

WHITE PAPER

WHAT DOES IT MEAN THAT AWAREX V7 IS A PRODUCT?

The Telemanagement Forum (TMF) have championed the use of Commercial Off The Shelf Software (COTS) by CSP's within the context of a standardized process and systems architecture, the extended Telecom Operating Model (eTOM.) Also, often described as 'out of the box' OOTB, it defines software applications by their ability to be implemented only through configuration without the need for customization, development or expensive support and upgrade procedures. The benefit to CSP's is rapid and assured implementation, reduced risk and low lifetime total cost of ownership whilst enjoying a continual stream of innovate new features and functions. They also allow superior integration through standardized API's. On top of this the software industry has increasingly embraced the use of Software as a Service (SaaS), which provide a standardized application delivered from the cloud with a flexible commercial model where you only pay for what you use without obstructive licensing agreements.

The TMF specifically advocate the journey to becoming a Digital Service Provider (DSP) using a COTS/SaaS approach to achieve the following goals: -

- The desire to shift to new commercial models with BSS vendors
- The need to accelerate time to market capabilities
- Setting up new lines of business with a dedicated BSS
- The shift to Net Promoter score as a driver of BSS strategy
- Introducing personalized and context aware offers to customers
- Launching 'Skinny' services to cut IT costs.

AwareX combines both concepts into its digital Omni-Client suite which allows CSP's to evolve into DSP's efficiently and effectively. AwareX is a true product which delivers a wide range of benefits to customers but it is important to understand what this means for the CSP, what are the pros and Cons of this approach?

A DIGITAL SERVICE PROVIDER SOLUTION

PRINCIPALS

We want to deliver a true product that provides a superior customer experience, is always available to end customers and provides optimized customer journeys. This means a clear and highly usable, intuitive user interface (UI) without the need for training or documentation, minimal number of clicks to achieve the end customers task, a large and vibrant functionality which is regularly updated and to do all this without any customization.

We want everything to be context aware to make the customer experience relevant and to maximize the CSP's ability to Upsell the right products to the right end users at the right time through the use of advanced analytics and integrated push marketing.

The system must be deliverable in a short time scale, be highly configurable and provide regular updates and upgrades without any Change Requests (CR) being required, and be paid for by usage not large risky project fees.

This must all be achieved whilst adhering to the appropriate privacy and data security standards (GDPR) (see our white paper on data security).

As a product, the roadmap of new features is critical to delivering continued innovation and the community of global CSP's who have implemented the system contribute to our roadmaps on a community basis.

DESCRIPTION

The awareX digital Omni-Client system provides a product solution which enables CSP's to offer a full suite of digital channels to sit on top of their existing backend BSS environments, effectively upgrading them to modern always on customer engagement systems. The Suite includes the Native apps for Apple (iOS) and Android Smartphones, Bots for Facebook and SMS feature phones, Web sites and Voice interaction with Alexa and Google voice units. We release a new version of the base software to the cloud every 2 months, containing features defined by the product roadmap. At AwareX we do not do CR's, you simply do not have to pay additional fees for new base software changes, but rather we work with our customers to get their requirements into the software roadmap and implement them with no additional costs for that software licence just the implementation services.

The system includes a content management system (CMS) which allows a CSP to change, modify and update a wide range of content without any need to refer to AwareX, it's in the hands of your marketing team to adjust such things as images, banners, links, terms and conditions (T&C), frequently asked questions (FAQ), help, teaser screens and surveys.

CSP's can freely see all customer service messages, requests, survey replies, network issues and everything else that end users want to communicate to their service provider.

The system is so configurable that each CSP has a unique look to their app with their own branding, images, screen layouts, features and functions all without doing any code customization, and whilst using the underlying customer journeys which have been optimized in the hands of millions of end users.

A PRODUCT APPROACH

Software Philosophy

Every piece of software delivered by AwareX has the concept of Product behind it, repeatable, stable, upgradable, secure, scalable and supportable. Because this is a product every aspect of the overall system has evolved and been thought through to be a true solution. Unlike a custom development where the focus is mainly on initial functionality leaving large holes in the overall solution.

Implementation

As a product, we have a standardized delivery plan as well. We know what information, is required for an implementation and we have made that easy to be collected, defined and implemented. The standard plan has a 3-month project time line to go live with a soft launch of the Smartphone APP for both Native iOS and Android. We provide a standard API workbook to enable definition of all interfaces in the format we need for rapid implementation. We support CSP's branding and style guides and provide tools to enable customers input on revised UI styles and formats. We also provide experience based best practice guides and our Marketing as a Service offering to ensure effective APP launches which help make a success of each project. This experience only comes from a product approach with a large number of implementations experience.

