Information tool for preservation, access and retrieval of nuclear knowledge in the frame of portal BelNET

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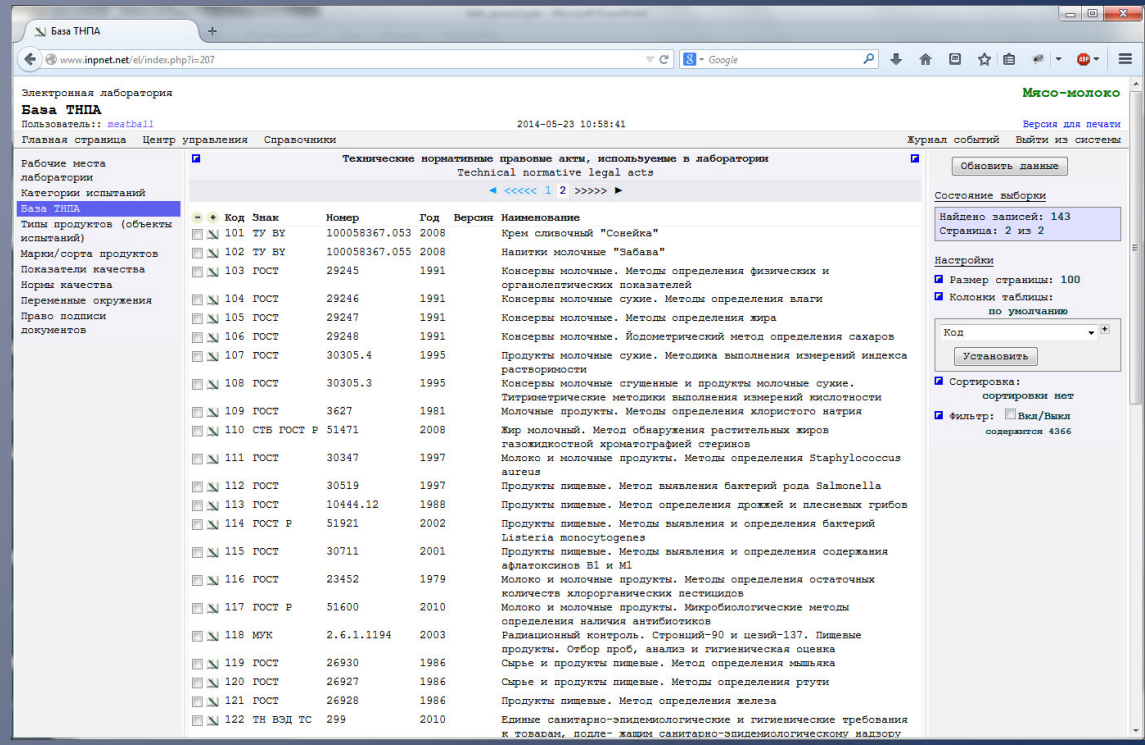
Framework eLab

Sphere of application: implementation and harmonization of the electronic document management of accredited testing laboratories in accordance with international ISO/IEC 17025, ISO 9001 and ISO 9004.

http://inp.bsu.by/labs/lar/laie.html



Over 5 years of uninterrupted operation of the system, more than 50,000 analyzes were executed with the help of eLab-Fuel in the 202 Chemmotology Center of the Fuel for quality monitoring and management of specimens, measurements and passports of fuels and lubricants of the Belarusian Armed Forces

