COMARCH

FULL PRODUCT OFFER
FOR TELECOMMUNICATIONS

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COMARCH PRODUCTS
THE FLEXIBILITY TELECOMS NEED IN THE DIGITAL ERA

Telecoms have helped to build the global supply chains. They have made constant access to information and instant communication a reality. Today, people and businesses across the globe depend on their mobile operators to provide them with innovative services needed in everyday life.

While the potential of innovative technologies such as 5G, AI and IoT is unquestioned, telecoms require IT tools to manage the digital processes and network operations that those technologies influence. Now is the time for key processes in your company to become automated and digitized, and to find the right partner to help you face the coming challenges.

Comarch, as an expert in telecom transformation projects, is there to support you. Since 1993, Comarch has helped many telecoms operators worldwide embrace new technologies and grow their businesses. We understand the needs of our customers, which is why we provide them with IT products that are highly modular, scalable and ready to support any future technology.

With Comarch you can simplify and automate 5G network operations, manage digital customer journeys, introduce and promote new kinds of services quickly and easily, raise customer engagement with loyalty programs, analyze daily operations with business intelligence, constantly improve your quality of service with intelligent assurance and analytics, and generate new revenues from cloud and IoT services in new verticals such as utilities, healthcare and logistics.

Our vast portfolio of IT products lets you automate and optimize any crucial area of your telecom business. Let us join you on the journey to a connected, digital world.

Choose Comarch to be your partner in the digital era. Let's shape the world of communications together.

As part of Telefónica's strategy, our network and operation support systems play a crucial role as enablers of the services we provide to our clients. Implementing Comarch Next Generation Network Planning is a major step towards improving the efficiency of network planning and optimization processes in our subsidiaries in Latin America. Comarch was chosen as it has already proven to be a trusted partner of the Telefónica Group in Europe, and shown a great degree of flexibility in meeting our needs. The current implementation will provide an integration platform for a best of breed OSS solution, unified and reused across the group.

Telefónica

José González Díaz
DIRECTOR OF TRANSFORMATION & OSS, GLOBAL CTO AT TELEFÓNICA S.A.

FULL PRODUCT OFFER FOR TELECOMS

PROVIDING ENTERPRISE SERVICES GLOBALLY

ENTERPRISE PRODUCT CATALOG

Enables simple and flexible storage of the entire CSP product portfolio in one place, via slave catalogs used for sales, charging and billing. Multi-tenancy, multi-currency and multi-taxation support.

DIGITAL BILLING AND REVENUE MANAGEMENT

Multi-currency and multi-taxation functions, allowing the creation of financial documents for customers and partners. Flexible rating rules apply to enterprise customers.

PARTNER MANAGEMENT

Get automation and flexibility in liaising with partners and third parties by modeling of any type of service. Secure and easy to deploy, with multi-currency, multi-tenancy and multi-national support.

WHOLESALE BILLING

Allows service and content providers to exchange billing data and invoices, and share revenue/cost information with partners. Easily scalable for all agreement types.

GLOBAL NETWORK OPERATIONS CENTER

Comarch network operations center is your own high-security "mission control". We analyze and resolve problems, update software, distribute security patches, and manage routers and domains on your behalf.

ENTERPRISE PRODUCT CATALOG

- **Implement a product catalog ready for any roles and multiple partnerships**
  Benefit from an easily configurable solution for multiple tenant and multiple role environment, so even the most complex organizations and partnerships fit perfectly.

- **Centralize all products and offers**
  Bring a unified approach to product specifications, offers, details and relations using a product catalog solution designed in line with market standards.

- **Integrate with other product catalogs**
  Take advantage of Comarch Product Catalog's unified interfaces and APIs to set this solution to work as a master enterprise product catalog or as a slave one.

- **Simplify service lifecycle management**
  Make it easy to create, copy, test, approve or retire services. A single entity or larger configuration element can be managed easily throughout the entire lifecycle.

DIGITAL BILLING AND REVENUE MANAGEMENT

- **Ensure flexibility in price and cost management**
  Effortlessly and precisely model even the most complex offers and wholesale agreements.

- **Be ready for global expansion**
  Ensure support for multi-currency, multi-taxation and multi-language functionalities.

- **Deploy single solution for all players in the ecosystem**
  Take unification to a new level, as a CSP, its partners and customers can all use the same solution.

PARTNER MANAGEMENT

- **Manage your digital ecosystem holistically**
  Simplify day to day business processes by taking a single, unified approach within a multi-tenant and multi-currency environment.

- **Adopt a model-driven approach**
  Use the easy to modify configuration stored in Centralized Product Catalog and Party Information Management modules to define how the system and processes work.

- **Prepare for global expansion**
  Take advantage of full global capabilities including multi-currency, multi-taxation and multi-language support.

WHOLESALE BILLING

- **Ensure support for various types of partner settlements**
  Benefit from built-in support for interconnect, roaming (TAP/RAP/NRTRDE/HUR), content with revenue share, MVNO, M2M settlement, signaling and OTT partners.

- **Implement partner management functionalities**
  Manage relations with partners and suppliers, and automate most tasks required for cooperation within the field of telecom interconnect billing.

GLOBAL NETWORK OPERATIONS CENTER

- **Streamline communications**
  With access to Comarch NOC, you have a single point of contact that makes communication easier and more efficient – whatever the issue.

- **Monitor and protect**
  Round the clock monitoring of infrastructure availability and performance lets you detect potential threats early, and prevent them from becoming problems.

- **Optimize resources and cut costs**
  There's no need for the expense of training or hiring specialist technicians, and your own team are freed up to focus on more important tasks.

- **Take control**
  Comprehensive monitoring and insight give you the full picture for strategic planning, and you receive regular reports on your system's operations.
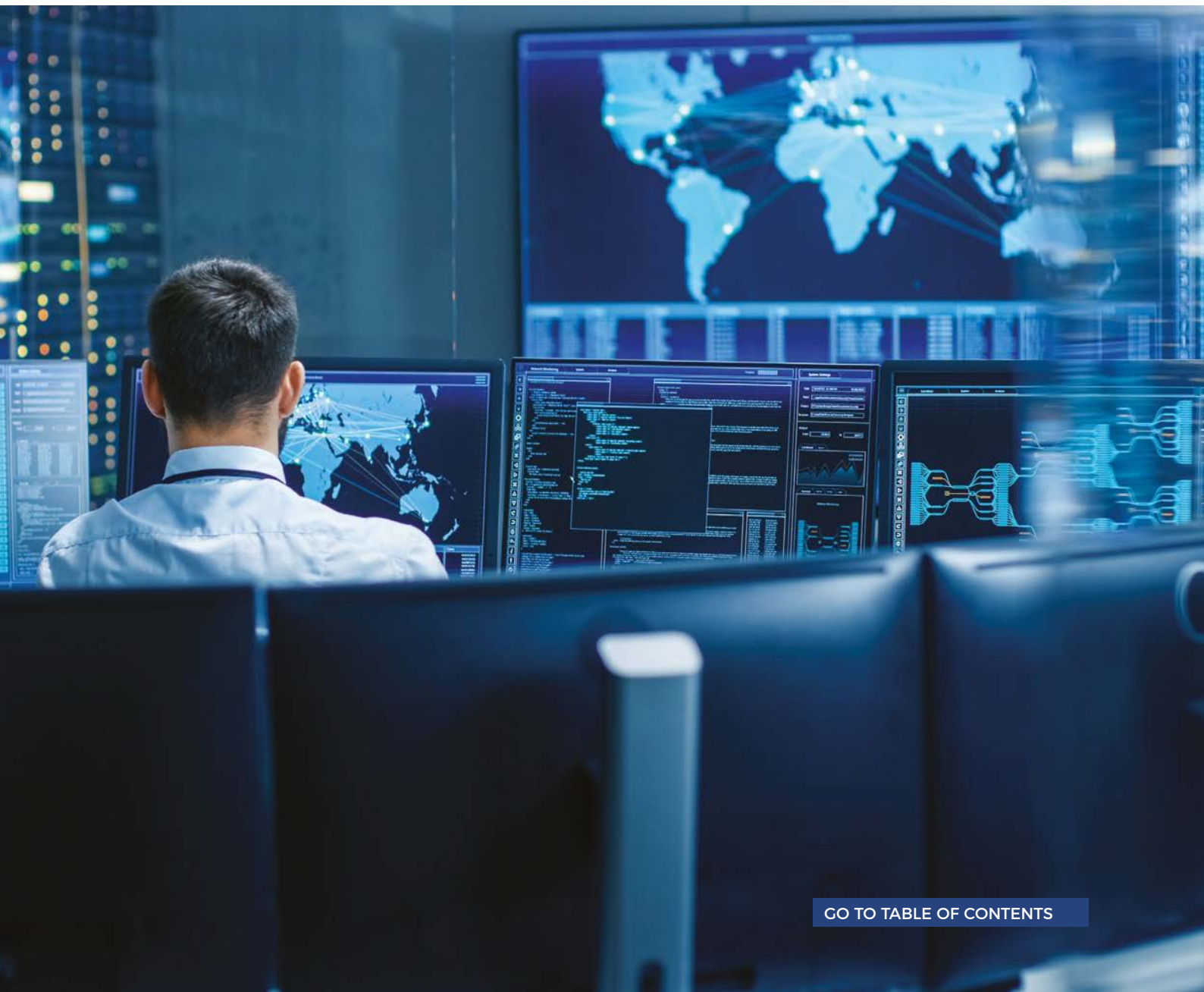
DIGITIZING ENTERPRISE CUSTOMERS

ENTEPRISE BILLING, CHARGING & REVENUE MANAGEMENT

Aids even complex corporate billing management, with real-time cost control based on customizable rules, and single invoice creation for all mobile, fixed, hosting and IoT services with multi-branch, multi-department and third-party support.

B2B SELF-ENABLEMENT PLATFORM

Provide mobile and fixed voice, data and VPN services that can be bundled with other solutions. Shows all relevant data, making even complex hierarchies manageable. Full omnichannel support ensures consistent customer experience.

B2B SALES & ORDERING
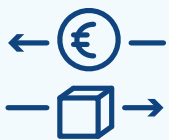
This proven solution provides a full lead to cash experience within a single package. It ensures accurate, automatic and near-instant quotes which, thanks to the product catalog-driven mechanism, become agreements seamlessly upon approval.

ENTEPRISE BILLING, CHARGING & REVENUE MANAGEMENT

- **Unify invoicing and hub billing**
  Aggregate data from numerous billing solutions to generate a single invoice.

- **Get support for complex company hierarchy**
  Implement multi-branch and multi-department support functionalities.

- **Introduce trial invoicing**
  Take advantage of opportunity to review invoices prior to approval.

- **Benefit from digital invoicing with online data access**
  Get online access to invoices with drill-down analysis possibilities to a single event.

- **Implement split billing**
  Split charges between numerous third parties.

B2B SELF-ENABLEMENT PLATFORM

- **Support customer-manageable complex hierarchies and multiple roles**
  Carry out split billing (for instance, sharing costs between employees and employers). Combine with flexible rules and dashboards for real-time cost control of subscriptions.

- **Implement advanced reporting**
  Guarantee accurate information for business needs with advanced business intelligence solution, numerous pre-configured dashboards and ad hoc reports.

- **Take a model-driven approach**
  Make it easier to introduce new products and services, re-use and bundle, experiment and navigate your business to where the market requires.

- **Go omnichannel**
  Ensure unified, 360-degree view and management possibilities for subscriptions, orders, cases and financial information in traditional and modern digital channels.

B2B SALES & ORDERING

- **Unify sales processes**
  Let a single solution handle entire lead to cash process, using the same entities, continuously enriched as the customer and order capture process progresses.

- **Drive quoting and ordering with product catalog**
  Guarantee bid prices, with quoting and ordering that use the same offers in a model-driven approach enabling re-usability and innovation, and simplifying multi-tenant quotes and orders.

- **Personalize offers and customize pricing**
  Address the needs of VIP customers, especially those in the public sector, who demand offer conditions cut precisely to their requirements. The system also provides tools preventing fraud, including approval processes and customization rules.

- **Manage enterprise frame agreements**
  Take advantage of full support for frame agreements, so negotiated offer terms can be used by a company, its employees and even related firms.

ENHANCING DIGITAL CUSTOMER JOURNEYS

DIGITAL SALES AND CUSTOMER CARE

Manage comprehensive traditional telco and digital service offers, letting customers browse and compare services, check availability, manage carts and check out. Provide full, actionable overview of accounts and access to self-care or direct support.

REAL-TIME DATA CONTROL & PRESENTATION

Calculate service charges, improving customer experience with clear, real-time views of bundle consumption, data use, balances and limits. Facilitates reporting with 360-degree customer views, analytical actions, recommendations and personalization.

CAMPAIGN MANAGEMENT

Comarch Campaign Management offers operators effective management and automation of multi-wave and multi-channel campaigns and execution of personalized & targeted communication to subscribers.

LOYALTY MANAGEMENT

Comarch Loyalty Management allows operators to retain and continuously engage customers, and to discover how clients react to loyalty programs.

BUSINESS INTELLIGENCE
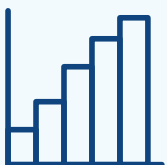
Business intelligence helps you by providing a visual representation of data produced from various sources, so you can analyze this information in many dimensions, share it internally and define useful insights to build the company's competitiveness.

DIGITAL SALES AND CUSTOMER CARE

- **Get a 360-degree customer view**
  Use current and past cost control, digital invoicing and integration with payment providers.

- **Go omnichannel**
  Pick processes most beneficial to your business and place them in your preferred channels, to create customized customer journeys via omnichannel process management.

- **Take advantage of contextualized help**
  Benefit from help engine with chat, chatbots, call center, and spectator mode.

- **Adopt intuitive digital services and a mobile first approach**
  Manage your catalog services, including advanced marketing tools, in few simple steps.

REAL-TIME DATA CONTROL & PRESENTATION

- **Simplify real-time usage and cost control view**
  Get full view of current usage, consumption, and financial data across all channels. Achieve better control over costs, with converged charging, unified rating and balance management.

- **Ensure 3GPP compliance**
  Ensure all your networks and devices are in line with the standards of the top seven standard development organizations, covering cellular telecommunications, radio access, transport network and service capabilities.

- **Be 5G ready**
  Benefit from support for all fixed and mobile networks, and all communication protocols.

- **Enhance scalability and openness**
  Scale up smoothly as your business grows, and take advantage of smooth integration with other Comarch and third-party systems.

CAMPAIGN MANAGEMENT

- **Create effective campaigns**
  Organize multiple simultaneous marketing activities efficiently, build event-triggered, time-based campaigns with recurring interactions using an intuitive drag-and-drop designer.

- **Target campaigns to subscribers**
  Create target groups aligned with each campaign from the start, and automate the process of creating segments and importing existing groups. Send and track customized offers and promotional codes.

- **Monitor real-time response**
  View real-time information and statistics within one window, and track message dispatch performance and campaign results on ongoing basis.

- **Get campaign data analytics**
  Aggregate and compare data from different campaigns. Use templates to present shareable reports to decision-makers rapidly. Integrate with Google Analytics.

LOYALTY MANAGEMENT

- **Access full customer insights**
  Create, merge, and manage all customer data based on ID from the BSS system, to ensure you are always up to date with the performance of your loyalty programs.

- **Leverage AI and machine learning to retain customers**
  Identify patterns in your customers' behavior with AI algorithms based on billing data, and present your clients with offers that match their changing needs.

- **Use gamification to engage customers**
  Turn customers into players by enabling collection of badges based on simple activities and particular achievements to reward them with a special discount or an extra plan.

