



MATRIX SOFTWARE: DIGITAL TRANSFORMATION



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Company Summary

MATRIX Software is a provider of digital BSS technology to communication service providers (CSP) globally. The company, based in Silicon Valley and founded in 2009 by ex-Portal / Oracle executives, is primarily focussed on the effective monetisation of digital services.

The company’s main offering is the MATRIX Digital Commerce Platform, which combines the functions of an online charging system (OCS) and policy and charging rules function (PCRF) with tools for enabling digital channels in a single real-time platform that can be deployed in the cloud or on premise. By combining these functions in a unified platform, with a single point for configuration, data management and customer interaction, CSPs can simplify their architecture and reduce operational costs. MATRIX claims unique advantages in performance, scalability and latency through patented database and decision engine technologies.

The company has received financial investments from four tier-1 CSPs and leading venture capital firms. MATRIX is well regarded in the industry and has a partnership with Vlocity for an all-digital suite solution called Go-Digital. The company also works closely with multiple SI partners for delivery of its solutions worldwide.

This profile is focussed on the digital transformation capabilities of MATRIX Software.

Figure 1: MATRIX Software Company Facts

Founded	2009
Offices	HQ in Saratoga, USA with offices in the UK, UAE, Singapore, Malaysia, New Zealand and Australia
Employees	210
Regional focus	Americas, Asia Pacific, Europe and Middle East & Africa,
Customers	Telstra, Vodafone NZ, Swisscom, Ooredoo Group, Zain, 3 UK, 3 Denmark, 3 Sweden, 3 HK, Wind Tre, Orange Poland Yoodo, Visible, iD Mobile. Tata Communications / Teleena
Selected key customers	Telstra, Vodafone NZ, Swisscom, Oordeo
Partnerships	Vlocity, IBM, Tech Mahindra, Accenture, Delta Partners, KPMG
Company status	Privately held

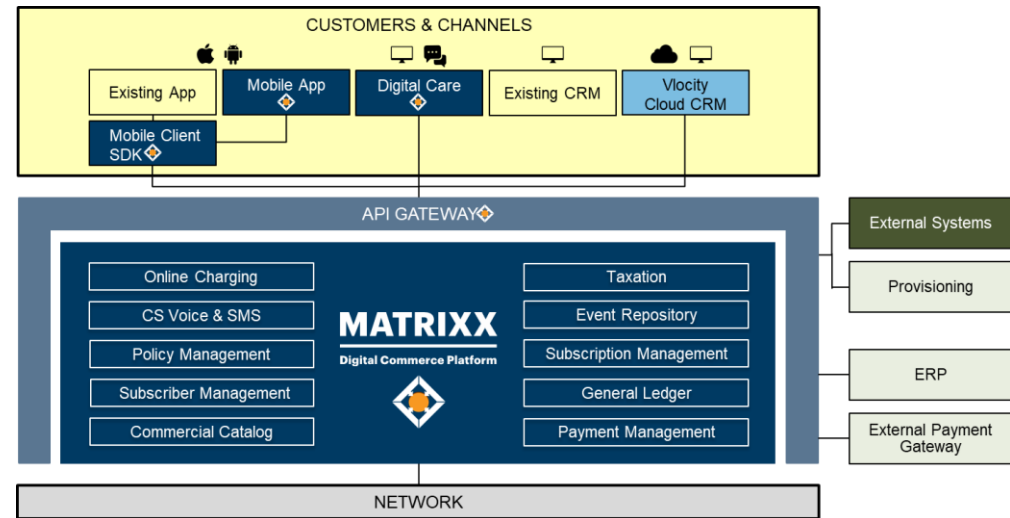
Product Strategy – A digital BSS stack focussed on business transformation

MATRIXX is increasingly deployed separately from existing legacy infrastructure to create a new digital BSS stack using a fast-track approach. This approach allows CSPs to deliver a digital experience in under six months, to simplify operations, reduce opex, and to embrace agile development with configuration-based software.

The MATRIXX product footprint goes beyond the online charging and policy functions. MATRIXX Digital Commerce includes a SIGTRAN Camel Gateway to manage circuit switched voice and SMS services alongside DIAMETER based data services. The platform also contains other commerce capabilities including subscriber management, general ledger management, taxation, and commercial catalog which all share the same real-time engine as the charging and policy functions.

