awareX

WHITE PAPER

TM FORUM, OPEN DIGITAL ARCHITECTURE (ODA) AND AWAREX

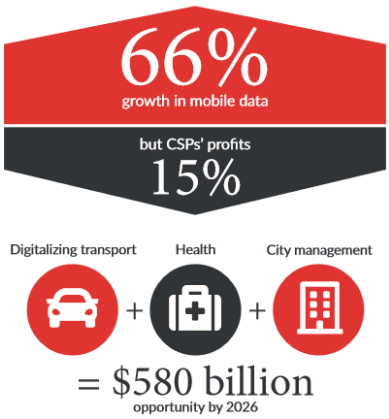
The Telemanagement Forum (TMF) describe the ODA as a blueprint for success in the digital markets of tomorrow. It is focused on the CSP's business and operating models enabling a choice of technology partners, mindset, decision making and time to market advantages.

The ODA is an open architecture for business and technology which affords a community approach to best practice use of metadata, microservices and normalized API's in the next generation BSS/OSS of a digital world. The ODA reference architecture **maps API's against technical and business platform functions** and offer a blueprint, language and set of key design principals which technology suppliers can deliver to accelerate the journey for CSP's to transform to become DSP's where operators face common business challenges.

AwareX is a member of the TMF and part of the technology community with its product centric, layered, secure, scalable cloud-based customer self-service omni channel solution aligned to the ODA principals of creating a flexible, competitive and future proof operating environment. AwareX along with Orange and its technology partners delivered a TMF Catalyst project using digital omni-client integrated to artificial intelligence (AI) and robots to enable self-service of Orange's Live box ADSL routers.

What's Driving the ODA?

Over the past 5 years mobile broadband data usage has increased dramatically but competition and commoditization has reduced margins. The opportunities for digitalization across manufacturing, transport, health and city management are estimated as a total market opportunity of $1.2 Trillion with CSP's able to address $580 billion. For CSP's to be at the center of this revolution the legacy BSS/OSS systems are not appropriate, and the ODA offers an approach to delivering a digitally relevant capability.



Source: Accenture, Ericsson & Arthur D. Little

200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012

To be able to respond to the new market dynamics TMF sees the CSP's responding in two areas:

- Digital efficiency which is about using omni-channel customer centricity
- Digital Enablement which is about digital ecosystems such as those of manufacturing, transport & health services.

Underpinning these responses are technology enablers required by a digital ecosystem. These are a fully cloud and native infrastructure, modularity, rapid innovation cycles and low risk 'pay as you go' approach. The promise of this virtualized approach is radically improved agility and operational efficiency. For example, we might measure this in terms of call deflection from the traditional call center or revenue upsell of new data bundles.

Who is driving the ODA?

The TMF has produced the ODA with input from over 50 separate consortium organizations and pilot projects which have helped to re-imagine the common requirements for digital OSS/BSS. The key contributing CSP's are stated as……

The **business requirements** defined by the consortium members are: -

- **Cloud.** Applications natively architected to utilize the elastic scaling and High Availability (HA) of the cloud but not legacy apps adapted to a new platform.
- **Lower cost of operation.** Ensure that architectures support automation and ultimately AI.
- **Flexible business models.** Sharing of data with charging systems.
- **Multi-Vender support.** Ability to integrate components such as chat bots.
- **Business agility.** Minimize the time, cost and risk of launching a new product or service.
- **Ecosystem capable.** Sideways integration to create new capabilities with API's for both input and output of data.

ODA Architecture

The key is a layered approach at both the macro and micro levels, where each broad category can be sub divided into operating modules all connected by REST API's. This is to facilitate horizontal layering and scalable operation, which allows for a reduction in the number of systems required, simplify the overall architecture and reduce operational costs.

The fundamental reason to do this is to achieve a **single view of the customer**. Data generated in one part of the architecture must be available to components at any other point in the architecture. This principal has led to the concept of a common data vertical which coupled with security and governance makes data available in **real time** to any component of the system.