Pre-Integrated interfaces

We support a large number of interfaces to the popular back end BSS systems as shown below. This enables fast and ensured integration to your BSS systems. We also integrate with the API's exposed by Enterprise Service Busses, API servers as well as RPA and direct connect.



Upgrades

This is the single most important advantage of the product approach for a CSP customer. We all know that BSS projects have a long and difficult history concerning upgrades, where custom developments are subject to CR's for expensive and time-consuming upgrades, re-testing and re-training. The effort is so high and so expensive that only a low velocity of upgrades ever occurs and CSP's become frustrated that they cannot deliver innovative customer facing features in the time scale customers expect, especially in the fast-moving world of digital service provision.

AwareX delivers a new base release every 2 months. This contains new features and functions from the product road map. These new releases are delivered without any additional cost to the CSP for the software licence (although we do charge a small fixed services fee to implement the new software). Of course the CSP does not have to implement every release but can combine releases by jumping versions if they so wish, but at least 2 upgrades per year is anticipated consolidating the 6 AwareX versions per year.

You simply can't do this with a custom software development, the developer will require payment for the work and take time to develop and test the new software, plus the onus is on the CSP to specify every new feature and there is no global community to provide innovation direct to the roadmap which you get with AwareX's product approach.

Release Notes

Journey name	Feature name	Release Notes	Service Provider Requirement
Force Upgrade	Soft upgrade feature improvement	Optional/Soft upgrade is used when a new version of the app is available and we want to encourage users to upgrade to the new version. We've improved the usability of the soft upgrade to make it more effective. Pressing "Yes" on the prompt now takes the user.	None
Marketing Messages	Scrolling marketing banner	Users can now see multiple marketing banners on the home screen. These banners are displayed in the the single marketing card present on the home page, and allow for horizontal swiping. These banners can be set up in CMS as earlier, and user clicks on the banner are captured in the analytics platform.	None
	Other Miscellaneous Items	<ul style="list-style-type: none"> Change Plan feature now works on iOS11 Improve behavior when no data is available to display on the screen. "No data available" is only displayed at the end of the request instead of during the screen data load Account card displays only name (no Welcome, since the user may be viewing someone else's account). Account card displays Welcome only when no name is available Better messaging when user has no add-ons Stability improvements Report "home screen viewed" event only after data loads successfully (not on error) Ensure that existing users upgrading from pre 6.1.1 version are push enabled on Android Usage cards contain a chevron indicator any time there is a detail screen available Handle the use case when a user is not allowed to register for the loyalty club program via the app 	None
Top-up	Optional message when doing top up	An optional message can now be specified while topping up a number. This is useful when the top-up is done for someone else as a gift. Example, "Happy Birthday", "Get well soon" etc.	Service
Authentication	Keep me logged in checked by default	The 'keep me logged in' flag is now enabled by default. In order to provide the user with more control, any time the user selects/deselects this flag, that choice is respected.	None
Guest Access	Guest Top-Up	Users can top-up using the mobile app without registering /creating an account or logging into their account if the BSS supports this. This allows users to perform a critical action without the burden of registration and authentication steps.	Service
Bills	Display Multiple Bills at an account level	The product now supports displaying multiple invoices for the same time period for a billing account. Some BSS systems allow multiple invoices to exist for a given month for a billing account. These invoices are typically used to group together multiple lines belonging to the billing account. These invoices are not payable individually. Bill payment can be made for any amount and the BSS will apply the payment to the appropriate bill driven by BSS business rules.	Service
Analytics	Base Analytics	A single app open event is sent to Google Analytics each time the app is opened. This gives us another data point for basic analytics. Note that no event information is captured. Customer identifier information is sent if available to identify users across channels	None
Usage Management	Android - Data usage on mobile network based on info available on the phone	Android users on versions 6 and above can now see which apps use the most cellular data. This data queries the Phone locally for the last 30 days of usage and displays information based on that. Subsequent releases will track wifi and roaming usages.	None
Analytics	Analytics - additional event tracking	In every release we continuously track additional events to gain valuable insights. Localytics event reporting takes up a small amount of non zero rated data	None

Release notes are structured documents which show every addition and change to the software with each new version. Given the velocity of releases they are important documents for the CSP to review, both so they can plan for introduction of new features and services to their end customers and also so they can decide which specific versions to implement to live operation.

Security testing

As a standard product both AwareX and its customers conduct regular PEN testing of the system allowing us to review results regularly and ensure we are current with the evolving threat. Since this is not a one-off event for us the product approach enables better security through more testing than a custom app would ever endure.