An event repository supports real-time event streaming and campaign management. MATRIXX has also built a payment gateway interface and subscription management capabilities to cater to modern payment methods such as Venmo, Apple Pay, Google Pay, Masterpass and credit/debit cards. MATRIXX provides orchestration for user journeys that involve external systems such as tracking a physical order with a third party logistics partner.

Figure 2: MATRIXX Product Footprint and Key Integration Points
 [Source: MATRIXX, 2019]



MATRIXX also offers a number of channel components through its flexible API gateway including client SDKs to create Web, Android, and iOS self-care apps and its own mobile app. For CRM it offers a front office tool for care agents, with chat and trouble ticketing integration. It can also integrate into existing CRM systems, or it can deliver a full omni-channel cloud solution with partner Vlocity.

The MATRIXX platform is prepared for 5G monetization

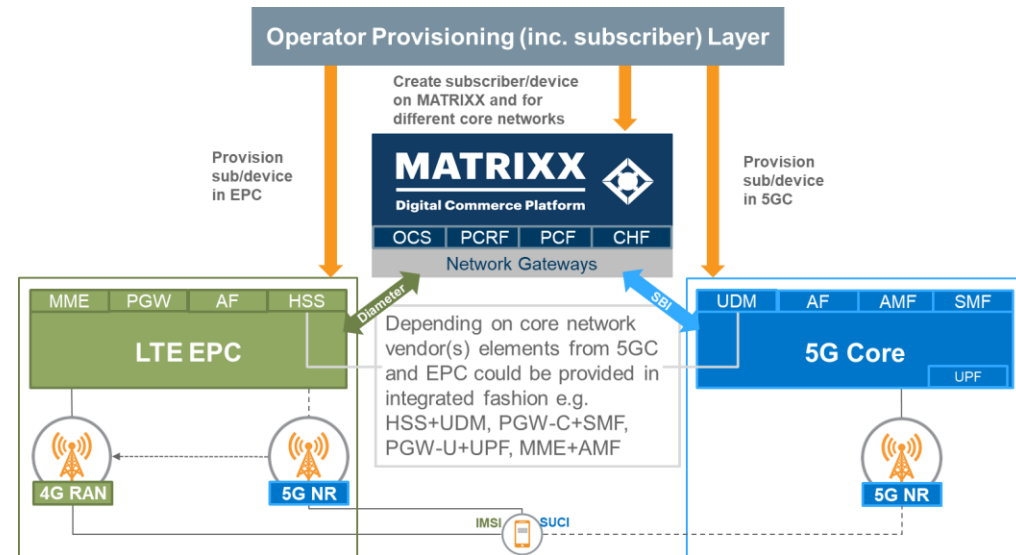
The MATRIXX 5G vision is to deliver a single commerce platform that can cater for all network types and all customer segments.

The MATRIXX Digital Commerce Platform interfaces to the underlying network through natively built network adapters. This ensures that the core of the platform remains network-agnostic, allowing it to operate in a variety of network configurations in multi-technology environments. 5G will introduce different integration architectures and technologies, but the MATRIXX Technology Core consisting of a high-speed decision engine and in-memory database are already in place and fully abstracted from, and applicable to, the new standards of 5G.

The MATRIXX Platform hosts the OCS and PCRF functions for 2.5/3/4G natively through the appropriate Diameter network adapter and the decision engine. The introduction of the 5G core will result in an evolution from the previous telecoms protocols (SIGTRAN Camel and Diameter) to an open service based architecture which will require a platform to support multiple generations of control plane signalling. The use of service based interfaces by 5G does not alter the architecture of the MATRIXX platform since appropriate network adaptors harmonize the input into MATRIXX protocols that drive the decision engine.

Figure 3 shows how MATRIXX will support customers on an LTE Evolved Packet Core while also supporting a 5G Core, which gives CSPs flexibility to choose their network migration strategy as they evolve from 4G to 5G.

