The Digital Telecommunications Industry
Unlocking New Business Value with Intelligent Technology
“Digitalization has reached every aspect of today's life, and it brings new and exciting opportunities for the telecommunications industry. Technologies such as 5G networks, software-defined networking, blockchain, the Internet of Things, artificial intelligence, and machine learning can enable telcos to innovate and establish competitive differentiation – yet they also represent a significant disruption. To succeed, telcos will need to strengthen their position as the providers of digital services beyond connectivity while focusing on profitable growth across their key customer segments.

The need to transform into an intelligent enterprise – to optimize profitability, digitalize business processes, and reimagine business models – has never been so great for the industry. Telcos are uniquely positioned to drive and lead the digital economy, if they can be bold and imaginative.”

Stephan Gatien  
General Manager  
Telecommunications Industry  
SAP SE
Telcos Face New Challenges and Opportunities Amid Digital Disruption

Leading telcos use market dynamics to create and capture new business opportunities.

Disruption and competition
Nontraditional market entrants are driving increased margin pressure and speeding up the commoditization of core communication services.

To compete effectively in the digital age, telcos use a margin management approach to drive profitability and increase the focus on delivering a highly personalized customer experience.

Business model innovation
In the digital age, the need to quickly deliver new services, meet customer demand, and optimize business processes is greater than ever.

Telcos use digital technologies to transform existing processes and create efficiencies in the enterprise that will propel growth in the future.

Next generation networks
With the introduction of the cellular Internet-of-Things network and the upcoming 5G rollout, the new battleground is all about connecting a sensor-based world.

Telcos are building a platform and ecosystem to monetize their sensor-based business — not just on the connectivity layer but also by delivering data processing and industry solutions together with partners.

Leading telcos use digital technologies to:
- Become intelligent enterprises
- Reimagine their business models to develop new revenue streams beyond traditional services
- Create innovative business processes to protect and expand their customer base
- Drive efficiency in asset operations and the supply chain to protect their bottom line
- Use Big Data and advanced analytics to defend their margins
With Huge Opportunities and Challenges, It Is Essential to Focus on the Right Strategic Priorities to Drive Digitalization

In a connected world, where every company is becoming a technology company, smarter products and services will refocus commerce on business outcomes and blur industry lines.

In this new digital era, telcos must proactively adapt their business models or face strong headwinds that erode both profitability and relevance. Business agility is key, and embracing digital technology is mandatory. Innovative telcos will respond effectively to encroaching competitors and meet new expectations from customers.

**Customer first**
Telco operators will put both the customer and the customer experience first in an effort to differentiate as core services and networks get commoditized. They will focus on delivering the best omnichannel experience from store visit to returns and service management.

**Operational excellence**
Winning telco operators will be able to compete effectively against “over the top” players and others thanks to superior operational processes. They will make the most of new technologies to become intelligent enterprises with increased automation rates (artificial intelligence, bots) blending effectively with digital and human labor.

**Revenue stream diversification**
Telco operators will accelerate the search for new revenue streams to break out of zero growth sectors. They will expand their portfolio of digital services, invent new business models, and, for some, expand through M&A to penetrate new markets or enter new geographies.

**Intelligent connectivity**
Telco operators will continue to spend billions of dollars in the evolution and expansion of convergent networks, becoming smarter and more virtual and approaching near-zero latency with 5G. They will leverage new technologies to make these networks even smarter to anticipate congestion, predict failures, and possibly self-heal. They will use intelligent connectivity to drive service innovation and invent new business models.

Business optimization and intelligent automation are key priorities for innovative telcos to simplify their business and free up resources to invest in transformative programs.

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2. SAP survey, Mobile World Congress 2018.
Our Point of View: To Achieve These Strategic Priorities, Leading Telcos Are Becoming Intelligent Enterprises

An intelligent enterprise enables employees to focus on higher-value outcomes and to invent new business models and revenue streams.

By applying intelligent technologies such as the Internet of Things (IoT), artificial intelligence (AI), machine learning, and advanced analytics, leading telcos transform into event-driven businesses. These event-driven businesses automate repetitive tasks, enable employees to focus on higher-value tasks, and allow the invention of new business models and revenue streams by monetizing data-driven capabilities and applying core competencies in new ways.

Optimize and extend the value of current processes

Transform with next-generation business processes

Optimize existing processes for more efficiency or reliability.

