**TSG-SA WG 1 (Services) meeting #15**                    **S1-020543**
**Saalfelden, Austria, 11-15th February 2002**        **Agenda Item: 10.12**

| | |
|---|---|
| **Title:** | Liaison Statement on revised "Draft Push Service Stage 1" |
| **Source:** | SA1 |
| **To:** | SA2, SA3, SA4, SA5, T2, WAP Forum, GSMA and GSM-A SerG |
| **Response to:** | |

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**Attachments:**        S1-010540
                        [Draft TS 22.174 v0.6.0, "Push Service; Service aspects (Stage 1) (Release 6)]

**1. Overall Description:**

SA1 thank SA2, SA3, SA4, SA5, T2, WAP Forum, GSMA and GSM-A SerG  for their interest in Push Service. At the Push SWG at SA1-#15, the draft Push stage 1 was discussed and some revisions made in definitions, overview, and other areas.

Kindly note that the current stage 1 version and schedule are:

   - the draft stage 1 is advanced from v0.5.0 to v0.6.0
   - the schedule for Push service has changed to Release 6

SA1 will further refine the Push stage 1

**2. Actions:**

**To all groups.**

**ACTION:**   SA1 are providing the current draft stage 1 for information.

               Comments and suggestions on the draft are welcome.

**3. Date of Next SA1 Meetings:**

| Title | Date | Location | Country |
|---|---|---|---|
| SA1 Adhocs | 8 – 12  Apr 02 | Sophia Antipolis | France |
| SA1#16 | 13 – 17 May 02 | Victoria | Canada |
| SA1 Adhocs | 8 – 12 Jul 02 | | Italy |
| SA1#17 | 12 – 16 Aug 02 | Durango | North America |
| SA1 Adhocs | 14 - 18 Oct 02 | | |
| SA1#18 | 11-15 Nov 02 | | |

# 3G TS 22.174 0.6.0 (2002-02)

*Technical Specification*

**3rd Generation Partnership Project;**
**Technical Specification Group Services and System Aspects;**
**Push Service**
**Service aspects (Stage 1)**
**(**Release 6**)**

| Keywords |
| --- |
| UMTS, service, push |

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### *Copyright Notification*

## Contents

## Foreword

This Technical Specification has been produced by the 3GPP.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TR, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

    x   the first digit:

        1   presented to TSG for information;

        2   presented to TSG for approval;

        3 or greater     indicates TSG approved document under change control.

    y   the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

    z   the third digit is incremented when editorial only changes have been incorporated in the specification.

## Introduction

The Push Service introduces a means to transmit one or more data packages from a push initiator to a push recipient (e.g. a UE)without a previous user action. The push concept, as provided by the SMS teleservice, has been very successful in the GSM second generation, both for text messaging (for user viewing) and for other unstandardized data to the SIM (as a building block used for OTA and other purposes). This TS introduces the use of push as a building block (network capability) for new services, both public and private, in 3GPP.

In the normal client/server model, a client requests a service or information from a server, which then responds in transmitting information to the client. This is known as the "pull" technology, the user pulls information from the content provider. The World Wide Web is a typical example of pull technology, where a user enters a URL (the request) which is sent to a server and the server answers by sending a Web page (the response) to the user.

In contrast to this there is also the "push" technology where there is no explicit request from the user before the content provider (push initiator) initiates an information transfer to a user.  Another way of saying this is that whereas "pull" transaction of information are always initiated from the user, "push" transactions are content provider initiated.

Typically, a user signs up with the push initiator and defines their interest, volume of information acceptable and other factors in the push subscription profile. As information becomes available that satisfies the user's push subscription and profile, the push initiator delivers it to the user using the Push Service.

The Push service may be used to implement high level services such as IP multimedia services, MMS, etc., and new services including public safety, government, corporate IT, transfer of data packages to machines and devices, in addition to infotainment type services.

Another common use for push services is the delivery of notification from e.g. MMS to the user while the user has the option of "pulling" the actual data packages from the push initiator.

The delivery network provides the push data packages to the user agent in the UE. The user agent interprets and presents the data packages to a person, device or machine using the UE.

