



ŽIVLJENJE NISO LE BESEDE

WWW.MOBITEL.SI

Operation of 090 premium services via the Voice portal

(technical specifications)

Rev oo2.5

Ljubljana, 27.11.2008

Introduction

Mobitel provides a **VOICE PORTAL** solution for all providers leasing one of Mobitel's 090 premium number. This solution is intended for delivery of automated premium voice services and answering services with the use of computer applications. It enables several simultaneous calls on one 090 number, without the provider having to pre-lease a certain number of lines for receiving simultaneous calls. For this reason it is suitable for services, which have a high user response rate generated by service advertisements (for example TV or radio advertising).

The Voice portal is intended for advanced providers operating an internet server, who have sufficient knowledge to develop computer applications for automated replay of voice content.

Through the Voice Portal Mobitel enables providers to conduct services over Voice XML protocol. The users are charged for calling these 090 numbers according to the premium billing tariff, per minute, or per call in accordance with the currently valid price list for M-vrata.

The Voice portal enables voice recording, automatic speech recognition – ASR (Slovenian language) and automatic speech synthesis TTS (currently only for English language).

This document defines the procedure of premium billing and method of communication in the user-Mobitel-provider chain.

For any technical questions you can contact our technical support at: help@m-vrata.com.

Description of operations

All user requests for payable premium voice services are made via a call to a 090 number of a 090-Voice portal server. The server maps the 090 telephone number to a service provider's URL address of the service or content. See chapter "Description of telephone number to URL address mapping". Users' numbers must not be hidden, if they wish to use the service.

Billing and establishment of user's authorization for service use is executed at the exchange. If the user is authorized to use the service, the 090 Voice portal server retrieves the content from the service provider's URL address. Then it loads the VXML document across the HTTP protocol and the content of the VXML document is replayed to the user.

The call can be disconnected by the user or by the application. 090 calls must not be longer than 30 minutes. After 30 minutes the call is automatically disconnected by the Voice portal.

Course of a call

A user calls a 090 number. The exchange bills the premium call in minutes. At the same time it checks whether the user is authorized to use the service. If the user is authorized, the 090 number is mapped to a specified 031XXXXXX number, which is defined in the exchange. The request for establishing the connection is forwarded to the 090 Voice portal server, which performs the mapping of the 031XXXXXX number into a service provider's URL. The application at the service provider's side receives a connection request. User starts being billed when the application on the provider's side establishes the connection.