- **Integrate with new partners quickly**
  Access your partners' billing configuration and utilize Data Hub streamlining for data exchange processes, thereby reducing the time and cost of integration.

Data Sources

| POS System | Campaign Management | ERP & CRM System | Customer Care | Billing System | BI & Data Warehouse | Gift Card System | IoT Platform |

COMARCH LOYALTY MANAGEMENT

File Processor   Transaction Processor   Message Processor   Report Engine

Business Administration	Contact Center	Member Portal
Mobile Application	In-store application	Data Hub
Gamification	Location Based Services	Social Mining

Program Partners

3rd-party Providers

Marketing Agencies

Card Producers

Touch Points

| Point of Sale | E-mail | SMS | WWW | Call Center | Mobile | NFC | Social Media | Gamification | E-commerce |

Comarch Loyalty Management Architecture

BUSINESS INTELLIGENCE

- **Unify data from various sources**
  Standardize data from telco systems such as BSS, OSS, assurance, FSM software, and IoT platforms to build a competitive, data-driven organization.

- **Segment data and analyze clients' behavior**
  Apply various types of segmentation, define insights, and prepare personalized offers for clients. Get visual representation of customers' value, and analyze churn rate to create strong relationships with clients.

- **Plan and execute 5G rollout coverage**
  Use dashboards to present planned 5G rollout in a specific period of time, and have real-time updates on the planned execution of installed or upgraded sites.

- **Take advantage of reporting as a service**
  Let Comarch experts create, manage and update your business reports to ensure that your telecom data provide insights which help you to meet strategic and operational goals.

- **Be up to date with predictive maintenance alerts**
  Predict and avoid expensive failures thanks to defined equipment parameters sent with IoT smart devices, information based on past events and data from the network hardware environment.

5G NETWORK OPERATIONS

ZERO-TOUCH NETWORK PROVISIONING

A solution to IoT and 5G demands for rapid, automatic implementation of telecom network elements. Comarch Zero-touch Network Provisioning allows devices to be connected, updated, pre-configured and updated.

REAL-TIME OSS – SDN/NFV ORCHESTRATION

The Comarch solution is a platform for provisioning and managing services over VNFs, PNFs and SDN-controlled networks, facilitating comprehensive orchestration of complex multi-domain topologies.

INTELLIGENT ASSURANCE & ANALYTICS

Comarch Intelligent Assurance & Analytics delivers OSS/BSS analytics, AI and knowledge accumulation for big data analysis, predictive maintenance, and automated incident prevention and resolution.

ZERO-TOUCH NETWORK PROVISIONING

- **Reduce cost of device implementation**
  Configure devices without intervention by a technician. This can reduce costs of device implementation, after which initial configuration, software updates and script execution can be done automatically.

- **Deliver services rapidly**
  Install, then let devices connect to the network, self-configure and activate necessary services, reducing the time needed for service implementation.

- **Fully automate processes**
  Automate the "plan, build, run" process thanks to API integration with resource and process management. Devices can also establish secure connections with other systems using NETCONF and/or RESTCONT.

- **Take a catalog-driven approach**
  Create a library of configuration scripts which can be retrieved and implemented easily per use case, vendor and machine language to achieve significant cost reductions.

REAL-TIME OSS – SDN/NFV ORCHESTRATION

- **Make your network context-aware**
  Customize your network by varying the level of performance across services, locations, applications or users.

- **Deploy services rapidly**
  Be the first one to the market by using NFV to make your applications available faster, and then take advantage of SDN to adjust traffic flow and bandwidth to best suit your service.

- **Virtualize for security**
  Introduce virtual networks to your company and provide the basis for micro segmentation as a security strategy in your data centers.

- **Introduce flexible service pricing**
  Attract more clients by offering pricing models based on software and license usage.
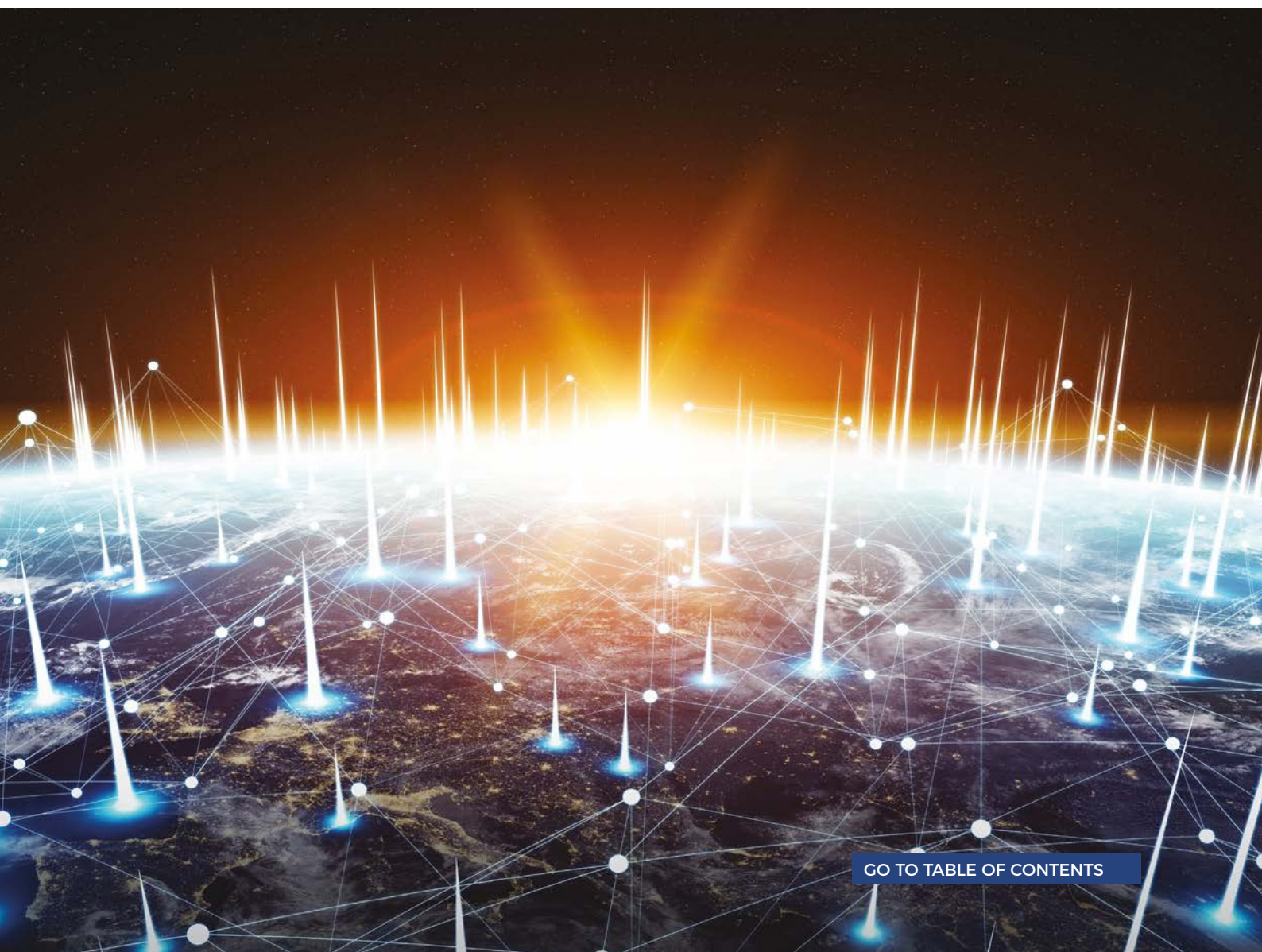
INTELLIGENT ASSURANCE & ANALYTICS

- **Get AIOps for 5G network**
  Let humans and machines collaborate intelligently to deliver the information required to perform the appropriate actions at the right time.

- **Break the silos**
  Take a holistic approach to telecom assurance processes and break the traditional silos which are decreasing your operational efficiency.

- **Decrease mean time to repair**
  Deploy intelligent root-cause and impact analysis to decrease MTTR significantly, optimize resource utilization and improve customer satisfaction.

- **Introduce policy-based management**
  Unify configuration of all telecom assurance processes, so you can focus on defining strategies instead of performing repeatable operational tasks.
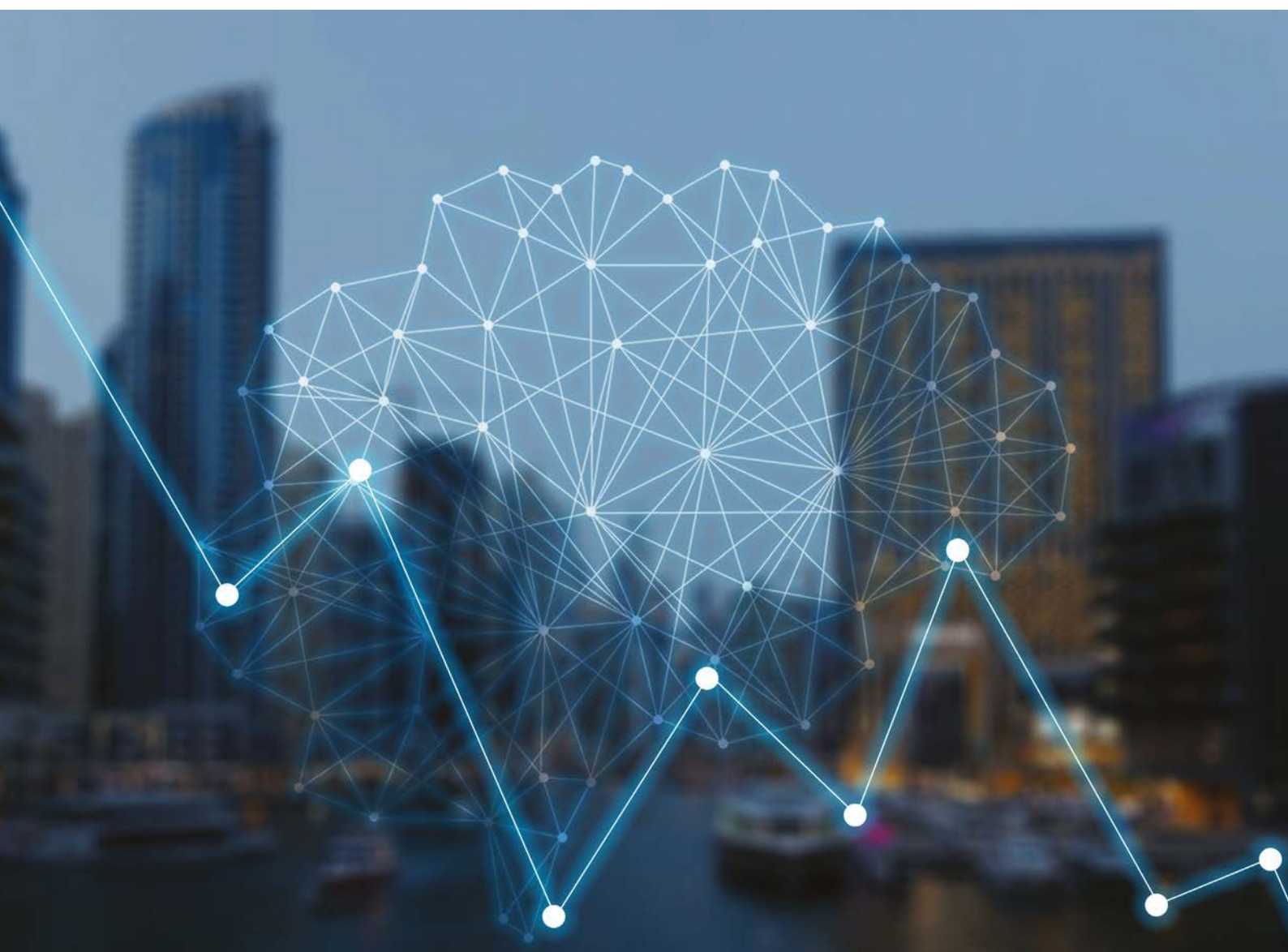
With a modern and innovative OSS portfolio, Comarch has repeatedly demonstrated strong and reliable business partnering with Vodafone. Comarch has provided high quality COTS products, coupled with their impeccable services, to implement solutions on time and within budget, adapting swiftly to new business requirements arising during and after implementation. Considering dimensions such as time to market, quality to market, customer obsession, agility, value and innovation, Comarch is a partner that invariably ticks all of the boxes.

Shane Gaffney
DIRECTOR OF OSS, CENTRAL EUROPE AT VODAFONE

RESOURCE MANAGEMENT

REAL-TIME NETWORK INVENTORY MANAGEMENT

Stores information about physical, logical and virtual network resources in a shared, central inventory facilitating network resource catalog management for multi-vendor, multi-domain networks.

NETWORK PLANNING & DESIGN
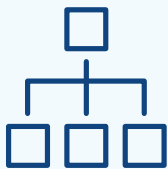
Enables CSPs to manage telecom network planning, design and optimization processes comprehensively and efficiently, and to future-proof operations to ensure ongoing customer satisfaction.

NETWORK AUTO-DISCOVERY & RECONCILIATION

Provides live, comprehensive insight into a multi-vendor, multi-domain network, enabling effective network management and supporting reconciliation of RAN, transport, core, access and IT domains.

NETWORK CONFIGURATION MANAGEMENT

Comarch Network Configuration Management enables service providers to automate network provisioning in the radio access network, transmission, core and access domains.

RESOURCE ORDER MANAGEMENT

Simplifies network planners' daily activities by delegating all repeatable tasks to ROM smart engine and allowing them to focus on strategic network planning and optimization.

REAL-TIME NETWORK INVENTORY MANAGEMENT

- **Get a comprehensive network view**
  See equipment and connections in several layers, both technology-specific and generic, for a consistent view of the network.

- **Reduce network operating cost**
  Increase business efficiency and decrease operational costs with a single network view.

- **Improve resource utilization**
  Use existing resources efficiently, and plan new ones which are profitable from the business perspective.

- **Assure efficiency**
  Get network assurance system support with topological correlations for recognizing and troubleshooting the root cause of failures.

- **Integrate in umbrella OSS**
  Reduce operational costs and raise processing efficiency, with OSS system that provides data for all other modules.

- **Innovate**
  Create umbrella OSS for new virtual and legacy architectures, thanks to integration with the SDN/NFV framework for inventory, planning, configuration and assurance.

NETWORK PLANNING & DESIGN

- **Increase agility with process-driven network inventory**
  Implement business process management and automated task distribution using process flows and rules to increase agility.

- **Get a complete network view**
  Get accurate and detailed network view showing logical, virtual and physical resources at a glance.

- **Implement umbrella OSS**
  Benefit from pre-integration with SDN/NFV framework for inventory, planning, configuration and assurance.

- **Innovate and evolve**
  Let new and legacy architectures operate together, giving technicians advanced network management tools.

- **Ensure integrated assurance**
  Synchronize data and alarms with SQM/CEM to enable SON integration and quality-driven optimization.

- **Lower OPEX**
  Integrate tools into one ecosystem featuring automated synchronization mechanisms.

- **Lower CAPEX**
  Improve coordination of co-dependent network-related processes for CAPEX optimization.

- **Decrease time to market**
  Monitor efficiency using unified project procedures and configurable reports, and reduce time to market.

NETWORK AUTO-DISCOVERY & RECONCILIATION

- **Get a comprehensive, live network view**
  Get up to date insight into the multi-vendor, multi-domain network thanks to Comarch Mediation Layer.