> Note: The requirements of services such as streaming, conversational services and broadcast are independent  from push. Therefore they are not considered appropriate for inclusion here. Push will be available for use in appropriate applications of all high level services.

# 1 Scope

This Technical Specification defines the Stage 1 description of the Push Service and is the set of requirements that shall be supported for the provision of push, seen primarily from the subscriber's, service providers' and delivery network points of view.

This TS includes information applicable to network operators, service providers, terminal and network manufacturers. It is of use to manufacturers and organisations, which have devices or machines benefiting by availability of push data.

This TS contains the core requirements for the Push Service, for operator and external Push Initiators, which are sufficient to provide a complete service capability and service capability feature.

This TS defines the requirements for Push to enable delivery of data "packages", including such functionality as:

· Transfer of data packages from a Push Initiator to a Push Recipient

· Latency and Priority classes,

· Delivery class

· Definition of handling of undeliverable push data packages

[Editors Note – this bullet will be reviewed following the completion of the Service Management section -Flexible application of User Profile and  Service Management through participation of the push initiator and the organization-user in appropriate cases]

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] 3G TS 21.133: "3G Security; Security Threats and Requirements"

[2] 3G TS 21.905: "Vocabulary for 3GPP Specifications"

Editors note : other refs ? charging , security

# 3 Definitions and abbreviations

Definitions and abbreviations used in the present document are listed in TR 21.905 [2]. For the purposes of this document the following definitions and abbreviations apply:

## 3.1 Definitions

**Data package**: data sent by the push initiator to the push recipient, of a format known to the receiver (push recipient), and not otherwise defined by the push service.~~Data Package:~~

**Delivery Network**: the network that delivers the data packages from the Push Initiator to the User.

**Organisation-user**: an entity which uses push service and controls push recipients. It may be a corporation or government agency. One illustration is an organization or entity which controls UEs integrated into special-purpose devices as part of a closed user group. A UE which is controlled by an individual only for personal services has no organization-user.

**Push initiator**: the entity that originates push data and submits it to the push service for delivery to a Push recipient.

**Push recipient:** the entity that receives the push content from the delivery network and processes or uses it. This may include the UE with which the PLMN communicates with, the user agent with the application level address, and the device, machine or person which uses the pushed data packages.

**Push service**: a service triggered by a Push Initiator in order to transfer data packages (e.g. data, multimedia content) from the Push Initiator to the Push Recipient without a previous user action. The type of bearer shall be selected based on the push initiator's and delivery network capability and the capabilities of the Push Recipient's UE.

Trust Level : ?

**User agent**: is any software or device that interprets resources. This may include textual browsers, voice browsers, search engines, machine or device interface software, etc.

**Push Subscription Profile**: a set of parameters indicating the users settings and preferences for the Push Service.

## 3.2 Abbreviations

For the purposes of this document the following abbreviations apply:

URL – Uniform Resource Locator.

# Overview of the Push Service

The overview of push is followed by a summary of the relationships among the entities involved (operators, users, push recipients and push initiators).

Note: these are functional descriptions: multiple functions may, depending on business arrangements, be performed by a single entity.
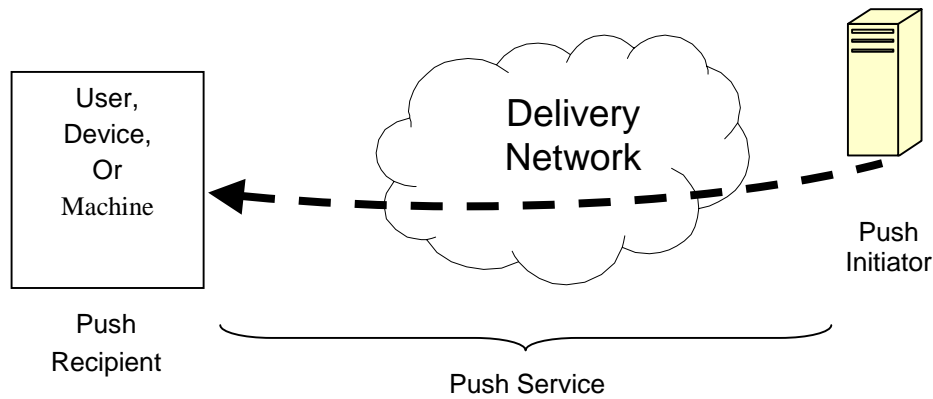
Figure 1: Push Service Overview

A Push Service is a service whereby the Push Initiator sends data packages to a Push Recipient, without interaction from the Push Recipient.

