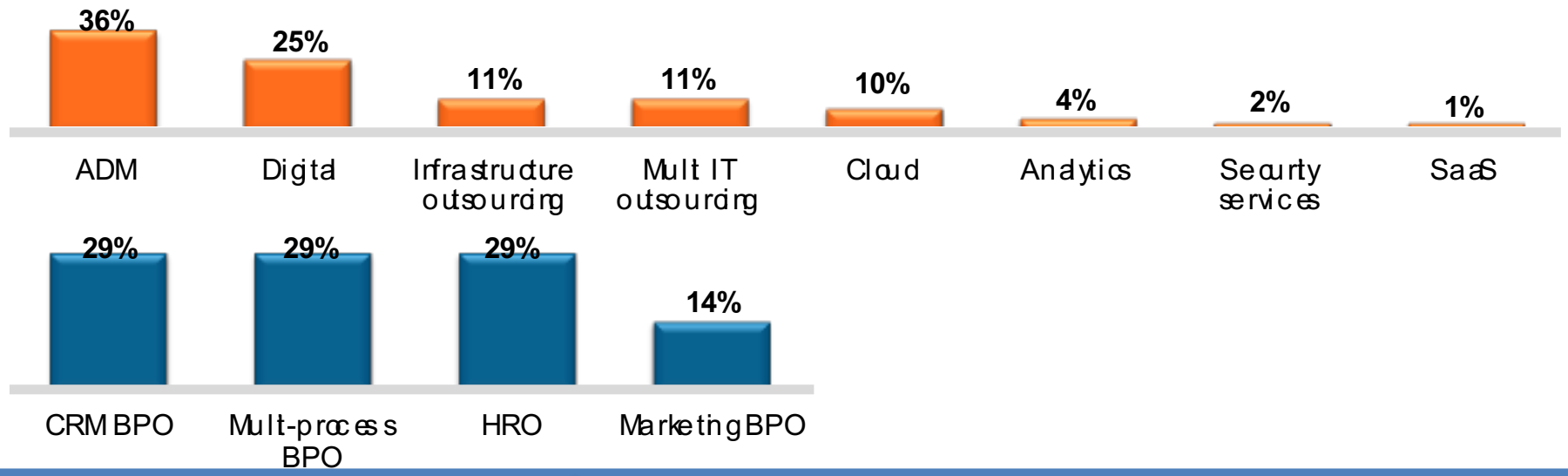
2016–2022 utility market forecast ($M)

		2016	2017	2018	2019	2020	2021	2022	CAGR
Business services	CRM	2,562	2,714	2,872	3,036	3,210	3,388	3,531	5.4%
	F&A	3,230	3,390	3,579	3,761	3,948	4,159	4,267	4.7%
	HR	1,269	1,350	1,440	1,534	1,634	1,743	1,821	6.2%
	Industry specific	14,924	15,725	16,537	17,356	18,185	19,009	20,103	5.0%
	Total business services	**21,985**	**23,178**	**24,427**	**25,687**	**26,977**	**28,298**	**29,721**	**5.1%**
IT Services	IT infrastructure management	2,971	3,078	3,219	3,297	3,362	3,415	3,457	2.4%
	ADM	1,615	1,794	1,946	2,116	2,295	2,484	2,681	8.4%
	Other IT services	2,797	2,849	2,908	2,957	3,015	3,071	3,160	2.1%
	Professional services	7,946	8,811	9,496	10,258	11,052	11,878	12,751	7.7%
	Total IT services	**15,329**	**16,532**	**17,569**	**18,629**	**19,724**	**20,848**	**22,049**	**5.9%**
	Total BPS and IT services	**37,314**	**39,710**	**41,996**	**44,316**	**46,701**	**49,146**	**51,770**	**5.4%**

