MATRIXX Digital Commerce Platform

TECHNICAL DATASHEET

The MATRIXX Digital Commerce Platform (DCP) is a cloud native, real-time monetization engine delivering industry-compliant rating and charging functionality along with a rich array of digital commerce capabilities such as subscription management, event streaming and management, personalization and digital payments.

At its heart is a 3GPP-compliant Online Charging System (OCS), supporting 2/3/4G cellular networks, and a Converged Charging System (CCS) supporting 5G, both delivered from the same platform.

The DCP platform provides a bridge between northbound IT systems (such as customer engagement systems and billing platforms) via open API's and southbound 4G and 5G network core environments via Diameter or an HTTPv2 Service Based Interface.

This bridging role enables the platform to provide agile and adaptable monetization solutions that support prepaid, post-paid and pay-now consumers, Enterprise, IoT, Industry 4.0 and private network opportunities. Furthermore, the platform is access-network agnostic, offering the same monetization solution to support services provided over cellular, fixed, wi-fi and LPWAN networks.

KEY PRODUCT FEATURES
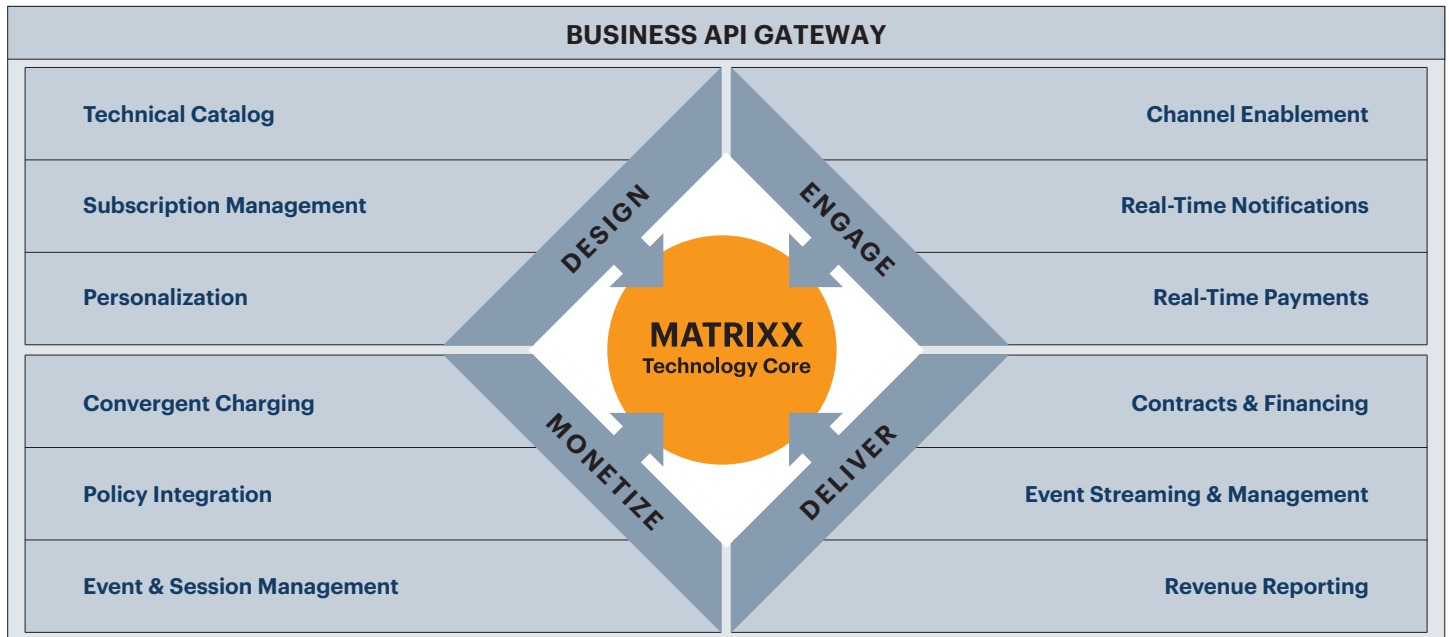
MATRIXX | Digital Commerce Platform

Figure 1: MATRIXX Digital Commerce Platform Key Product Features

MATRIXX Technology Core

The MATRIXX Technology Core is the high-speed decision engine and in-memory database that underpins the transformative capabilities of the MATRIXX Digital Commerce Platform. Its configurable decision-table architecture eliminates the need for custom development to support new business requirements. The high-speed decision engine eradicates performance bottlenecks so that every customer interaction is instant and precise.

Design

- **Technical Catalog** – All pricing and policy are configuration-based, offering rich charging and promotions for services, goods, and content. As part of a federated catalog architecture, MATRIXX incorporates reusable building blocks and templated parameterization that allow Commercial Catalogs to interface easily via API calls, reducing time-to-market for offer and service provisioning.

