

Telco 2.1 Plugin for Integration of Blog Software with Mobile Communication Network

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Abstract—At the present time Telecom Web Services (TWS) become more and more widely known and many mobile network operators decide to expose their networks through Application Programming Interfaces (API) and include access to their infrastructure ‘as a part of their offer. This document presents an idea of development of blog software plug-in which would allow blog owners to use telecommunication services. This should be available even to those who do not have programming skills and do not want to invest in dedicated integration their blogs with available APIs.

Proposed functionalities of such plugin are listed and a short case study is presented. The case study shows how telecommunication functions could enrich a travel blog with more interactivity and communication features which currently are not available.

The document also describes a working prototype which was prepared in order to verify feasibility of the proposed idea. Basic technical specification is provided and example functionality is described with command reference and screenshots of dedicated Web portal which was set up for plug-in testing purposes.

I. INTRODUCTION

NOWADAYS it is difficult to encounter an actively working business or a creative individual which do not use communication possibilities offered by World Wide Web (WWW). Large and small companies not only present and advertise their products on-line but actually do their business in the Internet. For many of them, it is now a primary way to reach their customers with the latest offers and product information.

Personal WWW logs known more commonly as *blogs* became a very popular way of sharing individual’s thoughts and ideas regarding virtually all matters. Some of the blogs are *lightweight* places where authors express their opinion and emotions regarding their personal life, but many of them are sources of valuable information. Regardless the weight and importance of blogs’ contents, all authors are interested in reaching as many readers as possible and keeping their blog live (i.e. receiving comments, discussing posts, etc.)

A. Blog software

Popularity of publishing on the WWW was a driver for fast development of many blogging engines. Typically, such software (also called *blogware* or *blogging software*) enables blog author to easily author, edit, and publish short articles (posts), include images, and moderate comments submitted by readers. However, through many extension (plug-ins) functionality contents the blog can be enriched with image galleries,

movie clips, calendars, user menus, tag clouds, and many others.

The most popular blogging engines are *WordPress* [1], [2], *Joomla!*, and *Drupal*. They are free and relatively easily customizable. According to information available on WordPress’ homepage there are thousands of themes and plug-ins ready for download and they should satisfy nearly all blog owners’ needs.

B. Telecom Web Services

Telecom Web Services (TWS) is a general name for various Application Programming Interfaces (APIs) dedicated to be used with telephony network. Basic functions which are made available through those APIs include:

- Message send and receive.
- Terminal location
- Call set-up

The key practical advantage of TWS is that they are based on widely accepted standards (e.g. HTTP, XML) which makes system integration easier and less costly than in case of other native protocols and APIs. Their management is also relatively simple and required level of security can be achieved without excessive costs.

It is not yet common to mobile network operators to expose their networks via TWS. Because it is a completely new type of service many factors have to be carefully analyzed such as pricing model, network security, subscribers security, risk of cannibalization of other services, etc. However, TWS are generally considered as a mean to gathering new revenues and as a technology which shall boost creativity and innovation in the area of telecommunication services.

II. TELCO 2.1 WORDPRESS PLUG-IN

Despite the fact that TWS are regarded as very easy to use it is still not possible for persons without programming skills. This means that in order to use available telecommunication functionalities still several (or more) lines of code have to be written. In order to overcome this obstacle the idea of development of blog engine telco plug-in is proposed.

This approach can be considered as a small advancement and extension of Telco 2.0 approach. Thus a name ‘Telco 2.1 plug-in’ was proposed for the prepared software module. The key differentiator is the assumption that telecommunication services are made available without requirement for any

programming. This should substantially extend number of people capable to use telecommunication functions in their Web pages.

A. Proposed functionalities

Functionalities which could be envisaged for such plug-in can be divided into two following categories:

- Blog housekeeping—used by blog owners and administrators:
 - Short Message Service (SMS) [3] notification about new posts.
 - Sending of new post excerpt via Multimedia Message Service (MMS).
 - SMS authorization of new users.
 - Welcome MMS sent to new blog readers.
- Business telco components for Web—used by small companies and individual entrepreneurs:
 - Micro-payments via Premium Rate SMS or MMS.
 - Transaction confirmation via SMS.
 - SMS auctions.
 - Targeted marketing info sent via MMS.

Some of the functionalities listed above were implemented in the working prototype described later.

B. Case study

To demonstrate how telecommunication functionalities could be effectively use be a web page to increase its attractiveness for users, let us consider an example of *ekskursja.pl* portal. Its a travel portal which allows authors to share information about past journeys and future travel plans. They can post images (also organized as galleries), comment other's posts and search for information according to geographical location.

Initial screen of the portal is shown in Fig. 1

Owners of the portal intend to increase number of users by offering them unique functionalities and possibility to sell photos made during their journeys.