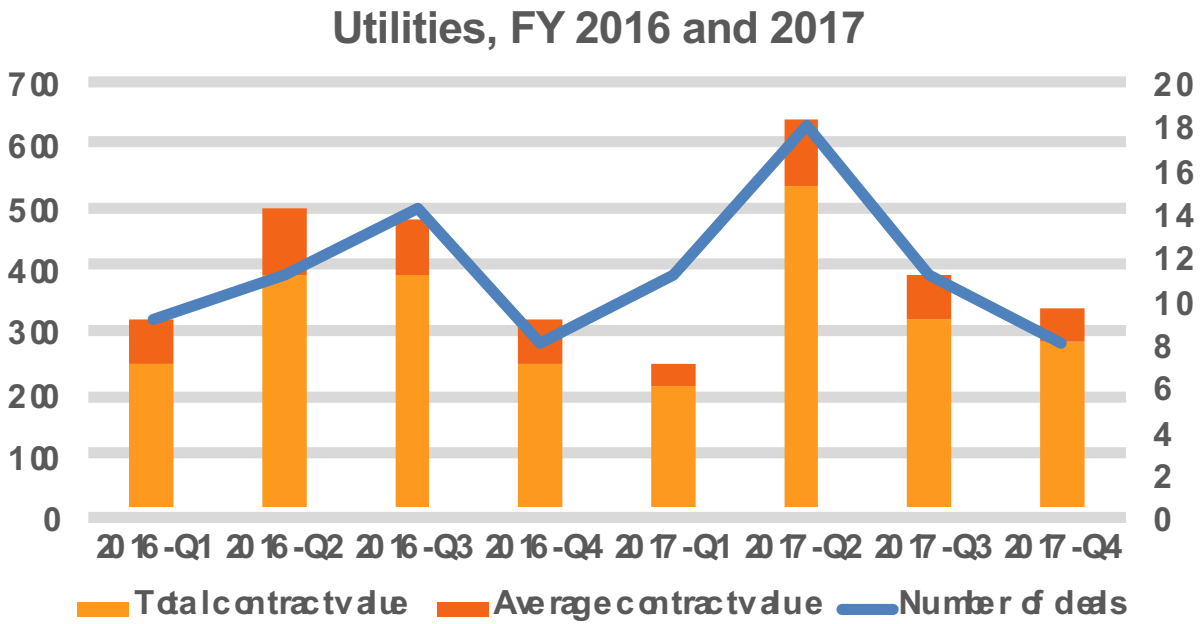
Source: HfS Research, 2018

Utility outsourcing publicly announced contract analysis 2016 and 2017





Source: HfS Research 2018

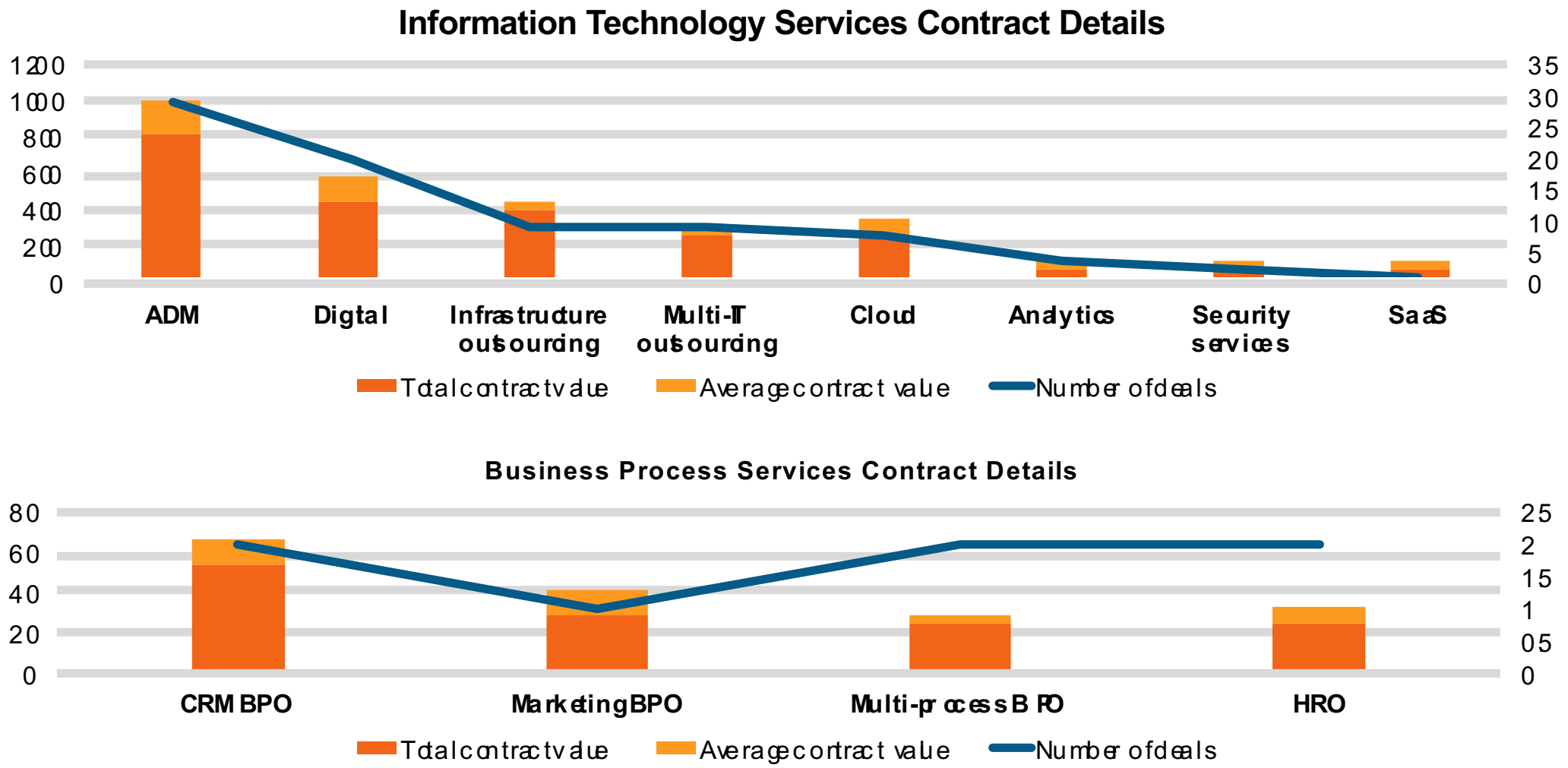


Atos and Northern Ireland Electricity (NIE): IT infrastructure outsourcing deal worth US $77 million, May 2017.

Tleto and Göteborg Energi Deal: ADM deal worth US $60 million, December 2017.

Sogeti and Enexis Group Deal: SaaS deal worth US $59 million, July 2017.

Utility operations publicly announced contracts in 2016 and 2017



Utility industry outsourcing contract analysis—digital grows and IT and BPS integrate

- HfS maintains a contract database for all publicly announced services contracts.
- We mined our database for utility contracts for 2016 and 2017 to review trends and volumes.
- **Volume—**Utility industry deals represented 3.8% of all captured publicly announced contracts.
- **Deal type—**The vast majority of utilities deals were for IT outsourcing (90%), which includes application development and maintenance (ADM), digital, cloud, infrastructure, analytics, and security services deals. This reflects utilities' continued focus on legacy modernization and digital transformation. Note the emergence of "digital" as its own category. These deal are often high-profile initiatives announced as part of strategic imperatives. Many modest, but still transformative, business-process deals are also being done, but are often not announced.
- **IT and BPO deal convergence—**Many business process deals include elements of IT such as intelligent automation, smart analytics, and other digital change agents. Many IT deals require business process expertise in order to automate manual functions and build effective internal and external user experiences. We identify these as combined deals when we can, but, increasingly, deals identified as IT or business process will include elements of the other.
- **Top utilities deals—**The three deals spotlighted are some of the larger for utilities from 2016 and 2017. The dominance of IT engagements is notable in the deals announced by Tieto, Atos, and Sogeti. Some of the largest deals have not yet been publicly announced and include IT infrastructure, application development, and maintenance for a major German utility.

Industry Blueprint: Utility Operations 2018
Research methodology

Research methodology