- **Subscription Management** – Full support for recurring subscriptions and one-off purchases with flexible revenue recognition (advanced, deferred, linear and consumption-based). Support for personal and business plans on one device, including enterprise sharing. Cycle management is flexible, with support for auto-renewal and grace periods.

- **Personalization** – MATRIXX offers subscribers and subscriber groups a precise view of their balances and subscriptions, with user-configurable thresholds, spend limits and notifications. 'Build-your-own-plan' and dynamic sharing are out-of-the-box features.

KEY PRODUCT FEATURES (continued)

Engage

- **Channel Enablement** – MATRIXX provides REST APIs to streamline integration to mobile apps, web self-care, CRM and other channels.

- **Real-Time Notifications** – Support for push, SMS, USSD and email delivery of system and customer notifications, with templates for personalized messages. Triggers can be set for promotions, spend control and regulatory compliance, with actionable information delivered via URL/meta-data.

- **Real-Time Payments** – MATRIXX can process credit card and bank debit charges in real-time or by deferred settlement and caters for ad-hoc purchases, recurring autopay, threshold-based autopay and advanced recharge. MATRIXX has built integration libraries to several external payment gateways, including Braintree, Cyber Source, Foo Masterpass and RomCard.

Monetize

- **Convergent Charging** – Highly configurable, real-time charging for all services, goods and content. 3GPP-compliant, fully convergent across all offerings, customer segments and payment models, supporting cellular, fixed, wi-fi and LPWAN connected devices, enterprise and consumer customers. Prepaid, post-paid, pay-now and charging from subscription level or group level shared balances, from families to enterprise. Configurable rating rules can be loaded to the system and made instantly available.

- **Policy Integration** – A subset of full standalone policy engine rules is available as an integrated capability on the Digital Commerce Platform, targeted at small to medium networks. Full Sy Diameter and N28 5G SBA interface implementations are also available, supporting business logic interaction between the DCP and external, stateless PCRF/PCF implementations.

- **Event & Session Management** – Capabilities include session control, network integration, field-configurable DIAMETER, CAMEL and SBA gateways, circuit-switched voice and VoLTE charging, 5G policy and charging and adaptive quota management (AQM). AQM is a patented approach to managing quota sizes and validity times for each customer to reduce core network loads and optimize customer balance accuracy.

KEY PRODUCT FEATURES (continued)

Deliver

- **Contracts & Financing** – The contract parameters for duration, initial payments, installments, offer grants, discounts and terms & conditions are configurable through a GUI and exposed to the external commercial catalog and provisioning via an API. Contracts defined within the CRM system provide the 'master' contract definition and terms, with the Digital Commerce Platform ensuring charging level adherence to those terms.

- **Event Streaming & Management** – Ultra-low latency, flexible event streaming framework, offering guaranteed delivery and multiple filterable subscriber streams that can be archived and audited. Enables real-time analytics and campaigns, fraud analysis and enterprise notifications. Includes support for Kafka, Google Pub-Sub and ActiveMQ adaptors.

- **Revenue Reporting** – Fully configurable chart of accounts and transaction template definitions that use decision tables to map each transaction to correct account codes. Accounts and amounts are calculated in real-time for fully auditable events. Includes daily reports for ERP posting and finance insights.

Deployment Options

The MATRIXX DCP can be implemented in Network Edge, Telco Cloud, Private and Public Cloud environments. It is deployed as a cloud native, containerized application, orchestrated and managed by Kubernetes. It can be delivered on bare metal or virtualized infrastructure. See cloud native infrastructure requirements section for more details.

With 5G driving the need for increasingly flexible performance and elastic scale, cloud native deployments are becoming the primary choice for most organizations, providing:

- **Platform Abstraction** – The ability to take advantage of the practically-infinite scale of the cloud, or to deploy within a secure private data center, the cloud native architecture benefits from the portability and ubiquity of the Kubernetes ecosystem.

- **Container-Based Deployments** – Easily orchestrated, fast start-up times and lightweight implementation, allowing high utilization of the underlying hardware.

- **Loosely-Coupled Micro-Services** – Designed from the ground up as optimally sized autonomous business functions that independently scale, are easily upgraded, ephemeral and easily replaced.

- **DevOps** – Highly automated orchestration allowing for continuous integration and delivery.