The typical mode of operation is as follows:
- A Push Recipient (e.g. user, receiving device like a meter) would subscribe to a set of services offered by various Push Initiators and allow these Push Initiators to send it data packages that meet it's configured criteria
- A Push Initiator would identify information matching the criteria set by the Push Initiator and package it up into a data package
- The Push Initiator would hand over the data package to the Push Service, identifying the Recipient's address, and optionally delivery class, priority, delivery time parameters, etc.
- The Push Service (offered by the Delivery Network) takes the responsibility of delivering the data package, optionally following the delivery class, priority and delivery time parameters, to the Push Recipient and for providing feedback to the Push Initiator regarding delivery of the data package if requested by the PI.

Key characteristics of the Push Service include:
- The Push Initiator may but is  not required to deal with the specifics of the wireless transport, selection of appropriate bearers, out-of-coverage or roaming issues, and other wireless network anomalies. These are all managed by the Push Service and hence can be optimised at the network level rather than being handled by all applications. Using an available bearer the push service offers as many capabilities that are available to delivery of the data packages following the requested push services requested by the push initiator.

Editors note – the following 2 points are not agreed.:
The Push Service does not look into the contents of the data package and does not transcode or otherwise alter the contents as they may be encrypted or contain application specific data type that is not understood by other applications e.g. an m-commerce transaction data package.
Tasks such as capability negotiation, transcoding, user groups etc. are expected to be handled by the PI.

- The service is capable of supporting asynchronous communication between an Push Initiator and the push recipient on a wireless device.
- The privacy of the user is important and the introduction of the push services should in no way result in unwanted information "spam" being sent to mobile users.

  The Push data package could contain:
- Application specific data exchanged between a server and its client e.g. ERP, CRM, Field Service management and m-commerce transaction data. Meter reading
- Provisioning or configuration control data
  - MMS type data
-

The entities shown in Figure 1 are Push Initiator, Network Push Service (Delivery Network) and the Push Recipient. The Initiator or Recipient may be outside the Operators network and hence will require well-defined relationships amongst them.

For example, a Push Initiator can be within the Operator domain (e.g. an operator portal) or an external VASP. A Push Recipient (e.g. a User) will need to be part of the Operators network and will require allowing the network to pass through push data and also subscribing to the Push Initiator to generate the data it wants pushed. To support flexible billing models, it becomes necessary for the Operator to have a defined commercial relationship with the Push Initiator.

# 4 Overview of the Push Service

The overview of push is followed by a summary of the relationships among the entities involved (operators, users, push recipients and push initiators).
Note: these are functional descriptions: multiple functions may, depending on business arrangements, be performed by a single entity.
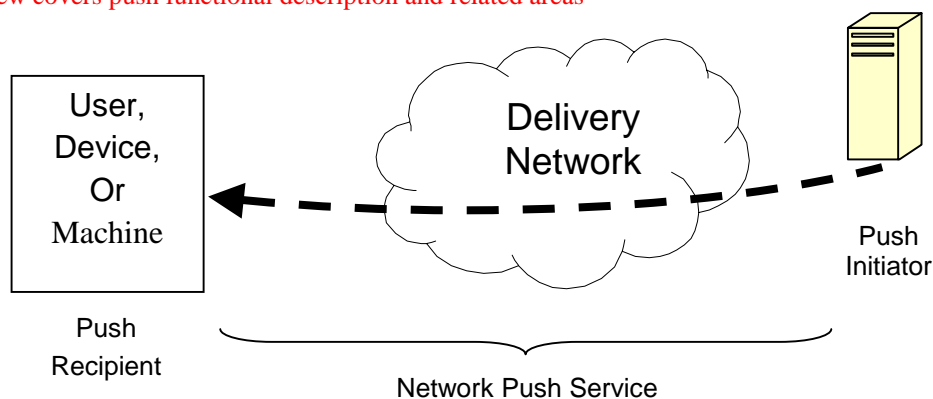This overview covers push functional description and related areas