Regression testing

As part of any product SDLC, regression testing is a crucial part of the product as well as the enablement cycle. By having a base of core test cases that span our entire product suite, we are able to assert and verify that the hundreds of features AwareX offers are not comprised as we add new functionality. Regression testing is performed not only on our product iterations but also for each enablement. For enablement's, the addition of Customer specific regression test cases are added to the product core suite. One of the most crucial aspects of regression testing is the continued maintenance and scenario additions as our product evolves. The final evolution of regression testing is the Automation of the regression test suite. By

hooking the Automation suite into the Development and QA Testing process you are able to establish true continuous integration which leads to efficient time to market for our software with utmost quality.

Roadmap tool and process

AwareX delivers products to customers by engaging in 2 very clear, separate and distinct activities.

- Product Development

AwareX is a product company and releases a new version of its base system product every 2 months. AwareX maintains a product roadmap with prioritized features. These features are sourced from a variety of places, such as industry trends and best practices, internal ideas and feedback and requests from our customer community. These features are built as part of the reference application, which contains AwareX trade dress and functions against a simulator backend.

- Enablement

Features that are available as part of a Generally Available (GA) release and are described within the Release Notes, are available to customers to be 'enabled'. This results in the creation of a customer specific release. Enablement consists of 3 main activities: -

- Configuration – This involves enabling and disabling features/flags, setting the way customers view the Apps.
- Branding – This involves using appropriate localized colors, text and graphics, your brand guidelines.
- Data Connector – This involves interfacing with the backend system to fetch the data needed to make features work (e.g. fetching the Bill details from the BSS to enable the Bill feature)

Quality

The word quality can mean many things. In software, it's often the mistake that the idea of Quality Assurance (QA) pertains to just the testing of software. In relation to the lifecycle of a Product suite, the salient pillar of quality is the injection of quality into the end to end process. Quality starts from the sales cycle all the way through post production launch. Every step along the way follows processes that have been tested over time and enhanced after each iteration. Infusing automation and performance testing into the development and test cycles allows AwareX to meet scale needs with confidence. Quality starts with sales and scoping through to customer engagement into development and testing, ultimately resulting in smooth issue free deployments. With a product that is used 24*7*365 by millions of end users, Quality must extend to post production monitoring.

Support

Software support and maintenance is provided for the product. We provide a support portal for customer use which enables all the usual product reporting and queries to be handled as tickets with an SLA. New versions are regression tested and we expect a zero defects release. However, should a bug be identified a full support process with escalation is provided.

Operations

We use a standardized industry set of operational tools 'ELK' configured to provide a full operational management and monitoring capability. Since they are monitoring a product we have standard dashboards and alarms which enable a 24*7*365 support model with a choice of 4 nines or 5 nines availability SLA. Custom Applications require custom operations tools and integrations which are expensive and more difficult to operate than the AwareX product approach.

High Availability

The Product has been architected to be active/active Highly Available (HA) in every implementation. It is delivered as standard with 99.99% service availability SLA. This can be extended to 99.999% availability SLA if required. (see separate white paper on AwareX high availability and DR). This level of availability right out of the box is something a custom-built application simply cannot enable.

Innovation

AwareX spends a significant amount of time and money in product R&D. This involves focusing not just on ideas that can be mainstream today, but investing in ideas that could potentially be significant in the future. Examples include looking at alternative channels such as Alexa (for voice) as well as Bots. AwareX maintains a culture of innovation by listening to customers, having a vision of the 'ideal' way and empowering the team. The customer community contribute ideas, suggestions and experience with the APP to further generate innovations and continual improvement in the product.

Data Security

The AwareX suite is GDPR compliant, this is the strict EU personal data privacy and data security specification. We use encryption and hashing to ensure no personal data is every attributable to an individual and we hold no personal or private data on our systems. Our long-term storage provides logs for analytics and operations use only and it is not possible to identify any personal data from them.

Analytics

The system includes a full productized analytics suite also delivered from the cloud, it is fully integrated with the other elements of the AwareX offering with 'OOTB' dash boards and a full range of reporting, graphics and free form capabilities. It's totally integrated right out of the box and drives the marketing capability.