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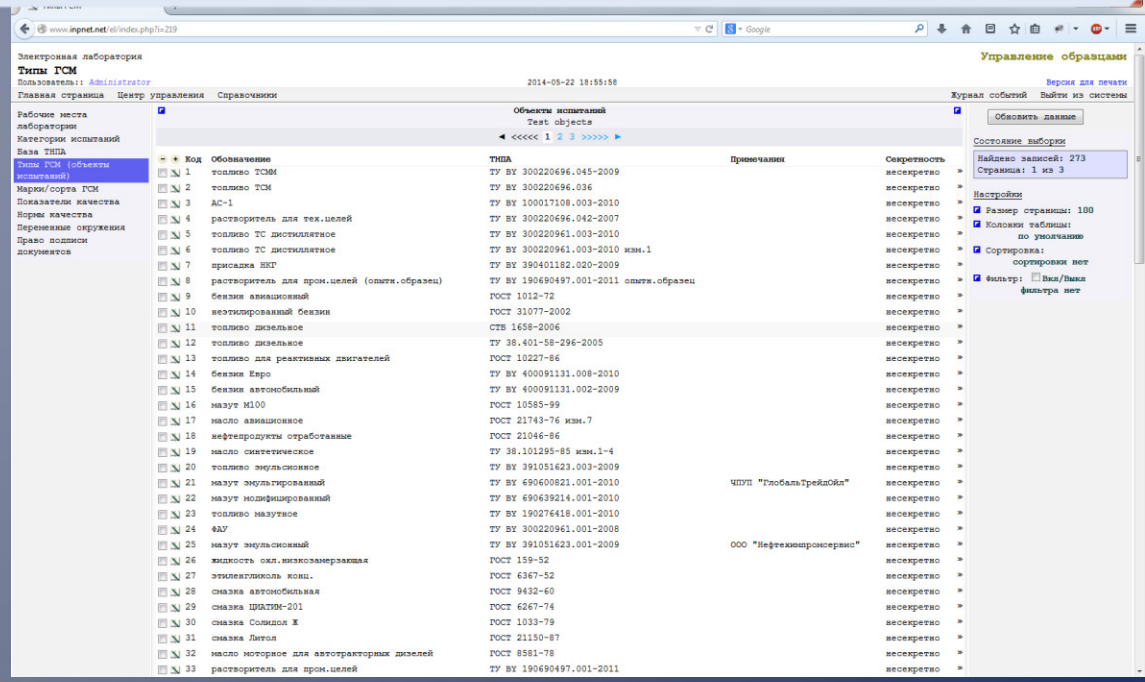
What is eLab?

System eLab has a client-server architecture based on free software:

- Debian GNU/Linux,
- Web-server Apache,
- the Firebird database server,
- PHP application server.



The system runs under Windows and Linux.
The work is carried out through the Internet in multiplayer mode, with the division of access rights by way of widespread browsers: Internet Explorer, Mozilla Firefox, Google Chrome, Opera etc.

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https://en.wikipedia.org/wiki/Free_software

Free software or libre software is computer software distributed under terms that allow users to run the software for any purpose as well as to study, change, and distribute it and any adapted versions. Free software is a matter of liberty, not price.

Russian variant of Linux:

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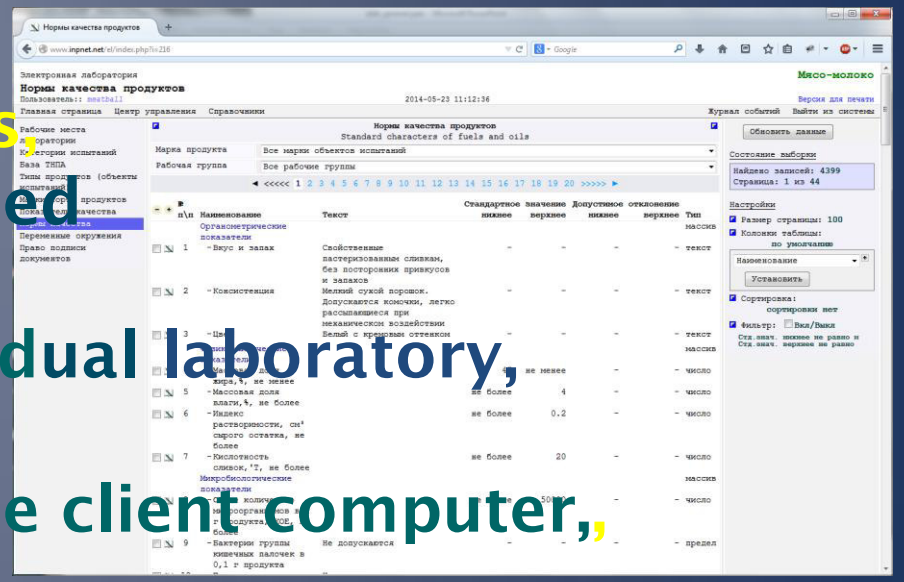
Features of eLab :



- software eLab is open to modifications by users,
- includes a standard set of log forms of accredited laboratory
- is easily adjusted to the specifics of each individual laboratory,
- runs on a secure server;
- it is not required to install some software on the client computer,,
- it is sufficient of a standard browser,
- can operate both on a local intranet, or the global Internet,
- allows in the frame of a single installed copy of the product at the same time maintain the workflow of many laboratories and organizations, with different profiles.

