Towards Wider Sharing of Iconographical Art Content

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Abstract. Information and multimedia technologies that have been developed during the past couple of years provided new e-tools to memory institutions (viz. museum, libraries, galleries, etc.), reviving the valuable treasure made by generation of people. Digital libraries (DLs) are such powerful contemporary tools for cultural heritage presentation, preservation and archiving. However, DLs power will increase significantly if they use mechanisms for ubiquitous sharing of their e-artefacts and they distribute attractive content in the social networks, reflecting community demands and needs. This paper presents a service for automatic sharing of iconographical artefacts and full collections from the Bulgarian Iconographical Digital Library to selected Facebook communities. In this case the service will be used for widely promotion of knowledge about East-Christian Iconographical Art and Culture, but I could be used not only for this and not only in this domain.

Keywords: Digital Libraries, Services, Sharing, Social Network, Facebook, Iconography.

1 Introduction

In an attempt to answer the need for virtual presentation and preservation of the valuable artefacts of the East-Christian iconographical art and particularly of the Bulgarian iconography, a team from the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences developed a multimedia digital library called Virtual encyclopedia of Bulgarian iconography (also called Bulgarian iconography digital library, BIDL). The initial aim of the developers was the creation of a web-based environment for registration, documentation, and access and exploration of Bulgarian iconographical artefacts, providing its wide accessibility and popularization. Following this idea the team continues work on development of tools for wide shearing of the BIDL large amount of information.

Data and information sharing is a main Web 2.0 service provided by the Social networks like Facebook. This action is made by users manually when they meet interesting content.

This paper presents a tool for automatic sharing of iconographical content from the Bulgarian Iconographical Digital Library (BIDL, available at http://bidl.math.bas.bg) to selected Facebook communities. Section 1 shortly describes Bulgarian Iconographical Digital Library and the content that will be shared. Section 2 presents the Graph

API used to get data in and out of Facebook's social graph. In section 3 a service for automatic sharing of iconographical artefacts and full collections is described. The last section discusses future work and plans for extending the presented service.

2 Bulgarian Iconography Digital Library and its Content

Orthodox (East-Christian) iconographical art is recognised as one of the most significant areas of the art of painting. Until recently, it had been neglected in the digital documentation and the registry of the art of painting. But the accessibility to this valuable part of mankind's cultural and historical ancestry was enhanced greatly with the appearance of the Virtual encyclopaedia of the Bulgarian iconography multimedia digital library (BIDL) [3] in the world virtual space. BIDL is an Internet-based environment—a place where iconographical objects of different kinds and origins have been documented, classified, and "exhibited" in order to be widely accessible to both professional researchers and the wide audience. The library provides services for registration, documentation, access and exploration of a practically unlimited number of Orthodox iconographical artefacts and knowledge, and end users can use this rich knowledge base through its interactive preview, complex object search, selection, and grouping.

Rare specimens, collections, icons from difficult-to-access storages, distant churches, chapels, and monasteries, objects in a risk environment or unstable conditions, etc. are appearing for new e-exposition. BIDL digitally preserves:

- Hundreds of specimens of Bulgarian icons from different artists, historical periods, and schools, and their detailed description;
- Techniques of the iconography;
- Description of significant iconographic schools of The Renaissance—introduction of works and authors;
- Biographies of known iconographic artists;
- A glossary of terms.

The presented icons originate from the end of the twelfth to the beginning of the twentieth centuries and the majority of them belong to the Bansko-Razlog iconographic art (around 80 icons, XVIII, XIX, XX century). Icons from the main schools and regions of Bulgaria (Triavna iconographic school, Samokov iconographic school, icons from Veliko Tarnovo, Sozopol, Rila Monastery, Arbanasi, etc.) are presented. The digital objects are grouped into thematic collections according to their topics, period, authors and other criteria. For the description of the content in the library, a domain ontology for the Orthodox iconographical art has been developed. In this semantic model [4] the iconographical art world is described by three "thematic entities" (also called levels of knowledge): "Identification" entity (consists of general data identifying aspects of the iconographical object), "Description" entity (concerns the descriptive details of the theme and forms of representation, providing a better understanding of the content), and "Technology" entity (includes technical information

revealing iconographic techniques, base materials, gildings, repousse covers, etc., used in the creation of the iconographical objects, etc.).