» **Data summary**: Data was collected via RFIs with service providers, utility client reference checks, briefings with leaders of utility industry practices within service providers, a survey of utility industry clients in the Global 2000, and publicly available information sources from Q1 2018. Sources include: enterprises, providers, and advisors or influencers of utility industry business process services.

» **Short-listed service providers**:

accenture, arvato BERTELSMANN, Capgemini, CAPITA, CGI, Cognizant, CONDUENT, DXC.technology, EXL, HCL, IBM, leidos, NTT DATA, TATA CONSULTANCY SERVICES, tieto, WNS, wipro, vertexone

This report is based on:

» Tales from the trenches: Interviews with enterprises who have evaluated service providers and experienced their services. Some contacts were provided by service providers, and others were interviews conducted with participants in global market research studies.

» Sell-side executive briefings: Structured discussions with service providers regarding their vision, strategy, capability, and examples of innovation and execution.

» Publicly available information: Thought leadership, investor analyst materials, website information, presentations given by senior executives, and industry events.

HfS Blueprint scoring: utility operations

Execution		100%
Service delivery • Best practices • Continuous improvement • Footprint	15%	
Industry expertise • Depth of industry knowledge • Direct sector experience	25%	
Relationship management • Formal relationship and governance structure • Client-centricity • Single face to the customer	15%	
Attracting and retaining talent • Culture • Development opportunities • Reskilling • Attrition	15%	
Breadth of industry offerings across value chain	15%	
Overall execution	15%	

Innovation		100%
Partnership ecosystem for best of breed capabilities • Depth and breadth of partners • Output of partnerships	15%	
Deployment of intelligent automation • Development and use of proprietary tools • Development of skills with best-of-breed partner tools • Engagements with IA	15%	
Flexibility in pricing models • Evolution of commercial models • Outcome-based approaches	10%	
Clear vision for future of your industry • Deep knowledge of industry • Focused approach for meeting industry needs • Articulation of clear value proposition	20%	
Models for co-innovation and collaboration • Co-development with clients	10%	
Growth and refinement of industry-specific offerings	10%	
Overall innovation	20%	