The system is easily configured for the needs of the project

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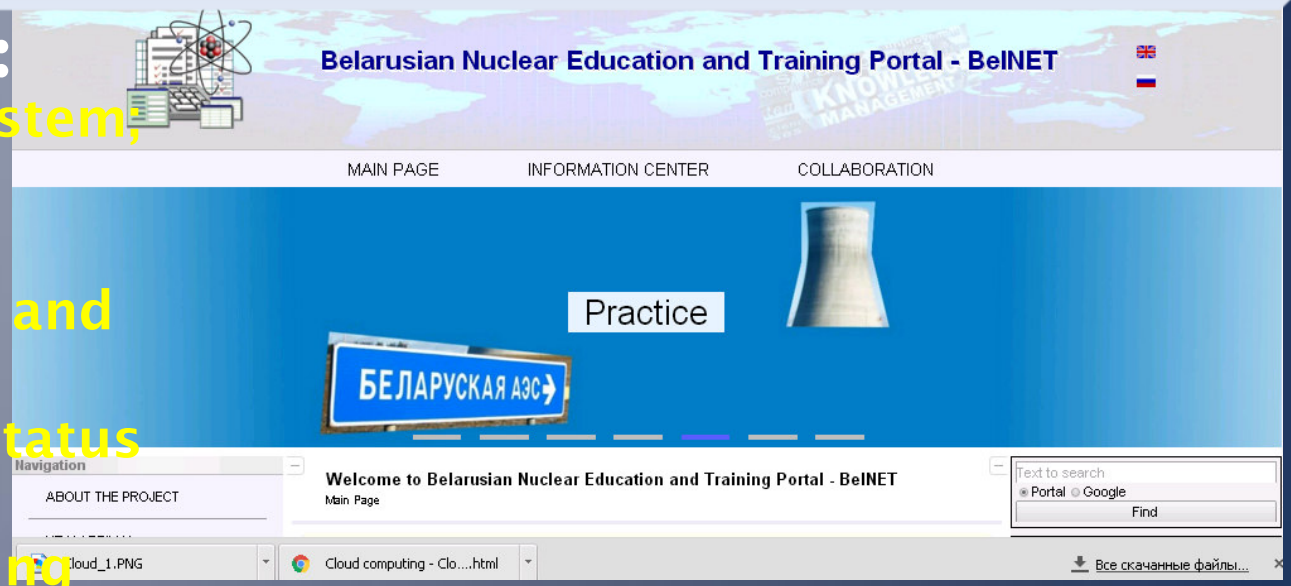
Technical advantages of eLab:

- ability to extend the functionality of the system;
- customizable user interface and the preservation of its current state;
- fast convenient system of sorting, filtering and retrieval of data;
- automatic update and display the current status of the sampling,
- simple insertion mechanism, editing, deleting records, editing multiple records simultaneously.
- validation of input data, the abolition of common mistakes;
- exclusion of input data duplication;
- automatic generation of output documents for reports in prescribed form;
- possibility for user to make changes to the templates of the final documents;
- exclusion of the human factor and related errors in records and output documents.



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Competition with analogues of eLab:

- Compliance with requirements of free software, working under Windows and Linux.
- automate laboratory processes;
- significantly reduce the time to:
  - ✓ registration of samples and test results;
  - ✓ extract certificates of product quality;
  - ✓ search the appropriate entries in the laboratory journal;
- eliminate operator errors when creating documents;
- generate summary laboratory reports;
- increase lab productivity, quality of work and quality of monitoring of the works.


СВИДЕТЕЛЬСТВО
О РЕГИСТРАЦИИ КОМПЬЮТЕРНОЙ ПРОГРАММЫ
№ 051


СВИДЕТЕЛЬСТВО
О РЕГИСТРАЦИИ КОМПЬЮТЕРНОЙ ПРОГРАММЫ
№ 843


СВИДЕТЕЛЬСТВО
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Steps in eLab development:

2010 – eLab is implemented in the educational process of Belarusian State University, Belarusian State Technological University, Belarusian National Technical University, in the Chemical-toxicological laboratory of the Minsk Drug Treatment Clinic.