- **Automate auto-discovery & reconciliation processes**
  Automate the discovery and resolution of discrepancies between inventory data and the real network, with rule definition for complex scenarios.

- **Reduce time to market**
  Shorten upgrade and optimization cycles by providing almost immediate configuration update feedback from the network.

- **Simplify the provisioning process**
  Intervene manually when required, thanks to pre-integration with Comarch OSS Process Management.

- **Improve customer experience**
  Choose pre-integration with Comarch Network Planning & Design to implement the plan, upgrade, verify, re-plan process to shorten the time needed to provide good customer experience.

- **Implement umbrella configuration management integrated with SON**
  Eliminate provisioning errors thanks to automatic recognition and resolution of conflicts between plans.

- **Reduce costs by migrating to a single OSS tool**
  Decommission and migrate legacy systems into Comarch OSS Suite, to make cost savings.

NETWORK CONFIGURATION MANAGEMENT

- **Facilitate multi-vendor and multi-domain configuration**
  Enable multi-vendor, multi-domain network configuration with mobile and fixed network support.

- **Simplify provisioning**
  Hide the complexity of vendor-specific network configuration management and automate network planning to vendor-specific reconfiguration.

- **Improve customer experience**
  Choose pre-integration with Comarch Network Planning & Design to implement the plan, upgrade, verify, re-plan process to shorten the time needed to provide good customer experience.

- **Make yourself future-proof**
  Ensure extendibility for future network technologies thanks to flexible and template-based design.

- **Facilitate umbrella configuration management – integrated with SON**
  Eliminate network provisioning errors, with automatic recognition and resolution of conflicts between plans.

- **Reduce costs**
  Decommission and migrate legacy systems into Comarch OSS Suite, to make cost savings.

- **Integrate configuration management with SDN**
  Get support for configuration of a standard IP network and integration with SDN controller.

RESOURCE ORDER MANAGEMENT

- **Utilize intent-based approach**
  ROM uses an intent-based approach to orchestration, where complex topologies are created by simple requests.

- **Reduce time to market**
  Model-driven, reusable elements of Resource Order Management reduce time to market.

- **Let employees focus on important tasks**
  The automation frees valuable human resources from repetitive tasks & reduces the effort required for network maintenance.

- **Choose easy implementation**
  The product is an easily deployable tool, that fits seamlessly in the middle of the customer's existing software stack.

INTELLIGENT ASSURANCE & ANALYTICS

AI CONTROL DESK

Comarch AI Control Desk delivers supervised machine learning for automated situation detection, problem detection, baseline generation and anomaly detection, and knowledge accumulation.

CUSTOMER EXPERIENCE MANAGEMENT

Links service monitoring and quality management, providing an insight into customers' perceptions of services to help network providers switch from network-centric operations to customer-focused ones.

SERVICE QUALITY MANAGEMENT
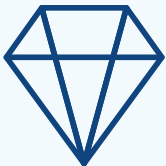
Comarch Service Quality Management facilitates customer-centric quality management, letting you prioritize network performance management to deliver high-level customer service assurance.

SERVICE MONITORING

Events from fault management, service quality management and performance management are correlated in Comarch Service Monitoring and presented graphically for rapid insight into the network situation.

AI CONTROL DESK

- **Introduce AIOps**
  Let humans and machines collaborate intelligently to deliver the information required to perform the appropriate actions at the right time.

- **Supervise AI/ML**
  Allow sophisticated correlation rules to use data from many sources to trigger automated actions and reduce manual ticket processing by up to 90%.

- **Automate service assurance**
  Set the data update frequency, define the file formats and other parameters to adapt to business requirements.

- **Accumulate knowledge**
  Embed your operational team's knowledge in the system in a formalized manner which can be used by ML algorithms to increase operational efficiency.
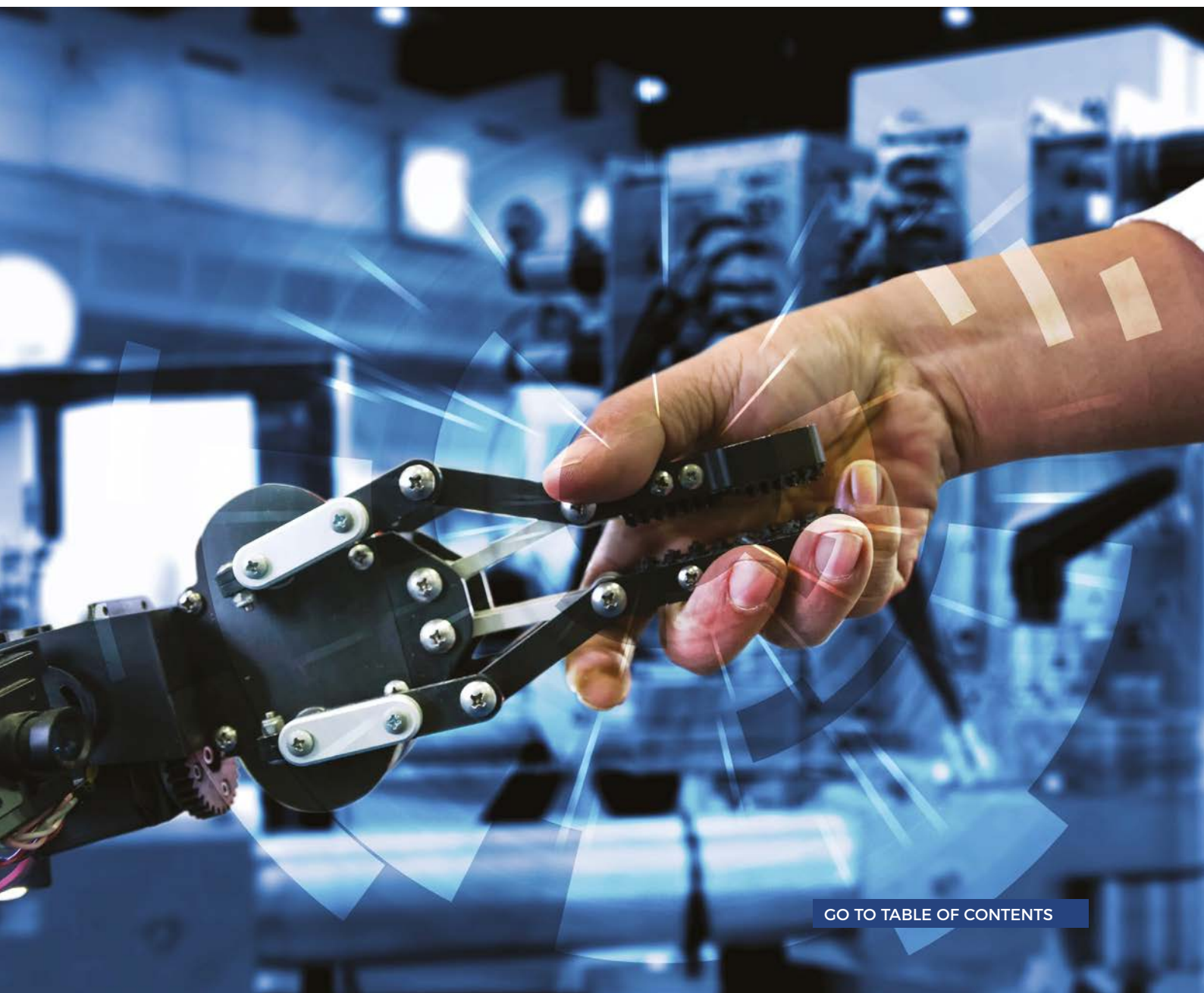
CUSTOMER EXPERIENCE MANAGEMENT

- **Improve problem solving efficiency and protect your revenue**
  Obtain the information and drill-down capabilities to speed up troubleshooting and decrease mean time to repair. Use built-in self-healing capabilities, prioritize your incidents and solve problems quickly.

- **Personalize your offers**
  Understand telecom customer behavior and be proactive in providing your clients with offers that are tailored to their needs. Personalization improves customer satisfaction, increases loyalty and decreases churn rate.

- **Improve customer satisfaction**
  Measure your customers' quality of experience and optimize service performance in line with what they expect. Identify and eliminate problems perceived by your customers increase satisfaction and reduce churn.

- **Gain extra knowledge and expand your business**
  Use the solution to identify new potential revenue streams and leverage big data capabilities to launch new products, build partnerships or provide new services, helping your business expand in size and value.

"CORE" CEM Use Cases					SQM Use Case	Analytical Use Cases	
Customer Insights & VIP Monitoring	Mobile & Fixed Service Performance	Device Performance	Corporate Monitoring	Roaming Monitoring	Affected Clients Service Monitoring	Non Real-Time Analytics	Real-Time Analytics

Annoyed customers hot-spots	User location profiling	CEI	4-Play experience	Silent calls & call drops	(...)
Indoor problems	Mobile traffic detection	Traffic routes	Transport analytics	Browsing performance	(...)

examples   examples

Annoyed customers hot-spots	Annoyed customers hot-spots

CEM Use Cases

SERVICE QUALITY MANAGEMENT

- **Get a holistic view of services**
  Define service models and use them to monitor interdependencies between your customers, services and network.

- **Be proactive with predictive maintenance**
  Utilize machine learning algorithms to automatically define baselines and detect anomalies.

- **Integrate KQs with intelligent event processing**
  Embed threshold-crossing events generated by your SQM into end to end processing of events arising from different sources.

- **Monitor 5G and IoT services**
  Efficiently monitor new services implemented using 5G and IoT technologies.

SERVICE MONITORING

- **Monitor services on any network**
  Monitor and manage the quality of digital services on heterogeneous multi-vendor, multi-domain networks and delivery platforms serviced by partners.

- **Prevent customer service degradation**
  Be proactive in preventing customers from experiencing service quality deterioration, with early alerts about potential incidents.

- **Prioritize based on customer and business impact**
  Distinguish between the different impact that similar network KPIs may have on service level and customer experience.

- **Automate impact analysis and enhance root-cause analysis**
  Resolve customer incidents rapidly by automating impact analysis and improving root-cause analysis by drilling down into events that impact services.

SERVICE DESIGN & FULFILLMENT

SERVICE CATALOG

Comarch Service Catalog defines service rules and enables the centralization of service specification management, with the goal of further automating fulfillment and assurance processes.

SERVICE INVENTORY

End to end management of network and related products from the service perspective. Integrates with other Comarch modules to facilitate a comprehensive network, service and product view, simplifying management of all these aspects.

SERVICE FULFILLMENT & ORCHESTRATION
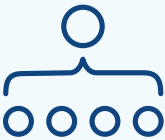
A catalog-driven solution designed to reduce time to market and automate service fulfillment for customer service delivery on top of a hybrid network. Enables seamless orchestration of virtual and physical network functions and services.

FIELD SERVICE MANAGEMENT

A system supporting service order placement, scheduling, technician assignment, route optimization, equipment allocation and management of service level agreements and reports, to reduce operating costs and improve customer experience.

SERVICE ACTIVATION

Responsible for activation of service components delivery on both legacy (based on NMS) and modern (employing NFS/SDN technologies) service platforms. Enables seamless integration and swift deployment of new products and services, the system gives operators an edge and allows them to stay ahead in telecom service provisioning.

SERVICE CATALOG

- **Reduce time to market**
  Define products from the business and technical perspectives, supporting an automated order to cash process..

- **Lower operational costs**
  Centralize and automate service management for fulfillment and assurance processes.

- **Improve customer experience**
  Define rules for service monitoring and quality management to raise the level of customer experience management.
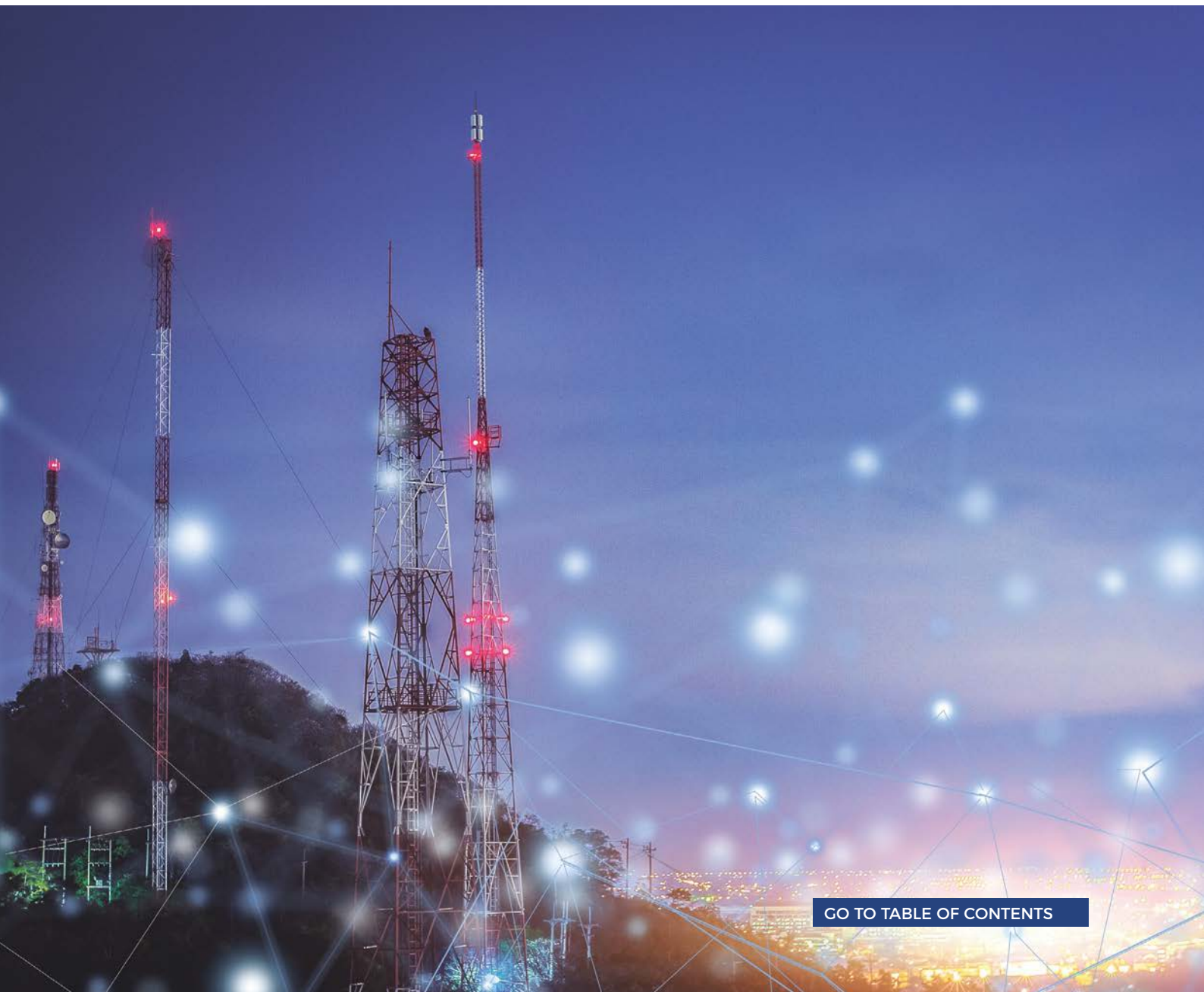
SERVICE INVENTORY

- **Get a comprehensive network view**
  See resources required for services, and identify the services supported by a given network element.

- **Connect networks and services**
  Eliminate the gap between business/customer centric views and technical infrastructure to control development and maintenance costs.

- **Save time on service delivery and cut costs**
  Ensure faster, less expensive new service delivery and service fulfillment automation.