Extend current business processes beyond efficiency gains to capture new sources of value.

Transform the company’s value chain or business model to capture new revenue streams.
SAP Enables Telecommunications Companies to Become Intelligent Enterprises

SAP helps telcos transform to intelligent enterprises through integrated business applications that use intelligent technologies and can be extended on SAP® Cloud Platform. This enables next-generation business processes to deliver breakthrough business value on our customers’ journey to becoming intelligent enterprises.

Intelligent Suite
The set of applications provides the business capabilities that telcos need to run their business. End-to-end business processes span multiple applications, so processes and data must be integrated for automation, a seamless user experience, fast adoption, and ease of operations.

Intelligent Technologies
Several innovative technologies have matured to practical use:
- The IoT makes business applications interact with the physical world.
- Big Data makes large data sets accessible for advanced analytics and intelligence.
- Machine learning and AI automate repetitive processes and learn from human exception handling and decision-making.
- Advanced analytics find data patterns to support decisions and predict the future.
- Blockchain distributes collaborative processes across the entire value network.
- Data intelligence finds new value in data assets for new business models.

Digital Platform
The digital platform, which is powered by SAP HANA®, extends intelligent, end-to-end processes and connects to these data sources:
- Cloud platform that allows customers and partners to extend their intelligent suite to run additional business processes.
- Data management to handle and organize data, a key asset of an intelligent enterprise.
SAP Leonardo technologies bring the power of intelligent technology to your platform and applications to streamline existing workloads, reveal optimal decisions, maximize revenue and profits, improve customer satisfaction, and capitalize on digitally transformed business models.

In addition, companies can use SAP Leonardo Services, delivered by world-class innovators that combine industry and emerging technology expertise, to help drive innovation and business impact at scale.
SAP Leonardo: Intelligent Technologies Optimize, Extend, and Transform the Business

Intelligent scenarios in telecommunications
SAP Leonardo technical capabilities are embedded in business-core and industry applications to optimize and extend business processes. Companies can also use them together with innovation services to build and assemble next-generation business processes. For telcos, we support more than 15 intelligent scenarios to optimize, extend, and transform their business. Below are a few highlighted ones which will be further explained on subsequent pages.

- Optimize existing processes for more efficiency or reliability.
- Extend current business processes beyond efficiency gains to capture new sources of value.
- Transform the company’s value chain or business model to capture new revenue streams.

- Cash application
- Service ticket intelligence
- Customer retention
- Customer service chatbot for telcos
- Business integrity screening
- Customer profitability analytics
- Digital boardroom
- Digital twin for mobile networks
- Connected cable reel
- Telco energy consumption optimization
- Blockchain-based mobile device management
- Hypertargeted advertising
- Joint IoT services combining SAP Leonardo technologies and telecommunications capabilities
SAP Leonardo: Applications Optimize Business Processes

Optimizing business processes results in achieving the same business outcome more efficiently and reliably. We begin with scrutinizing current practices: What can be automated using machine learning and artificial intelligence? How can we make processes aware of the real world by connecting them to the things around them? How do we give people the right analytical tools to make sense of vast amounts of data and to handle exceptions.

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<td>Labor-intensive and error-prone processes for invoice matching</td>
<td>Labor-intensive and slow resolution of customer service tickets</td>
<td>Lack of insight into root causes of customer attrition</td>
<td>Costly customer service and slow in resolution</td>
<td>Slow detection of both internal and external fraud</td>
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The SAP Cash Management application uses machine learning intelligence to boost automatic matching rates and frees up finance professionals to focus on strategy and service quality.

The SAP Service Ticket Intelligence application efficiently processes inbound social media posts, e-mails, and other channel interactions. It automatically determines classifications, routing, and responses.

The SAP Customer Retention application anticipates customer behavior – such as product cancellations or renewals – with instant insights from transactional data and digital interaction points.

Based on the SAP Conversational AI service, use a prepackaged telecommunications chatbot designed specifically for customer services purpose.

The SAP Business Integrity Screening application monitors and analyzes data from diverse sources, so you can identify, manage, and counteract risks and protect the bottom line.

- Increased productivity
- Reduced error rates
- Increased productivity
- Higher customer satisfaction
- Increased customer retention
- Reduced customer service cost
- Accelerated service resolution
- Increased productivity
- Reduced revenue leakage

Vodafone uses the SAP Process Mining software by Celonis to achieve 100% process transparency in less than six months, reducing costs by 11% and improving time to market by 20%.

