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Intelligent Automation in Telecom Operations

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Overview

In HfS Research's Blueprint Report Intelligent Automation 2016, we highlighted that "intelligent automation (IA) is one of the most disruptive developments our industry is facing. The market development is still nascent, but we will see exponential growth set in within the next 12 months." However, there is no commonly accepted understanding of IA or its key components, adding to the blurred perception across industries.

In this Point of View (PoV), we analyze the current adoption of automation in the telecom industry, service providers' offerings for automating telecom business processes, and the role of AI in the next stage of telecom automation productivity. Currently, the objective of automation is merely to automate back-office or offshore activities to reduce the headcount, but with the implementation of different AI methods (natural language processing, machine learning, and deep learning techniques), the industry is moving from automating tasks to automating knowledge. As telecom business processes have different human touch points ranging from network operations to order management to customer interactions, automation can play an important role in improving the response time of workflow processes—which is beneficial for internal stakeholders and customers. In telecoms, there are two different streams: networks and business operations. Although intelligent automation can be applied to both streams, the focus of this PoV is intelligent automation in telecom business operations (or telecom operations).

Current State of Intelligent Automation in Telecom Operations

The telecom industry is ripe with opportunities for increasing the use of intelligent automation. HfS published the Blueprint Report Telecom Operations 2016, and we identified "automation" as a key lever for the telecom industry. Exhibit 1 provides a quick reference to the telecom value chain and the major activities of each value chain node.

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Exhibit 1: The Value Chain of Telecom Operations

Network	Fulfillment	Assurance	Billing
•Network Rollout Management	•Order Management •Provisioning •Activation •Order Fallout Management	•Technical Help Desk •Incident and Problem Management •Field Force Management •Service Level Management	•Billing Desk •Pricing Management •Billing Management •Revenue Assurance

Source: HfS Research, 2017

Clearly, many of the value chain activities could be potential use cases of "intelligent" process automation. In addition, overall integration among the value chain activities can lead to overall process transformation. We have interacted with telecom companies to understand the state of telecom business processes, and most of the automation examples we have seen are in the fulfillment and assurance stage. Some of the most frequently used automation business uses in cases in the telecom vertical are described in Exhibit 2.

Exhibit 2: Intelligent Automation Solutions in Telecom Operations

Value Chain	Intelligent Automation Solutions	Case Studies
Network	» **Network Drawing Automation:** Reduces network drawing time by automating network diagram production and analysis process with multiple checkpoints, including cost, compliance check, future load distribution, etc.	» **Case Study of a European Telco**: The manual drawing of networks in Visio was time-consuming and error-prone. Automating network drawing reduced the average network drawing time from 30 minutes to 2 minutes and improved the quality of the network drawings.
Fulfillment	» **Order Management and Provisioning Automation:** Performs automatic quality checks in order management	» **Case Study of an Asian Telco:** Multiple checks for order audits were time-consuming as 36 conditions were audited. Automating the order audit

	and provisioning processes, thus saving activation time. Provides automated applications to autofill customer data from customer profiles into CRM as part of the provisioning process.	checks provided a 15% increase in agent productivity. » **Case Study of a UK Telco:** High average handle time (AHT) for collecting order information was resulting in low throughput. Automating the collection of order information led to a 40% reduction in the number of FTEs.
Assurance	» **Field Force Automation**: Enables field technicians to work effectively by automating some of their processes and providing technical and operational expertise on demand. Uses automation to reduce false or ghost tickets, thus reducing the mean time to repair. » **Automated Self-Care:** Automates services for subscribers to identify, report, and solve issues that could impede service performance. These processes increased agent productivity and reduced resolution time. » **Service Desk and Web Chat Automation:** Increases productivity of L1 and L2 support with automated	» **Case Study of a European Telco:** The mean time to repair was high because of ghost tickets and incomplete data on tickets when technicians showed up at the site. Automating ticket analysis and allocation reduced ghost tickets, and the overall ticket volume was reduced by 10%. In addition, the mean time to repair decreased by 20% because the data on the tickets was complete. » **Case Study of a European Telco:** The mobile number portability process took a long time and many resources. The telecom converted the process into an automated self-care process in which customers enter details on the website or in an app, and in the background, all processes are automated and completed within four hours. » **Case Study of a European Telco:** A high volume of repetitive questions was supported by onshore, high-cost agents. Automating the service desk led to the resolution of more than 75% of

