Consumer Reference Architecture Level 1

North Star + SOE/CXP/SOI/SOR

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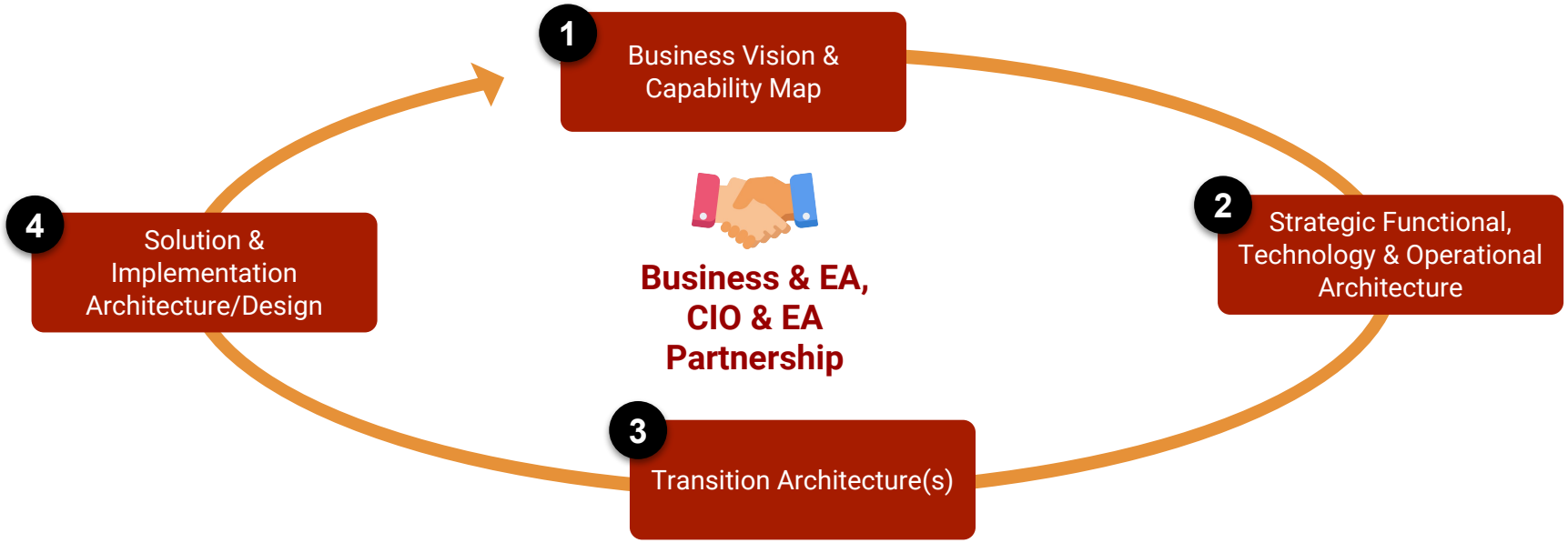
Role of EA & Guiding Principles

Guiding Principles

- Customer Experience Focus
- Modularity & Reusability w/o Silos
- Business KPI & Program Alignment
- Data Driven Insights
- Speed to Value (Low/No Code) & Agility
- Standards & Technology Specialization
- Well Architected for Security, Operations, & Future Proof

Enterprise Architecture Approach



EA aligns Business Vision to a Technology Strategy and Design that guides Implementation

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Our Architecture Methodology

Level 1 Work Products

Systems of Engagement

Customer Experience Platform

Systems of Insights

Systems of Record

Reference Architecture

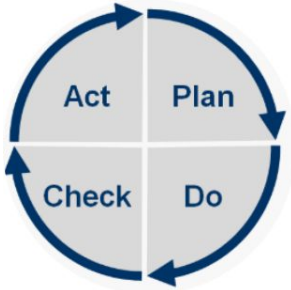
Architecture Decisions

SOE, CXP, SOI, SOR Level 1 Functional Views

Deming Cycle

ACT
Take action to standardize or improve the process.

CHECK
Study the results.



PLAN
Plan ahead for change. Analyze and predict the results.

DO
Execute the plan, taking small steps in controlled circumstances.