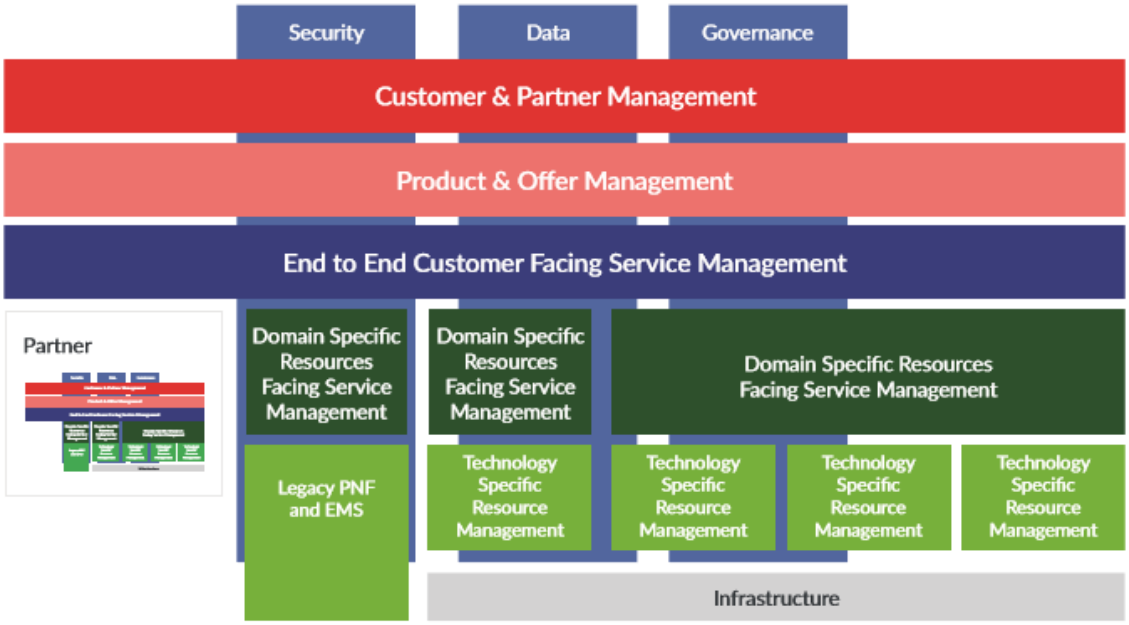
200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012

Componentization is important as systems will be made up from multiple venders as well as the need to integrate with legacy environments, at least until migrations to new BSS back end systems can take place over several years. Microservices principals may be applied to the modularity enabling continuous delivery and reduced time to market and time to value as any change is isolated to a specific business function.

The **architecture goals** are to deliver: -

- Independent scalability
- Faster time to market
- Greater flexibility
- Security
- Future proofing
- Flexible architecture
- New products and business models
- Reduced costs
- Increased speed
- Enhanced customer experience

TM Forum Open Digital Architecture



API's are a key component of the ODA supporting the requirement for componentization and multi-vender. The concept of internal and external integration using the same API's accelerates the build out of the digital ecosystem. The API's are REST based and are service and technology agnostic.

200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012

As new services are introduced the system must be capable of integrating multiple OSS and BSS components or external servers/services. This allows the 'mash up' creation of new services supported by the digital infrastructure.

Real Time. The design principals require that components should act and report in real time.

Nonstop principal. New versions can be placed into the run time environment with no need to stop the platform.

Catalog-based. Components should expose its capabilities through a catalog.

Security by Design. Modular open architecture systems should offer both component and holistic levels of security. AwareX uses encryption, anonymized data and hashed# data techniques across all aspects of the system such as customer data, identity management, infrastructure, data transit, data logs, device, analytics, notifications and crash reporting.