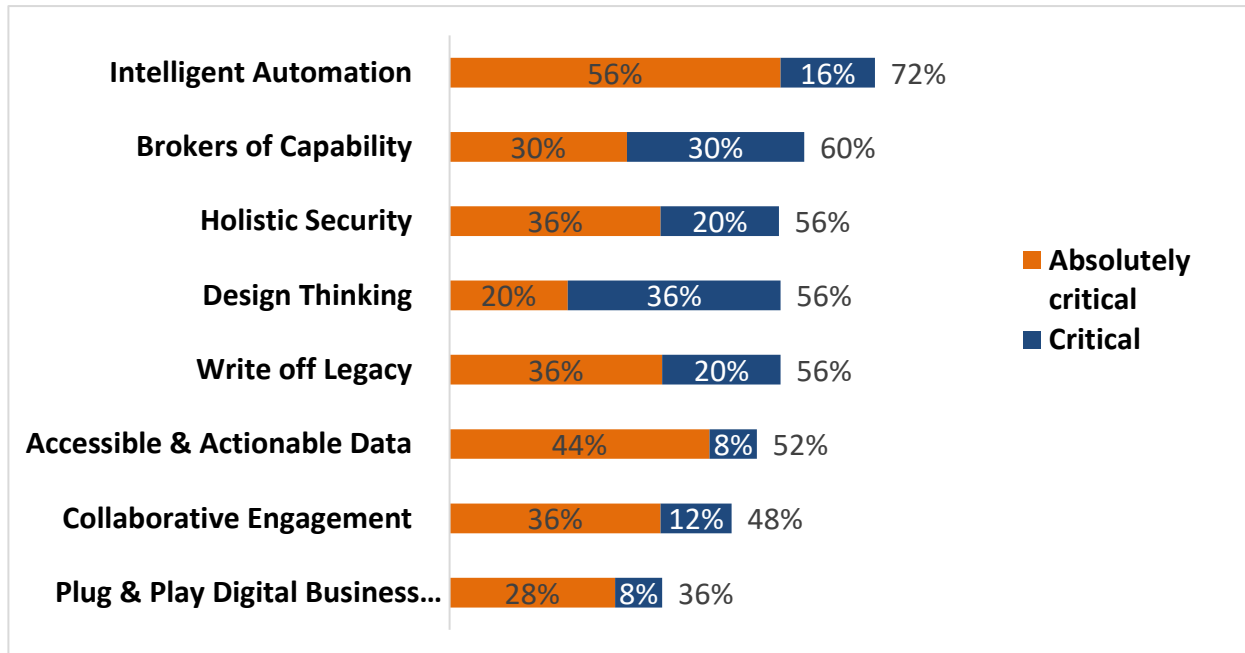|		
	tools. Automation and virtual agents are used to answer simple queries and repetitive questions. » **Application Automation:** Provides a unified or single screen or source of information to agents by eliminating switching from screen to screen. Provides a unified application to the workforce in the field by integrating other applications for the workforce in the field.	the customer interactions through automation alone. » **Case Study of a Large UK Telco:** Agents used more than 40 systems and an average of 14 applications to resolve a customer query. The high AHT led to a poor customer experience. In addition, the agent training cost was high due to non-standard and complex processes. Automating the application provided an 18% increase in agent productivity and improved the customer experience.
Billing	» **Billing Automation:** Automates the majority of audit checks in the billing process, thus reducing the FTE effort and the AHT.	» **Case Study of a U.S. Telco:** Each bill was audited for 75 conditions. The manual audits resulted in a high AHT and error rates. Automating the billing audit checks decreased the number of FTEs by 33%.