2012 – Commissioning of eLab-Fuel in 202 Chemmotology Center of the Fuel for quality monitoring and management of specimens, measurements and passports of fuels and lubricants of the Belarusian Armed Forces.

2013 – Commissioning of eLab-Fuel in Belarusian branch of company GazPromNeft.

2014 – Software eLab-Atom for control of ionizing radiation sources

2015 – Developed CMS eLab-Science

2015 – Portal of nuclear knowledge BelNET https://belnet.bsu.by

2017 – Portal of the project of Programme Horizon2020 Coexan https://coexan.bsu.by

2018 – Software eLab-Control for Intellectual information system of the Gosatomnadzor employee to ensure control (supervision) in the field of nuclear and radiation safety

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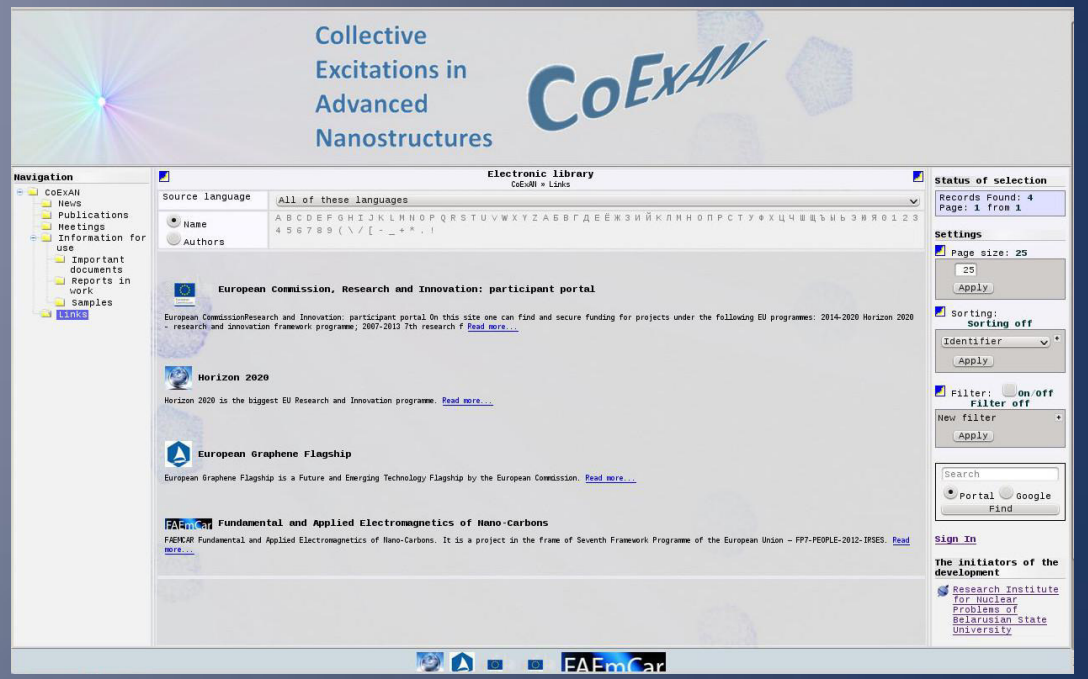
Modification of eLab:

eLab for electronic document management in the laboratory

eLab-Fuel for quality monitoring and management of specimens, measurements and passports of fuels and lubricants

eLab-M - for the meat and dairy industry

eLab-Atom for control of ionizing radiation sources



eLab-Control for control (supervision) in the field of nuclear and radiation safety

eLab-Science is an original content management system allowing cloud Internet technologies with sufficient level of security with the possibility of organizing "cloud" Internet platforms for joint work on the project