Figure 3: MATRIXX in the 5G Core Service-Based Architecture
 [Source: MATRIXX, 2019]



Product Overview

MATRIXX Digital Commerce combines network and IT functions into a single platform that helps CSPs streamline operations and offer enhanced customer experience. Key features include:

- **API gateway** to enable flexible integration with Mobile apps, web self-care, CRM and other customer channels
- **Design** templates to quickly create products, configure pricing, set policy and call control rules, and triggers for promotions
- **Engagement** tools including mobile app SDKs, contextual notifications and features for rich user personalization
- **Deliver** precise network controls for event and session management, native policy control, and network integration via configurable DIAMETER and SIGTRAN-CAMEL gateways
- **Monetization** capabilities for real-time charging of all services, subscription management, and payment support for pre-paid, post-paid and hybrid Pay Now methods
- **Flexible Deployment models** that allow MATRIXX to be deployed as a cloud solution (public, private or hybrid) or as an on-premise pre-certified hardware configuration

Figure 4: MATRIXX Digital Commerce Summary View [Source: MATRIXX, 2019]

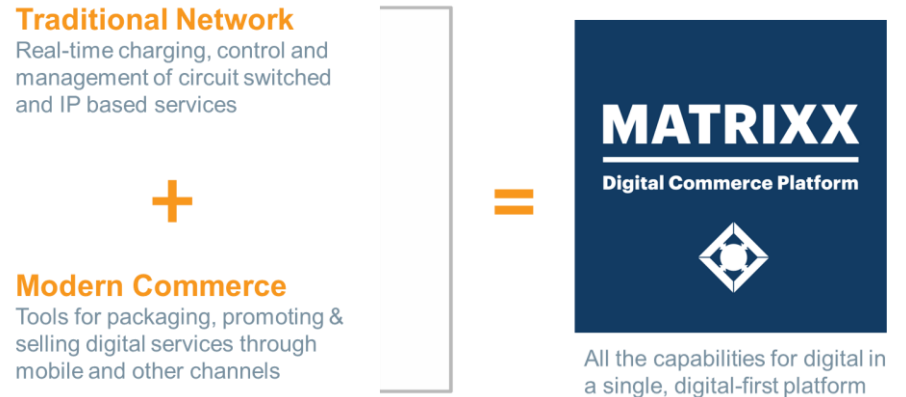
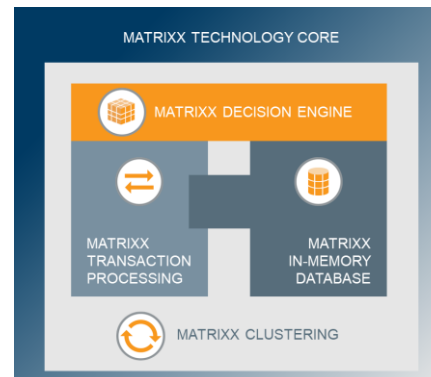