Source: HfS Research, 2017

Telecom Interest in Intelligent Automation Is High

In our research, we found that telecoms are willing to transform their processes with intelligent automation, which we show in Exhibit 3. For example, 72% of the respondents from telecom firms rated intelligent automation as either critical or absolutely critical, the highest rating among the eight ideals of the As-a-Service Economy.

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Exhibit 3: Importance of As-a-Service Economy Ideals to Telecom Customers

Please state how significant you see the As-a-Service Economy ideals and the shift to more intelligent operations are for your organization. (Only the absolutely critical and critical responses are listed.)

	Absolutely critical	Critical	Total
Intelligent Automation	56%	16%	72%
Brokers of Capability	30%	30%	60%
Holistic Security	36%	20%	56%
Design Thinking	20%	36%	56%
Write off Legacy	36%	20%	56%
Accessible & Actionable Data	44%	8%	52%
Collaborative Engagement	36%	12%	48%
Plug & Play Digital Business…	28%	8%	36%

Source: HfS Research, 2017; Sample: Telecom Buyers = 25

Based on our discussions, we observed that intelligent automation that leverages robotic process automation (RPA), autonomics, cognitive, and analytics is gaining the interest of telecom companies. Most of the early automation case studies in the delivery of telecom business processes came from either order management or customer support. We have recently observed automation examples in other telecom processes, such as network design, billing audits, field force management, and incident and problem management. Almost all service providers now offer automation solutions either on their own platforms or by leveraging third-party solutions. However, end-to-end automation has not been integrated in the value chain. In addition, the implementation of automation in telecom network management is lower than that in other value chain nodes.

To Move Along in the Intelligent Automation Continuum Telecom Systems Need to Evolve

Telecoms have rightly identified automation as the path to value, but the role of data and plug and play digital business platforms in getting there is not fully recognized as discussed in Exhibit 3. The biggest constraint is telecoms' on-premise legacy systems which need to evolve to enable intelligent automation.

HfS Research considers intelligent automation a comprehensive set of capabilities encompassing RPA, cognitive computing, and artificial intelligence that can be visualized as a continuum as shown in Exhibit 4.