Operation scheme

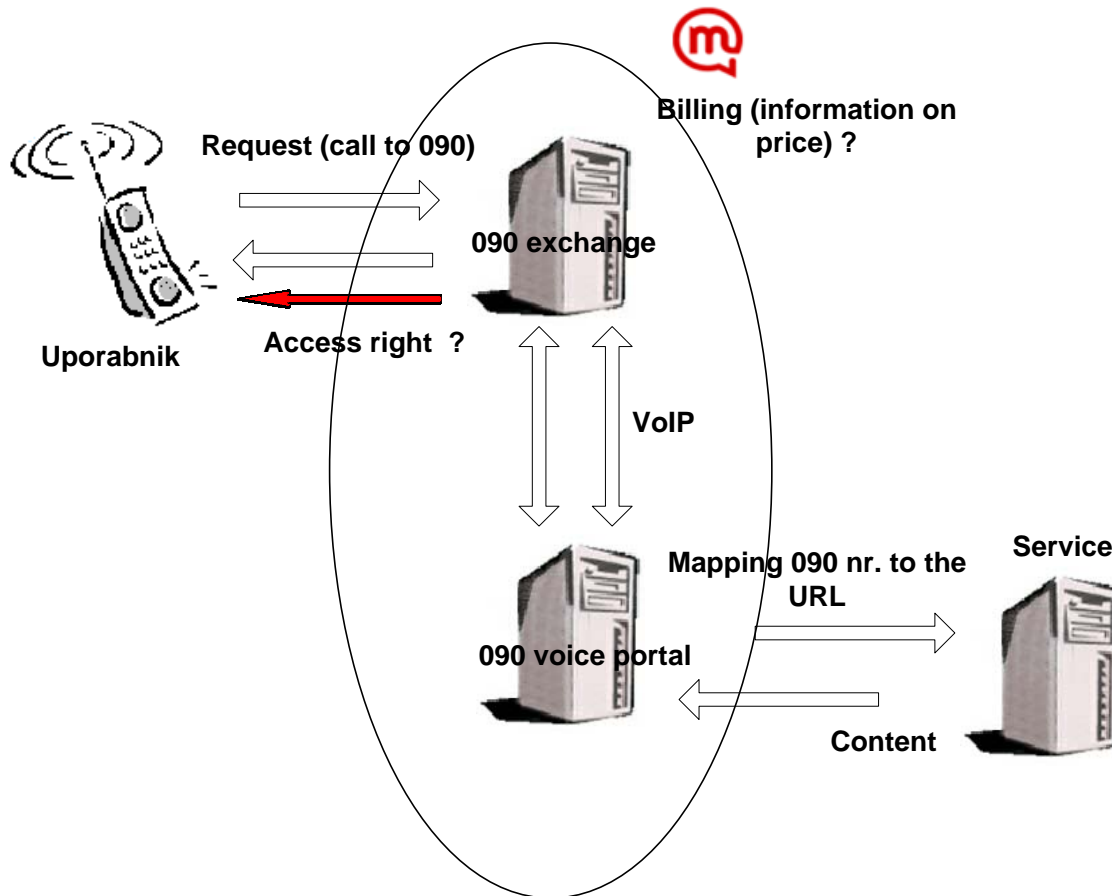


Figure 1: Operation scheme

The technology used

Mobitel is using a voice server based on the Voice XML 2.0 standard. You can read more about it on <http://www.w3.org/Voice>. Current usage possibilities of Mobitel's Voice portal are the following:

- **recognition of DTMF commands** (selection with telephone keys),
- **speech recognition or voice selection** (The system enables recognition of clearly and loudly spoken words in Slovenian. A user can select different content with certain pre-specified words instead of telephone keys. The set of recognizable words (grammar) should include as different words as possible. Similar words increase the possibility of false recognition.)
(example: http://www.m-vrata.com/datoteke/Datoteke/voice_asr.zip)
- **replay of sound files,**
- **user's voice recording.**

Supported format of sound recordings is **WAV – 8 kHz, 8/16 bit, mono, a-law**. For optimal operations (minimum delays for upload) the use of files up to 1 MB in size is recommended. The maximum size of the WAV file is limited to 4 MB, which is approximately 4 minutes of speech. If the sound files are bigger, they must be divided into smaller files which are then replayed in sequence.

The service provider must ensure:

- a server with a static IP address and a permanent internet connection,
- a Voice XML application, created according to the Voice XML 2.0 standard, incorporating the above parameters. We recommend that you limit the size of the VXML file to 200 lines.

The provider must send the appropriate URL address of its Voice XML application to Mobitel. The connection is performed via a standard http connection, using port 80.

The service provider must enable access to the application on its server exclusively to Mobitel's Voice portal 090 server. Access is limited exclusively to the IP number of the 090 voice server.

Description of telephone number to URL address mapping

A user calls a 090 number. This 090 number is mapped to a certain number with a 031 prefix. A direct call to this number with a 031 prefix is not possible. The 090 Voice server transforms the 031 number into the service provider's URL address. The application at the provider's side receives the following information:

- 090 voice server IP address.
- MSISDN or the callers telephone number (it is forwarded to the service provider's server in the form of a server variable HTTP_ANUMBER).
- The service provider's 031 number (HTTP_BNUMBER).

All user requests are logged on the 090 voice server.