Integration with telecommunication network could support portal owners' businesses needs by introduction of the following functionalities:

- SMS/MMS notification of new posts and comments.
- Travel log functionality consisting of:
 - A map showing current location of a traveler.
 - Micro-blogging (with possibility to post a photo) via MMS.
 - On line chat service with a traveler.
- Possibility to buy a photo via premium rate SMS and its delivery via SMS.
- Targeted marketing information related to their interests, location, and favorite travel destinations.

The above examples show that enriching thematic blog with interactivity offered by mobile network could greatly increase its attractiveness to the users, and potentially open some additional revenue opportunities for its owners and authors.

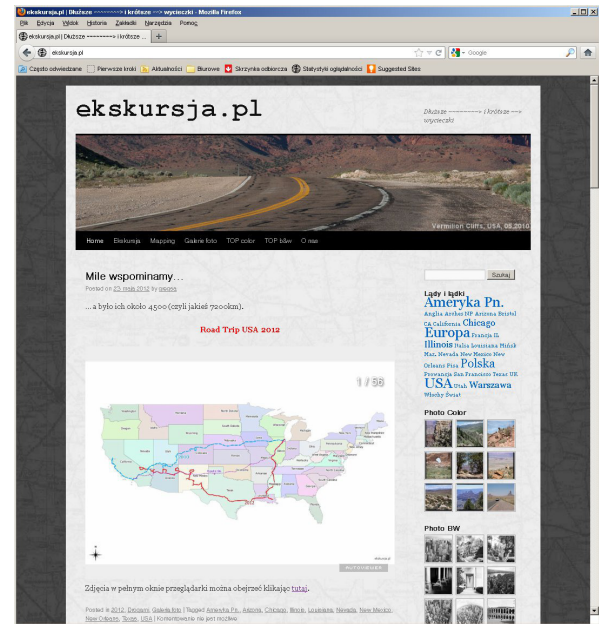


Fig. 1. Initial screen of *ekskursja.pl*

III. WORKING PROTOTYPE

In order to perform practical verification of the proposed idea a working prototype was developed and made available for testing and trials. Currently it implements the following commands:

- *auth_locate*—includes a small interactive map (free OpenStreetMap service [7] is used) which shows current localization of post's author.
- *auth_msg*—includes a form for sending a SMS message to the author.
- *auction*—includes a table which displays submitted offers and opens possibility to send offers via SMS and on the Web.
- *img2mms*—allows to send an image as a MMS message.
- *team_locate*—includes a static map showing location of mobile terminals.

In order to use a command in a post it is only necessary for the author to include it in a square brackets and provide values for mandatory parameters. No programming is required.

Additionally, the plug-in implements functionality of smart new post notification. In case a new post is published by one of the authors, other authors who recently posted some text in the same category are notified via Short Message Service.

A. Telecommunication API from Orange Polska

The prototype connects to TWS API service provided in a trial mode by Orange Polska [4]. It is accessible at <http://api.orange.pl> and currently exposes following services:

- SMS send and receive.
- MMS send and receive.
- Unstructured Supplementary Service Data (USSD) send.

- Terminal location.
- Mobile network operator verification.

In order to use any of the services user needs to create an account associated with his mobile phone number. Afterwards he can invoke the service by sending short XML document over HTTP (both POST and GET commands are available). During the trial period there is no charge for using this API. However, restrictions are applied in order to ensure security of other users and stability of network resources. The main screen of the API portal is shown in Fig. 2.

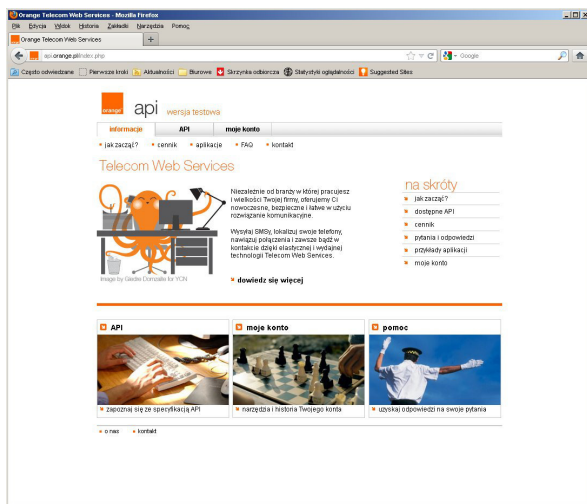


Fig. 2. Main screen of api.orange.pl

B. Prototype Web page

The dedicated Web page [5] which uses the plug-in was prepared and made available at the following URL: <http://sabak.info/sandbox/>. It demonstrates features that are ready to use and provides commands reference both for Web and SMS. Additionally, it includes posts related to various uses of Telecom Web Services with a special attention to APIs offered by Orange Poland mobile network.