Exhibit 4: The HfS Continuum of Intelligent Automation
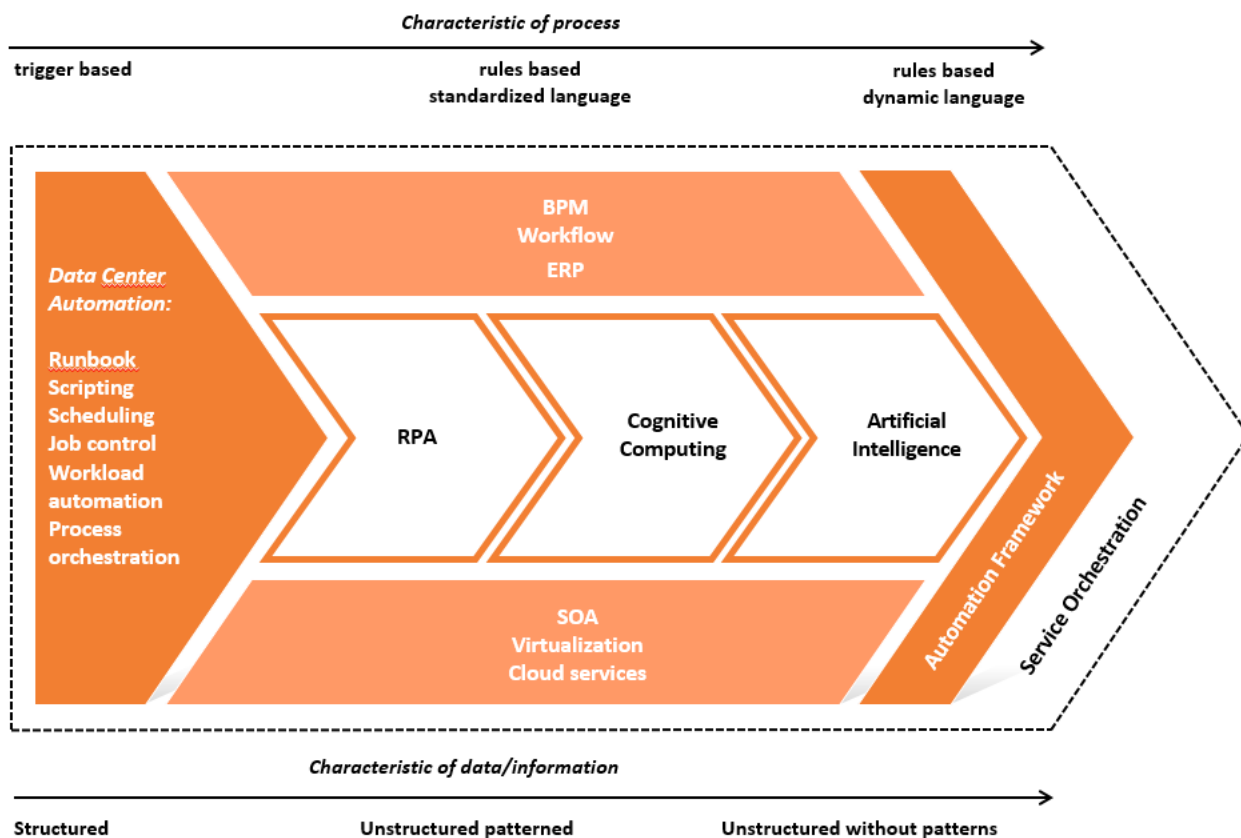
Source: HfS Research, 2017

The current state of telecom automation is mainly RPA driven. Because telecom technology systems have limitations, service providers have developed add-on platforms for providing automation services. This is **bolt-on automation**.

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The next phase of the telecom system evolution will be the cloudification of existing systems. Cloud systems will run concurrently with legacy on-premise systems. These systems will be **hybrid systems,** and they will enable service providers to access functionalities and implement cognitive and machine learning. These hybrid systems will reduce the need for business platforms developed by service providers. Customization will be required for process automation, but overall, service providers will focus more on services and less on systems. This is **built-in automation**. One use case is the identification of a unique customer across different services, such as voice, broadband, and IPTV, from different systems using cognitive capabilities. This use case can be extended to identify customers in the same family tree, the same household, and the same groups (such as school, college, and organizations) and provide them unique value-added services based on their unique usage patterns. The cognitive-enabled services platform will connect processes to gain a holistic picture of each customer's data, voice, messaging, and video traffic details in real time. Thus, personalized service offerings and advertisements will be the new revenue channel for telecom companies.

Telecom systems will further evolve into **native cloud** and networks **to all IP**. At present, telecoms have to maintain different networks for 2G, 3G, 4G, and LTE for voice, data, and broadband, but in the future, there will be only one network, and it will be IP based. This single network will enable telecoms to leverage broader artificial intelligence capabilities by dynamically connecting telecom systems with networks. This is **dynamic optimization**. One use case gives subscribers the capability to generate a minimum or optimal bill based on their usage pattern of different services in different locations by leveraging artificial intelligence. The other use case allocates bandwidth capacity on demand and the ability to charge users differently. This involves synchronization of provisioning and billing processes dynamically with network services on demand.

The automation journey of telecoms on the intelligent automation continuum from RPA to AI can be mapped with the corresponding evolution and advancement in telecom systems from legacy on-premise to native cloud as shown in Exhibit 5.