User, Device, Or Machine

Push Recipient

Delivery Network

Push Initiator

Network Push Service

Figure 1 : Push Service Overview

A Push Service is a service whereby the Push Initiator sends data packages to a user at a time that is determined by the Push Initiator.  For example :
☐ the data package could be advertising, which the user has agreed to accept,
☐ the data packages could be news bulletins, weather forecasts, stock quotes etc. that the user has subscribed to by prior arrangement,
☐ the data packages could be very specific to the users interests, hobbies e.g. details of the location of a rare bird for birdwatchers, the latest news from a favourite TV show,
☐ the data packages could be related to work (corporate information service)  e.g. company notices, details of next job for field engineers.
The data packages push is initiated by a Push Initiator that has permission to push data packages over a particular delivery network and permission to address a particular set of users.
The privacy of the user is important and push services should in no way result in large amounts of unwanted information "spam" being sent to mobile users.

Editors note : description of commercial relationships between operators, users and Push Initiators needs elaboration.

# 5  Requirements

The following list gives the high level requirements for the Push service:

## 5.1 General

The Push Service shall allow a Push Initiator (which may be external to the PLMN) to initiate delivery of data packages to the Push recipient, and in the case where the push recipient is a UE the User Agent interacts with a person or machine. It shall be possible to provide the Push Service without any user intervention, subject to settings in the push subscription profileGeneric User Profile [x].  The Push Initiator may interrogate the push subscription profileGeneric User Profile, if available, in order to establish the user preference related to the Push Service.
The push mechanism shall be efficient in the use of network resources and terminal resources.

Push Initiator may access user specific data held in the network (e.g. presence information and location information), when available, subject to the user's privacy requirements and operator agreement.

- It shall be possible to support Push Service independently over CS (including CS data and SMS), PS domains or IMS.
  Note: Operators should be able to choose which of these options they use to deliver Push services, and it should be possible to use these options independently from each other. e.g. delivery over the PS domain would allow operators who are not planning to introduce IMS and SMS to offer Push Services.

- It shall be possible to deploy Push Services independently of other services defined by 3GPP.
- The quality of service delivery shall be able to include time-sensitive as well as reliable delivery choices

It shall be possible to use all available access networks (e.g. GERAN, UTRAN,).

The bearer service for delivery of push data packages should be transparent to the Push Initiator, that is, the Push Initiator need not know what bearer service the client is using. The Push Initiator may, however, require certain grade of service for delivery, e.g. speed of delivery or delivery acknowledgement.

## 5.2 Addressing and Routing

It shall be possible to uniquely identify push service recipients.

The addressing model shall include network addresses of the device, device identities to support devices with multiple network addresses, user identities and application level addressing (i.e. user agents). The addressing model shall be compatible with Internet specifications when applicable.

The Push service shall be able to deliver a data package to a push recipient with a dynamically allocated IP address.

The Push service shall be able to deliver a data package to a push recipient that does not have an IP address currently assigned.

Both telecom and internet numbering and addressing schemes shall be supported.

A variety of identifiers can be used externally to address entities. For example, data only terminals (e.g. vending machine) can be reached without necessarily using E.164 numbers.

There is no requirement to address users by IMEI.

## 5.3 Service Delivery

The Push Service may offer classes of latency and priority, and service delivery. When offered this shall include support for the following:

### 5.3.1 Latency and priority

When offered the following classes shall be provided at a minimum:

- Delivery time constraints (timing window)
- Requested delivery priority (different priorities dependent on for example originator)

The push service shall be offered as soon as possible if class of service delivery is not specified/supported.

### 5.3.2 Delivery class

When offered the following capabilities (at a minimum) shall define the delivery class:

- "Data package" delivery status provided / not provided to push initiator
- Acknowledged / un-acknowledged
- Acknowledged / un-acknowledged ?
- A single-attempt delivery mechanism
  Note: The provision of a guaranteed (store and forward) mechanism is FFS.