The artefacts and valuable knowledge for the Orthodox iconographical art revives after its e-publishing in BIDL, but the necessity for wider distribution and promotion remains.

3 The Graph API

The Graph API is the core of Facebook Platform, enabling developers to read from and write data into Facebook i.e. the Graph API is used to get data in and out of Facebook's social graph. It's HTTP-based API that is used to query data, post new stories, upload photos and a variety of other tasks that an app might need to do.

The Graph API presents a simple, consistent view of the Facebook social graph, uniformly representing objects in the graph (e.g., people, photos, events, and pages) and the connections between them (e.g., friend relationships, shared content, and photo tags)

The APIs are composed of **nodes** (such as a User, a Photo, a Page, a Comment), **edges** (such as a Page's Photos, or a Photo's Comments), and **fields** (such as the birthday of a User, or the name of a Page).

The Graph API provides many functions over

Reading - All nodes and edges in the Graph API can be read simply with an HTTP *GET* request to the relevant endpoint.

Choosing Fields - It is possible to choose the fields (or edges) you want returned with the "fields" query parameter. By default, not all the fields in a node or edge are returned when the query is made.

Traversing Paged Results - When you make an API request to a node or edge, you will usually not receive all of the results of that request in a single response. This is because some responses could contain thousands and thousands of objects, and so most responses are paginated by default using *Cursor-based Pagination, Time-based Pagination or Offset-based Pagination*.

Introspection - The Graph API supports introspection of nodes, which enables you to see all of the edges a node has without knowing its type ahead of time.

Publishing - Most nodes in the Graph API have edges that can be published to (such as /{user-id}/feeds or /{album-id}/photos). All Graph API publishing is done simply with an HTTP *POST* request to the relevant edge with any necessary parameters included.

Updating - All Graph API updating is done simply with an HTTP *POST* request to the relevant node with any updated parameters included.

Deleting - You can delete nodes from the graph by issuing HTTP *DELETE* requests to them.

Searching - You can search over many public objects in the social graph with the /search endpoint. All Graph API search queries require an access token included in the request. The type of access token you need depends on the type of executed search:

- Searches across Page and Place objects requires an app access token.
- All other endpoints require a user access token.

4 Automatic Sharing of Iconographical Content

The following use case diagram (Fig. 1) presents the newly defined cases (in orange) which are needed for the implementation of the BIDL Facebook sharing module.