Marketing

The AwareX product includes a fully integrated analytics and marketing system to enable context aware personalization for effective customer communication and up-sell. AwareX's Engagement & Analytics Platform delivers an increase in active app users as well as higher retention. It is designed to deliver timely and personalized messages to coincide with a marketing promotion (for example a seasonal discount for an Add-On product) or based on a variety of user attributes such as previous actions (for example an end user who topped up in the last 30 days), OS/App version, current location (via Geofence), and many others. Campaigns can be optimized using A/B testing, the most powerful tool in the marketer's repertoire. Full graphical reporting is readily available to measure the effectiveness of the campaign so learnings can be incorporated into future subsequent campaigns.

Scalability

AwareX products are deployed in customers with millions of end subscribers and million plus monthly active devices. The Integration Platform which is the heart of the product and which serves as the primary interaction point with the backend system is stateless and allows for easy horizontal scaling through simple server addition without limitation. It also employs

mechanisms such as making calls in parallel to the backend systems wherever applicable, to reduce overall response times. On the infrastructure side, AwareX solutions run on AWS, the industry leading cloud services platform, which provides unparalleled scalability and reliability.

Documentation

Strangely good quality documentation which is usually a component of a product is not a feature of the AwareX offering. The reason is simple, this is a customer facing APP to be used by the widest possible set of end users, quickly, efficiently and reliably. To provide documentation is to admit defeat that the UI and functions are not intuitive or so easy to use that literally anyone can achieve whatever function they wish to use without any training or reading of documentation.

Customer journeys

Customer journeys are the fundamental function of the APP and are proven and user-tested with millions of telecoms subscriber's world-wide. AwareX customer journeys are specific for communication service providers offering digital products. New customer journeys are added with each new AwareX product release and existing ones are enhanced and optimized based on feedback received from the AwareX's community of telecom customers. The continual optimization cycle results in significantly improved APP efficiency with clear data display and minimal clicks to achieve any task.

Prototyping

AwareX uses tools such as 'Invision' to evaluate multiple workflows or options when designing new features. This enables our internal teams to quickly visualize different workflows without investing in actual product building. This mechanism also helps us get feedback from customers and other external parties wherever needed.

Community

The Application is today used every day in the hands of millions of end users all over the world. By selecting the AwareX product any CSP joins a community of service providers around the world who are concerned with the same things that you are. The community provides the input to the product roadmap which drives innovation and a customer centric product approach. Every member enjoys the innovations added to the roadmap which drive a rapid pace of innovation ensuring the product is always at the forefront of customer service features. You don't have to think of everything as the community overall ensures you will remain at the forefront of digital service provision.

Adoption

AwareX experience with multiple implementations all across the globe has provided insight to the ways and means to ensure effective and rapid adoption of the solution by end customers. Our engagement managers bring this experience along with standard tools, promotional ideas and analytic insights to each new project to maximize adoption and help a CSP achieve its business case goals.

TCO

It is well understood that the cost of any system is not just the initial purchase price but includes a number of lifetime events such as initial capital expense, operational costs, services, Software RTU, support and maintenance, operations, upgrades, change requests and the cost of any failures of customer satisfaction and loyalty.

AwareX has a very low TCO, this is facilitated by the product approach with SaaS RTU fees matched to the usage of the APPs. Low initial integration fees due to the pre-enabled BSS integrations, low UI branding due to the high configurability of the product APPs. With all upgrade software delivered included and a short project time line delivering a rapid time to market the TCO of a product is inevitably lower than a custom development approach. It is well understood that the quantum of

support, operations and change requests over a contract lifetime can greatly exceed the initial purchase price. With the awareX product approach these fees simply do not exist delivering a superior economic solution to the CSP.

What it's not (on demand customizations)