- Priority
  Note: Definition for priority required – this intended to indicate how the network will handle the delivery e.g. only deliver "off peak", etc

If the user declines delivery of a specific instance of pushed information the Push Service shall not attempt to re-send it.

## Service Modes

The push services may have several modes of operation.

Mode 0: Simple delivery without any modification or transformation or additional security

The data package delivered to the push recipient shall be identical to the data package provided by the push initiator.

NOTE: these further modes are not yet agreed, for further study

Mode 1: media transformation, no security

Mode 2 : media transformation with security

Mode 3: secure, no transformation allowed

## 5.4 Service Management

The basic principle of service management is "the user is in control".

The user or organisation-user of the Push Service has a subscription with a Network Operator. . If a user is provisioned with the push service, the subscription shall include a push subscription profile for push service settings and push service preferences. The push subscription profile parameters (users setting and preferences) are managed by the user or the operator on behalf of the user.

NOTE : It is expected that the push subscription profile will be part of the Generic User Profile once defined.

However, the main service relationship is with the Push Initiators who by definition have access rights to the delivery network.

The user or organisation-user shall be able to request Data packages from a particular Push Initiator be suppressed.

The user shall be able to indicate the maximum size of data packages permitted to be pushed. The delivery network shall limit push data packages to this size. The delivery network may also have its own limitations on maximum push data packages size.

## 6 Security

Editors note : relationship to DRM ?

The "Security Threats and Requirements" specified in 21.133 22.133 [1] shall not be compromised.

The user shall be able to use the Push Service in a authorized and authenticated manner.

The push initiator shall be authenticated to the user and the push service in a way that is understandable to both.

Mechanisms shall be provided to ensure that the Push message is sent to and accessed only by the intended addressed entity.

It shall be possible for the Delivery Network Push Service or the user to deny an unauthorized push message.

It shall be possible to deny an unauthorized push message. An authorization may be based on the following:

- identity of the Push Initiator
- the destination user, device or user agent
- push related attributes such as priority and content type

It shall be possible for the user agent in the UE to control acceptance of content pushed to the user based on the trust level of the Push Initiator.

The Delivery Network Push Service shall provide data integrity and data confidentiality of the pushed data packages.

Push Initiators must have authorization (e.g. service level agreement) from with the Delivery Network Push Service Operator (e.g. PLMN Operators) in order to use the Push Service.

## 7 Privacy

The Push Initiator shall comply with user, regulatory, organisation-user and operator privacy requirements.

[note: this has the same type of privacy requirements as in Presence Service/Generic User Profile, could reference or copy]

# 8 Charging

Push services shall support various charging mechanisms (e.g. reverse, prepaid and reply charging etc.).
The following charging scenarios shall be supported:

1. Charging for push services can be subscription based.
2. Charging for push services can be based on the content, the resources used and time needed to carry out the push service.
3. Charging for push services can be based on the number of messages pushed to a receiver.
4. It should be possible to charge the user only, the Push Initiator only, or both the user and the Push Initiator.
5. It should be possible to charge third parties e.g. corporate accounts.
6. It shall also be possible to mix and match the various different charging scenarios outlined above.
7. One-off charging for subscription and cancellation of Push Service should be possible.
8. Need to charge for rejected push content.

It shall be possible to include the following data in the CDRs as charging information if available:

- message types, length, storage time in the network, etc
- delivery time, upload / download method,
- Push service sender / -recipient
- number of Push messages sent
- number of Push messages received.
- roaming conditions (e.g. in a visited network)
- location conditions
- media.

## User Profile Information

List of information that will assist the user in using the push service e.g. max size of data received,

NOTE : user profile information may not always be available.
The push service shall be able to adapt the content on behalf of the user if the user has given this permission based on the privacy settings. ?

# 9 Roaming

Push services shall be available when roaming.
The push recipients shall be able to select and receive pushed local services, subject to the user profile settings.
Note : Further work required.

# 10 Inter-working

Note : This section shall describe the interworking with 3GPP bearers and services.

Note: it is assumed that Push initiators, external to the Network Operator, are located in IP networks. This should be confirmed.

## 10.1 Interworking with Different Bearers

## 10.2 Service Independence

### 10.2.1 Call Barring

It shall be possible to provide push service to a user regardless of barring status of other services.
It shall be possible for user to bar a push service regardless of barring status of other services.