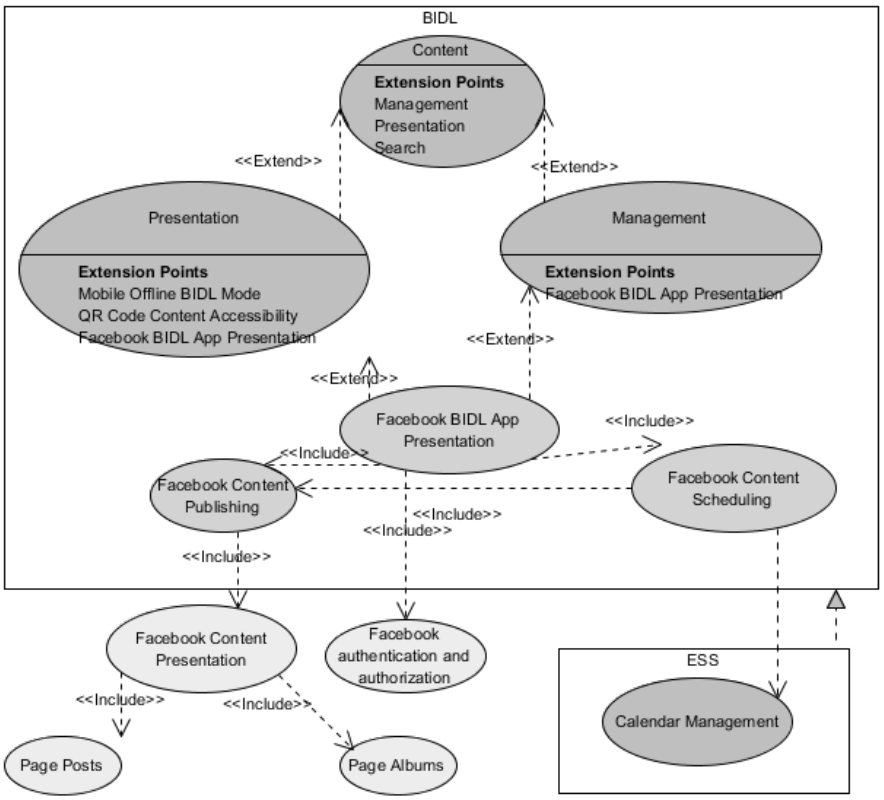

Fig. 1. Use case diagram: BIDL Facebook sharing module

The Facebook BIDL App presentation layer includes the implementation of a BIDL built-in user interface for managing the following use cases:

- Facebook user authentication and authorization, which is required for a Facebook application to access and post content to a specific page, group, wall, etc,
- Facebook Content Publishing module, which will implement the interface between the BIDL and Facebook. The interface includes publishing of posts with links, short description and images for a single BIDL object, and publishing of albums with images, links and short descriptions for BIDL collections and sets of objects.

- Facebook Content Scheduling module, which strongly interoperates with the developed integration between Encyclopaedia Slavica Sanctorum (ESS) [5] and BIDL [1]. This way, the automation of publishing content on a specific date is realized. Also, in this case, another benefit of the Facebook Graph API is used – the possibility of the API to create scheduled posts. It is realized by the Facebook feed interface (in the Facebook development terminology it is and 'edge') which includes the following publishing entities (Table 1):

Table 1. Publishing entities

Name	Description
message	The main body of the post, otherwise called the status message. Either link or message must be supplied.
link	The URL of a link to attach to the post. Either link or message must be supplied. Additional fields associated with link are shown below.
actions	The action links attached to the post.
place	Page ID of a location associated with this post.
tags	Comma-separated list of user IDs of people tagged in this post. You cannot specify this field without also specifying a place.
object_attachment	Facebook ID for an existing picture in the person's photo albums to use as the thumbnail image. They must be the owner of the photo, and the photo cannot be part of a message attachment.
targeting	Object that limits the audience for this content. Anyone not in these demographics will not be able to view this content. This will not override any Page-level demographic restrictions that may be in place.
feed_targeting	Object that controls news feed targeting for this content. Anyone in these groups will be more likely to see this content, those not will be less likely, but may still see it anyway. Any of the targeting fields shown here can be used, none are required.
published	Whether a story is shown about this newly published object. Default is true which means the story is shown. This field is **not** supported when actions parameter is specified. Unpublished posts can be used in Sponsored Stories.
scheduled_publish_time	Time when this post should go live, this can be any date between ten minutes and six months from the time of the API call.

Name	Description
backdated_time	Specifies a time in the past to back-date this post to.
backdated_time_granularity	Controls the display of how a backdated post appears. For example, if you pick month posts will be displayed as 2 months ago. instead of an exact date.

The **scheduled_publish_time** and b**ackdated_time** API entities allow the Facebook applications to manage the date and time of publishing an object (post, link, album, etc.) This implementation of the API, enables the BIDL application to be flexible and to manage maximum automation of our required purpose.