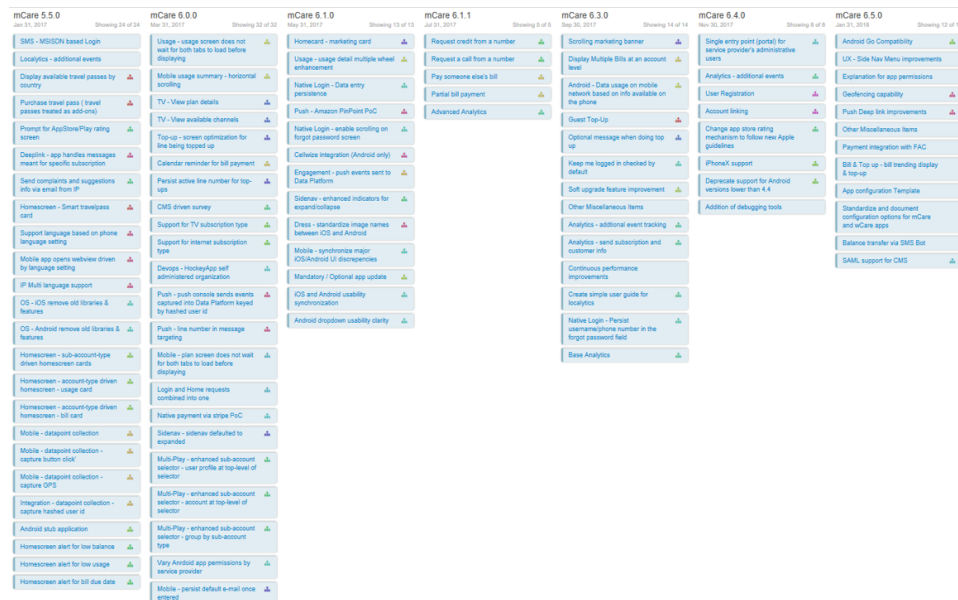
It is important that CSP's embrace the benefits of a product approach and do not try to look upon the solution as a custom development approach. This means understanding the high velocity of new releases from the roadmap and engaging with the AwareX engagement manager that each customer has allocated to them to identify, prioritize and schedule required features into releases in a planned and quality way from initial requirement documentation to the delivery of the release notes. To maintain the product approach we do not do custom additions but rather build a planned roadmap of what our customers need and then deliver it systematically in a planned and managed way.

R&D

AwareX spends a significant amount of time in product R&D for the product. This involves focusing not just on ideas that can be mainstream today, but investing in ideas that could potentially be significant in the future. Examples include looking at alternative channels such as Alexa (for voice) as well as Bots. AwareX maintains a culture of innovation by listening to customers and having a vision of the 'ideal' way and empowering the team.

Example annual releases

The figure below shows the 7 product version releases delivered over a prior 12-month period and the large numbers of new features provided to CSP's without any additional cost.



Usability testing

Product driven user experience and UI enhancement is essential in the digital Omni-Client landscape. Within AwareX our product iterations cycles, we infuse learnings from real end user experience by gathering data from multiple sources, including but not limited to, user feedback on social media, App stores and direct partner feedback derived from post enablement reviews. By working with our global diverse partners we get the opportunity to understand the behavior of a wide variety of user demographics who are regionally dispersed. Also, with the use of embedded Analytic SDK's we track the journey of all users' sessions and analyze trends and behavior that lead to enhancements that are then implemented into

our product cycles. As a product company AwareX also seeks 3rd parties who conduct objective UX/UI reviews that provide valuable insights that leads to a product platform that is a feature rich, yet simple to use.

Standardized architecture for all channels

By designing a proper Product AwareX has been able to architect a digital Omni-Client system not just an APP. This means that the product infrastructure supports of course Native Smartphone Apps but the same integrations, data processing and reformatting, security, analytics are all not just re-used but instantly available to other digital channels. AwareX have implemented Facebook Bots, SMS bots, Web portals and Voice channels for Alexa and Google. In future as, new digital channels evolve they will be able to be rapidly implemented leveraging the existing product infrastructure.

New digital channels

Because of the extensible product architecture AwareX is highly responsive to the introduction of new digital channels all of which fully utilize the existing infrastructure, integrations, security and scalability. This means a new digital channel can be added and supported for a minimal cost. The original digital channel was the Smartphone App but since its introduction AwareX has also introduced support for Featurephone bots, Smartphone bots, Facebook bots, Web portal and Voice systems Alexa and Google. Most recently Alexa has added a screen to its smart speaker device and a mixed voice, visual interface can be added. There will certainly be new digital channels in the future and the AwareX product is fully enabled to support them.

Upgrade policy

Whilst AwareX deliver a new base product version every 2 months, and whilst a CSP may enjoy this velocity of releases if they wish it is not required to implement every single update if it does not match a CSP's IT cadence. A CSP may upgrade between 6 and 2 times per year depending on the options selected. If you implement each release you will get a rapid velocity of new innovations and a dynamic approach to your Digital channels. On the other hand if you prefer you can upgrade every 3rd release and combine the prior functions into larger releases. AwareX will provide support for older versions of the software on an N-4 basis.

CONCLUSIONS

The product approach is endorsed and promoted by the TMF as the industry association for communications service providers. It's understandable due to the huge number of clear benefits of selecting a true product approach for digital Omni-Client requirements and being able to avoid the risks, timelines and costs associated with custom developments.

The AwareX product is proven, has a robust architecture supporting the key requirements of scalability, security and privacy across multiple digital channels. It is feature rich and optimized right out of the box and can be implemented quickly. It provides a low TCO and keeps the CSP at the forefront of innovation in customer service.