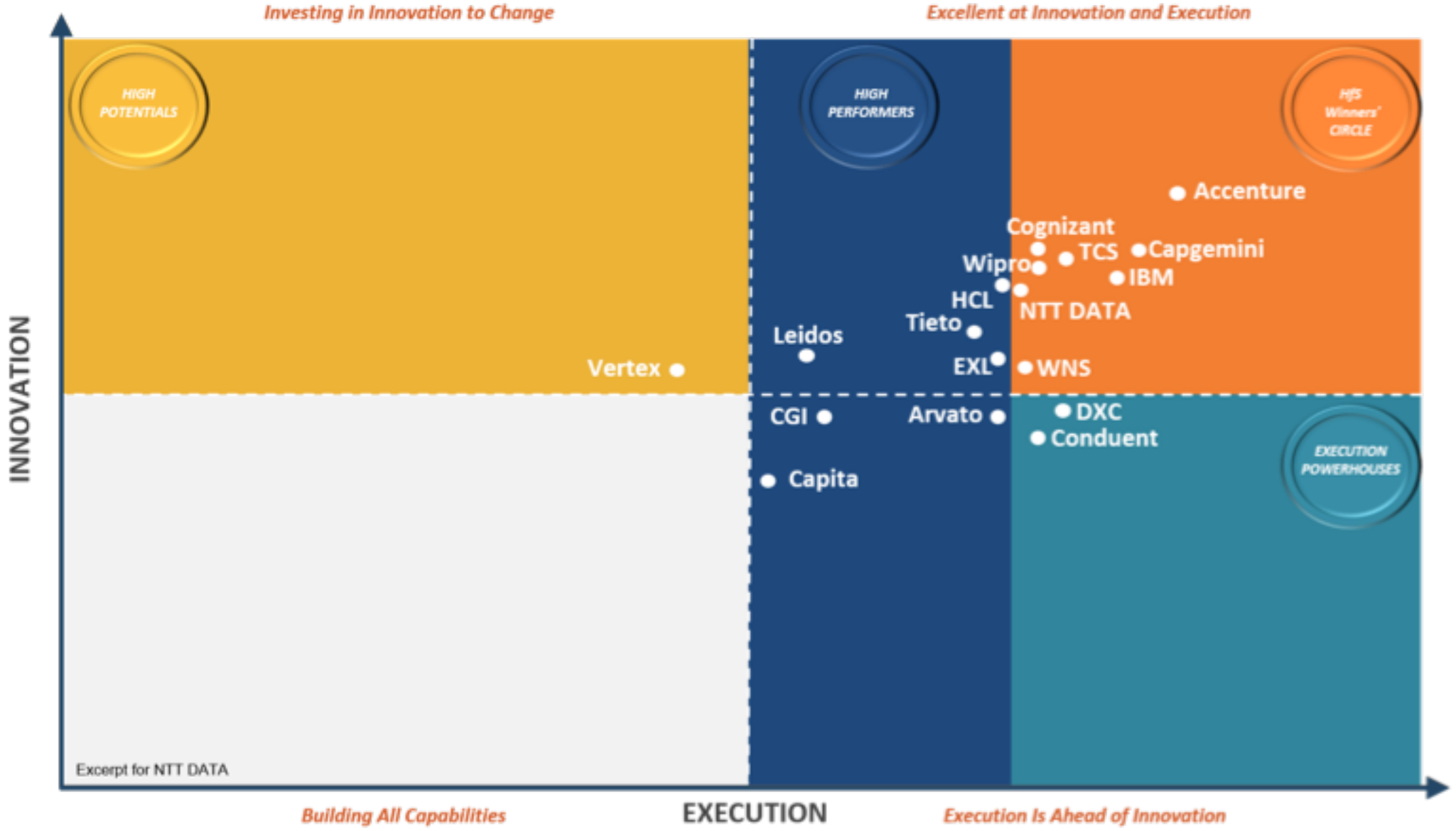
Industry Blueprint: Utility Operations 2018
Service provider analysis

Guide to HfS Blueprint Grid

To distinguish service providers that show competitive differentiation across innovation and execution, HfS awards these providers the “HfS Winners' Circle” designation.

	Execution	Innovation
HfS Winners' Circle show excellence recognized by clients in the Eight 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, strong client feedback, and are driving new insights and models.
High Performers demonstrate strong capabilities but lack an innovative vision or momentum in execution of 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 execution of it	Early results and proof points from examples in new service areas or innovative service models, but 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 a 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 2018



Utility industry grid results summary

- **We assessed 18 service providers** across multiple dimensions of service execution and innovation for utility operations services.
- **The HfS Winners' Circle represents service providers that excel at both execution and innovation**. The HfS Winners' Circle for utility operations includes:
  - TCS
  - WNS
  - Accenture
  - IBM
  - Wipro
  - Capgemini
  - Cognizant
  - NTT DATA
- **The High Performers all execute well and are investing in future capabilities**, but need to gain more consistency, traction, and scale with clients to maximize impact. The High Performers are:
  - EXL
  - Leidos
  - Capita
  - CGI
  - HCL
  - Arvato
  - Tieto
- **The Execution Powerhouses are focused on delivery strength while building innovation credentials**:
  - Conduent
  - DXC
- **Vertex is a High Potential, based on its vision, while building execution capabilities**.