KEY SYSTEM INTEGRATION POINTS

This diagram reflects how MATRIXX Digital Commerce is integrated into a traditional BSS/Network architecture.
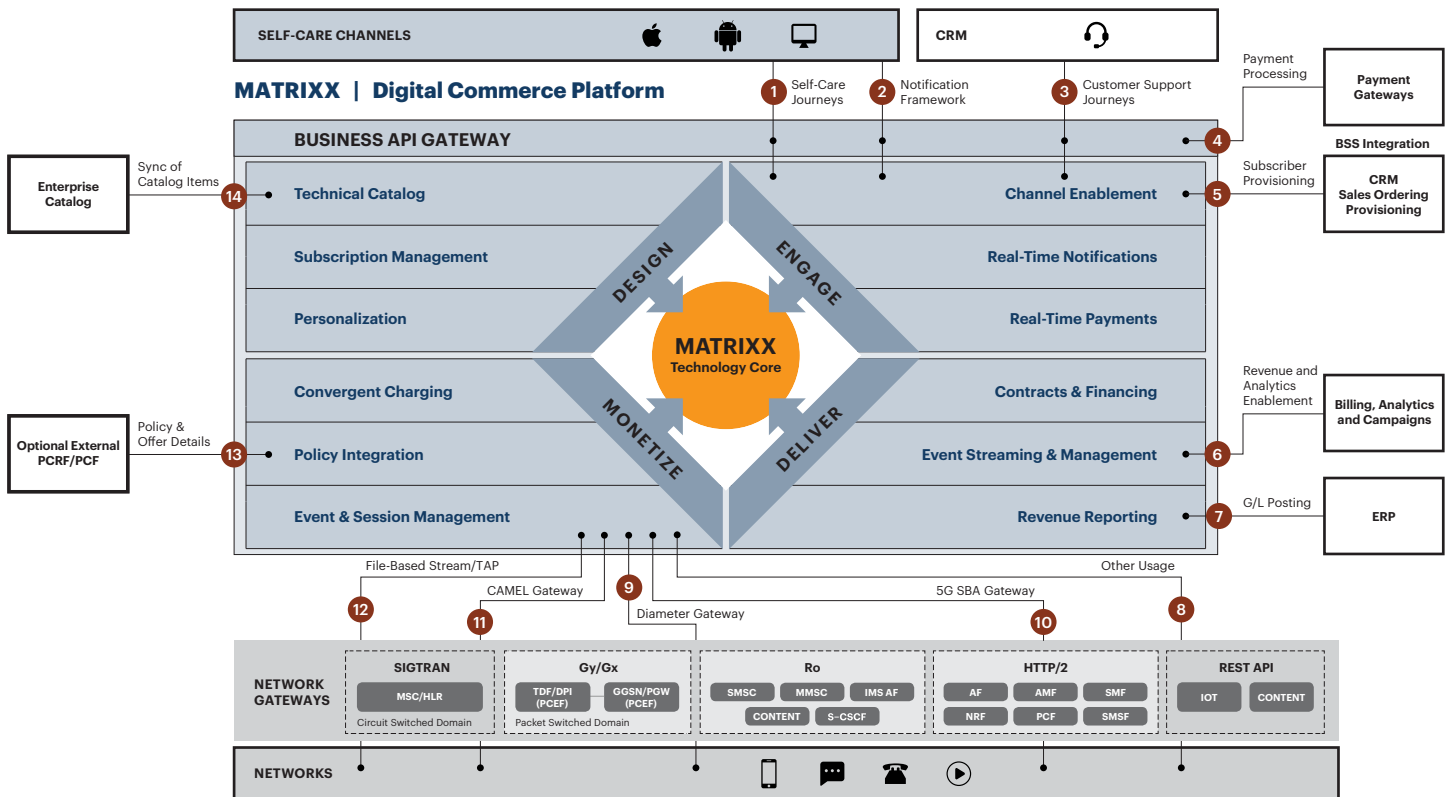

Figure 2: Key System Integration Points

The business API gateway provides a secure, configurable and extensible REST API gateway for northbound apps and OSS/BSS integrations. Features include API routing, call aggregation, transformation and enrichment with full security. It contains a framework and SDK for rapid development of external adaptors and leverages the core database for task state to build orchestration workflows.

Key Interfaces

1. **Self-Care** – The business API gateway provides a robust and secure framework with REST/XML, REST/JSON and Java APIs for mobile self-care apps and other customer-facing channels to interact with the MATRIXX platform.

2. **Notifications** – Generated based on threshold breaches, low balance, offer purchases and lifecycle changes which may be sent via SMPP, USSD (MAP-SIGTRAN), SMTP, or published using a native JMS/XML framework.

3. **Customer Support** – CRM and other customer-facing channels can interact with MATRIXX through the business API gateway. A joint solution, Go Digital,™ is available with Salesforce Communications Cloud that incorporates cloud-based CRM.

4. **Payment Processing** – An extendable payment framework is pre-integrated into the Braintree, CyberSource, Foo Masterpass and RomCard payment gateway and can be adapted for other payment gateways.