- **Improve customer experience**
  Improve service monitoring and quality management to raise the level of customer experience.

- **Drive automation**
  Store information about new services, and view details of existing ones to enable the execution of service orders.

- **Enhance service quality management**
  Calculate the impact of network-related problems on customer services, and enable alarm propagation and KPI/KQI monitoring for quality management processes.

- **Optimize network planning**
  Get information about network resource service utilization for network planning and upgrading processes.

SERVICE FULFILLMENT & ORCHESTRATION

- **Deliver services based on hybrid networks**
  Benefit from SDN/NFV technology combined with a legacy network to deliver new services and embrace the "fail fast" concept.

- **Use VNFs as components for service creation**
  Automate on-boarding and adaptation of VNFs and network services, then use them to model customer services via the service catalog module.

- **Increase creativity**
  Define new services without needing in-depth technical or scripting knowledge. Accelerate service creation and flexibility, and incorporate partners' services.

- **Improve time to market**
  Launch and deliver offers by building services from pre-defined components managed in the service catalog.

- **Align service offers with network capabilities**
  Focus on integrated product & service catalogs to deliver a true customer-centric offer.

- **Increase efficiency and cut costs**
  Cut the costs of service launch, delivery and provisioning, and unlock the capability to integrate third-party services.

FIELD SERVICE MANAGEMENT

- **Optimize costs with process automation**
  Benefit from well-informed task assigning and route planning.

- **Cut level of paper and phone usage**
  Ensure mobile access for technicians in remote locations.

- **Reduce dispatcher workload**
  Free up resources with Automatic Dispatcher module and order completion reporting performed directly by service technicians.

- **Maximize field workforce productivity**
  See the benefits of improved time and resource management.

- **Limit number of unsuccessful truck rolls**
  Ensure technicians have access to all required data in the FSM Mobile.

- **Increase the number of visits for higher revenue**
  Carry out a higher number of installations per day, and complete the service activation process in real time.

- **Boost field sales**
  Let field service operatives implement up-sell and cross-sell offers to customers.

- **Raise level of customer satisfaction**
  Keep clients happy with greater service efficiency.

Effective Planning and Scheduling

Field Service Empowerment

Corrective, Preventive and Predictive Maintenance

Third-party Workforce Management

FIELD SERVICE MANAGEMENT

Data Integration, Reporting and Forecasting

Site Access Management

Customer Service

Mobile Workforce Management

Field Service Management Features
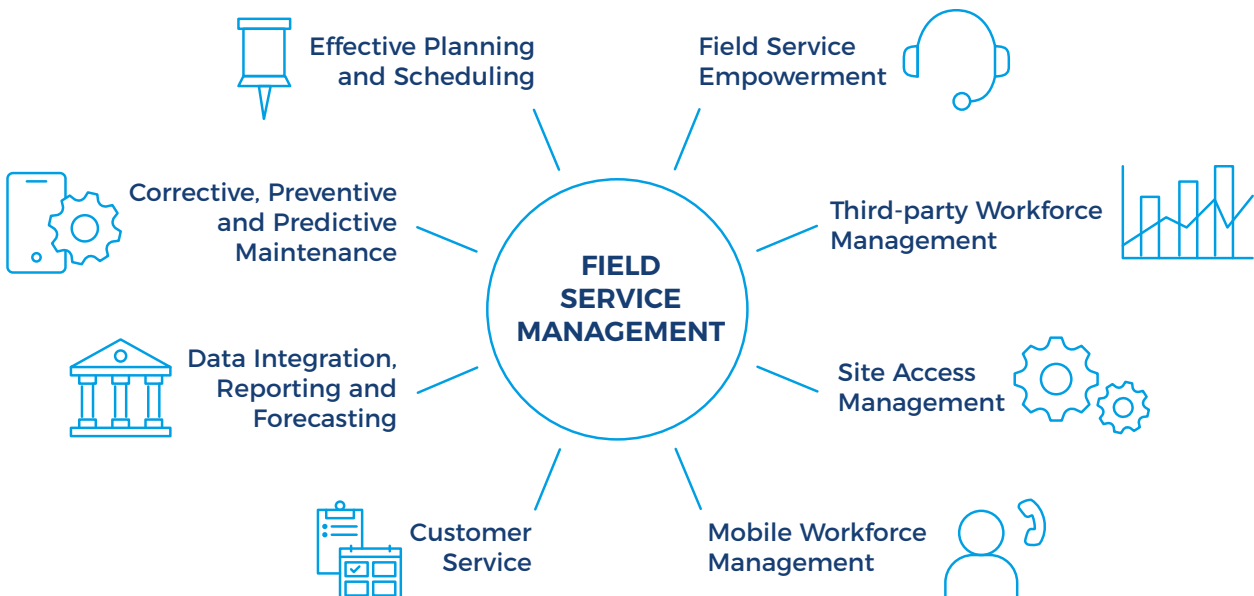
SERVICE ACTIVATION

- **Adopt business logic orientation**
  The system controls various behavior and operations through easily changeable business rules, and helps operators avoid heavy scripting when defining request processing logic in favor of a rule-based mechanism more suitable to rapid adaptation.

- **Choose seamless integration and fast deployment**
  Service Activation ensures seamless integration with your existing infrastructure, provides cost and time-effective support for new and proprietary interfaces and, thanks to a number of northbound interfaces, it binds easily with other BSS/OSS systems ("umbrellas").

- **Get a comprehensive view of your services**
  A centralized graphical user interface gives the system's administrator full and detailed information about system health and overall performance and allows service provisioning requests to be tracked in detail.

- **Achieve true service convergence**
  With built-in compatibility with Comarch BSS Mediation and Comarch OSS Mediation, Comarch Service Activation brings the capability to use the abilities of these products where true convergence is required.

I am confident that Comarch solutions will enable MTS to accomplish the transition from a network-centric towards a customer-centric OSS ecosystem, with the ultimate goal of creating the best customer experience.

МТС

Andrey Ushatsky
VICE-PRESIDENT AND CHIEF TECHNOLOGY OFFICER, MTS

IOT CONNECT

IOT SOLUTION MANAGEMENT

Comarch IoT Solution Management helps businesses function in today's IT world. It includes comprehensive support for selling, storing and managing IoT connectivity services, devices and applications.

IOT CONNECTIVITY MANAGEMENT

Comarch IoT Connectivity Management enables mobile operators and IoT service providers to provide managed connectivity in multi-national, multi-level and multi-operator environments.

IOT ANALYTICS PLATFORM

The IoT Analytics Platform module focuses on delivering measurable business value, using intelligent big data processing and real-time data analytics for M2M/IoT business purposes.
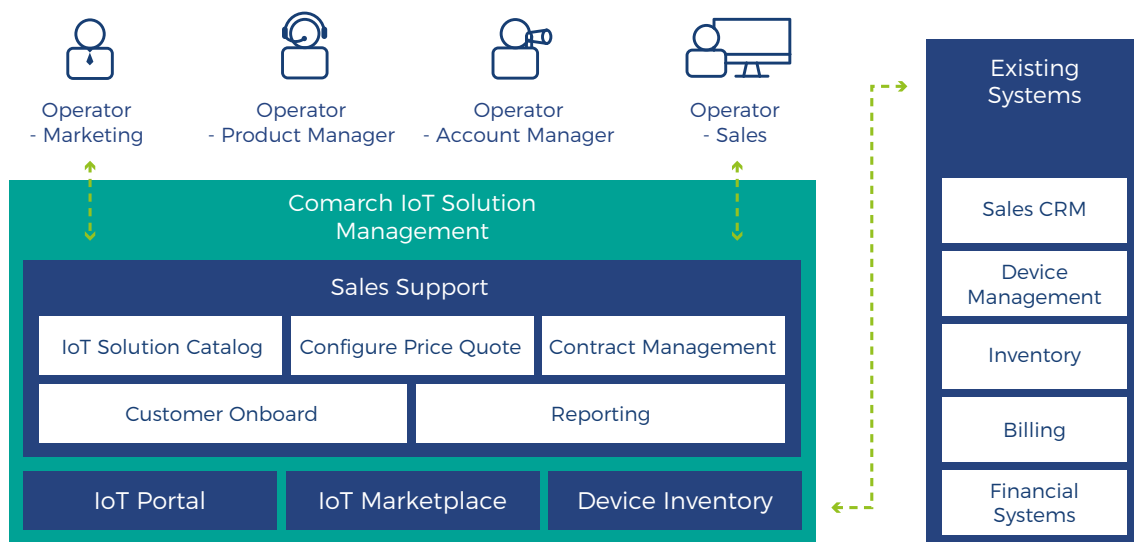
IOT BILLING

Comarch IoT Billing solution is tailored to the needs of your IoT operations, letting you charge for connectivity, devices, vertical applications and bundled services. Supports B2B, B2B2C and B2B2B models.

IOT SOLUTION MANAGEMENT

Manage a comprehensive IoT sales catalog
Create IoT solutions to connect devices and applications, import models and device types, and create offers to meet the needs of businesses and their customers.

Store an inventory of various IoT device types
Manage, deliver and monitor all physical devices, from simple nodes and complex sensors to multimode intelligent IoT gateways, using this Comarch solution.

Use device and vertical-specific pricing
Adapt your pricing model to any vertical, charge for device counters, define device lending/selling models, and set connectivity pricing in the background.

Control contract management
Complete the quote lifecycle with a contract that can be sent to customers and stored in the system. Amend the contract if required, and generate and manage voucher codes.

Open your ecosystem to the IoT
Use IoT Portal and IoT Marketplace to expose IoT Services to your customers and partners, sell IoT solutions and enable vertical applications with single sign-on feature.

Comarch IoT Solution Management Architecture

IOT CONNECTIVITY MANAGEMENT

- **Ensure M2M/IoT connectivity**
  Handle and manage all SIM types, monitor services and react in real time to any connectivity issues.

- **Get a scalable solution**
  Upgrade as your business grows. Handle any service, transaction and pricing model.

- **Increase efficiency of IoT operations**
  Receive live notifications on data-use browsing, reports, diagnostics and bulk operations via multi-language self-care.

- **Monitor costs**
  Integrate with your existing environment to facilitate automatic KPI/cost data processing.

- **Shorten time to market in IoT**
  Use bulk operations to deliver IoT services with automated provisioning and order management.

- **Control IoT equipment and services**
  Trigger actions automatically and deliver bandwidth and QoS-controlled services.

- **Be a real-time provider**
  Collect all billing and usage data instantly, and bulk-manage IoT SIMs.

- **Communicate more efficiently**
  Build personalized, flexible IoT offers and tariffs combining bundles in pre- and post-paid mode.

Comarch IoT Connectivity Management Architecture
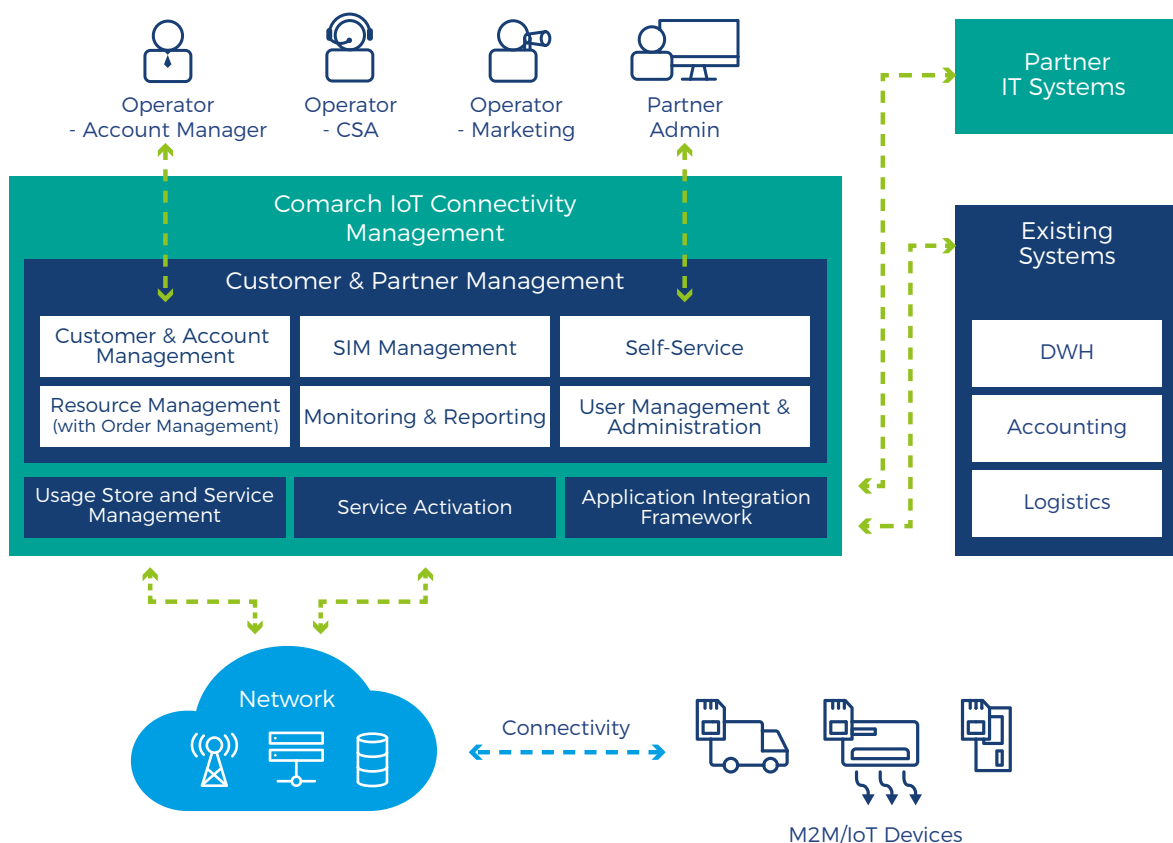
IOT ANALYTICS PLATFORM

- **Measure business value with real-time IoT data processing**
  Gather, process and combine real-time and historical data to see the services your customers use, so you can measure the value of your IoT business.