Innovation and execution highlights from the 2018 utility operations grid

Execution highlights

- **Relationship management: WNS**, **TCS,** and **IBM** get highest marks for relationship management.
- **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. **Capgemini**, **TCS**, **Wipro**, **IBM, Capgemini,** and **Accenture** lead the way here. **WNS**, **Tieto**, **EXL** , **NTT DATA,** and **HCL** are making significant industry investments.
- **Service delivery:** 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 Winners' Circle** and **Execution Powerhouse Conduent**. 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.

Innovation highlights

- **Growth of industry-specific offerings**: Four providers got particularly high marks for expanding industry-specific offerings: **HCL**, **Accenture**, **Capgemini,** and **EXL**.
- **Flexibility in pricing:** With As-a-Service offerings gaining in popularity in the utility industry the past few years, flexibility and innovation in pricing models is a critical aspect. **Wipro**, **EXL,** and **Tieto** are mentioned by utilities as being willing and able to provide this flexibility.
- **Vision for utility operations market evolution and services:** In the challenging market environment, a strong vision for the utility operations market is more important than ever. Clients expect much more than just cost savings by labor arbitrage. Providers that stand out with their vision for the role of service providers will play in helping utility clients in the energy transition are **Accenture**, **WNS, Tieto, Wipro, Capgemini, Cognizant,** and **TCS**.

Utility operations capabilities across the value chain—industry specific

Service provider	Upstream			Midstream	Downstream
	Generation	Market operations	Transmission	Distribution and metering	Marketing and retail
Accenture					
Arvato					
Capgemini					
Capita					
CGI					
Cognizant					
Conduent					
DXC					
EXL					
HCL					
IBM					
Leidos					
NTT Data					
TCS					
Tieto					
Vertex Business Services					
Wipro					
WNS					