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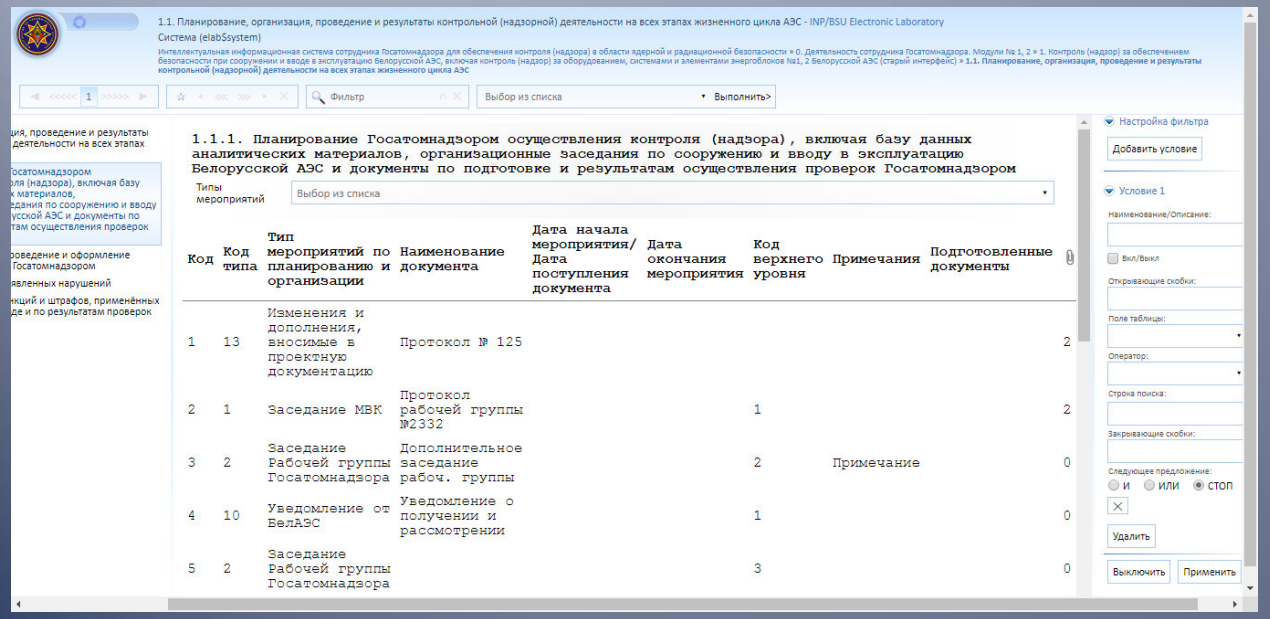
Intellectual information system of the Gosatomnadzor employee to ensure control (supervision) in the field of nuclear and radiation safety:



1. Module for safety control (supervision) during the construction and commissioning of the Belarusian NPP
2. Module for monitoring (supervising) the radiation safety of ionizing radiation sources
3. Module for accounting and control of nuclear materials, radioactive waste and spent nuclear material

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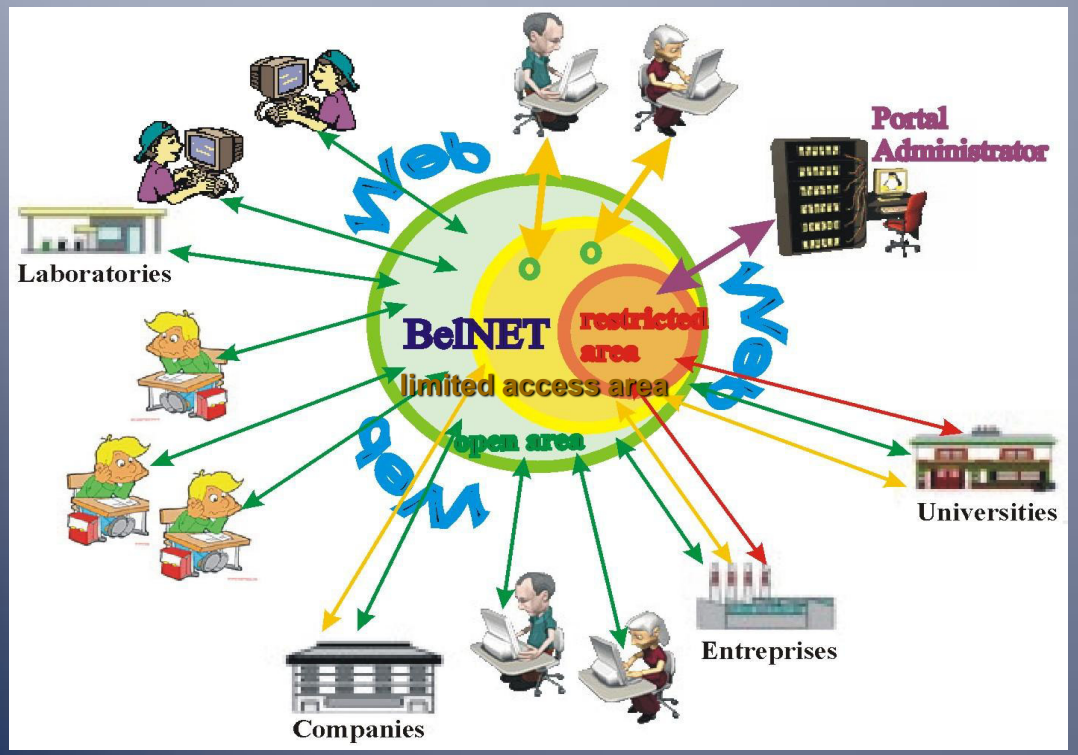
The BelNET main purpose is popularization of nuclear knowledge in order to attract the most capable young people in this field and create a positive image of nuclear power.