Example: the entry number to the Voice portal is the premium number 090140008; first it is mapped to a number such as 031914015. From here on the system only uses the number 031914015. The 090 voice server connects the number 031914015 with a destination URL address <http://podjetje.si/vsebina1/dokument1.vxml> of the service provider, where the provider's service application resides.

The destination URL and the number 031914015 are invisible to the user.

Service or content providers must always be aware of the telephone number transformation as they can monitor their traffic via Mobitel's web service Monitor for this number.

Billing model

Billing can be executed according to two methods. The user can be billed by premium time per second of the established connection, or per each established call. The billing to the user is performed by Mobitel. The revenue from the provider's service is split between the two contracting parties, as described in the *Cooperation at implementation of voice content via Mobitel's 090 premium telephone numbers agreement*. One 090 number can use only one price.

An example of a simple VOICE XML application:

The following files are an example of a simple voice application, written in the VoiceXML language. The application starts with a jump to the welcome.vxml page, which triggers the replay of a greeting sound file welcome.wav and a sound file with a description of possible choices choice.wav. The sound file tells us to press 1, if we want to listen to the first sound recording or press 2 for the second recording. In case of an error, the error.vxml file is executed. This triggers the replay of the error.wav sound file, which informs us that an error occurred.

```
<?xml version="1.0" encoding="UTF-8"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/2001/vxml http://www.w3.org/TR/voicexml20/vxml.xsd">
  <form id="mainMenu">
    <field name="selection">
      <!-- Welcome... -->
      <audio src="welcome.wav" maxage="0" fetchhint="prefetch"> </audio>
      <audio src="choice.wav" maxage="0" fetchhint="prefetch"> </audio>
      <grammar mode="dtmf" root="mainMenuRule">
        <rule id="mainMenuRule" scope="public">
          <one-of>
            <item>0</item>
            <item>1</item>
            <item>2</item>
          </one-of>
        </rule>
      </grammar>
      <filled>
        <if cond="selection == '1'">
          <goto next="Documents/document1.vxml"/>
        <elseif cond="selection == '2'">
          <goto next="Documents/document2.vxml"/>
        </if>
        <clear namelist="selection"/>
        <goto nextitem="selection"/>
      </filled>
    </field>
  </form>
</vxml>
```

Listing 1: welcome.vxml file

```
<?xml version="1.0" encoding="UTF-8"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/2001/vxml http://www.w3.org/TR/voicexml20/vxml.xsd">

  <form>
    <block>
      <audio src="melody1.wav" maxage="0" fetchhint="prefetch"> </audio>
    </block>
  </form>
</vxml>
```

Listing 2: Document1.vxml

```
<?xml version="1.0" encoding="UTF-8"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/2001/vxml http://www.w3.org/TR/voicexml20/vxml.xsd">

  <form>
    <block>
      <audio src="melody2.wav" maxage="0" fetchhint="prefetch"> </audio>
    </block>
  </form>
</vxml>
```

Listing 3: Document2.vxml

```
<?xml version="1.0" encoding="UTF-8"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/2001/vxml http://www.w3.org/TR/voicexml20/vxml.xsd">

  <form>
    <block>
      <audio src="error.wav" maxage="0" fetchhint="prefetch"> </audio>
    </block>
  </form>

</vxml>
```

Listing 4: error.vxml

Call Transfer

The Voice portal for 090 numbers that are billed per call also enables call transfer to Mobitel's phone numbers with appropriate subscription packages. This makes it possible for the provider to have the VXML application transfer calls to the Voice portal to the provider's agents, who can receive users' calls live on their mobile phones (SIM cards).

For call transfer from the provider's application on the Voice portal, the provider must, at least 7 days beforehand, send a request to Mobitel's e-mail address (090@mobitel.si) to assign phone numbers in Mobitel's network (with the appropriate subscription package) to which the users' calls to the provider's 090 number will be forwarded. Call transfer is possible only to numbers, which were inputted into Mobitel's system beforehand.