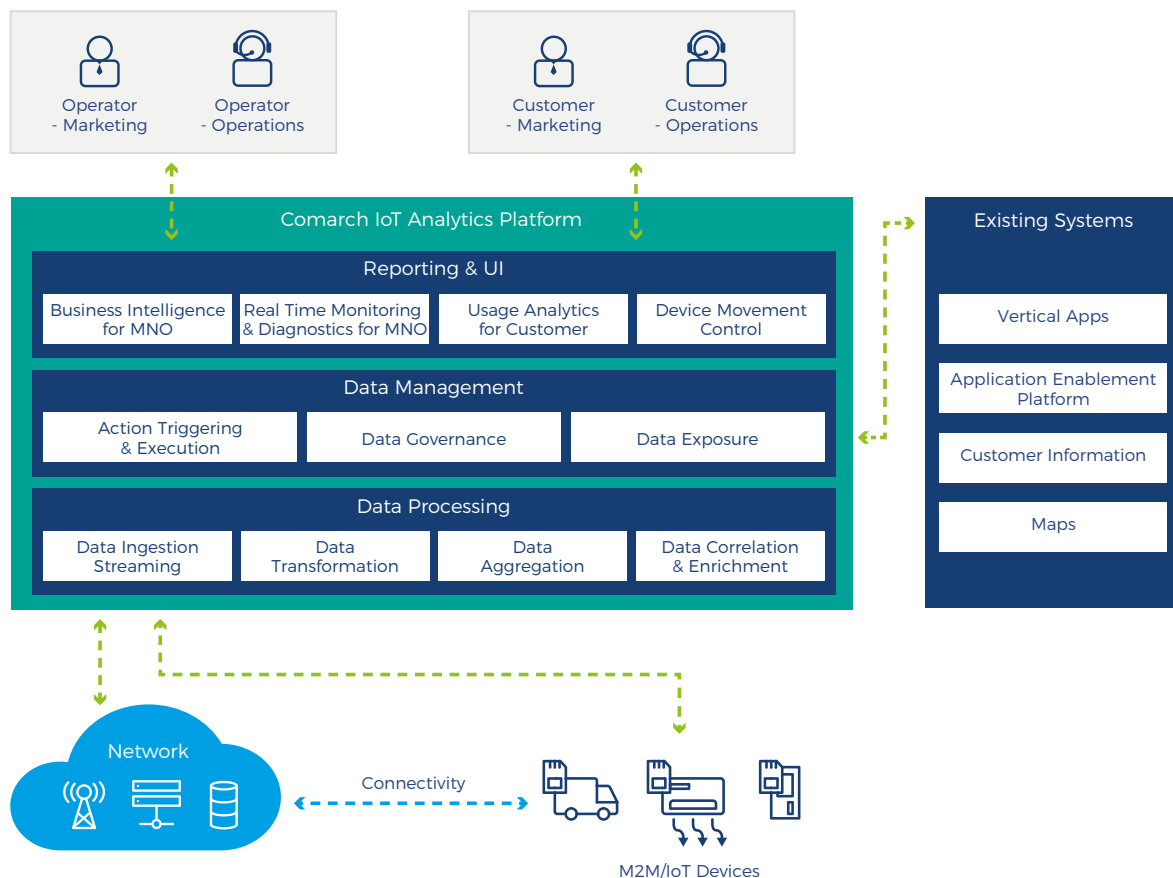- **Improve your IoT services through analytics**
  Combine IoT analytics data with information from BSS/OSS and vertical applications to build a complete view of the service and understand how to tailor it to your customers' needs.

- **Achieve operational excellence**
  Analyze how services are being used, track device performance and visualize equipment movement, to improve services, reduce inefficient usage and propose service changes to meet customer needs.

- **Offer highest quality of IoT Service with various-level SLAs**
  Manage different SLA levels in your IoT operations to deliver on QoS. Discover patterns and trends, see device issues, and report and analyze anomalies with user dashboards.

Operator - Marketing | Operator - Operations

Customer - Marketing | Customer - Operations

Comarch IoT Analytics Platform

Reporting & UI

| Business Intelligence for MNO | Real Time Monitoring & Diagnostics for MNO | Usage Analytics for Customer | Device Movement Control |

Data Management

| Action Triggering & Execution | Data Governance | Data Exposure |

Data Processing

| Data Ingestion Streaming | Data Transformation | Data Aggregation | Data Correlation & Enrichment |

Existing Systems

- Vertical Apps
- Application Enablement Platform
- Customer Information
- Maps

Network

Connectivity

M2M/IoT Devices

Comarch IoT Analytics Platform Architecture

IOT BILLING

- **Bundle IoT services with different pricing models**
  Create bundled services with CSPs, device providers, third parties and resellers, using value-based, criteria-based and device-based models.

- **Offer high-quality IoT service billing**
  Enhance user experience with swift and efficient invoicing, and 24-hour support across entire bill runs. Implement reporting, automated alerts and notifications.

- **Deliver IoT services to verticals**
  Create and tailor services for specific verticals and organizations, charging intelligently for the use of the IoT service and not only for data/SMS volume.

- **Control money flows**
  Use up to date, automatically generated financial documents within multi-party IoT services. Control full service delivery and browse financial reports, invoices and settlements.

- **Ensure billing accuracy with real-time data processing**
  Gather and process data from a network, IoT devices, applications and other sources in real time. Charge mixed, pre or post-paid to deliver value to any vertical.

Operator
- Billing Manager

Comarch / Operator
- Operations

Comarch IoT Billing

Billing & Rating

Product & Tariff Management	Rating & Process Management	On-line Charging
Invoicing	Payments	Dunning

Service Control

AAA	Service / Limit / Fraud Control

Existing Systems

- DWH
- Accounting
- Logistics

Network

Connectivity

M2M/IoT Devices

Comarch IoT Billing Architecture
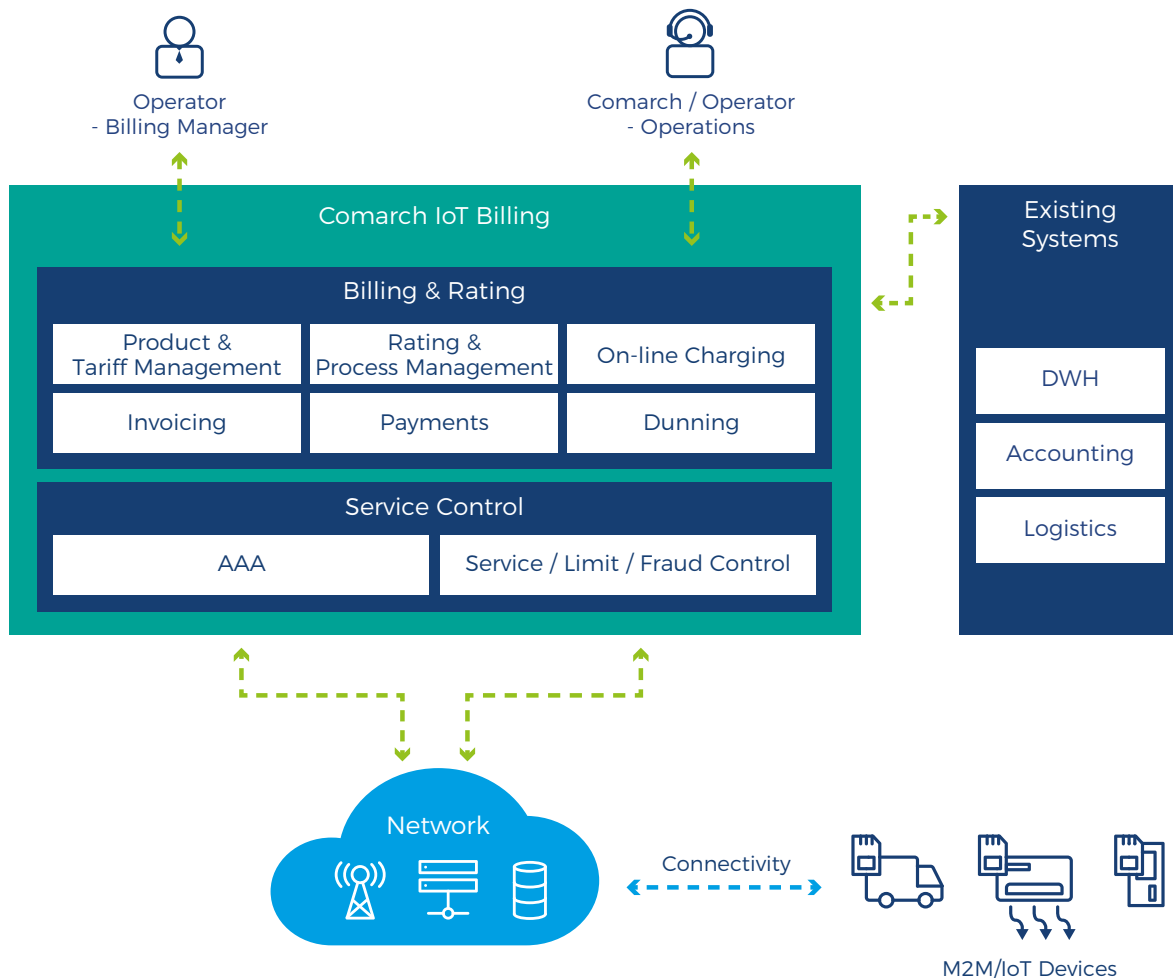
We chose Comarch because their existing product portfolio provided a good basis for the platform. More importantly, Comarch was able to prove their ability to quickly develop custom features upon request. We believe that, in dynamically growing markets, flexibility and customer orientation are the keys to success. The set-up we have chosen with Comarch helps us deliver just that.

Phat Huynh
MANAGING DIRECTOR, HEAD OF MARKETING & SALES
TELEKOM AUSTRIA GROUP

IOT ECOSYSTEM

IOT CONNECT

Comarch IoT Connect and related products combine as a platform for handling devices, assets, networks and data across the entire telco IoT business and in related vertical sectors.

SMART PARKING

Comarch Smart Parking allows you to create a smart city offer for local government. Its main function is to search for available parking spaces and send updates about them to drivers using a mobile application.

SMART LIGHTING

An intelligent lighting management system enabling operators to create a complete smart city offer for local authorities. The system allows remote effective management of lamps' energy consumption and advanced analytics.

SMART METERING

An intelligent measurement system which enables remote reading of water, gas, heat and electricity meters, as well as early detection of anomalies such as leaks, violations, and security alerts.

MOBILE HEALTHCARE FOR TELECOMS

Comarch Mobile telemedicine devices and applications enable continuous remote monitoring of patients' health, with data sent to doctors and caregivers in real time.

IOT CONNECT

- **Make IoT service quality matter**
  Monitor your SIMs and services with automated control rules and actions, react before customers experience problems.

- **Empower your IoT partners**
  Let verticals manage their own services, so they can deliver device, connectivity and app bundles to their customers.

- **Improve customer value**
  Charge in real time for the IoT services that customers actually use

- **Analyze IoT services in real time**
  Analyze services graphically – including usage, movement, trajectories, customer behavior and much more.

Comarch IoT Connect
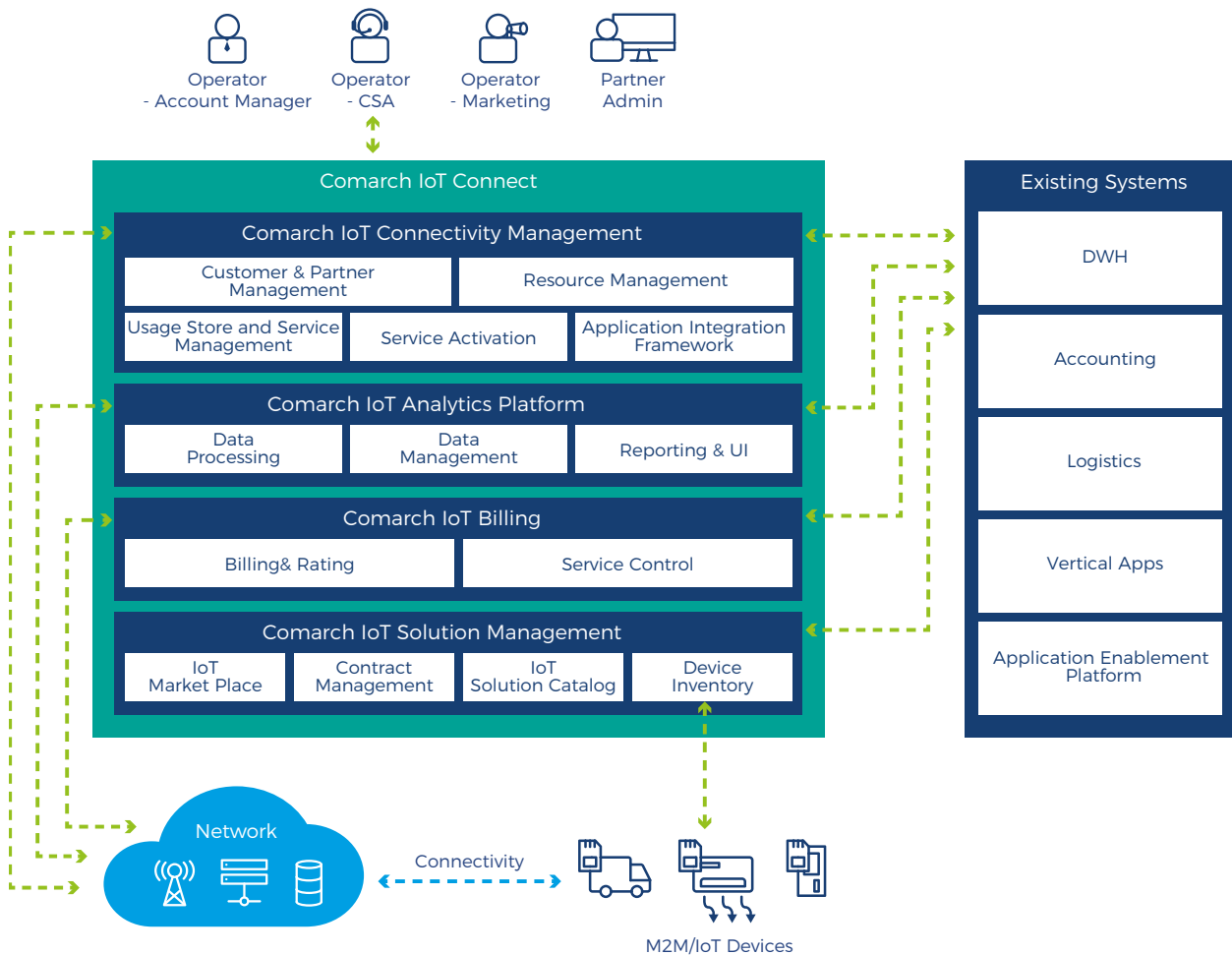
SMART PARKING

- **Offer image recognition technology**
  Become a trusted partner for cities by offering parking space monitoring based on IP cameras and modern intelligent video analysis (IVA) algorithms.

- **Ensure camera delivery and installation**
  Create a complete offer for local authorities by ensuring both delivery and professional installation of IP cameras in parking spaces.

- **Use our experience in data integration**
  Take advantage of our knowledge of standards and integrations with billing, customer care systems, reporting and analytical systems.

- **Optimize parking space occupation**
  Enable monitoring of parking space occupancy, identification of peak hours, predicting future traffic and even defining driver behavior.

SMART LIGHTING

- **Create smart city offer for local authorities**
  Ensure cities can activate/deactivate lamps where necessary and manage light intensity with this intelligent system installed in the lamp holder.

- **Ensure cost savings for local governments**
  Enable local authorities to make considerable cost savings on electricity, maintenance and lamp management by offering a new, intelligent way to manage lighting.

- **Provide hardware, software and integrations to your clients**
  Create a complete offer by ensuring that Comarch delivers lamp hardware, software and necessary integrations for the smooth implementation of the smart lighting system.

- **Monitor data in the cloud**
  Provide the possibility to measure and analyze electricity consumption or detect sudden power surges by processing all data in the cloud.

SMART METERING

- **Generate new revenues from the utility sector**
  Earn by not only providing connectivity between devices and the IoT platform, but mostly by providing an end to end solution to suppliers of many different utilities, including water, gas, heat and electricity.

- **Bring real value to your customers**
  Give your customers access to data that will enable them to counteract leaks and anomalies, reduce costs and manage resources effectively.

- **Improve efficiency and optimize costs**
  Give your organization the possibility to improve utilities usage and reduce costs.

- **Trust a reliable IoT solutions provider**
  Take advantage of Comarch's experience in data integration with systems that are associated with other IT solutions. Integrate Comarch Smart Metering based on the Comarch IoT Platform with other cloud solutions.

- **Extend the possibilities with other Comarch products**
  Extend the offer with additional Comarch systems such as FSM and Predictive Maintenance, which enable your partners to manage failures, schedule maintenance visits, and order repair tasks more accurately, in accordance with the agreed SLA.

- **Deliver services based on universal technology**
  Use Comarch Smart Metering, which follows industry standards such as Narrowband-IoT and LTE Cat M1 to ensure full compatibility with telecommunication and utilities infrastructure.