Principles of organization
https://belnet.bsu.by

At the moment, the content of the portal contains over 700 original entries

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Taxonomy
(the hierarchical structure of the portal) of BelNET (part) and CoExAN

Information center

- **Legislation**
  - International regulatory documents
  - Regional regulatory documents
    - CIS
    - European Union
    - The African Union
  - National regulatory documents
    - Republic of Belarus
    - Russian Federation
- **Basic principles**
  - Glossary
    - Terms and Definitions
    - Collection
  - Popular scientific literature
- **Science**
  - Basic Science
  - Applied science
  - Scientific conferences
- **Practice**
  - Data and analysis
- **Training Courses**
  - Lectures
    - Lectures in radiochemistry
    - Lectures in nuclear physics
  - Labs
    - Labs on radiochemistry
    - Labs on nuclear physics
    - Labs on material science and microelectronics
    - Labs for pupils
- **Biographies of scientists of Belarus**
- **Scientific conferences**

CoExAN

- **Home**
  - About project
  - Participants
  - Objectives
  - Background
- **News**
- **Publications**
- **Meetings**
- **Information for use**
  - Important documents
  - Reports in work
  - Samples
- **Links**
- **Dissemination**
- **Awards**

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Editors providing formation and access to resources within CMS eLab-Science:

- portal sections editor
- resource type editor
- resource editor
- systematization of resources
- editor of access to files
- portal structure editor
- resource content editor
- editor of test control questions
- editor of the answers to the test questions

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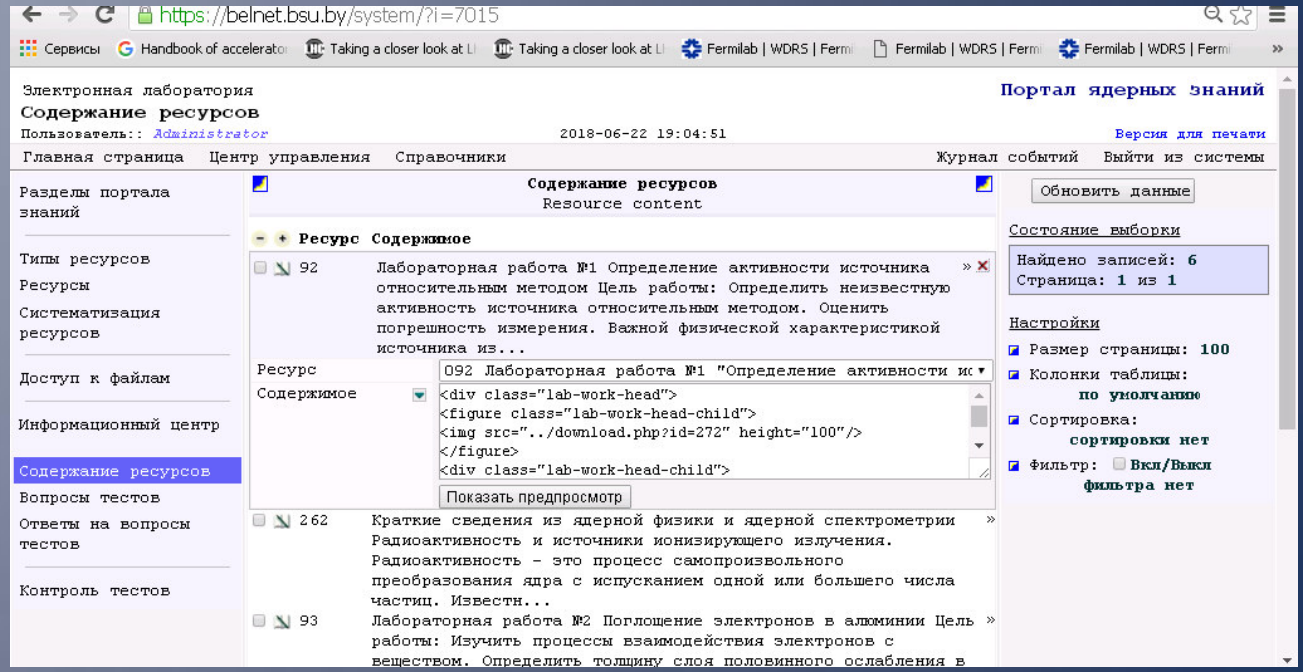
The resource content editor **allows to lay out in general access any text resources - not only laboratory works, but also various scientific materials and articles containing various formulas and pictures.**