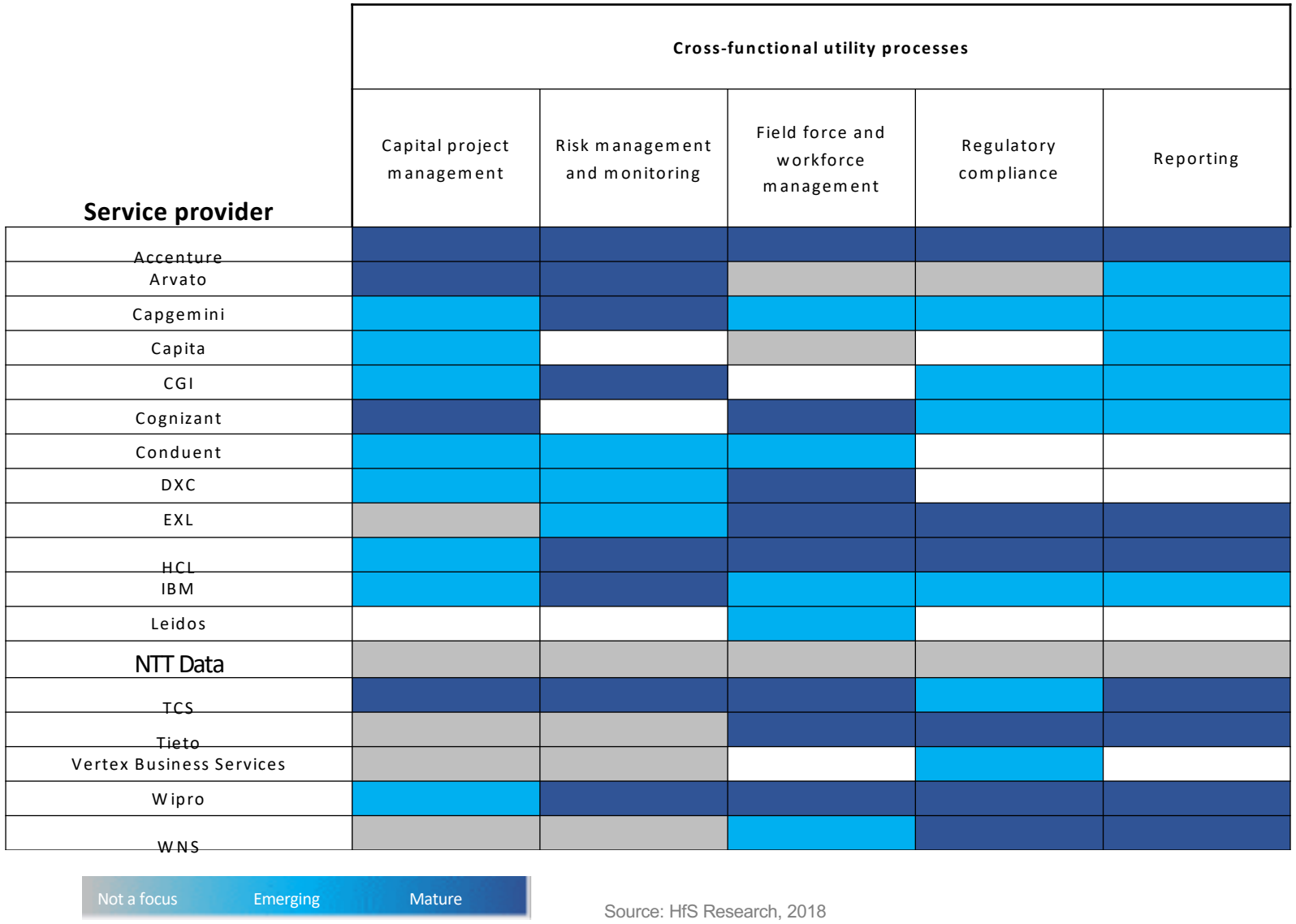
Not a focus | Emerging | Mature

Source: Buyers n= 34; Providers n= 26

Providers' utility industry-specific capabilities

- We asked clients of utility operations services to identify the top strengths of service providers across the utility operations value chain.
- We then asked providers to rate their utility business services offerings on a maturity scale.
- The heatmap provides a combined view of client's experience with providers and provider-identified capabilities.
- Highest maturity is found in the distribution segment, followed by metering and marketing, market operations, and generation.

Utility operations capabilities across the value chain—industry specific



Source: HfS Research, 2018

Providers' utility industry-specific capabilities

- **Cross-functional utility operations services** such as risk management and compliance and capital project management are offered by most providers, with the greatest depth of mature offerings in **risk management and monitoring** services and **field force and workforce management** services.
- **Banking** had the next greatest depth of providers with mature offerings, with services for **retail banking** as the most mature segment.
- **Capital markets** has less concentration of mature offerings, with **back-office** services having the greatest depth of capability.

Utility Operations capabilities across the value chain—horizontal

Service provider	Horizontal business processes				
	Customer engagement	Human resources	Procurement	Finance and accounting	Payroll
Accenture					
Arvato					
Capgemini					
Capita					
CGI					
Cognizant					
Conduent					
DXC					
EXL					
HCL					
IBM					
Leidos					
NTT Data					
TCS					
Tieto					
Vertex Business Services					
Wipro					
WNS					

Not a focus | Emerging | Mature

Source: HfS Research, 2018

Providers' horizontal utility capabilities

- We asked clients of utility operations services to identify the top strengths of service providers across the utility operations value chain.
- We then asked providers to rate their utility business services offerings on a maturity scale.
- The heatmap provides a combined view of client's experience with providers and provider-identified capabilities.
- Most providers of horizontal business services to the utility industry sector offer customer engagement services. **Customer engagement is ranked as the most mature horizontal offering, followed by finance and accounting services.**

Selected provider developments in support of the utility industry

Provider	Notable developments in support of the utility industry
NTT DATA	NTT DATA has an interesting and differentiated vision around business continuity and cyber security; it aims to provide continued business operations to clients in case of an attack that requires them to shut operations down.

Industry Blueprint: Utility Operations 2018
Market direction and recommendations

What does the future hold for utility enterprises and service providers?

- **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 and critical for survival of retail utilities.
- **Cyber security will break into the top three priorities of utility C-suites** and those providers that bring a full spectrum of holistic security capabilities and a partnership ecosystem to tackle the cyber physical threat to the critical infrastructure in the utility industry will gain significant market share and a vital role for utility customers.
- **Utilities adapt to new roles in the market**. Utilities can assume several business models are crystalizing and will firm up in the next couple of years, for example focusing on generation aggregation and orchestration, developing grid infrastructure and services, and bundling retail services.
- **Co-location is increasingly important in service delivery** as agile and continuous DevOps become dominant ways of working.
- **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 focus point, driven by battery storage technologies, analytics, and further proliferation of renewable energy resources. Partnerships are increasingly important in this effort.
- **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**.