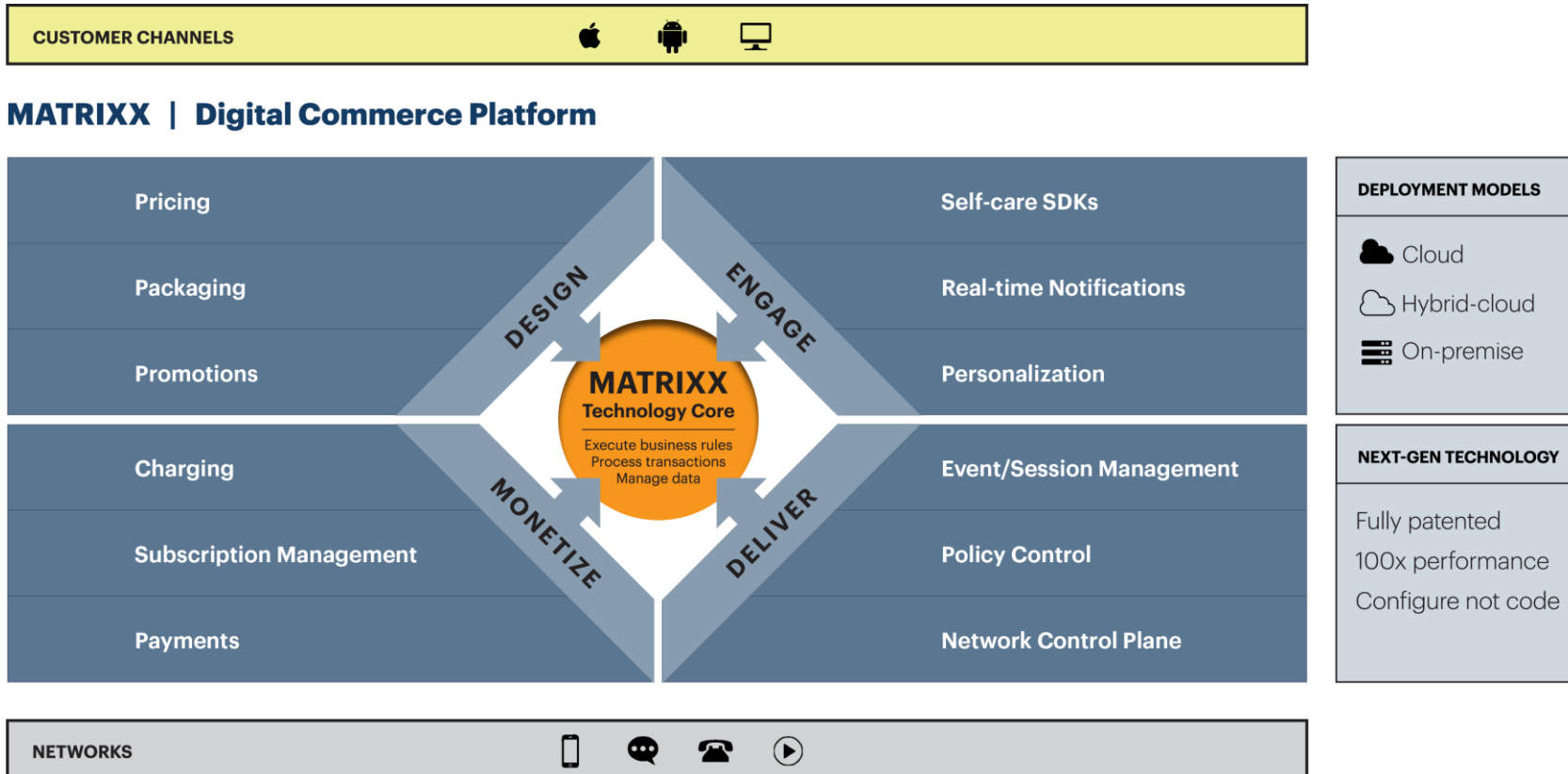
Figure 5: MATRIXX Technology Core [Source: MATRIXX, 2019]



MATRIXX uses proprietary high-speed decision engine and in-memory database technologies that are combined to execute business rules, process transactions and manage all data in a single, extensible data store.

Architecture Overview

Figure 6: Component overview of MATRIXX Digital Commerce Platform [Source: MATRIXX, 2019]



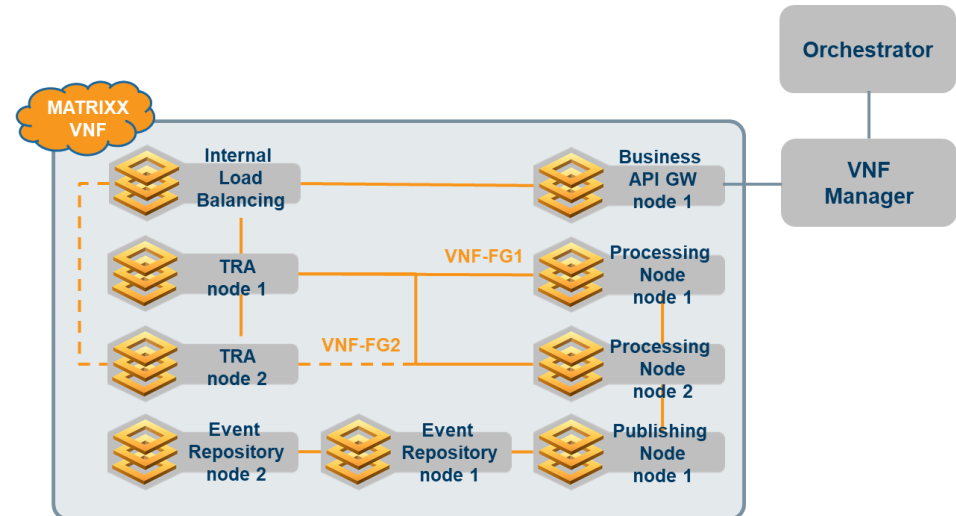
Cloud Native Architecture

The MATRIXX platform is divided into the following microservices:

- The **Business API Gateway** is responsible for bi-directional protocol translation
- The **Traffic Routing Agent** is responsible for routing and load balancing all types of request to the correct Application server and all types of responses to the initiator
- The **Processing Nodes** execute the business logic to process the request and create a response, and transactionally persists all the subscriber related data
- The **Publishing Nodes** execute the business logic to reliably publish events to downstream systems in real-time or batch and to create an auditable record of all events
- The **Event Repository Nodes** create and query a historical record of events for self-care and GL processing purposes

The processing and publishing nodes utilize patented in-memory database technology to achieve extreme performance and all-master persistent redundancy. The in-memory database (the Data layer) is a separate component to the business logic server (the Application layer) and there is clear isolation between these processes (the Application layer contains no persistent state).

Figure 7: Example Cloud Architecture running MATRIXX



Each node supports horizontal scaling today with roadmap enhancements to add auto-scaling. Centralized domain orchestration will be supported via providing reference architectures with Third-Party standards-compliant VNF Orchestrators. The MATRIXX reference architectures include stacks based upon Google Cloud Platform, OpenStack, VMware and OpenShift/Kubernetes.

Product Summary

Figure 8: MATRIX's Products

Product	Analysys Mason segment	Description
Digital Commerce Platform	Monetization Platforms, Customer Engagement	<p>MATRIX Digital Commerce Platform is a single system for creating, selling, delivering, monetizing digital services along with customer management and engagement. The platform combines the functions of an online charging system (OCS) and policy and charging rules function (PCRF) with tools for enabling digital channels in a single real-time platform that can be deployed in the cloud or on premise.</p> <p>Key features of the Digital Commerce Platform include:</p> <ul style="list-style-type: none"> • API gateway to enable flexible integration with Mobile apps, web self-care, CRM and other customer channels • Design templates to quickly create products, configure pricing, set policy and call control rules, and triggers for promotions • Engagement tools including mobile app SDKs, contextual notifications and features for rich user personalization • Deliver precise network controls for event and session management, native policy control, and network integration via configurable DIAMETER and SIGTRAN-CAMEL gateways • Monetization capabilities for real-time charging of all services, subscription management, and payment support for pre-paid, post-paid and hybrid Pay Now methods • Deployment models are flexible and MATRIX can be deployed as a cloud solution (public, private or hybrid) or as an on-premise pre-certified hardware configuration

Significant Customers [1]

Figure 9a: Key MATRIX Customers

Customer	Country	Scope
Telstra	Australia	MATRIX provides real-time rating and service management for data, roaming and pre-paid for 16 million subscribers.
Vodafone	New Zealand	MATRIX provides real-time rating for data and roaming across post-paid consumer and business segments.
Swisscom	Switzerland	MATRIX is responsible for real-time charging and service management for data, roaming and prepaid for the Swisscom brand and 3 MVNOs covering 8 million subscribers.
Ooredoo	Oman	Ooredoo chose MATRIX to deliver a new digital proposition on a new IT stack for prepaid users.
Ooredoo	Qatar	Ooredoo will launch a new digital proposition powered by MATRIX on a new IT stack
Ooredoo	Kuwait	Ooredoo will launch a new digital proposition powered by MATRIX on a new IT stack
Orange	Poland	Orange will launch a new digital proposition on a new IT stack powered by MATRIX
Hutchison Telecom	Hong Kong	Hutchison are deploying the MATRIX Digital Commerce platform as part of their digital transformation strategy
Three	UK	Three are deploying the MATRIX Digital Commerce platform as part of their digital transformation strategy
Three	Sweden	Three are deploying the MATRIX Digital Commerce platform as part of their digital transformation strategy
Three	Denmark	Three are deploying the MATRIX Digital Commerce platform as part of their digital transformation strategy
Wind Tre	Italy	Wind Tre are deploying the MATRIX Digital Commerce platform as part of their digital transformation strategy
Zain	Saudi Arabia	Zain will launch a new digital proposition powered by MATRIX