- **Select an end to end solution**
  Choose a product completely developed by Comarch, from R&D to prototyping at our IoT Plant and post-integration software development. Ensure top quality and reliability for your partners.

MOBILE HEALTHCARE FOR TELECOMS

- **Extend your service portfolio with healthcare innovations**
  Partner with healthcare industry representatives and expand your client base by providing connectivity to innovative devices for remote health monitoring.

- **Enable provisioning of healthcare services to remote locations**
  Be a part of changing the homecare landscape by ensuring that each patient, even in remote locations, can take a more proactive role in their own healthcare.

- **Ensure continuous information exchange between doctors and patients**
  Use the connectivity capabilities to ensure that patients and doctors gain access to personal health records, and are enabled to use instant messaging, real-time alerts, and notifications.

- **Use our know-how in complex integrations**
  Shorten the time to market by leveraging Comarch experience in implementations in the telecommunication and medical industries.

CLOUD & SECURITY

CLOUD DATA STORAGE AND BACKUP

Comarch IBARD is a professional all-in-one cloud service for storage, backup and file sharing, ensuring the highest level of data security. The product is sold in white label model so resellers can extend their portfolio for private and business clients.

INFRASPACE CLOUD (IaaS, PaaS)

Make the most of this ready-to-use platform managed by its clients. It delivers basic computing architecture of a fully outsourced, on-demand service in the form of many servers, high computing power, an operating system, network, and storage services.

MULTI-CLOUD MANAGEMENT SERVICES

Help telecoms achieve the full benefits of multi-cloud ecosystems with our capabilities to centralize and manage multiple cloud platforms - private, public, hybrid, third-party public, hosted private or non-cloud infrastructure, all from one place.

CYBER SECURITY

Comarch Identity & Access Management (CIAM) combines the functions of Identity Management and Access Management systems. It allows full control over access to a company's applications, workstations and VPNs.

CLOUD SUBSCRIPTION BILLING

Comarch Cloud Subscription Billing enables simple management of customers, their contracts, recurring billing and related processes for subscription-based businesses.

CLOUD DATA STORAGE AND BACKUP

- **Perform reliable data backups**
  Offer your clients an intuitive and flexible backup scheduler wizard, so they can backup files and databases at a given time and frequency.

- **Secure data storage with file encryption**
  Allow your clients to store files in the cloud with Comarch IBARD, and to secure them with their own encryption key.

- **Share your data securely**
  Facilitate file transfer and sharing without the risk that data will get into the wrong hands, and let clients manage access between themselves and their partners.

- **Synchronize data**
  Enable your clients to keep required documents to hand. With Comarch IBARD, files can be accessed and edited on mobile devices, with changes updated in real time.

Cloud storage

Comarch
IBARD

Cloud collaboration

Cloud backup

Comarch IBARD
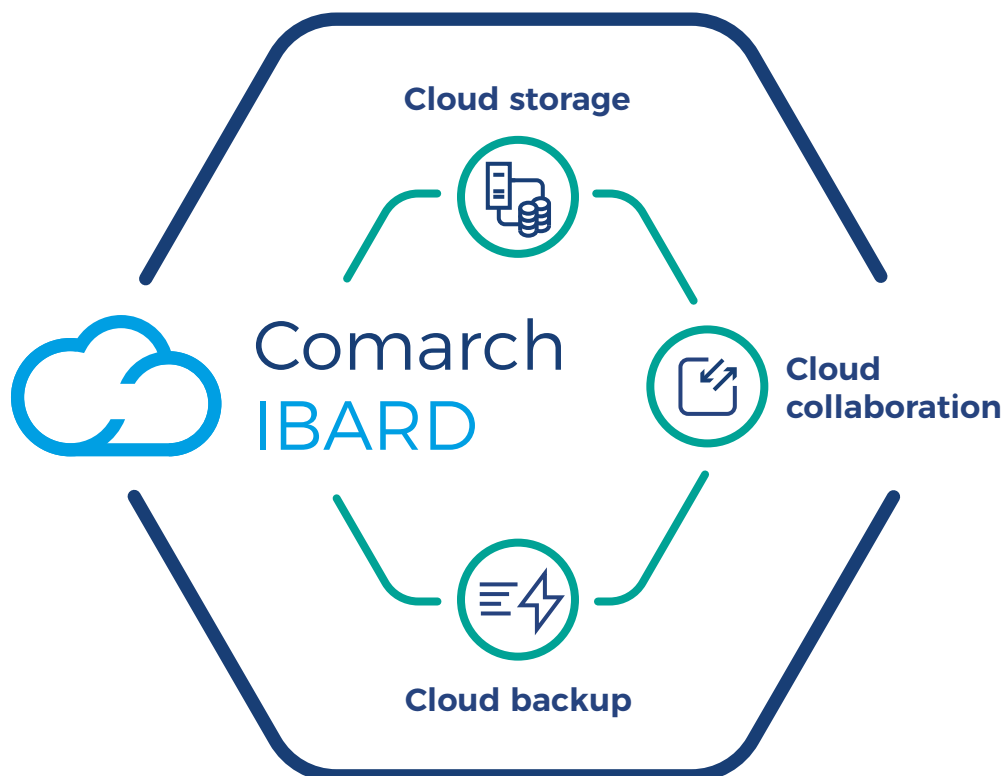
INFRASPACE CLOUD (IaaS, PaaS)

- **Avoid hidden costs**
  Take advantage of clear and transparent pricing of cloud services, with no hidden costs or elements difficult to predict when choosing the plan. Change the plan when you need to.

- **Limit operational and investment costs**
  Cut operational costs with our cloud services. Save from 50 to 80% on operational costs, depending on your line of business. Avoid high investment costs, as no additional hardware needs to be set up.

- **Benefit from infrastructure ready for telecom systems**
  Choose a platform that is prepared with telco needs in mind and ensures that integration with BSS, OSS, IoT and FSM systems goes smoothly.

- **Scale your business as you please**
  Benefit from our easily configured infrastructure that meets your business requirements and lets you transform your business to a cloud model in no time.

- **Secure your data**
  Use the cloud to its full potential without worrying about business security. Use high-end risk prevention mechanisms and the latest encryption methods to keep your data secure.

- **Ensure great reliability**
  Don't worry about the possible destruction of your servers, or delays due to natural disasters or sudden overloads. Thanks to cloud solutions, you are guaranteed the stability of services in unpredictable circumstances.

MULTI-CLOUD MANAGEMENT SERVICES

- **Use one portal to manage multiple cloud services**
  Choose cloud services from various vendors, and centralize different architecture platforms to achieve your business goals.

- **Optimize cloud costs**
  Create a mix of cloud services to fit your budget and performance needs. Adjust cloud service models to your core business and less vital processes to optimize the total cost of cloud solutions.

- **Improve reliability**
  Use passive cloud as a failover solution when the primary service goes down, and automatically revert when the primary cloud works.

- **Optimize workload distribution**
  Create a "single pane of glass" to ensure a holistic view of available and utilized resources, and enable optimal workload scheduling and scaling.

- **Enhance data security**
  Set consistent security policies across environments, and manage workloads following the procedures.

- **Increase automation**
  Orchestrate cloud services and move workloads between them to avoid manual interventions and ensure the required flexibility and scalability.
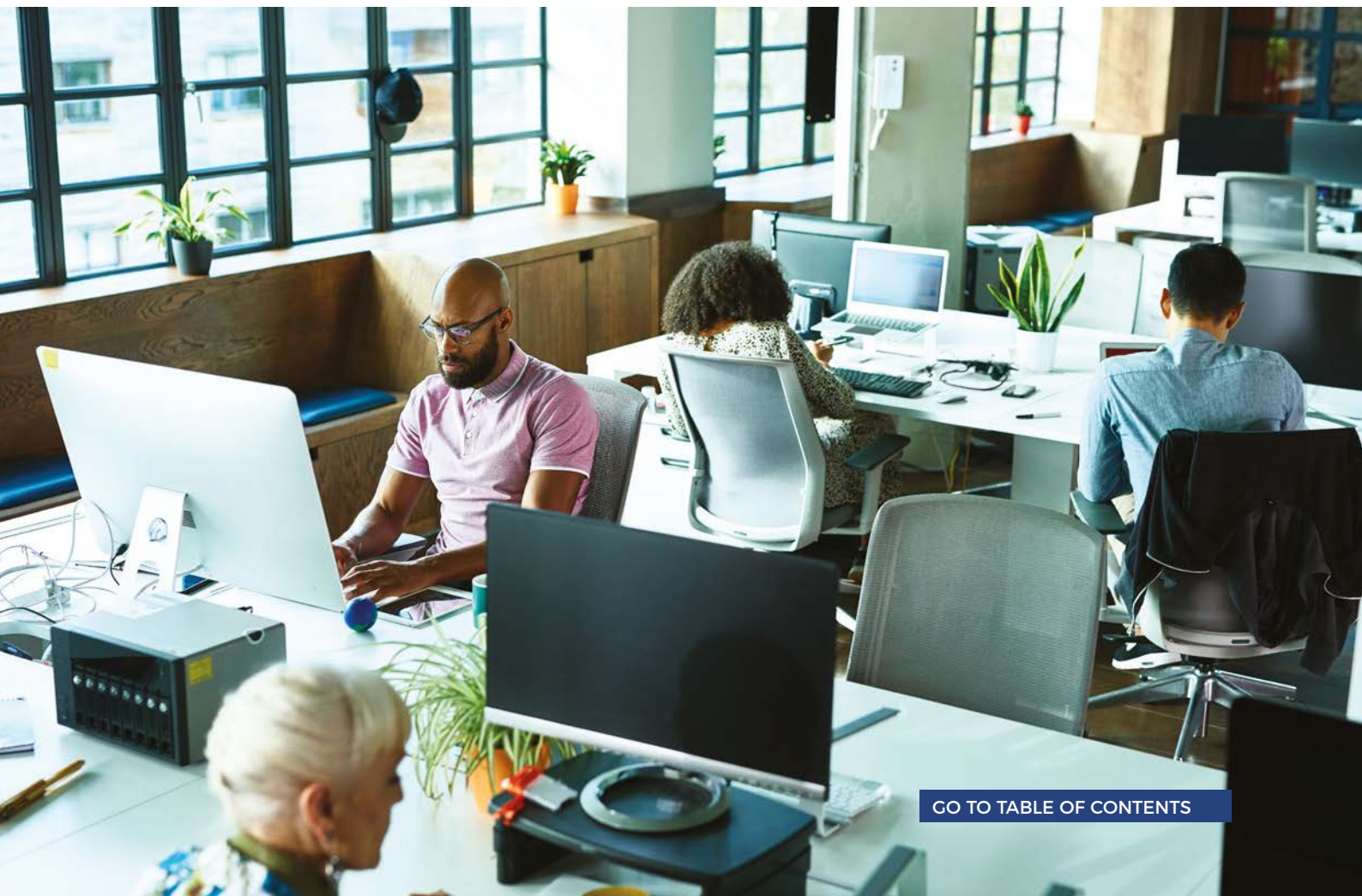
CYBER SECURITY

- **Authenticate and authorize users**
  Enable aggregation of all services related to user authentication and authorization data validation.

- **Take advantage of role-based access control**
  Simplify user management and ensure high flexibility by aggregating permissions from different applications.

- **Improve identity control**
  Allow management of all user identities and ensure appropriate people have access to the required resources at specific times and for specific reasons.

- **Ensure access management**
  Enable access to systems and resources across the entire enterprise, based on the appropriate level of user permissions.
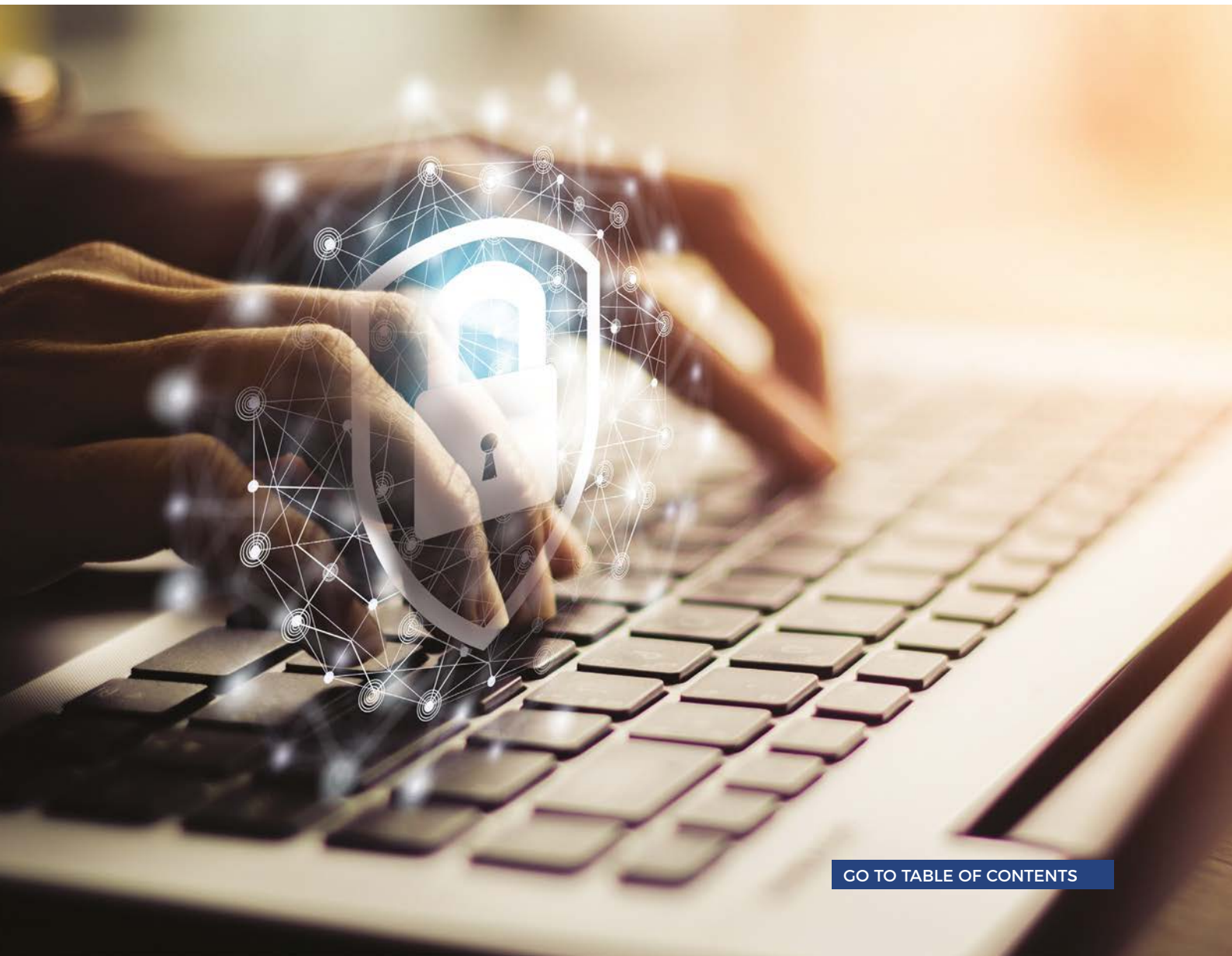
CLOUD SUBSCRIPTION BILLING

- **Manage billing operations**
  Rate, charge and bill for delivered services, ensuring revenue streams. Take advantage of invoicing, dunning, and payment functionalities to make sure that your business is financially stable.

- **Keep client contracts in one place**
  Store contract-related information in one system. Perform all required contract-related operations within a single process. Keep customer contracts on their accounts.