C. Technical specifications

WordPress software is written in PHP [6] and thus all plug-ins also have to be prepared using this scripting language. The plug-in prototype uses following version of software:

- WordPress: v3.2.1
- WordPress database: MySQL v5.5
- PHP: v5.5
- HTTP server: IdeaWebServer v0.7

D. Use case: Author's current location

One of the functionalities made available in the-plugin is possibility to include a map showing current location of the author. To achieve this author needs to include the following text in the body of the post.

```
[oapi21 app=auth_locate /]
```

Before the post is displayed in the Web browser, its author is localized by a mobile network and his location is presented on a map.

An example screen showing the post with such content is presented in Fig. 3.

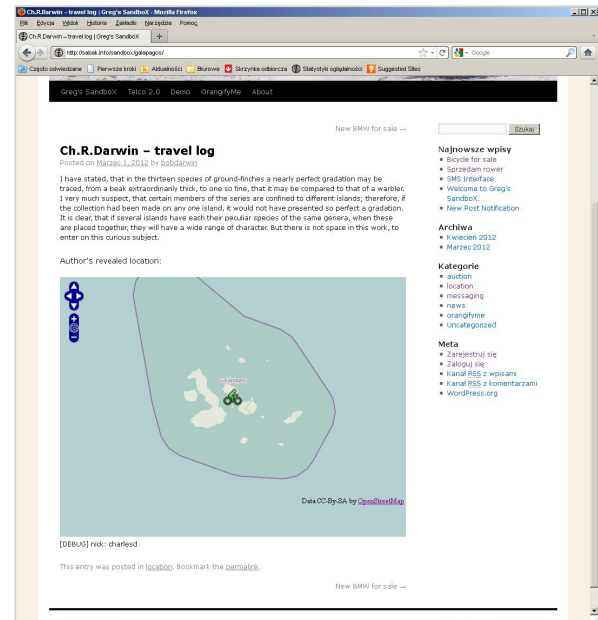


Fig. 3. Post showing author's location

E. Use case: SMS Auction

Another example of functionality implemented in the prototype is an 'SMS auction' feature. In order to prepare an SMS auction author should make following actions:

- 1) Create a new post.
- 2) Prepare a picture or an icon of a auctioned item and embed in it the post body.
- 3) Insert the following command in the post body:
[oapi21 app=**auction** id=*rower* /]
- 4) Publish the post.

As soon as the post is published other users can bid in the auction either by entering their offers via the Web page or using SMS commands which is sent to the short number. The SMS command syntax:

- G—routing keyword, required for delivery of SMS to the plug-in
- offer—command
- *nick*—nickname used by the bidder
- *auction_id*—auction identifier
- *amount*—money offered for the auctioned item.

An example of such SMS when user greg offers 550 PLN for the bicycle during auction with id 'rower' would be:

```
G offer rower 550
```

Every time new offer is submitted via SMS or Web all participants receive SMS notification about the highest offer.

An example screen showing the post after several offers were made is shown in Fig. 4.

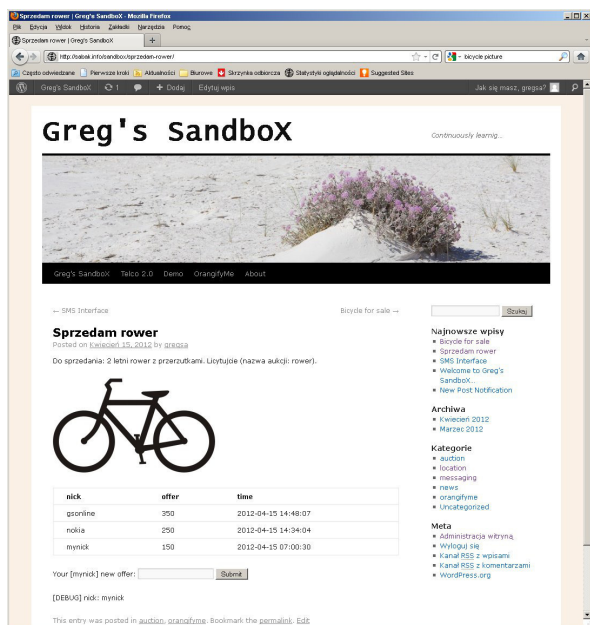


Fig. 4. Example screen of an auction

IV. SUMMARY

Development of 'Telco 2.1 WordPress Plugin' showed that contemporary blog software has architecture which makes integration with mobile network APIs relatively easy. Basic

telecommunication functionalities (showing terminal location, SMS) can be made available in a form which does not require any programming skills. Level of difficulty to include graphic information about author's location can be compared to using HTML tags for text formatting.

Future development of the plug-in could include:

- sending posts via MMS
- insertion of the operator's advertisements in messages sent to users
- payments via Premium Rate SMS
- SMS confirmation of transactions

After further development Telco 2.1 Plugin could become a really attractive option for blog owners and good opportunity for mobile network operators to increase usage of their services.

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