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Exhibit 5: The Evolution of Intelligent Automation in Telecom Operations
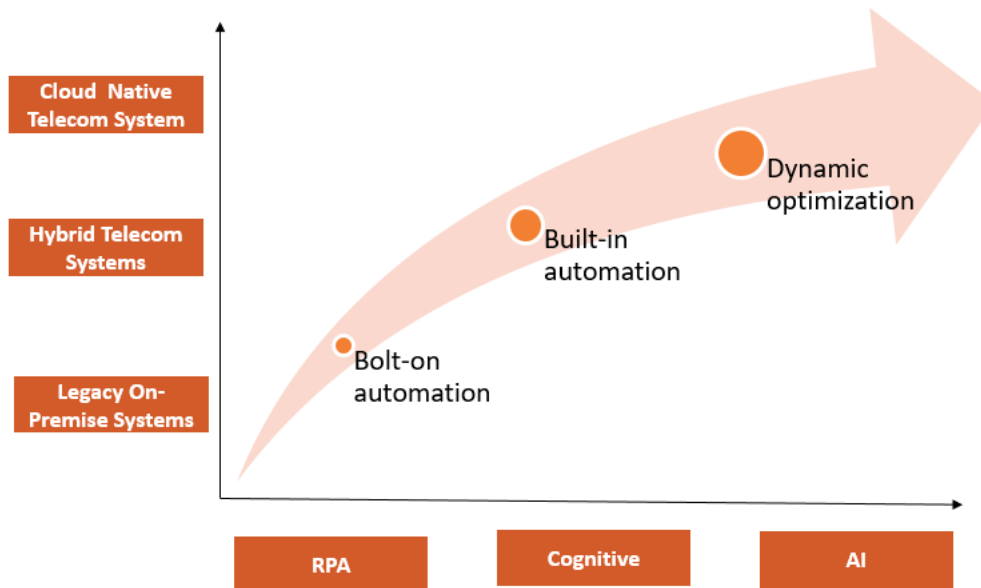
Source: HfS Research, 2017

Closing Thoughts

Telecoms provided the connectivity that enabled the Internet and the mobile revolution. However, telecoms were not able to monetize that connectivity and in the process continue to risk becoming dumb pipes. In the Internet era, value was captured by Internet giants, such as Google, Amazon, Facebook, and Microsoft. Similarly, in the mobile era, value is being captured by over-the-top (OTT) players, such as WhatsApp, Skype, Instagram, WeChat, Snapchat, and device manufacturers, such as Apple and Samsung.

The two things that separate these companies and telecoms are the customer experience and the ability to create innovative products and solutions. If telecoms want to thrive and not just survive going forward, they need to capture value in the next era of video and the Internet of Things (IoT) with a superior customer experience. Video will drive the demand for bandwidth exponentially. With the advent of the IoT, billions of devices will be connected to a network with a real-time decision-making operating system. Thus, connectivity management will be the next big hurdle for telecom operators. Therefore, the simple human operations-driven telecom network model is not feasible for the future. In the coming years, more AI-driven automated network operations will be implemented in telecom operations. However, we will also observe more customized service offerings for customers based on the intelligence derived from customer-generated data. As customers will be increasingly present on various connected platforms

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(connected car, smart city, connected healthcare, etc.), user data will be the next new revenue channel for telecom operators. Therefore, to maintain this physical network infrastructure, and the huge amount of real-time data, telecom companies are well advised to avoid thinking "task automation" and focus instead on process and knowledge automation, that is, the "intelligent automation" that will effectively connect all the critical pieces of the business.

For telecom ISVs, this is an opportunity to invest in cloud-native telecom systems with built-in automation and AI capabilities that can help telecoms thrive in coming years of video and the IoT. For telecom service providers, this will be an opportunity to help telecoms identify transformation opportunities using the Digital OneOffice™. Going forward, intelligent automation will be the key to telecom transformation, and service providers can play a pivotal role in telecoms' transformation journey.