With SAP Predictive Analytics software, Cox Communications saw a 14% increase in products and services bought per household, thanks to optimized predictive models used across e-mail, direct mail, and telemarketing channels.

Swisscom uses SAP Predictive Analytics software and the SAP HANA business data platform to personalize carrier billing services while reducing losses from nonpayment.

Vodafone uses our fraud management application to review 100% of its expense claims. Before implementing the software, it was only able to review 10% of employee claims made through a manual process.
SAP Leonardo: Capabilities and Services Extend Current Processes to Capture New Sources of Value

Extending business processes aims at generating more value and new outcomes. Begin by challenging the status quo: Are we doing the right things in managing assets or in shaping customer relationships? Innovators use digital technology to reimagine business processes to create new value. They recover unidentified margin leakage to optimize margins and increase profitability, and ensure that network assets and infrastructures are maintained as cost-effectively as possible while retaining maximum uptime.

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<tr>
<td>No granular margin insights as obstacle for margin-focused transformation</td>
<td>No real-time business insights in one place</td>
<td>Inconsistent asset information and high maintenance cost</td>
<td>No visibility of on-site cable-reel status, leading to low inventory utilization</td>
<td>Increasing energy consumption and emissions from networks and data centers</td>
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The SAP Customer Profitability Analytics solution (formerly the SAP Big Data Margin Assurance solution) delivers multi-dimensional margin information on the most granular level for telcos, based on the SAP HANA® business data platform and TM Forum Information Framework (SID) compliant data model.

- Increased margin
- Reduced revenue leakage
- Increased productivity
- Reduced maintenance cost
- Increased asset utilization
- Increased inventory utilization
- Reduced energy cost
- Reduced carbon dioxide emissions

Vodafone Germany implements the SAP Customer Profitability Analytics solution (formerly the SAP Big Data Margin Assurance solution) to analyze granular customer profitability and identify margin leakage scenarios worth tens of millions of euros.

Proximus uses SAP Leonardo technologies for its network expansion projects, tracing all materials, assessing consumption, and optimizing material supply.

Swisscom is scaling for business transformation and offering and monetizing its new digital services with the SAP Billing and Revenue Innovation Management solution (formerly the SAP Hybris® Billing solution).
SAP Leonardo: Intelligent Technologies and Innovation Transform the Telecommunications Value Chain and Business Models

Transforming the business starts with ideas to conquer new markets with current products or deliver new value on your home turf. It often goes along with a renewed view on who is the ultimate customer and what kind of value they really need.

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<th>Blockchain-based mobile device management</th>
<th>Hypertargeted advertising</th>
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<td>No effective information-sharing mechanism between telcos and phone manufacturers to deny access to stolen or counterfeit devices</td>
<td>Advertisers unable to execute contextual precision advertising because of limited customer profiling</td>
<td>Challenges in monetizing the IoT networks and incoming 5G deployment beyond connectivity</td>
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- A blockchain-based blacklist of stolen or counterfeit devices’ International Mobile Equipment Identity is shared among all telcos, phone manufacturers, and government agencies. Telcos are enabled to establish new business models such as device insurance based on the shared list on blockchain.

- Through SAP Data Network, this use case provides hypertargeted customer profiles to advertisers, after applying machine learning and Big Data techniques, enabling telcos to obtain new outcome-based revenue streams.

- SAP Leonardo IoT capabilities enable telcos to deliver comprehensive IoT solutions to enterprise customers. The combined capabilities from SAP and telecommunications provide innovative services including fleet management, smart logistics, connected transportation safety, smart asset tracking, smart constructions, a vehicle network for smart parking, and fueling.

- Deutsche Telekom is participating in the SAP Leonardo Blockchain Consortium initiative, building a blockchain-based prototype to respond more quickly and comprehensively to smartphone theft.

- NTT Docomo is collaborating with Komatsu and SAP to provide a connected construction solution based on SAP Leonardo technologies, combining data from machinery, people, and terrain for real-time decision-making.

- Mojo, the connected vehicle platform and app provider for Deutsche Telekom and T-Mobile USA, is using the SAP Vehicles Network solution. Together with SAP, it is bringing automated parking and fueling services to a growing base of connected drivers.

- T-Systems partnered with SAP and our joint client, the Hamburg Port Authority, to build a real-time smart-port logistics management system.