Editors Note: These requirements may need further clarification. The intention is to allow Push Services to operate in a network even if some other services are barred. e.g. The Push Service will use mechanisms (that are not barred) other than SMS if SMS is barred.

# 11 Annex A (informative): Push Service Use Cases

Editors note : this section contains some initial ideas and requires a lot of work.

Push services may be defined and profiled in various ways, including types of service entities, types of information and delivery characteristics.

The basic principles which apply include:

- A mobile may have many services
- Each service may have its own requirements for provisioning, service delivery and support
- Service delivery architecture shall accommodate and efficiently support this diverse range of services
- The functionality required to support various business model shall be provided
- No single entity has complete control of the subscriber

Services will be provided by many service entities including:

- Operators
  - News, weather, e-mail, advertising, presence, location
  - Consumer M-services, M-Commerce applications
- VASPs
  - Vertical industry applications, niche interest applications
  - Banking, stock trading
- Corporations
  - Corporate intranet, extranet, field support applications
- Public Safety
  - Internal local communications, inter-group (including emergency response)
  - Public alerts: traffic, weather safety,
- Government
  - Security agency internal communications
  - Agency dissemination of information (like a VASP)
- Internet (for mass consumption)


A wide range of use cases may be described. This list is intended to illustrate some of the corporate, public safety and government cases in addition to those, which are in the information, entertainment, advertising and Internet areas.

A user may subscribe to many services.

- Bank Services - (724 Solutions Inc. like services) closed system, very, very high security (down to the using public-key encryption at the field level).  This is a public service that is offered by a private company that needs low-level network access.  Service could include bank account access, mutual fund, portfolio access, money transfers, and stock operations.
  - Private banking service - notifications could be pushed out if your bank account reaches a certain level, could also push real-time debit or credit transactions to the user...
- Stock Services - could be public or private, but in all cases strong security is required.(like the Pocket Broker application).
  - Private Stock Server - could indicate that a sale as gone through, a portfolio has reached a certain level, a stock broker's buy or sell suggestion for paying members, etc.
  - Public Stock Server - that simply allows the user to receive notification of major stock changes, volume level concerns or key levels being reached.  Since there is no trading this is public information and might cost a modest subscription fee.
- Corporate Push Services - company private e-mails and calendar events, company alerts for: (1) CRM changes – e.g. please contact Joe immediately, (2) inventory levels, (3) field service calls, (4) ERP data - manufacturing stopped – e.g. parts missing, (5) collaboration alerts – e.g. new specs document to review, and (6) workgroup alerts – e.g. Tom's code has been checked-in integration can continue
- Public Safety - Police Department in a city provides: (1) alerts to all department members through very secure push service, (2) alerts to police members in adjoining municipalities. Department members receive alerts from state police department, as coordinated by the city's department. The cross-department alerting is tailored to the individual member's assignments.
- Public Safety – Police, Fire and other related agencies provide alerts with some ranking of their severity to the public: (1) traffic status and problems, (2) severe weather alerts.
- Government – Agency with high security requirements and closed system uses the service to notify their members while keeping the terminal addresses totally private and confidential and preventing monitoring of the amount of their traffic. The agency is able to maintain security and key control without the knowledge or need for cooperation of any other entities.

The service inititiator of high security and high sensitivity services shall be provided with flexible interfacing with operator user profile and other databases, restricting critical information (e.g., user identities, sensitive services enabled, and usage data) from others, while providing the operator with a limited set of required data.