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About the Authors

Pareekh Jain

Pareekh Jain is a Senior Vice President at HfS Research. He established the global engineering services practice at HfS Research which covers mechanical engineering services, embedded engineering services, software product engineering services, PLM services, IoT and Industry 4.0. He also tracks telecom and manufacturing vertical and runs India operations for HfS Research. He authored various industry leading engineering services research reports including HfS engineering services blueprints, HfS engineering services top 20, HfS engineering services quarterly trends, etc. He is regularly quoted in media on engineering services and outsourcing trends.

A seasoned outsourcing consultant, Pareekh has seen the engineering services outsourcing industry from three perspectives: service provider, advisor and buyer. He started his career as a software engineer with Geometric, which gave him the service provider perspective. He was then with neoIT, an outsourcing advisory firm. At neoIT, he was a key contributor on a number of engagements with leading US and European clients, which spanned across the outsourcing lifecycle. He also produced neoIT's seminal report on city competitiveness for outsourcing. In his last assignment he gained the perspective of an outsourcing buyer as he led strategic planning, sales planning, product planning and R&D initiatives for the APAC region of Emerson Network Power—a Fortune 100 manufacturing multinational whose APAC operations are based in Kuala Lumpur, Malaysia.

Pareekh is a thought leader, having authored a variety of publications on topics related to outsourcing, engineering services, technology and regional competitiveness in outsourcing. He loves business fiction writing in his free time and his first novel "*Who is that lady?*" was published recently.

Pareekh received his MBA from the Indian Institute of Management (IIM), Bangalore and a Bachelor of Technology from the Indian Institute of Technology (IIT) Delhi.

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Tom Reuner

Tom Reuner is Senior Vice President, Intelligent Automation and IT Services at HfS. Tom is responsible for driving the HfS research agenda for Intelligent Automation and IT Services. Automation cuts across the whole gamut ranging from RPA to Autonomics to Cognitive Computing and Artificial Intelligence. This includes increasingly the intersections of unstructured data, analytics, and Cognitive Automation while mobilizing the HfS analysts to research Intelligent Automation dynamics across specific industries and business functions. Furthermore, he is supporting HfS' push to disrupt IT Services research by focusing on application services and testing. A central theme for all his research is the increasing linkages between technological evolution and evolution in the delivery of business processes.

Tom's deep understanding of the dynamics of this market comes from having held senior positions with Gartner, Ovum and KPMG Consulting in the UK and with IDC in Germany where his responsibilities ranged from research and consulting to business development. He has always been involved in advising clients on the formulation of strategies, guiding them through methodologies and analytical data and working with clients to develop impactful and actionable insights. Tom is frequently quoted in the leading business and national press, has appeared on TV, and is a regular presenter at conferences.

Tom has a PhD in History from the University of Göttingen in Germany.

He lives in London with his wife, and in his spare time he tries to improve his culinary skills in order to distract him from the straining experience of being a Spurs supporter.

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Tanmoy Mondal

Tanmoy Mondal is a Knowledge Analyst at HfS Research, identifying global trends in engineering services from both industry & technology perspectives, tracking global outsourcing deals & investments including partnership agreements & R&D announcements in the sector and supporting the domain leads in secondary research, data analysis, PoV's and research writing.

Tanmoy has over 4 years of research, pre-sales and market intelligence experience in TCS, HCL and Tracxn. At his TCS & HCL role, he has worked on preparing RFP responses including solution construct and commercial proposition. He was responsible for analyzing the business scenario for ERP implementation for different industry verticals and participated in several Enterprise Transformation projects across domains to optimize the IT landscape, increasing IT integration among client business verticals, improving productivity & reducing business incidents. In Tracxn, he was part of the emerging technology team that helps finding companies (Start-ups) specializing in upcoming technologies (virtual/augmented reality, drone etc.) for acquisition & portfolio investments for PE and VC firms.

Tanmoy holds Master's in Business Administration from IIFT (Indian Institute of Foreign Trade), and Bachelor of Engineering from Jadavpur University, Kolkata.

Tanmoy is passionate about football and loves to read economics related books & articles.

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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.

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