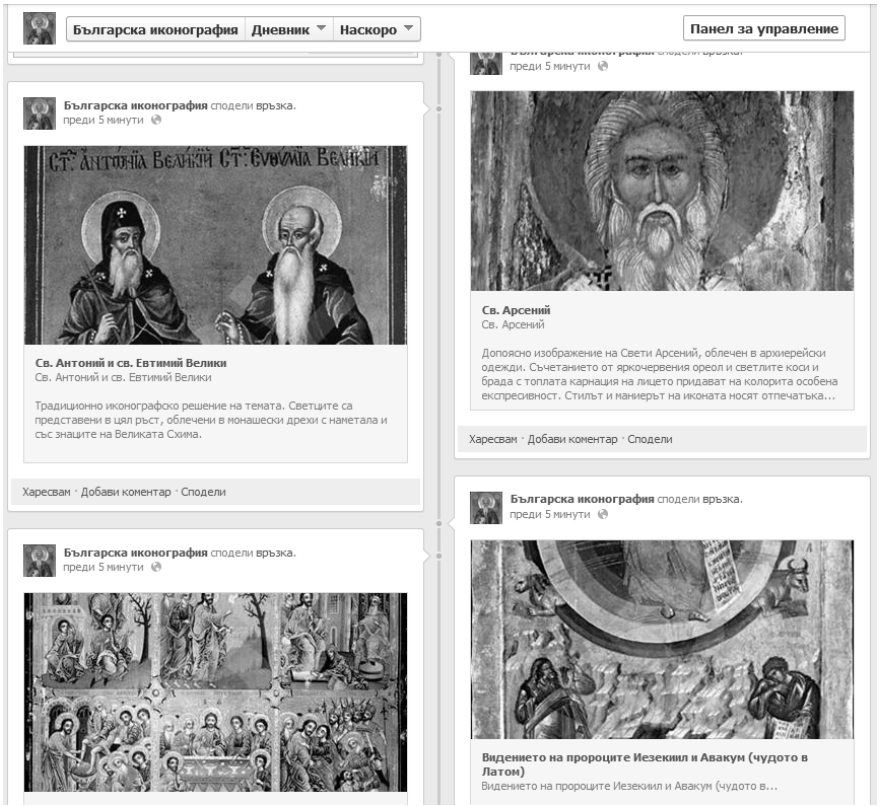

Fig. 2. The automatically created BIDL Facebook objects

The screenshots (Fig. 2 and Fig. 3) present an example of the result of the implemented integration between Facebook and BIDL. The automatically created objects – posts, links and albums are as usual, as if they were manually created. Also, they can be commented, liked, shared in the social set. Thus, the purpose for increasing the popularity of a certain domain can be realized with a great success.