- The user receives a short information message about important news (e.g. the user subscribes to a news list) the full news article will not be retrieved until the user accepts the pushed data packages. The possibility to reject the message is also valid.
- The user receives data packages about e.g. new e-mails, voice-mails, fax etc and can choose to receive the whole content immediately or at a later occasion.
- During a sports event the user is interested in receiving a short streaming video with highlights from the most important happenings and can choose to read/view more when interested.
- The user is part of a cell broadcast group and will be notified about local news from the group owner. All messages will then be, cost and capacity efficiently, pushed to the subscribers in the group.
- When entering a particular place (e.g. shopping mall, airport, amusement park) a message is pushed to the user and a list of available services are presented to the user. If the user is interested in any of the services he can easily visit the recommended sites. The message can also include information about other kind of bearers related to this local area e.g. Bluetooth,WLAN.
- When passing a store included in the users interest list the IMS capable client receives a streaming video commercial e.g. pizza options to order from. Reverse charging in the IMS network can be used if the user decides to order something.
- When roaming a message can be pushed to the user with information about e.g. a phone call cost when roaming in this particular area.
- An IMS capable client is roaming into an IMS network and receives a Streaming video trailer e.g. presenting the IMS operator for the user.
- Since the home operator is aware of when the client is roaming, Push messages related to the client's roaming position can be sent to the user e.g. a list of available services (like weather forecast, local news, ongoing events) the user can choose from.
- Game invitation can be pushed to the selected game partner. If the invitation is accepted a session is set up to start the game.
- Games where it's likely that the opponent's answer might take some time (e.g. chess). Each time one of the players do a move a push message is sent to the opponent.
- A notification when you exceed some application dependent counters/limits (e.g. money left on pre-paid) giving you options to set up a session related to solving the problem (e.g. put more money on the prepaid account).
- Occasions where a waiting time is expected (e.g. at a doctor's office, dentist, a restaurant, Swedish systembolaget i.e. wine store). After being registered (establishment of a long-lived session) a push message will be sent to you when it's your turn (eventually a reuse of the session).
- E-ticket, a document being pushed to the client and activated by an application in the client. When entering the arena for which the e-ticket is valid the information is transferred via e.g. Bluetooth (e.g. at a music event, sports event or an airport) additional information might be transferred to the client (e.g. where to go).
- Synchronisation, e.g. automatically update the terminal's address book when the user makes a change elsewhere (for example in "Contacts" stored on an Exchange server).
- Provisioning, i.e. push a message to the client containing settings needed by the terminal to access the services the user is subscribed to. For example when buying a new terminal/getting a new subscription.

It shall be possible to address groups of user, where groups are defined by subscriptions, geographic area or any other useful grouping.

**Comment:  This section is confusing, e.g. specification of both delivery class and delivery priority. The following parameters should be specified by the push originator for each push message (as examples):**

- **delivery class (or priority)**
- **immediate (< 5 seconds)**
- **medium (< 1 minute)**
- **low (as available)**
- **time to live**
- **content type (e.g. MIME)**
- **streaming / non-streaming**
- **minimum bit rate**
- **guaranteed / non-guaranteed**
- **acknowledged / un-acknowledged**
- **control information (replace, delete, client capability query, client update capability)**

The push initiator for non-public services (e.g., private or corporate services, public safety services and government services ) shall have flexible interfacing with service provisioning to enable restriction and management in accordance

with suitable arrangements with operators. Specifically, for sensitive push services, the push initiator may maintain parts of the user profile and service provisioning database with flexible interfacing to the operator's database.

The user shall be able to subscribe to multiple Push Initiators at the same time.
It shall be possible for a user to convey their unique address to the Push Initiator when subscribing to a new service.
The user shall be able to cancel a particular push service from their mobile terminal.
The user shall be able to discover and subscribe to new push services from their mobile terminal.
The user shall be able to easily determine their current subscription list for push services from their mobile terminal.
The push initiator for third party services (e.g., private or corporate services, public safety services and government services) shall have flexible interfacing with operator administrative services including billing.

## 12Annex B:    Change history

| V. 0.1.0 | February 2001 | First Draft (Presented at TSG-SA-WG1 6th – 9th February 2001) |
| V. 0.2.0 | July 2001 | Second Draft (from SA1 ad-hoc, 9 July 2001) |
| V. 0.3.0 | November 2001 | Third Draft (presented at SA1 5th – 9th November 2001) |
| V. 0.3.1 | January 2002 | Highlighting removed as basis for Phoenix SWG (13-18 January 2002) |
| V. 0.5.0 | January 2002 | Output of Phoenix Push SWG (15-16 January 2002). |
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| Change history | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TSG SA# | SA Doc. | SA1 Doc | Spec | CR | Rev | Rel | Cat | Subject/Comment | Old | New |
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