



# Mobile Presence

**It's a new world for operators today. Market fragmentation and increased competition from traditional and emerging players are demanding a shift in the marketplace.**

The increased pressure on revenues heightens the importance of innovation and rapid time-to-market with new, differentiated services. Indeed, the move among progressive operators is towards Customer Value Innovation, a shift from traditional voice/SMS-focused services to new services which offer differentiation, personalization, participation and simplicity.

Artium is uniquely qualified to deliver the underlying technology by which operators can deliver enhanced mobility for a new wave of services. The company's rich history of sophisticated telecoms software solutions have been at the leading edge of convergence. For the past decade, Artium solutions have armed operators with the necessary technology to drive increases in revenues and margins. Over the past year, Artium has continued to blaze a path of innovation, gaining a strong leadership role in the areas of mobile presence and in the areas of opportunity emerging around the convergence of IT and telecoms networks.

## Artium adds a new dimension to location awareness

As the telecoms market has evolved, the corporate environment has also undergone significant shifts. Microsoft's Office Communication Server (OCS) technology is transforming the workplace, introducing new sophistication to communications between colleagues and between businesses, their clients and partners. OCS's automatic adjustment of status dependent on user activity, or on observation of Outlook calendars, is a significant step along from the crude self-certifying status settings of the first phase of messaging applications.

Artium's ARTA platform uses the desktop functionality of OCS's presence awareness and extends and enhances it for the mobile environment. ARTA conjoins desktop presence features with mobile handset technology so that the status of mobile users can be displayed by Office Communicator whilst they are on the move. The flexibility of ARTA's status settings means that users can set much more than just a forwarding number. With ARTA, any number of call diversion scenarios can be established based on time, location, on the established importance of an incoming call and so on. Each scenario has potential to require a different response. ARTA can deal with calls on each basis as desired.

## Mobile Presence

Artium's Mobile Presence solution combines information about the location and state of users and intelligently aggregates the results on the basis of user preferences.

## Location

Location is covered by both absolute and relative definitions. Absolute locations can be provided from many sources, which include on-device GPS, cell ID, mobile or SIM-based applications. All of these locations have different accuracy and precision characteristics that must be understood to correctly use the location. Similarly relative locations can be derived from a number of sources in order to detect proximity to people or to a known place, i.e. work or home. Sources include cell ID (without mast location knowledge), NMR readings or local environments (Wi-Fi MAC addresses). Artium provides both SIM- and device-based mobile location clients that can determine the absolute location more

accurately than simple cell ID whilst also being able to determine relative location.

## State

A user's state (or status) can help to determine their availability and willingness to communicate. State can be determined in many ways, such as by a user's connectivity. State can be changed based on knowing if a user's mobile device is turned on, if they are logged into OCS and if they making a call on their mobile, SIP or VoIP/OCS phone. Location can also be used to help define state, i.e. if a user is located in a meeting room, they may prefer to divert calls to a PA. At other times they may be moving rapidly (inferring running, cycling, driving etc) and therefore implying a state which limits communications, perhaps resulting in the diversion of calls to a message service or to the next available colleague.

## Intelligence

Artium's technology offers a range of both intelligent and manually configurable options to provide ultimate flexibility for operators and consumers. By combining state and location with an awareness of a user's means of communications, Artium can intelligently derive a full understanding of a user's presence. This is used to automate delivery of communications to the right person in the right format at the right time.

### Presence from the Mobile Phone

Many systems exist to take desktop presence and feed that into IM-style applications (either consumer-focused or enterprise-focused). However, there are significant challenges in taking the presence from a mobile device.

This can be accomplished by placing a client on some devices and using this to detect the call status of the device. However, this leads to significant support issues with the multiplicity of devices that exist and the inability to support all devices.

To help overcome these issues, Artilium is able to extract presence information from the mobile device using a number of different techniques:

- **By integration with the HLR, which is the master point for this information.** It is traditionally a tightly controlled network element with restricted access. If access is permitted then the MAP ATI command can be used to extract information about the device.
- **By integrating the ARTA platform into MSCs, call control information can be extracted.** This integration could be performed using notify-only commands so that call-flow processing is not delayed by this action.

### Mobile and SIP Presence Integration

This information can be used to track the on- or off-call status of the phone and possibly the location as well. (This is dependent on the MSC passing optional information).

- **By adding the SIM Toolkit application.** The system can detect the location of the device from this, and also receive on-/off-hook notifications.

Additionally, by using the SIM Toolkit application, it is possible to determine the relative position of the mobile subscriber – this can be inferred from the absolute

position or directly detected using NMR signatures. This relative location determination can be utilised to provide zone-based positioning that itself can be used to control the rating of calls placed. The Artilium system allows this to run in a continual fashion without user intervention. User settings can be stored by ARTA in order to determine the location of the user in abstract (i.e. at home, at work) and any movement from there can establish new availability settings and new call handling patterns. Wi-Fi hotspots can be monitored similarly and ARTA can interpret the signals from such local locations in order to suggest appropriate courses of action.

### Scenarios for engaging with OCS

When a worker initiates a call with a colleague via OCS, that data is passed through ARTA. OCS status, including integration with Outlook Calendars, is also shared helping to determine communications connectivity. Likewise, when a user initiates or receives a call on their mobile device, ARTA will change their OCS status accordingly.

### At the office

Built on Microsoft technology, Artilium's location-aware services can recognise an environment by a user's access to Office-based applications such as OCS. Logging on to OCS triggers a change in the user's status and applies call routing information accordingly.

When the availability status in OCS changes, ARTA registers that altered status and can adjust routing rules. For example, if a user shifts from being available to being in a meeting, ARTA can divert calls to another colleague.

### Out of office

Changing the way in which a phone accesses a service can update the availability status of a user. In an office environment a user may access wireless services. When users leave work and move out of range of wireless access,

the network can update the user's status to out-of-office and modify their availability status accordingly.

When user status is updated automatically in this way, ARTA will adjust accordingly. Personal calls need no longer be diverted. Work-related calls can be given new priorities and be routed to colleagues or to voice mail.

### Privacy

Privacy is an issue whenever personal data is shared between systems. ARTA lets users control how their historic data is kept, who has access to it, and with what authority they can access it.

### Technical Integration with OCS

Artilium has two points of integration with Office Communications Server and could do similar with other VoIP clients assuming the correct API exists (i.e. MSN Messenger etc).

1. On the presence side we use Office Communicator client API to send SIP simple commands/updates to the Office Communications Server indicating a change in presence.
2. On the call control side the ARTA platform functions as a SIP controller or a B2BUA (Back-to-Back User Agent) without the voice bridge functionality. The ARTA platform sits between the Mediation Server and the Gateway to enable the monitoring of calls in progress and generate correctly rated record.



Artilium is the leading developer of Microsoft-based carrier-grade software for mobile networks.

Artilium's ARTA Mobile Services Platform is an open, modular, highly extensible Next Generation Service Delivery Platform built on Service Oriented Architecture principles and designed to enable rapid creation of new mobile applications, packaged as services, throughout their lifecycle.

ARTA activates the coming wave of third-party application development and innovation. By providing open and secure access to mobile network functionality and autonomous software processes, ARTA enables infinite possibilities for intelligent mashups which combine network capabilities of presence, mobility, location and telephony; with Web services including advertising, social networking and search.

Based in Belgium with offices in the United Kingdom, Artilium is a publicly listed company on the London Stock Exchange (LSE/AIM: ARTA). The company was founded in 1995 and has completed more than 40 installations serving tens of millions of end-users in 11 countries.