Key Interfaces (continued)

5. **Subscriber Provisioning** – A provisioning API simplifies the integration of CRM, sales ordering, provisioning and BSS systems by performing data model translation, interface abstraction, error checking and catering for multiple integration protocols.

6. **Revenue and Analytics Enablement** – Events or aggregated events are generated for every session and interaction, and these can be integrated into campaign management and analytics platforms via MATRIXX events and notifications. MATRIXX provides an event streaming server, Apache Kafka connector or Google Pub/Sub connector to manage and deliver event streams to external target systems.

7. **General Ledger Posting** – Event Detail Records (EDRs) are generated for all General Ledger (G/L) balance changes and all charging transactions. Each record contains detailed charge record and balance impact information including taxation and discount breakdown and all G/L assignments. The associated G/L information for all EDRs is processed daily to provide aggregate G/L posting information that can be integrated with an ERP financial system.

8. **Non-Network Usage** – MATRIXX DCP supports event-based charging for non-network usage via a REST API for content, IoT and other services.

9. **Configurable DIAMETER Gateway** – MATRIXX DCP is compliant with 3GPP Online Charging System (OCS) standards and supports real-time charging for all services, using Ro or Gy interfaces. A subset of 3GPP-compliant Policy and Charging Rules Function (PCRF) functionality is supported natively via Gx. All DIAMETER integration can be locally configured without coding.

10. **Configurable 5G SBA Gateway** – MATRIXX DCP is compliant with 3GPP release 15 specifications for Service Based Architecture (SBA), Charging Function (CHF) and Network Repository Function (NRF) interworking. MATRIXX provides Converged Charging System (CCS) functionality within a 5G core environment through the CHF, providing charging services to network functions, with support for converged charging (over N40 reference point) and spend control (over N28 reference point). The SBA gateway provides a flexible parameter mapping mechanism allowing specification changes and vendor-specific parameters to be configured locally without product coding.

11. **Configurable CAMEL Gateway** – Real-time, circuit-switched charging is supported using CAP 1, 2, 3, 4 for voice and CAP 3 for SMS with MAP supported for network queries (MNP and USSD query services support).

12. **File-Based Stream/TAP** – Offline rating is supported by converting CDRs and TAP records into Diameter Ro requests.

13. **External PCRF/PCF** – The MATRIXX platform can interact with a third-party PCRF via Sy to query counters and via Sh (acting as an Sp reference point) to retrieve subscriber offer details in both pull and push modes. The third-party PCRF (and other Diameter-based clients) can also use the Sh interface to retrieve subscriber information using an agreed XML format. It can also interact with a third-party PCF in 5G Standalone networks via the N28 service-based interface reference point.

14. **External Product Catalog** – The commercial catalog items can sync to the technical product catalog in MATRIXX via REST.

CLOUD NATIVE INFRASTRUCTURE REQUIREMENTS

The following minimum environment configurations are required to run the MATRIXX Digital Commerce Platform:

- **Kubernetes Distribution** – A production-grade, fully supported Kubernetes distribution for public or private cloud such as Amazon EKS, Google GKE, Redhat Openshift or VMware Tanzu Kubernetes Grid. K8s 1.18 or above.

- **Worker Nodes** – Linux x86 based public or private cloud or bare metal worker nodes.

- **Persistent Volumes** – For local storage solutions (EBS, local SSD, etc) a small space for host OS and container images is required. For shared storage solutions (EFS, NAS, NFS/SAN etc.) MATRIXX DCP is 'ReadWriteMany (RWX)' and requires fast shared storage for transaction log files. Standard shared storage is used for archiving transaction log files, checkpoints and events.

- **Ingress Controllers/Load Balancers** – Production-grade cloud platform network load balancer for non-HTTP ingress traffic (such as diameter) along with an appropriate application load balancer or separate ingress controller and network load balancer for HTTP traffic (5G Service Based Architecture and Business API Gateway).

- **Networking** – Standard Kubernetes Container Network Interface for networking. Optionally Single Root I/O Virtualization (SR-IOV) networking for the Processing pods for improved network performance.

ABOUT MATRIXX DIGITAL COMMERCE

MATRIXX Digital Commerce is the industry's leading cloud native rating and convergent charging solution. Architected with the performance and resiliency of a network function and the configurability of an IT application, MATRIXX DCP unifies IT and Networks to provide operators the agility to operate at web scale. With its API-first design, lightweight, no-code configuration, and microservices architecture, MATRIXX Digital Commerce is easy to configure, fast to deploy and capable of serving multi-network environments from a single, extensible platform. Massively scalable and highly efficient to operate, MATRIXX DCP enables operators to successfully automate operations, monetize new services and hyper-scale offerings, all at web-speed.

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