Measurement Framework

- Impact to Customer Experience
- Impact to Business
- Impacts to CI/CD
- Impacts to Quality
- Impacts to Operational NFRs. etc.

Level 2 Work Products

Systems of Engagement

Customer Experience Platform

Systems of Insights

Systems of Record

Detailed Functional, Technology Architecture

Architecture Decisions (with Deep Dive Evaluations as needed)

Key Process Flows/Use-Cases with System Touch-points

Data Architecture & Flows

Operational/Deployment Arch.

API Dictionary & Lifecycle Mgmt

Transition Design

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Consumer Reference Architecture: Key Tenets

★ *Architecture Foundational Areas*	*Systems of Engagement, Insights & Records*
★ *Common Customer Experience Platform*	*Uniform engagement & BPM processes across SOE & SOR*
★ *Customer-centric over Channel-centric*	*Consistent experience across all touchpoints*
★ *Common SOI tier across all channels*	*Oath/VCG grid baseline, enabling a 1:1 customer experience*
★ *Enable consistent, reusable services*	*API first approach, with reusable design patterns*
★ *Efficient use of resources*	*Standard technology stack to create a fungible resource pool*

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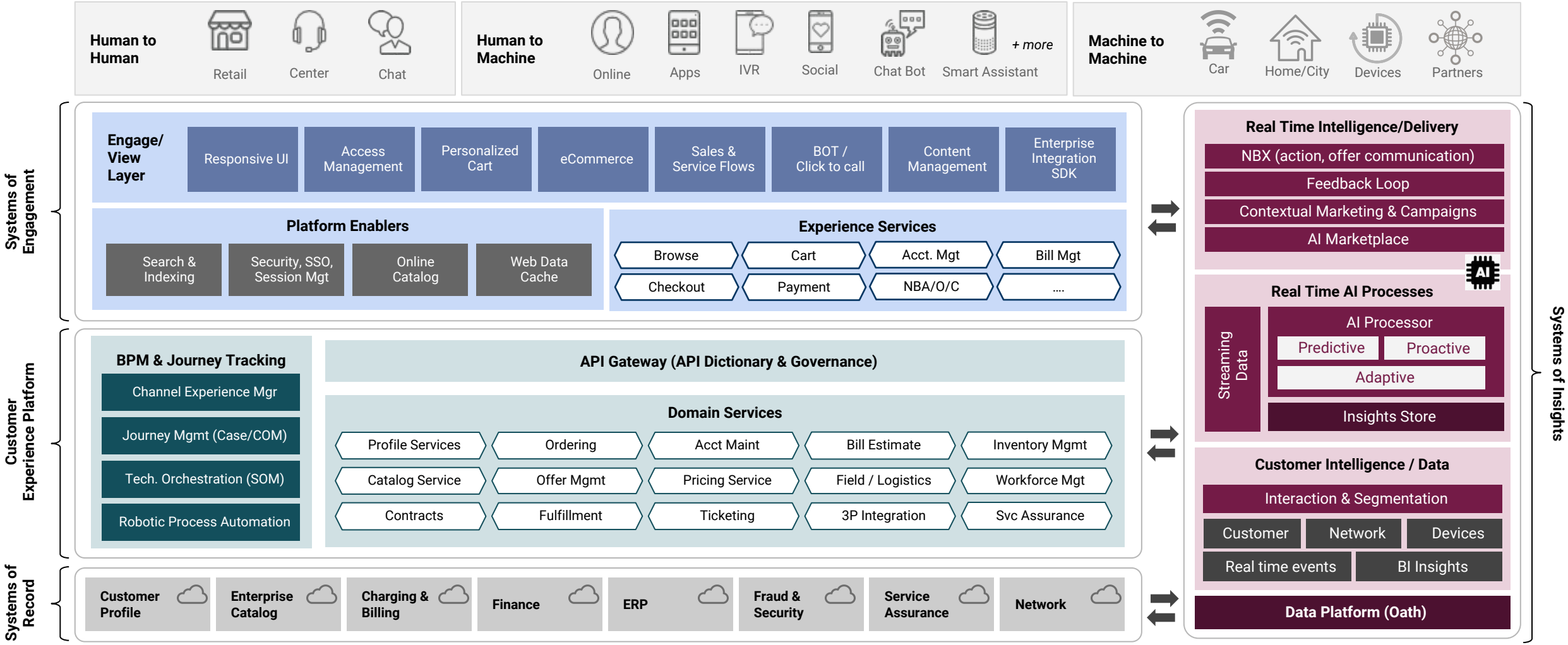
North Star: End State Reference Architecture