Recommendations for utilities

- **Select providers with new business model acumen.** Finding new streams of revenues and designing business models to monetize existing assets like data and new services utilities can offer is top of mind for many utility executives. Service providers can play a role here and use advanced analytics capabilities to unlock the value of data, create digital platforms, streamline operations, implement new services, and support operating models. Look for those providers with a clear vision on utility industry business models, a willingness to invest, and proven solutions.
- **Push your provider on holistic security.** The utility industry harbors a lot of critical infrastructure. It is often a target of cyber attacks, which makes securing this infrastructure increasingly challenging and important. Risks increase with the IT/OT integration and growth of networks of connected assets. Ask your service providers for their vision, strategy, and capabilities for holistic security. The service provider's security culture and infrastructure is critical for their ability to keep your operations secure.
- **Use intelligent automation as the fuel for new efficiencies in the core business and new services and revenue streams.** Artificial intelligence, machine learning, and natural language processing are key technologies in the quest for streamlining operations to cater to the needs of customers, stakeholders, and markets as well as foundational for new services and business models. A transactive grid with a high number of distributed assets playing various roles and performing a multitude of services needs to be very intelligent. A utility that wants to create superior customer experiences and lower costs needs highly intelligent, low touch or no touch, and personalized services delivered through its operations.
- **Obsess over customer engagement.** Transparency, trust, loyalty, and engagement are four choke points in the relationship between customers and their utility. In liberalized and competitive markets, customers have been conditioned to switch providers—how can you create loyalty in such an environment? Everyone has experienced high utility bill shock at some point, eroding trust. Most people have never bought a Nest thermostat to manage energy usage or even used the delay timer on their dishwasher to benefit from a lower tariff at night. This inertia is a challenge to customer engagement and loyalty and, more importantly, a massive test to new, non-traditional utility services that are paramount to the transformation of the utility industry. Use human-centric approaches and ethnographic research to truly get to know your customers. What are the jobs they hire utilities to do? What roles do electricity, gas, and water play in their lives? What is their stance toward renewable energy and their likelihood to invest in solar, battery storage, and electric vehicles, and why? What are the types of (new) services they would consider buying from their utility?

Recommendations for utilities

- **Create your own investigative roadmap with Horizon 1 (act now), Horizon 2 (watch out) and Horizon 3 (investigate) priorities.** Cyber security**,** smart grids, digital marketing, data foundations and advanced analytics, CIS revitalization, enterprise asset management, renewable energy resource management, and digital platforms for customer engagement should definitely be in Horizon 1. IoT, artificial intelligence, and battery storage are next to move from Horizon 2 to Horizon 1. If blockchain is in your Horizon 3, that is fine for now, but start to investigate and experiment thoroughly, or you'll risk playing catch-up sooner than later.
- **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 clients and suppliers in the energy world and support secure, transparent, and open value chains. Choose a service provider that supports you to understand and embrace these radical changes, helps innovate internal processes, and provides external plug-and-play services that address the impacts of digital technologies, finding a new balance and interplay between internal and external capabilities.
- **Take a co-investment and partnership approach to IoT.** IoT is rapidly being deployed in the utility industry and will 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 been running for years. For the next phase, keep in mind that no service provider has all the pieces of the IoT puzzle. Look for service providers that can partner with you, act as brokers of capability, and have a good partnership strategy.
- **Embrace in advanced analytics to extract value from your data troves.** Data and the insights you are able to derive from it will hugely impact your 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.

Recommendations for providers of utility operations services

- **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.
- **Co-invest in innovation.** Pro-actively and aggressively push the innovation agenda around DER integration, Internet of Things, IT/OT convergence, augmented reality, virtual reality, mixed reality, intelligent automation, advanced, predictive analytics, predictive maintenance, drones, 3D printing for MRO, simulating with digital twins, and blockchain. Show your willingness to put your skin in the game.
- **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. Explore its impact on energy trading, utility operations processes and platforms, and your utility operations capability stack.
- **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.
- **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, like with behind-the-meter services such as solar leasing, EV charging, and energy management, or from capturing new mandates for smart city and smart lighting infrastructure and management.

Recommendations for providers of utility operations services

- **Provide platforms to monitor and manage solar and wind farms.** Utilities operating across the value chain, OEMs of renewable generation assets, and consumers of large amounts of renewable energy have a big need for platforms that allow them to centrally monitor and manage fleets of distributed renewable energy farms. Several providers are creating and operating such platforms for clients. This is a growth area in utility operations.

- **Create digital attackers.** Utilities are often asset heavy, industrial- and engineering-focused organizations with an abundance of legacy systems—not the ingredients you look for to play in a hyper-competitive retail environment. One course of action is to create a digital attacker, a separate organization without the burden of legacy that is in a position to leverage new technologies to create agile and nimble operations and digital customer experiences with lower cost to serve. Some utilities use this strategy to transition their entire customer base to the new entity over the course of several years in a move to play in the competitive space now and write off legacy in the medium term. The foundation for digital attackers are best-in-class platforms. The stitching together and orchestration of these platforms is a perfect role for providers to take on.