- **Manage collections**
  Secure your company's revenues by effective collection management. Use dunning management functionality for multi-stage collection management, and reduce business risks.

- **Use out of the box features**
  Avoid unnecessary integrations and paying for other systems. Use all-in-one software including features such as a selfcare web application, CRM for customer support, product catalog configuration, system administration and reporting. Integrate other systems with our API when necessary.

PROFESSIONAL SERVICES

BUSINESS CONSULTING

Comarch helps CSPs and technology vendors to optimize and automate business processes and increase efficiency by eliminating redundancy and rethinking IT architectures and configurations.
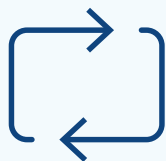
MANAGED SERVICES

Comarch Managed Services can help your company achieve an OPEX reduction of up to 50%, and improve the time to market for new services, technology rollouts, device and infrastructure integration.

BSS/OSS TRANSFORMATIONS

Comarch offers a comprehensive portfolio of products and services designed to support local and multi-country transformations for businesses of all sizes in both the BSS and OSS domains.

CLOUD TRANSFORMATION

Comarch's IT solutions for telecoms benefit from agile, microservice-based architecture that ensures full automation of platform integration and delivery, rapid deployment, and cloud-readiness.

END TO END PROJECT DELIVERY
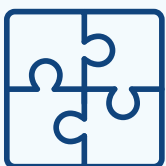
Helps CSPs transform service and network management using automation. Assures orchestration of a domain-specific orchestrator, so each domain provides sub-services needed to deliver customer service.

BUSINESS CONSULTING

- **Benefit from the know-how of BSS/OSS experts**
  Let Comarch support your transformation in the areas of: Sales & Customer Management, Convergent Charging & Billing, Service Design & Fulfillment, Network & Service Assurance, Resource Planning & Inventory, as well as new business areas such as SDN/NFV, IoT, M2M and Data Analytics.

- **Achieve maximum business results**
  Set the data update frequency, define the file formats and other parameters to adapt to business requirements.

- **Break down operational barriers**
  Personalize the parameters and communicate with your business partners through a secure channel. Sort your data (usage, billing etc.) and define all service and data accesses for each business partner.

MANAGED SERVICES

- **Get measurable results**
  Define KPIs and KQIs that will help you achieve your project goals.

- **Offer highest level of service**
  Benefit from monitoring, measuring, reporting and reviewing of SLAs against SLTs.

- **Manage incidents efficiently**
  Get services restored as soon as possible after any incident, minimizing the impact on business operations.

- **Outsource infrastructure and hosting**
  Comarch Data Centers offer SaaS and IaaS implementation models.

- **Outsource business processes**
  Comarch can take responsibility for business processes and implement operational tasks.

- **Migrate to new BSS/OSS seamlessly**
  Benefit from seamless migration, from black box outsourcing to fully managed processes.

- **Get specialist support**
  Enjoy Comarch's SaaS and BPO services guarantee of quality, in the knowledge that all personnel are ITIL v3 certified.

- **Get single point of contact with 24/7 support**
  Take advantage of 24/7 access to a dedicated service desk that handles all incidents and requests.

BSS/OSS TRANSFORMATIONS

- **Consolidate BSS/OSS to save time and money**
  Optimize network/resource management and business processes related to technology rollouts and current market needs.

- **Optimize product and customer management**
  Manage product portfolio and customer-related processes across multiple locations in a unified, optimal and cost-effective manner.

- **Generate new revenues from existing assets**
  Implement new models, while securing your company's independence in the value chain and ensuring monetization of assets.

- **Pave the way for tomorrow's technologies**
  Leverage the capabilities of your BSS/OSS infrastructure to support the latest technologies.

- **Consolidate**
  Shorten time to market and boost service innovation with a central product and service catalog. React to customers in real time and create new services rapidly.

- **Benefit from managed services**
  Move part of the responsibility for your transformation's success to Comarch, saving time and money.

CLOUD TRANSFORMATION

- **Don't move your data**
  Retain pre-existing SaaS and PaaS models while still benefitting from the convenience of the cloud-ready solution.

- **Deploy new services quickly**
  Re-use network configuration to make the addition of new value-added services a matter of simply defining pricing models and content.

- **Integrate easily**
  Integrate smoothly with third-party software including social media, IP-based messengers, analytics and BI tools, IN and IoT platforms, and OTT services.

- **Find new revenue streams**
  Use telco cloud platform openness to allow operators to access new revenue sources and manage content with OTT providers in revenue-sharing models.

- **Raise capacity intelligently**
  Speed up deployment, simplify automated testing, and facilitate a swift response to temporary network utilization peaks.

- **Lower OPEX**
  Improve automation and reuse configuration patterns and operations teams by allowing them to work from the same cloud platform.
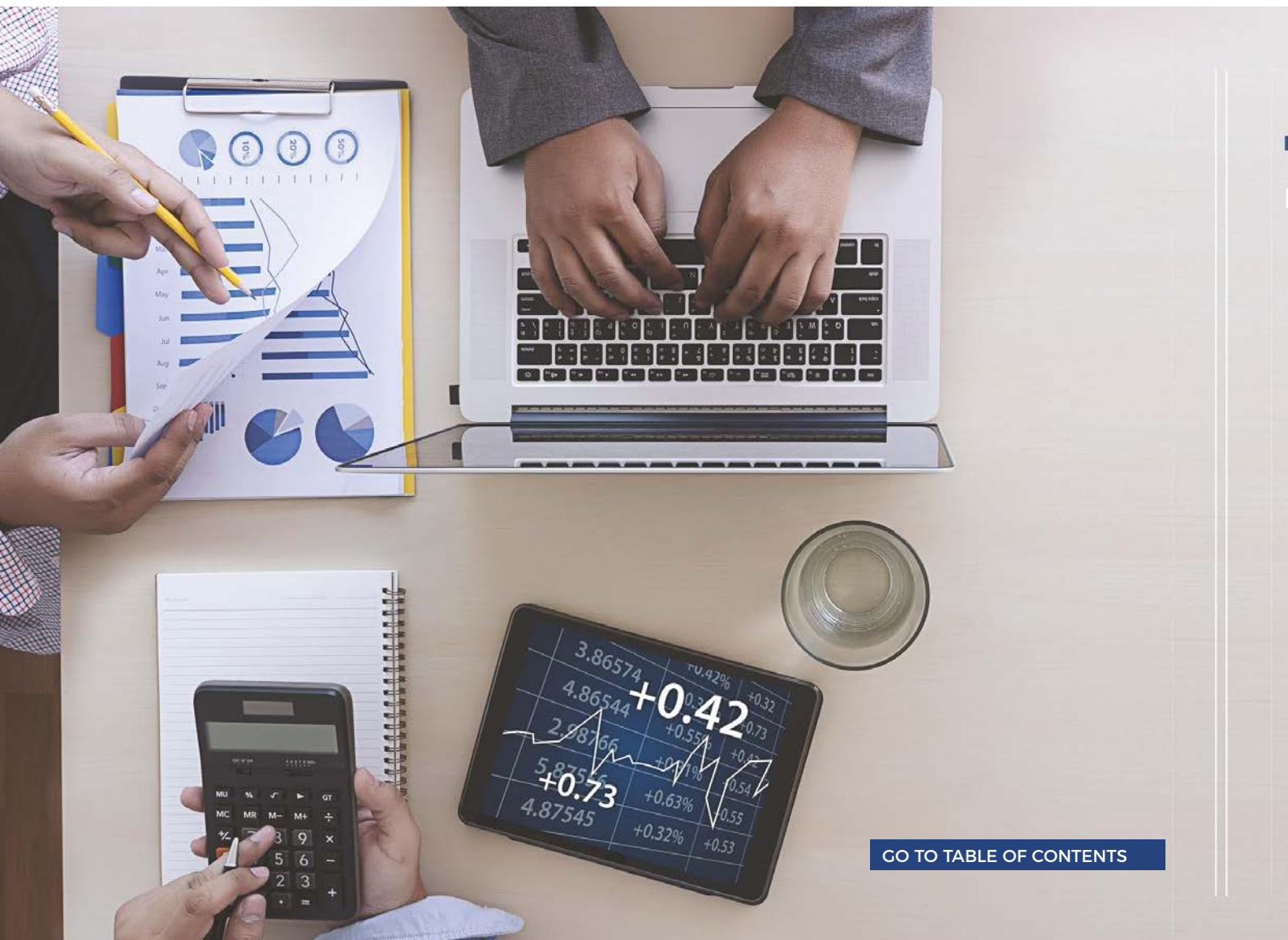
END TO END
PROJECT DELIVERY

- **Get full post-sales support**
  Get help from our experts with any system maintenance issues, and benefit from full support in person or over the phone.

- **Outsource third-party management**
  Take advantage of Comarch's experience with third-party companies as integration and technology partners, or select your own.

- **Get a tailored solution**
  Let us examine systems, business processes and organizational issues to establish the best way to reach the desired outcome.

- **Share responsibility for managing project risks**
  Let Comarch shoulder some of the risk of a project via its own tools and risk management methodologies or those of its partners.

- **Don't tackle issues alone**
  If you need advice, ask. We are always there to help you get the most out of your new solution, even after the go-live phase.

- **Get professional training**
  Benefit from Comarch training services, addressed to those engaged in system implementation, project managers, end users as well as system administrators and trainers.

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We were very impressed by Comarch's highly responsive and flexible attitude, as well as their coverage of our current and future needs. Telecom operators that want to stay competitive in today's market need to deliver top-notch customer experience and provide personalized, data-driven services through all touchpoints. It is also crucial to manage all operational aspects by decreasing the number of incidents, improving response rates, and increasing efficiency through automation focused on added value activities. In partnership with Comarch, we aim to complete a very sizeable project that will affect and transform all aspectsof our BSS operations, ranging from prepaid charging and credit control to customer information management, mobile network provisioning, and trouble ticketing. Based on what we have seen so far, we are very hopeful and optimistic about the outcomes of the project.
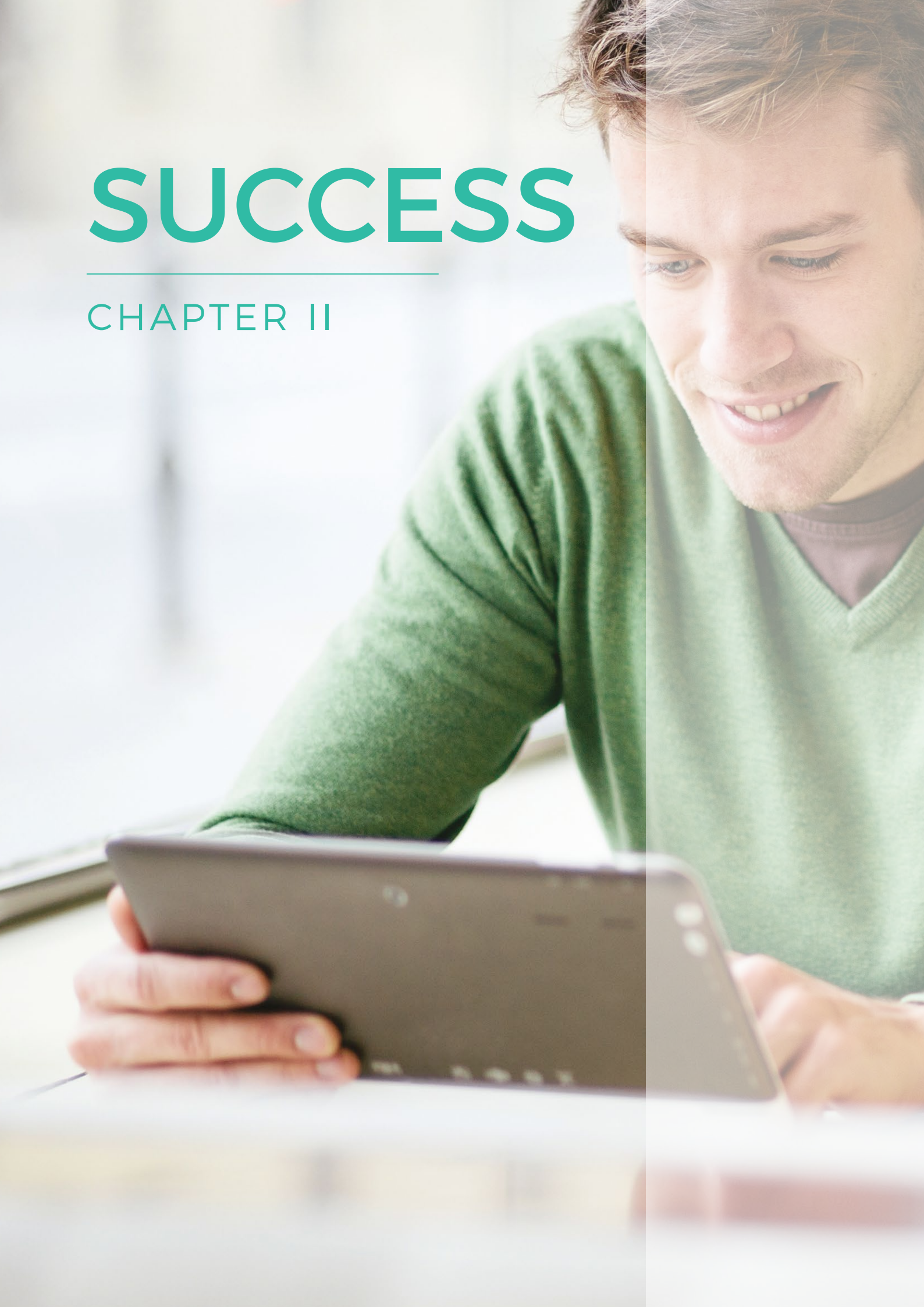
Werner De Laet
CEO AT ORANGE LUXEMBOURG

SUCCESS

CHAPTER II

COMARCH TELECOM CUSTOMERS

TELECOMS OPERATING WITHIN INTERNATIONAL GROUPS

CUSTOMER	IMPLEMENTATION SCOPE
Telekom Deutschland telekom.de	End-to-end view of services with integrated resource and service layers thanks to Comarch Resource & Service Inventory.
T-Mobile (formerly GTS) t-mobile.pl	Convergent billing for improved billing processes and shorter time to market for new services.
T-Mobile Poland t-mobile.pl	Full automation of fault management tasks, including correlation and handling trouble tickets.
E-Plus, now owned by Telefónica Germany telefonica.de/e-plus-gruppe	Transformation of network planning and design processes with Comarch OSS.
Telefónica Global telefonica.com	Improved efficiency of network planning and optimization processes in Telefónica subsidiaries in Latin America.
Telefónica O2 Deutschland telefonica.de	Better control of network operations with transport network management & configuration, fault and performance mediation.
Vodafone Group vodafone.com	Fault management, service monitoring and performance management multi-tenant solution and tools for a single Vodafone Global NOC, managing the operator's networks in several countries.
Vodafone Germany vodafone.de	Integrated Assurance & Analytics for mobile, fixed and cable networks & services in Vodafone Germany, including Vodafone Kabel Deutschland.
VF Kabel Deutschland kabel.vodafone.de	Switching to process-driven infrastructure and network management, with centralized inventory management and planning.

Orange Luxembourg
orange.lu

Comprehensive BSS stack for mobile, fixed and network services.

Orange Poland
orange.pl

Optimization of field service management for a network covering more than 300 000 square kilometers and more than 20 million subscribers.