- Improved customer satisfaction
- Increased revenue from new digital services
- Increased revenue from new digital services
- Improved enterprise customer retention
SAP Leonardo: Transformational Scenario – The Hypertargeted Advertising Use Case

SAP customers and SAP experts collaborate to design and build up use cases leveraging SAP Data Network – fully tailored to the specific customer situation and supported by SAP Leonardo Innovation Services.

**Example:** The hypertargeted advertising use case

By providing a hypertargeted, cross-platform customer profile to advertisers, after applying machine learning and Big Data techniques, this use case enables telcos to obtain new outcome-based revenue streams while also benefiting advertisers’ business outcomes.

According to 451 Research, the “telecom data as a service” addressable market will grow from US$24 billion in 2015 to approximately $79 billion in 2020, which provides a sustainable and potentially highly profitable business for telcos.\(^3\) The opportunity for telcos to develop the expertise to better target consumers in a rapidly changing digital world will provide for a competitive advantage moving forward.

Source: TM Forum, 451 Research

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Bringing It All Together: NTT Group’s Journey to Become an Intelligent Enterprise

Improving road safety by avoiding predictable accidents with SAP Leonardo

With human error being the cause of vehicle crashes, NTT is taking advantage of the Internet of Things to allow companies such as Keifuku Bus Company to monitor its drivers and ensure transportation safety. The solution allows its customers to equip drivers with smart shirts capable of tracking biomedical signals. In this way, safety supervisors can monitor drivers’ health conditions in real time and alert deficient drivers to stop before an accident happens. With the ability to check and ensure the alertness of each driver, NTT customers can deliver a safer service to its passengers and the community.

Objectives:

- Reduce bus company’s liability and promote transportation safety in an efficient and automated way
- Establish new revenue streams for NTT’s IoT business

Results:

- By estimating the mental fatigue of drivers and warning managers in real time of anomalies, drivers can be instantly alerted through mobile devices, preventing accidents.
- The cloud-based solution was easy to deploy, and customers such as Keifuku could validate its effectiveness in just two months.

Objective

Easy

To deploy

2 Months

Time to value

“This project makes it possible to monitor a driver’s conditions continuously in real time. Thanks to making good use of this data, we can catch a driver’s unusual movements when he is driving and an abnormality occurs. We expect that this will help us make the vehicle stop safely.”

– Sachihiro Amaya, President, Keifuku Bus Company Ltd.
How to Get Started with SAP Leonardo

Whether you’re still exploring new ideas or have defined one idea in detail already, SAP Leonardo brings together world-class innovators, industry and emerging technology expertise, proven use cases, and design thinking methods to help you optimize your business and drive innovation and impact at scale – faster and with less risk.

SAP takes a holistic approach to innovation. Because digital transformation isn’t just about installing the latest technology, we also address the readiness to receive a new idea. From human capital to infrastructure, we bring best business practices across your organization to improve communication, plan for employee training, review technical and regulatory feasibility, and consider other cross-functional needs to drive change and truly scale your innovation.
SAP Is the Innovation Partner for Telcos

Ten-year innovation vision
Deliver fully intelligent business solutions and networks that span across company boundaries and promote purpose-driven businesses. These solutions will be the most empathic symbiosis between machine intelligence and human ingenuity.

- Self-running enterprise systems
- Self-organizing business ecosystems
- New markets and business models

Comprehensive industry coverage
SAP enables the comprehensive coverage of the complete telecommunications value chain across the enterprise. With its clear industry road map, SAP is the partner of choice for the telecommunications industry.

- 10 of the top 10 global telcos run SAP software
- 94% of telcos in the Forbes Global 2000 are SAP customers – more than 4,500 in total
- 1.8 billion mobile messages processed every day by SAP

Proven services offering
By bringing together world-class innovators, industry and emerging technology expertise, proven use cases, and design thinking methods, we help telcos develop innovations that deliver impact at scale.

- Use proven methodologies to drive innovation, from reimagining customer experiences to enhancing operations
- Fuel your innovation through a managed innovation ecosystem from SAP
- Build your own innovation capability and culture

SAP delivers support for becoming an intelligent enterprise in the telecommunications industry – providing integrated business applications that use intelligent technologies and can be extended on SAP Cloud Platform to deliver breakthrough business value.

Learn more
- SAP.com for telecommunications
- SAP Leonardo
- SAP Digital Business Services
- SAP Design Thinking