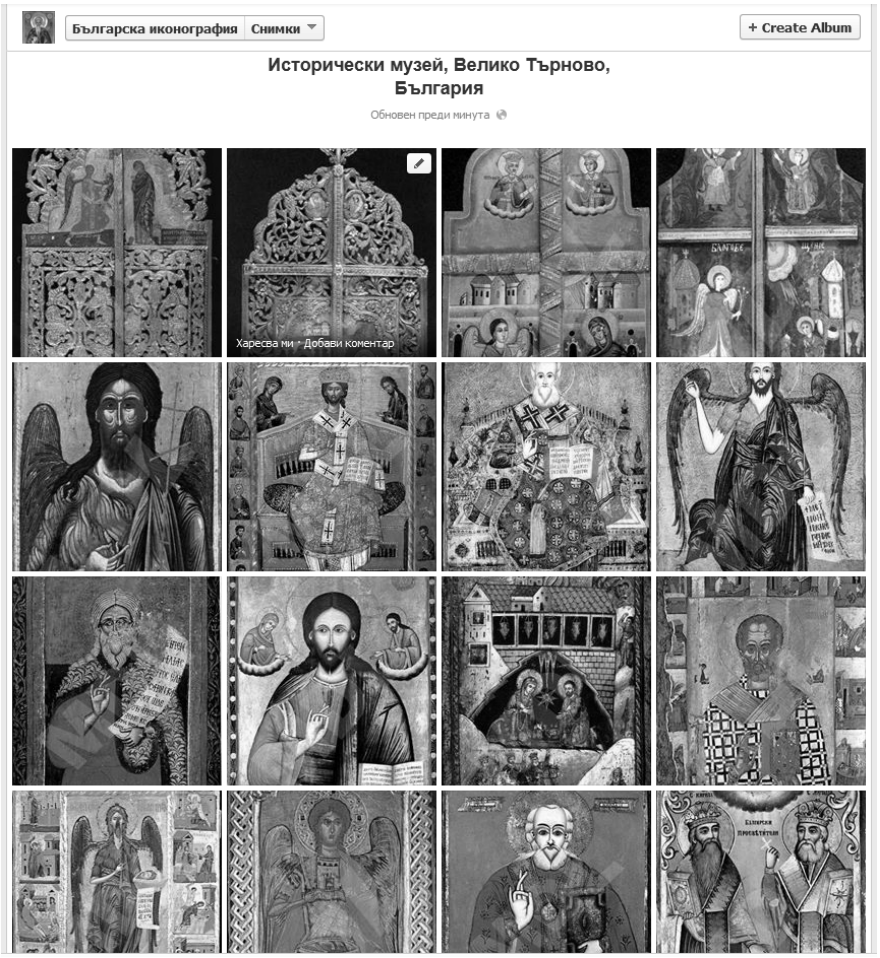

Fig. 3. The automatically created BIDL Facebook collections

5 Conclusions and Future Work

The future work is focused on the implementation of reverse interface – from Facebook to BIDL, aiming to present the likes, shares and comments directly to BIDL and make it possible to create deep analysis, based on the information, gathered from the social set.

The work continues not only with implementation of service for automatic sharing of artefacts and full collections in another digital libraries, but with development of tolls for integrated sharing of information from different libraries, adding to the BIDL data (icons, pictures) the source materials of ESS (canonical and medieval texts) and of Multimedia Library for Bulgarian Traditional Culture and Folklore (folklore and

uncanonical records) [2, 6, 7]. The results will give complex information to the users of automatically shared objects in social networks.

References

1. Paneva-Marinova, D., R. Pavlov, M. Goynov, (2012), Two Integrated Digital Libraries for Knowledge and Iconography of Orthodox Saints, In the Proceedings of the International Conference on Digital Heritage, In: M. Ioannides et al. (Eds.): EuroMed 2012 (Oct. 29 – Nov 3, 2012, Lemesol, Cyprus), LNCS 7616, pp. 684--691. Springer, Heidelberg.
2. Pavlov, R., G. Bogdanova, D. Paneva-Marinova, T. Todorov, K. Rangochev (2011), Digital Archive and Multimedia Library for Bulgarian Traditional Culture and Folklore, International Journal "Information Theories and Applications", 2011, Vol.18, № 3, pp. 276-288.
3. Pavlova-Draganova, L., D. Paneva-Marinova, R. Pavlov, R., M. Goynov, (2010), On the Wider Accessibility of the Valuable Phenomena of Orthodox Iconography through Digital Library. In: 3rd International Conference dedicated on Digital Heritage (EuroMed 2010), pp. 173-178. Lymassol, Cyprus.
4. Pavlova-Draganova, L., D. Paneva-Marinova, R. Pavlov, (2011), Ontological Presentation of East-Christian Iconographical Art Domain. International Journal "Serdica Journal of Computing", 2011, Vol. 2, pp. 101-114.
5. Rangochev, K., M. Dimitrova, D. Paneva-Marinova, (2012), Medieval Sources and Present-Day Folklore Materials on Saints in an Electronic Encyclopedia, In: Proceedings of the Second International Conference on Digital Presentation and Preservation of Cultural and Scientific Heritage, September 18-21, 2012, Veliko Tarnovo, Bulgaria, pp. 172-176.
6. Bogdanova G., N. Noev, K. Stoffel, T. Todorov, (2011), 3D Modeling of Valuable Bulgarian Bells and Churches, Mathematica Balkanica, NewSeries Vol. 25, 2011, ISSN 0205-3217, Fasc. 5, pp. 475-482.
7. Bogdanova G., Todorov T., Noev N., (2013), Digitization and 3D Scanning of Historical Artifacts, International Conference Digital Preservation and Presentation of Cultural and Scientific Heritage - DiPP`13, Veliko Tarnovo, Bulgaria, pp. 133-138.