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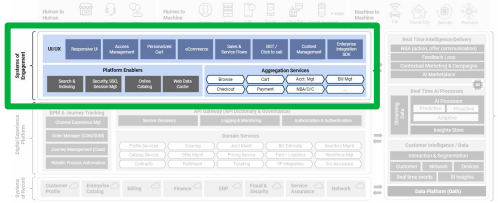
Systems of Engagement (Level 1 Architecture)

REST Calls

Async Calls



Human to Human: Retail, Center, Chat

Human to Machine: Online, Apps, IVR, Social, Chat Bot, Smart Assistant, + more

Machine to Machine: Car, Home/City, Devices, Partners

Systems of Engagement

Security Gateway: Identity Provider | Access Management | Policy Management | Fraud Check

Engage/View Layer: Web Data Cache | UI/UX (Assisted UI | Digital UI | Reusable UI Components) | Web Content Mgmt | Chat Bot

API Gateway: Policy Management | API Management | Access Management | API Analytics

Services Layer: Push Notification | Searchable Catalog Cache | SEO | Session Mgmt | Experience Services (Browse | Cart | Acct. Mgt | Bill Mgt | Checkout | Payment | NBA/O/C | ....)

Common Capabilities: Real Time User Monitoring | App Performance Monitoring | Caching | Search & Indexing | Logging | Distributed Tracing | Service Discovery/Routing | Configuration Mgmt | Messaging/Streaming | Security

Customer EXperience Platform

BPM & Journey Tracking ↔ Domain Services (via API Gateway)

Systems of Record

Systems of Insights

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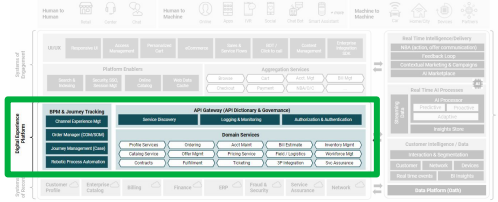
Customer Experience Platform (Level 1 Architecture)



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Systems of Engagement

Systems of Engagement
- View Layer
- Platform Enablers
- Experience Services

Customer Experience Platform

BPM - Channel Experience Manager (Screenflow, NBX, Orchestration) via API Gateway

API Gateway
- Verizon Internal Gateway (green zone): Policy Management, API Management
- Verizon External Gateway (yellow zone): Access Management, API Analytics

COM
- High Level Order Tracking
- Business Process Steps (Order to Bill)
- Customer Communication
- Post Order / Transaction Mgmt
- Cart / Quote Management
- Case Management

Order Submission (Service, Device & Content)

Journey Management, Order Updates & Case Tracking

SOM
- Network Fulfillment & Orchestration
- Billing & Profile Updates
- Device Fulfillment & Orchestration
- Content Fulfillment & Orchestration
- COM Updates
- Fallout Management

Domain Services
- Profile Services
- Ordering
- Acct Maint
- Bill Estimate
- Inventory Mgmt
- Contracts
- Network (MTAS)
- Svc Assurance
- Catalog Service
- Offer Mgmt
- Pricing Service
- Field / Logistics
- Workforce Mgt
- Ticketing
- 3rd P Int (SCM)
- ...

