

# From application to dormitory - housing process in University Study-Oriented System (USOS)

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## Keywords

Dormitories assignment, Housing, USOS, USOSWeb, USOS API, System integration

## 1. Summary

The task behind this project was to streamline the process of applying for dormitory places for students, to relieve university administration in the assignment procedure and to provide data exchange with third party dormitory administration systems. Those goals have been achieved within the framework of existing and widely used USOS<sup>1</sup> (University Study-Oriented System, used in most of the main Polish HEIs) and its satellite applications. New modules can be adopted for local circumstances and be used as a foundation for other applications, eg. mobile apps.

## 2. EXTENDED ABSTRACT

Getting a suitable accommodation is one of the top priorities for students, especially for the freshmen when old-school networking is not a case yet. Universities all over the world provide housing opportunities, although in most cases the number of dormitory rooms is limited. The process of obtaining a place to spend the most of the academic year used to be long and challenging for all the parties. Students, who fill applications, selected group of faculties (or other departments, or even other entities) called the trustees review students' applications and award them places in dormitories. Finally, dormitory administration, handle the checking in & out of the. In the last couple of years USOS, together with its satellite systems, has gained new modules assisting and automating the process.

Before the major overhaul, USOS had a module which allowed university administration to record application delivered on paper. Then an outcome of the application has been recorded in the database. Finally, when students arrived at dormitories doors, administration could also perform basic hotel operations (as check-ins & check-outs) within the system. Student ID cards could be used as entrance keys. The whole process, while helpful, provided only little support for university administration.

Dormitory application for year 2016-2017 (stude

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- On this page you can state your preferences regarding specific student dorm you would like to live
- You can edit your preferences using the 'Draw and drop' method

Preferred student dormitories with types of places wanted (the higher YOUR PREFERENCES

<input type="checkbox"/>	(in Polish) Bursz Jagiellońska, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Kamienka, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Miasteczko AGH, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Piaśń, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Zaczek, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Bydgoska B, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Bydgoska CD, Miejsce w domu studenckim
<input type="checkbox"/>	(in Polish) Nowicka, Miejsce w domu studenckim

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USOSweb is a web application used by students and academic teachers. Students can check their grades, apply for classes and much more. For about 5 years now, instead of going through long, paper

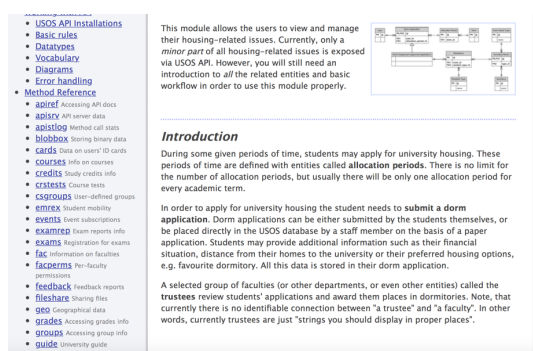
<sup>1</sup> <http://usos.edu.pl>

dormitory application, students fill one in USOSweb, which is already their university virtual home. All the basic student data are in the system, the rest can be provided in the series of relatively easy forms. Students enter their dormitory preferences, as well as additional information that might influence outcome of their application.

USOSweb is also used for a selection process. Once students' applications are complete, trustees can (either automatically or by-hand) assign students to certain dormitories. In case of an automated process, an advanced algorithm (varying from university to university) can assign hundreds of dormitory places in a very short time. Algorithms are based on certain criteria. In most cases mean income, distance from the university to the original home-place and community action or volunteering are the main factors that are taken into account.

Modular structure of the system allows local developers to use their own algorithms, either based on the one distributed with USOS or written completely from scratch. Different groups of students can be subject to different algorithms.

While USOS has by now most features needed by a hotel-like management system (including payment management and circulation forms...), in many cases dormitories use their own, third party systems. That's why a new module for USOS API REST-like interface has been created to allow exchange of data between those external systems and USOS.



The screenshot shows a web application interface. On the left is a sidebar menu with the following items: **USOS API Installations**, **Basic rules**, **Datatypes**, **Vocabulary**, **Diagrams**, **Error handling**, **Method Reference**, **APIDEF** (Accessing API docs), **APIKEY** (API server data), **APILOG** (Method call logs), **APIBOX** (Storing binary data), **CARDS** (Data on student ID cards), **COURSES** (Info on courses), **CREDITS** (Study credits info), **CSESSAYS** (Course tests), **CSGROUPS** (User-defined groups), **EMREX** (Student mobility), **EXERCIS** (Exam subscriptions), **EXAMREQ** (Exam requests info), **EXAMS** (Registration for exams), **FAC** (Information on faculties), **FACPERMS** (Per-faculty permissions), **FEEDBACK** (Feedback reports), **FILESARE** (Sharing files), **GISO** (Geographical data), **GRADES** (Accessing grades info), **GUIDE** (User's guide), and **HOUSING** (Dormitories and...).

The main content area is titled 'Introduction' and contains the following text: 'This module allows the users to view and manage their housing-related issues. Currently, only a minor part of all housing-related issues is exposed via USOS API. However, you will still need an introduction to all the related entities and basic workflow in order to use this module properly.' Below this, it states: 'During some given periods of time, students may apply for university housing. These periods of time are defined with entities called allocation periods. There is no limit for the number of allocation periods, but usually there will be only one allocation period for every academic term.' It then explains: 'In order to apply for university housing the student needs to submit a dorm application. Dorm applications can be either submitted by the students themselves, or be placed directly in the USOS database by a staff member on the basis of a paper application. Students may provide additional information such as their financial situation, distance from their homes to the university or their preferred housing options, e.g. favourite dormitory. All this data is stored in their dorm application.' Finally, it notes: 'A selected group of faculties (or other departments, or even other entities) called the trustees review students' applications and award them places in dormitories. Note, that currently there is no identifiable connection between "a trustee" and "a faculty". In other words, currently trustees are just "strings you should display in proper places".'

New methods allow communication in both directions, providing information about entitled students as well as giving back crucial information about check-in and check-out. With that, university departments can use its housing resources more effectively.

On top of streamlining the application process, detailed data available in USOS provide better possibilities for allocating dormitory places and substantially facilitate reporting to higher education supervising institutions.

### 3. Acknowledgments

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### 4. AUTHORS' BIOGRAPHIES



Michał Żabicki graduated in computer physics in the Jagiellonian University in Krakow and in 2013 obtained PhD in theoretical physics from the same university. Since 2012 he is a software developer at the Center of Integrated Systems Development, Jagiellonian University.