- **Bring your designers, digital agencies, and ethnographers to the party**. Service providers should help utility clients to expand comprehension of customers and create services and experiences that match the customers' "jobs to be done".

- **Focus offerings on profitability and new growth.** The utility industry struggles with profitability of the core business and creation of growth opportunities in new businesses. Service providers should center the positioning, business outcomes, and value metrics of their utility operations services around these core topics.

About the Authors

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Derk Erbé is Research Vice President, Supply Chain, Procurement and Energy at HfS Research. 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.

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Mayank Madhur is a Knowledge Analyst at HfS Research, supporting different practice leads in secondary research, data analysis, PoV's and research writing.

Mayank has over 2 years of research, pre-sales and software development experience in Altimetrik and HCL Tech. In his HCL Tech role, he worked in the delivery team of a large medical device client for R&D project.

At Altimetrik, he was part of the Strategic Business research team supporting Altimetrik vertical heads, sales and marketing team. He also worked in Profiling of prospective M&A targets in areas of interest and providing analytical support for benchmarking of company and peer analysis.

Mayank holds a Master's in Business Administration from Birla Institute of Technology and Science College, Pilani (BITS, Pilani University) and a Bachelor of Engineering in Electrical and Electronics from Jawaharlal Nehru National College of Engineering (Visvesvaraya Technological University), Karnataka.

Mayank is passionate about fiction and mythology related novels and development of excel based application.

2018 Industry Blueprints

Dimension	Blueprint Name	Author(s)	Publishing Quarter	Planned start	Planned completion
Business Services	Banking & Financial Services Business Services	Elena Christopher	Q1 2018	Feb-18	Mar-18
	Insurance Business Services	Reetika Fleming	Q2 2018	Mar-18	Apr-18
	Energy Business Services	Derk Erbe	Q2 2018	Feb-18	May-18
	Utilities Business Services	Derk Erbe	Q1 2018	Jan-18	Mar-18
	Manufacturing Business Services	Pareekh Jain	Q3 2018	Aug-18	Sep-18
	Telecom Business Services	Elena Christopher	Q2 2018	Apr-18	May-18
	High-Tech Business Services	Elena Christopher	Q4 2018	Jul-18	Aug-18
	Retail Business Services	Melissa O'Brien	Q3 2018	Jun-18	Jul-18
	Travel & Hospitality Business Services	Melissa O'Brien	Q2 2018	May-18	Jun-18
	Healthcare Business Services	Saurabh Gupta	Q1 2018	Aug-18	Sep-18
	Life Sciences Business Services	Saurabh Gupta	Q2 2018	Sep-18	Oct-18
IT Services	Banking Financial Services IT Services	Elena Christopher, Jamie Snowdon	Q3 2018	Aug-18	Sep-18
	Insurance IT Services	Reetika Fleming, Jamie Snowdon	Q3 2018	Aug-18	Sep-18
	Energy IT Services	Derk Erbe, Jamie Snowdon	Q4 2018	Nov-18	Dec-18
	Utilities IT Services	Derk Erbe, Jamie Snowdon	Q3 2018	Sep-18	Oct-18
	Manufacturing IT Services	Pareekh Jain, Jamie Snowdon	Q4 2018	Oct-18	Nov-18
	Telecom IT Services	Elena Christopher, Jamie Snowdon	Q4 2018	Oct-18	Nov-18
	Retail IT Services	Melissa O'Brien, Jamie Snowdon	Q4 2018	Oct-18	Dec-18
	Travel & Hospitality IT Services	Melissa O'Brien, Jamie Snowdon	Q3 2018	Jul-18	Sep-18
	Healthcare IT Services	Saurabh Gupta, Jamie Snowdon	Q4 2018	Nov-18	Dec-18
	Life Sciences IT Services	Saurabh Gupta, Jamie Snowdon	Q3 2018	Nov-18	Dec-18
	High-Tech IT Services	Elena Christopher, Jamie Snowdon	Q4 2018	Sep-18	Oct-18

About HfS

The HfS mission is to provide visionary insight into the major innovations impacting business operations: Automation, Artificial Intelligence, Blockchain, Internet of Things, Digital Business Models and Smart Analytics.

HfS defines and visualizes the future of business operations across key industries with its OneOffice™ Framework.

HfS influences the strategies of enterprise customers, to help them develop OneOffice backbones to be competitive and to partner with capable services providers, technology suppliers, and third-party advisors. The "As-a-Service Economy" and "OneOffice" are revolutionizing the industry.

Read more about HfS and our initiatives on our website.