X by Orange
xbyorange.com

New billing system facilitating revenue management for new services in the cloud for small and medium-sized enterprises (SMEs).

ngena
ngena.net

Comprehensive solution for global NFV-based network services for enterprises, based on Comarch BSS, OSS and assurance products.

A1 Telekom Austria Group
a1.group

Support in entering the IoT / M2M market and becoming the leading M2M boutique provider in the CEE region thanks to Comarch IoT Connect.

A1 Belarus
a1.by

Support for network expansion for the largest wireless operator in Belarus.

STC
stc.com.sa

Using Comarch IoT Connect to create a new IoT connectivity platform serving the Saudi market.

Thales Alenia Space
thalesgroup.com

B2B BSS system for a satellite Internet service provider.

MTS
ir.mts.ru

Improved network reliability via unified "umbrella" assurance system for access and core networks covering almost the entire territory of Russia.

Telenet Group
telenet.be

Improved network performance visibility with Comarch Performance Management platform.

Bitė Group
bite.lt
bite.lv

Rollout of OSS/BSS IT infrastructure covering major operational and business processes.

FIXED AND MOBILE, TRIPLE AND QUADPLAYERS

CUSTOMER	IMPLEMENTATION SCOPE
Arqiva arqiva.com UNITED KINGDOM	Support for development of next-generation smart metering services thanks to Comarch OSS & assurance products combined with Managed Services.
Covage covage.com FRANCE	Smart BSS supporting the services of high-speed broadband access across all territories in the north of France.
dtms dtms.de GERMANY	New sophisticated billing system extending the supply chain with separate pricing of services for individual customers.
Golden Telecom goldentele.com UKRAINE	Support for data mediation and interconnect settlements.
KPN kpn.nl	Integrated BSS system for large enterprises and corporates, leading to streamlined KPN customer experience, reduced costs and minimal investment risks.
LG U+ uplus.co.kr	Support in launch of the world's first 5G network with the help of Comarch products from the Operations Support Systems and Intelligent Assurance & Analytics range.
Megafon moscow.megafon.ru RUSSIA	Improving the Efficiency and Quality of Field Operations with Comarch Field Service Management.
Mobile Vikings mobilevikings.be BELGIUM	Transformation into a full MVNO and BSS overhaul for three operator brands.
Netia netia.pl POLAND	Delivery of system handling interconnect agreements, covering current and future needs. Implementation of Comarch Fault Management for reduced risk of network failures and improved service quality for customers.
Networks! networks.pl POLAND	Support for Orange and T-Mobile infrastructure-sharing initiative in Poland – planning and optimization of the "golden grid" network.

NextGenTel
nextgentel.no
NORWAY

Major transformation of the company's BSS and OSS, supporting all business and individual customers.

Plus Communications
plus.al
ALBANIA

Implementation of fully-fledged BSS system ready to serve first customers within 4.5 months.

Polkomtel
polkomtel.com.pl
POLAND

Support for the wholesale B2B activities with InterPartner Billing system for one of the biggest mobile telecom carriers.

PTC – Public Telecommunication Corporation
ptc.gov.ye
YEMEN

Mass-market business support systems (CRM, orders, billing and charging).

Siminn
siminn.is
ICELAND

Enhancement of multi-service, multi-technology and multi-vendor IT environment and operations with Comarch BSS.

TDC Group
tdcgroup.com
DENMARK

Support in reaching a carrier-neutral infrastructure leader thanks to Comarch BSS.

Telegrosik
telegrosik.pl
POLAND

Integrated BSS system handling subscribers of IP telephony (calling cards).

TeleYemen
teleyemen.com.ye/en
YEMEN

Smart BSS system supporting the development of converged telecom services.

TCI
tci.ir
IRAN

Support for interconnect settlements with Comarch BSS.

SUNRISE
sunrise.ch
SWITZERLAND

Supporting Sunrise's IoT services expansion by delivering an out-of-the-box IoT Connect Platform.

VALO Networks
valonetworks.com
CANADA

Support for an innovative broadband Internet access project with the help of Comarch BSS.

CABLE/SATELLITE TV

CUSTOMER	IMPLEMENTATION SCOPE
Cable Onda cableonda.com PANAMA	Helping a local cable operator to become customer-centric and maximize profits with a new end-to-end BSS solution.
Media Broadcast media-broadcast.com GERMANY	Support for Germany's largest broadcast and media industry service provider in the rapid and efficient introduction of new TV services (under the brand name freenet TV), based on DVB-T2.
Multimedia multimedia.pl POLAND	Deployment of a comprehensive billing system replacing the various legacy systems of Multimedia's daughter companies.
Grupo TVCable grupotvcable.com ECUADOR	Increasing operational efficiency via a centralized BSS system for multiple billing and customer care systems. Implementing a Field Service Management system to automate tasks in the field.
Vectra vectra.pl POLAND	Comprehensive BSS system supporting the Polish multi-play operator in pursuit of a product innovation strategy, through streamlining and facilitating the creation of new offers.
ViaSat viasat.com USA	Customer experience improvement in a multi-partner model of field service delivery.

OTHER

CUSTOMER	IMPLEMENTATION SCOPE
SCSK scsk.jp JAPAN	Supporting the creation of an IoT ecosystem for Japanese enterprises for a software provider.

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WHY COMARCH

CHAPTER III

COMARCH IN NUMBERS

1991 Comarch onset

Founding year 1993

1999 Publicly traded on Warsaw Stock Exchange since

OVER **6500** EMPLOYEES

RECOGNIZED BY
Gartner, Forrester Research, IDC **and more**

THOUSANDS OF SUCCESSFULLY **COMPLETED PROJECTS** ON

6 Continents in about **100** Countries

93%
of revenues sale of own software and solutions

The total value of Comarch's shares on the Stock Exchange

USD 500 mln

HEADQUARTERS

KRAKÓW, **POLAND**

SUBSIDIARIES
58

ADDED VALUE
Comarch is a software house which sells own software productsts to large corporations along with implementation and managed services

North America

Europe

Asia

Middle East

Latin America

Africa

Australia

GLOBAL PRESENCE

ORGANIZATIONAL STRUCTURE

prof. Janusz Filipiak

Founder and CEO of Comarch SA
Strategy, HR, Marketing

Konrad Tarański

Finance, Administration
and Internal IT Systems,
CFO, Vice-President
of the Management Board

DIVISIONS

Paweł Prokop

Vice-President of
the Management Board,
Director of
**PUBLIC SECTOR
DIVISION**

Andrzej Przewięźlikowski

Vice-President of
the Management Board,
Director of
**FINANCIAL SERVICES
DIVISION**

Zbigniew Rymarczyk

Vice-President of
the Management Board,
Director of
**ERP
DIVISION**

Marcin Warwas

Vice-President of
the Management Board,
Director of
**SERVICES
DIVISION**

Piotr Janas

Director of
**IOT
DIVISION**

Marcin Romanowski

Director of
**E-HEALTH
DIVISION**

Jacek Lonc

Director of
**TELCO SALES & BUSINESS
STRATEGY DIVISION**

Paweł Workiewicz

Director of
**TELCO OSS
DIVISION**

Andrzej Zasadziński

Director of
**TELCO BSS
DIVISION**

CUSTOMERS & OFFICES WORLDWIDE
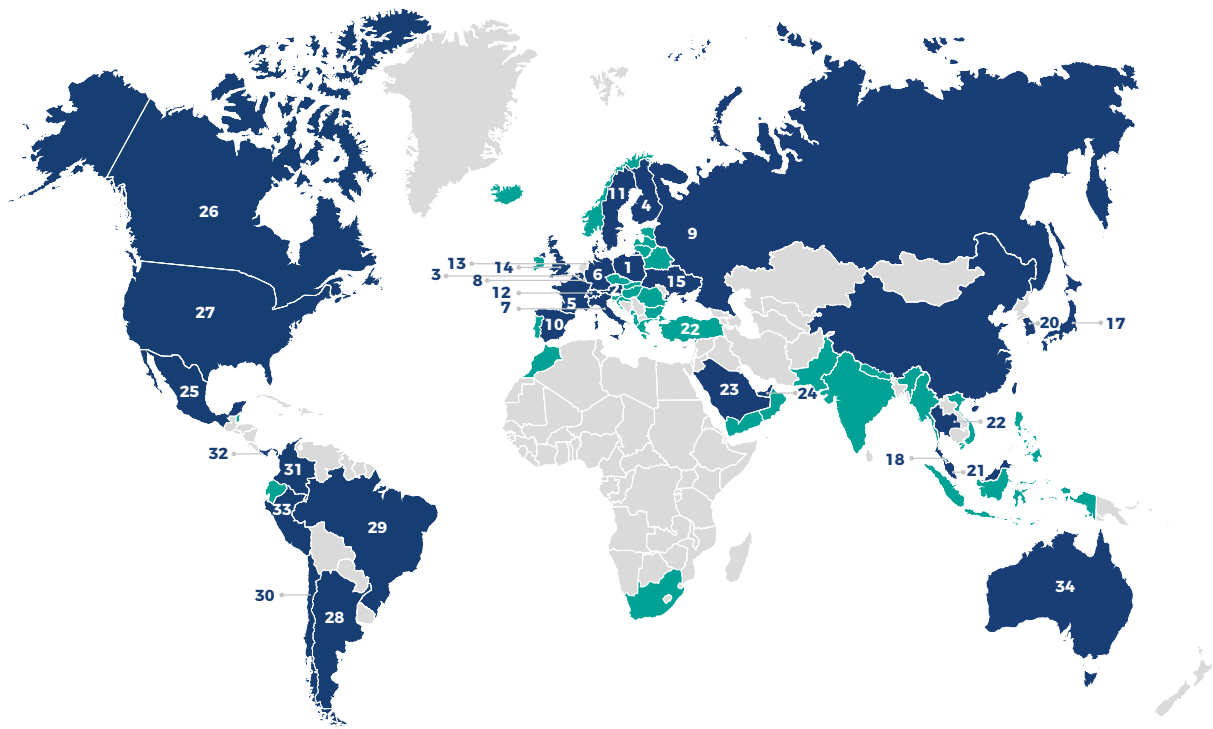
58 SUBSIDIARIES

90 OFFICES

IN **66** CITIES

IN **34** COUNTRIES

ON **5** CONTINENTS

● WORLDWIDE SUBSIDIARIES, CUSTOMERS, PROJECTS   ● CUSTOMERS AND PROJECTS

EUROPE

1   POLAND | Białystok, Bielsko-Biała, Częstochowa, Gdańsk, Gliwice, Katowice, Kielce, Kraków HQ, Lublin, Łódz, Opole, Płock, Poznań, Rzeszów, Tarnów, Toruń, Warszawa, Włocławek, Wrocław

2   AUSTRIA | Innsbruck, Vienna

3   BELGIUM | Brussels

4   FINLAND | Espoo

5   FRANCE | Montbonnot Saint Martin, Lille, Cergy

6   GERMANY | Berlin, Bremen, Dresden, Düsseldorf, Hamburg, Hannover, Munich, Münster

7   ITALY | Milan, Rome

8   LUXEMBOURG | Luxembourg

9   RUSSIA | Moscow

10   SPAIN | Madrid

11   SWEDEN | Stockholm

12   SWITZERLAND | Arbon, Zug

13   THE NETHERLANDS | Rotterdam

14   UK | London

15   UKRAINE | Kiev, Lviv

ASIA

16   CHINA | Beijing, Shanghai

17   JAPAN | Tokyo

18   MALAYSIA | Kuala Lumpur

19   SINGAPORE | Singapore

20   SOUTH KOREA | Seoul

21   THAILAND | Bangkok

22   TURKEY | Istambul

MIDDLE EAST

23   SAUDI ARABIA | Riyadh

24   UNITED ARAB EMIRATES | Dubai

NORTH AMERICA

25   MEXICO | Mexico City

26   CANADA | Saint John, Montreal, Toronto

27   USA | New York, Rosemont, Chicago, Columbus

SOUTH AMERICA

29   ARGENTINA | Buenos Aires

30   BRAZIL | Sao Paulo

31   CHILE | Santiago

32   COLOMBIA | Bogota

33   PANAMA CITY | Panamá City

PERU | Lima

AUSTRALIA

AUSTRALIA | Sydney, Melbourne

● DATA CENTER   ● DATA CENTER ONLY

CUSTOMERS IN
ALL MAJOR INDUSTRIES

CUSTOMERS IN ALL MAJOR INDUSTRIES

TELECOMS	vodafone	Telefónica	T · ·	orange	LG U+
FINANCIAL SERVICES	ING	BNP PARIBAS FORTIS	Allianz	delta lloyd	ERGO / AXA
FMCG	HEINEKEN	Carlsberg	DANONE	Unilever	Red Bull / COSTA COFFEE
RETAIL	METRONOM	TESCO	Carrefour	Auchan	JERÓNIMO MARTINS / ROSSMANN
TRAVEL	Heathrow Making every journey better	jetBlue AIRWAYS	enterprise	ETIHAD AIRWAYS	SAS / TURKISH AIRLINES
OIL & GAS	bp	ExxonMobil	OMV	CIRCLE K	LUKOIL OIL COMPANY

VALUE PROPOSITION

CONFIGURABLE SYSTEMS, FLEXIBLE APPROACH

- **Flexible and cooperative** approach
- Focus on **customer centricity**
- Variety of **delivery models** (including managed services, SaaS and license-based)
- Customers' influence on the **system development**
- **Agile** organization
- High **modularity** of BSS/OSS suites

COMPLETE FUTURE-PROOF PORTFOLIO

- Strong **product roadmap** and vision
- **Feature-rich** functionalities combined with **high configurability** of products
- Incorporating **industry trends** and advanced **technologies** (AI/ML, blockchain, IoT, 5G, cloud, automation, software-defined, E2EO)
- Enabling cooperation with **OTT players**

FIT FOR GLOBAL EXECUTION

- **Local teams** (globally)
- Network of **data centers**
- **In-house delivery** model (full control over quality)
- **Certification** (recognized globally)
- Network of **subsidiaries** (local commercial engagements)
- **Multi-tenancy** (ability to deliver single platform for multi-country organizations)
- **One-stop-shop** (end-to-end project delivery starting with research, software production and delivery, cumulating with Managed Services)

BUSINESS STABILITY & RELIABILITY

- A **reliable business partner** recognized by leading research companies
- Active member of **industry associations** (TMForum, MEF)
- Clients' **recommendations** (also beyond the telecom industry)
- High level of **R&D investments**

YEARS OF EXPERIENCE

- Presence on the telco **IT market** since 1993
- Proven track record in delivering projects **all over the world**
- **Numerous** IT projects implemented/executed
- **Established brand** in the telecom industry

DIGITAL SECURITY

- **GDPR** compliance
- Automated identification of potential fraudulent activities thanks to **AI/ML**
- Systems configured with an ability to **protect and restore** critical data and services
- **Hybrid approach** using both simple algorithms and advanced AI engines
- **Proactive** defense strategies

COST-EFFICIENT BSS/OSS TRANSFORMATIONS

- Easy **customization** and configuration
- Products **built in-house**, resulting in faster and cheaper integration
- Good **interoperability** with legacy systems
- **Flexible and easy** changes and configurations of the data model

COMARCH

ABOUT COMARCH

Since 1993, Comarch's specialist telecommunications business unit has worked with some of the biggest telecoms companies in the world to transform their business operations. Our industry-recognized telco OSS and BSS products help telecoms companies streamline their business processes and simplify their systems to increase business efficiency and revenue, as well as to improve the customer experience and help telcos bring innovative services to market. Comarch's customers in telecommunications include Telefónica, Deutsche Telekom, Vodafone, KPN and Orange.

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