Call transfer is executed through a jump to a form, described in Listing 5. The number A is the caller's number, B is the number of the Voice portal, and C is the number to which the call is transferred.

```
<form id="Call transfer to the operator">
  <block>
    <var name="A" expr="'386' + session.connection.remote.uri"/>
    <var name="C" expr="'38641700700' />
    <var name="B" expr="'38690XXXX'"/>

    <log>Caller - A - <value expr="A"/></log>
    <log>090 - B - <value expr="B"/></log>
    <log>Transfer - C - <value expr="C"/></log>
    <submit next="http://validator090.mobitel.si:8082/validator"
      method="get"
      enctype="application/x-www-form-urlencoded"
      namelist="A B C" />
  </block>
</form>
```

Listing 5: VXML code for call transfer

User telephone number forwarding

MSISDN or the user telephone number is forwarded to the provider's application in an international format (38641XXXXXX). The telephone number is saved in an http variable HTTP_ANUMBER.

Error log forwarding via e-mail

During testing developers can receive error notifications, which facilitate application code debugging. We recommend that during testing the application begins with the following lines of code. The developer enters an e-mail address where they wish to receive error messages in the second line.

```
<?xml version="1.0" encoding="UTF-8"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.w3.org/2001/vxml http://www.w3.org/TR/voicexml20/vxml.xsd">

<meta name="maintainer" content="joe.developer@foo.org"/>
<form>
  <block>
    <goto next="index.vxml" />
  </block>
</form>
</vxml>
```

Listing 6: error log forwarding via e-mail

If anything is wrong with the voice application or the provider's content (wrong format of provider's files, corrupt files, etc.), the call is disconnected. If there is an error in the first file, the connection is established and is disconnected immediately without an answering machine. When there is an error in one of the following files, the system works normally until it comes to the erroneous file where it disconnects without explanation.

Forbidden characters in an XML document

Some characters have special meaning in XML documents and are therefore not allowed. The following table contains the special characters in XML documents. The first column contains the character's graphic symbol, the second column contains a replacement for that character and the third column contains a character description.

Character	Replacement	Description
<	<	Less than sign
>	>	Greater than sign
&	&	Ampersand
"	"	Double quote sign
'	'	Apostrophe

Table 2: Forbidden characters in an XML document

Frequently Asked Questions (FAQ)

1. How can I get information on the caller's phone number?

Answer: The caller's phone number includes the POST variable HTTP_ANUMBER:

PHP code: `$anum = $_SERVER['HTTP_ANUMBER'];`

ASP code: `anum=request.servervariables("HTTP_ANUMBER")`

2. How can I measure the length of the phone call?

Answer: The length of the phone call can be measured based on the difference between the time of the first request for an VXML document and the event that call termination triggers: `<catch event="connection.disconnect.hangup">`

3. How can I alter the cache on Mobitel's Voice portal, if I do not want the WAV files to upload over the web every time?

Answer: The information on the time of validity or the cache control must be inserted in the HTTP header. If you do not insert this information into the HTTP header, the Voice portal selects default values, which are generally very long (day or more).

Example:

```
<?php
    header("Expires: Mon, 26 Jul 1997 05:00:00 GMT");
    header("Cache-Control: no-cache");
```

4. Which type of audio files is used?

Answer: The WAV files of the following format are used:

- Bit Rate 64 kbps
- Audio sample size 8 bit
- Channels 1 (mono)
- Audio sample rate 8 kHz
- Audio format CCITT A-Law

5. Some numbers are sent in the international MSISDN format, and some in the local. How can I unify the format?

Example 1: `HTTP_ANUMBER=361XXXXXX`

Example 2: `HTTP_ANUMBER=41YYYYYY`

Answer: If ANUMBER is a number of less than 10 digits they are Slovenian numbers, and you just add 386 in front of the number.

For any technical questions please contact our technical support at: help@m-vrata.com .