Common Capabilities
- App Performance Monitoring
- Distributed Tracing
- Caching
- Service Discovery/Routing
- Messaging/Streaming
- Configuration Mgmt
- Logging
- Security

Systems of Record

- Customer Profile
- Enterprise Catalog
- Charging & Billing
- Finance
- ERP
- Fraud & Security
- Service Assurance
- Network

Systems of Insights

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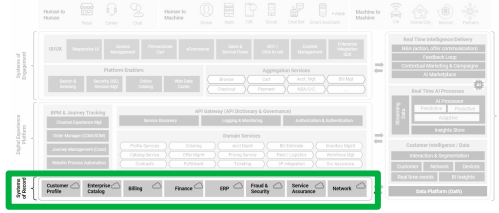

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Systems of Engagement

Customer Experience Platform

Systems of Record

Customer Profile (GRID)

- Customer Information
- Billing Profile
- Device Profile
- Enterprise Profile
- Order History
- Access Management

Reference Data / Resources / Catalogs

- Enterprise Catalog
- Service Inventory (TN, IP etc.)
- Service Qualification
- Device Inventory

Charging

Real time Alerts	Usage Inquiry
Quota Management	Real time Rating
Policy Enforcement	Slice Mgmt
QoS based Rating	Real time CDRs to Bill

Billing

RT Bill Estimate	Acct Receivable	Usage Mediation	Tokenization
Taxing	Bill Validation	Loans/Securitization	Adjustments
GL/Settlements	Real Time Billing	Bill/Fee Calculations	Revenue Allocation

Format

- Bill/Letter Format
- Print / Store
- Bill View & Online Bill
- Billing Analytics

Billing Interfaces & Feeds

- Data Warehouse
- Pymt Processors
- Print Center
- Tax Dept
- Finance Dept
- VEC

Bill to Cash

Collections		*Payment Processing*				*Revenue Assurance*		
Collections	Treatment	CC/DC/ACH	Cash	Scheduled	Refunds	Fraud	Controls	Audit
Finalization	Write Off	Dispute/Care	Lockbox	One Time	Chargeback	Security	Reporting	RPA

Corp Finance

- Procurement
- Treasury, Cash, Revenue
- ERP & Booking
- Master Data Mgmt
- Performance Reports
- Planning

Systems of Insights

4G Network | 5G Network | MEC *

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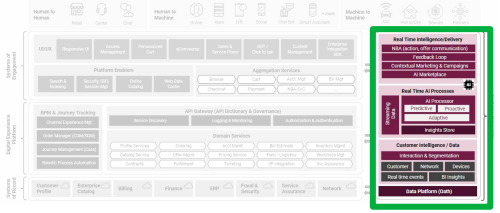

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Systems of Engagement

Customer Experience Platform

Systems of Record

AI/ML Serving Layer

- DECISIONING ENGINE (NBA, NBO)
- AI MARKETPLACE
- CRM
- STREAMING ENGINE
  - Data Ingest
  - Real-time Feature Engineering
  - Real-time Aggregation
  - Batch Feature Engineering
  - Batch Precompute Event History
- INSIGHT STORE
  - Insight Store: Real-time + Historic Insights
  - Customer DNA
  - Event Insights
- 3rd Party Models
- AI PROCESSOR
  - Real-Time Training Models: Adaptive Models
  - Real-Time Predictive Service: Trained Models
  - Batch Training Jobs: Training Models
  - Batch Predict Jobs: Trained Models
- VISUAL ANALYTICS
- AI PORTAL

AI/ML Dev Layer

- FEATURE ENGINEERING
- MODEL DEVELOPMENT WORKBENCH
- INTEGRATION & DEPLOYMENT
- MODEL MANAGEMENT

Data Platform

OATH: BIG DATA LAYER

Systems of Insights

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Thank you

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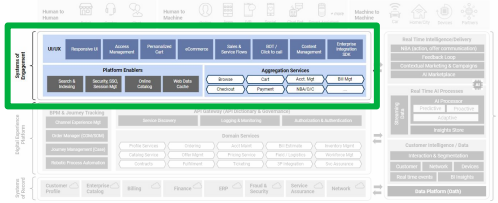

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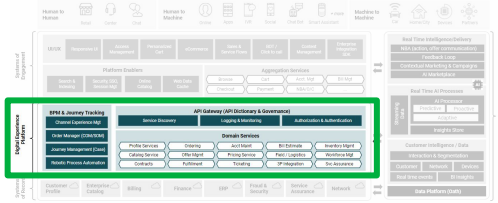

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