Privacy by Design. Data protection is included from the initial design with the processing of data limited to what is strictly necessary. AwareX systems are not the system of record for the data that is viewed by end users. AwareX does not store information displayed to customers in any databases in the cloud. When a request is made for data by the client application, the Integration platform makes a request via the API's to the backend and returns the data to the client after performing validations and data transformations. The European GDPR data privacy laws require the ability for personal data to be removed and forgotten.

Agile Governance. An ODA compliant system should provide a design pattern, naming and version control, lifecycle management and standard development best practices. AwareX achieves this with our XDC experience design center, Aha product management system and various design, automated test and development tools and processes.

Roadmap planning. The basic principal is that CSP's have a common set of requirements which can be prioritized into a common roadmap which defines future deliverables and maintains any systems relevance and currency.

AwareX compliance Table

This table shows the compliance of AwareX digital omnichannel solution to the ODA principals.

ODA Principal	AwareX	Comment
Omnichannel	✓	Native digital channel iOS, Android, SMS, Facebook, Web, Voice (Alexa & Google)
REST API	✓	AwareX provide an API workbook as part of any implementation to define all interfaces and data flows.
Fast time to market	✓	90 days for system go live then new services every 60 days.
Flexible	✓	Optional implementation of all omni-channels or just one with variable functional levels, easily integrateable and upgradable.
AI	🛠	Roadmap item, using API for horizontal integration of AI. Proven by TMF Catalyst presented at Nice 2018.
Native	✓	iOS, Android APPs are native.

200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012

ODA Principal	AwareX	Comment
Cloud	✓	Full cloud architecture with full scalability and HA.
Modular	✓	Internal integration between platform, monitoring, analytics, services, push messaging.
Rapid Innovation	✓	CMS provides immediate update ability in CSP hands. 60-day version cadence updates.
Leverage global community in development of new capabilities	✓	Community of CSP's contribute to roadmap globally.
Share industry best practice	✓	Workflows and customer journeys are optimized through input from millions of users worldwide.
Operational efficiency	✓	Greatly reduced cost to serve through automation and self service.
Real Time	✓	Results delivered into customers hands immediately
Common data model	✓	Uses the BSS data model and data base interpreted by the API.
Microservices	✓	New channels are added easily by utilizing the common platform services.
Dynamic integration	✓	Analytics, Home Security
Non-Stop operations	✓	60-day update cadence invisible to end user. Service availability SLA.
Catalog based	✓	New products and services identified in the catalogue for channel sales are available for customer purchase in the apps.
Security by design	✓	Full encryption, no customer identifiable data stored, PEN tested regularly.
Privacy by design	✓	GDPR compliance, no private data held in the system.
Agile Governance	✓	New version released every 8 weeks.
Roadmap Planning	✓	Full product management web service, all community members are encouraged to input contributions.
Elastic scaling	✓	Designed for native cloud scaling and high availability from day 1.
Ability to add new channel integrations	✓	AwareX omnichannel has been expanded leveraging the common platform to include Apps, web, SMS, FB and voice.
Sharing with charging systems	✓	AwareX is data integrated with a wide range of charging systems already.

200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012

ODA Principal	AwareX	Comment
Multi-vender support	✓	AwareX uses multiple venders internally and integrates smoothly externally.
Minimize time to launch	✓	Normal project time line to go live is 90 days.
Sideways integration	✓	AwareX API enables new server integration, examples completed include analytics, home security, engineer appointment scheduling.
layering	✓	AwareX is a fully layered system design.
Common data vertical	✓	AwareX uses the backend BSS data and data model creating an integrated data stack.
Legacy integration	✓	Support for almost all installed legacy BSS in service today via API and/or RPA.

References:

1. Tele Management Forum ; Open Digital Architecture, A blueprint for success in the digital markets of tomorrow
2. Ericsson and Arthur D.Little, The value of the digital opportunity.

200 Portland Street Boston Massachusetts 02114 USA | W awarex.com | E Info@awarex.com T +1-617-986-5060 | F +1-617-456-3012