Significant Customers [2]

Figure 9b: Key MATRIXX Customers

Customer	Country	Scope
iD Mobile	UK	iD Mobile partnered with MATRIXX Software to launch a digital brand that allows extensive personalization and customer control.
Yodo (Celcom Axiata Group)	Malaysia	MATRIXX enabled Celcom to launch their new digital brand Yodo which offers highly customizable tariffs
Visible (a new Verizon brand)	USA	MATRIXX provides real-time charging, policy and service management for Visible which is run entirely on cloud based infrastructure. The MATRIXX deployment runs on Google Cloud Platform.
Tata Communications / Teleena	Netherlands	MATRIXX provides real-time policy, charging and rating for Tata's Move Platform which offers hosted, cloud based MVNE and IoT solutions to carriers.

Analysis: Strengths, Weaknesses, Opportunities and Threats

STRENGTHS

- MATRIXX's Digital Commerce Platform is a well regarded platform that has been successfully deployed worldwide across multiple CSPs across all tiers.
- The MATRIXX solution is cloud-native compliant, which has become a key requirement for new deployments..
- The company has a close working partnership with Vlocity, a Salesforce ISV Partner, to provide an all cloud based solution called Go-Digital.
- Tier-1 CSPs such as Telstra, Swisscom, Orange and Three and leading silicon valley venture capital funds have invested in MATRIXX.

OPPORTUNITIES

- Growing CSP concerns around the high cost of maintaining legacy monetization systems are driving them to invest in modern platforms which are agile, scalable and cheaper to run.
- SIs view companies such as MATRIXX favorably for partnering in telecom transformation projects since some of the larger product vendors have their own consulting practices which competes with SIs.





WEAKNESSES

- MATRIXX is reliant on technology and delivery partners in order to sell and deliver solutions to CSPs who are deploying broader solution suites.
- MATRIXX has limited channel presence outside of its core regions of operation.

THREATS

- Larger vendors with broader portfolios of offerings such as network equipment providers may offer better pricing for end-to-end transformation deals that include charging components.
- Many CSPs are planning for or in the process of making significant investments into new network deployments which may limit their ability to invest in monetisation platforms.

Research from Analysys Mason

-  **Consumer services programmes**
 - Mobile Services
 - Mobile Devices
 - Fixed Broadband Services
 - Convergence Strategies
 - Video Strategies
-  **Operator investment programmes**
 - Operator Investment Strategies
 - Network Traffic
 - Spectrum
- Telecoms software and networks programmes**
 - Software Forecast and Strategy
 - Telecoms Software Market Shares
-  **Network-focused**
 - Next-Generation Wireless Networks
 - Video and Identity Platforms
 - Service Design and Orchestration
 - Automated Assurance
 - Network Automation and Orchestration
 - Digital Infrastructure Strategies
-  **Customer-focused**
 - Digital Experience
 - Customer Engagement
 - Monetisation Platforms
 - AI and Analytics



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- Digital economy programmes** 
 - Digital Economy Strategies
 - Future Comms
- Enterprise and IoT programmes** 
 - Large Enterprise Voice and Data Connectivity
 - Large Enterprise Emerging Service Opportunities
 - SME Strategies
 - IoT and M2M Services
 - IoT Platforms and Technology
- Regional markets programmes** 
 - Global Telecoms Data
 - Americas
 - Asia-Pacific
 - Middle East and Africa
 - European Core Forecasts
 - European Telecoms Market Matrix
 - European Country Reports

DataHub 

Data covering +80 countries and +550 operators
 ~2500 forecast and +250 historical metrics
 Regional results and worldwide totals
 Operator historical data
 Compare markets and operators
 Financial values in USD, EUR or local currency
 Export data to Excel and save searches

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