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Instrument “Preview”

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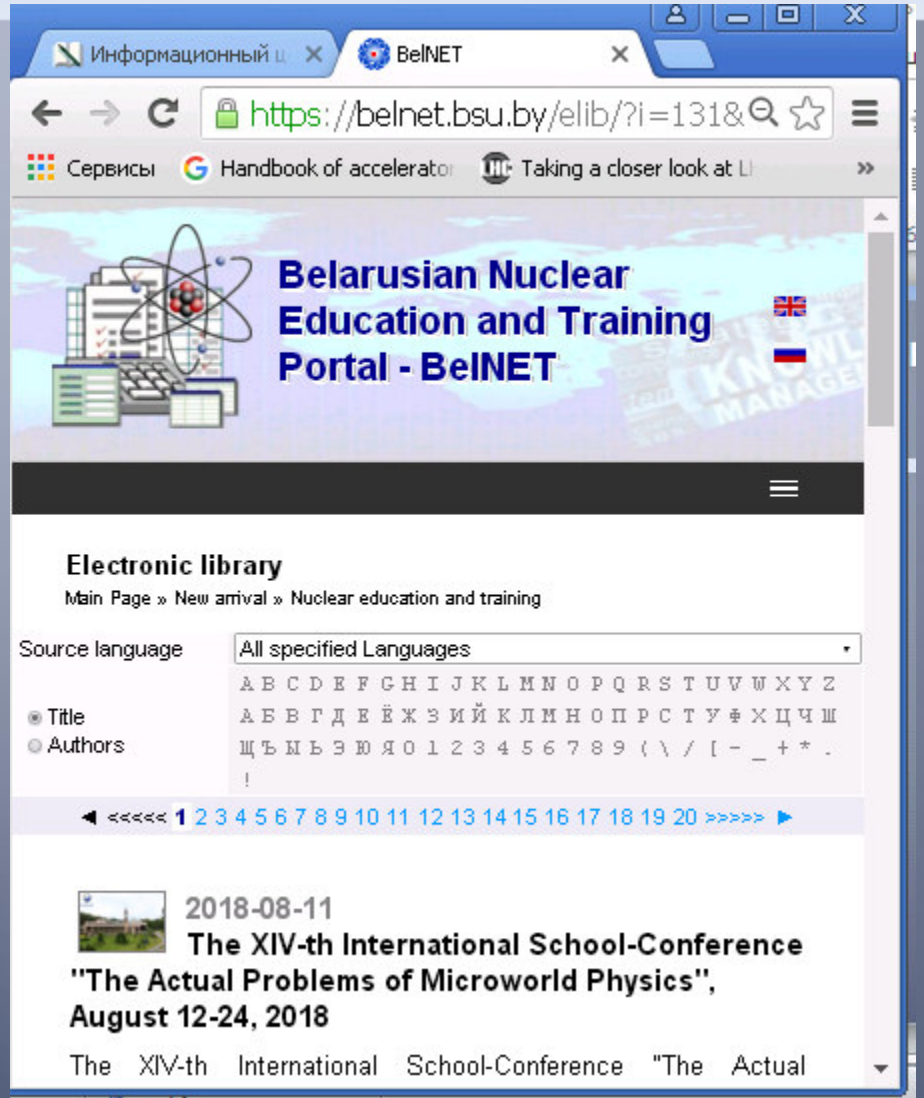

Mobile version

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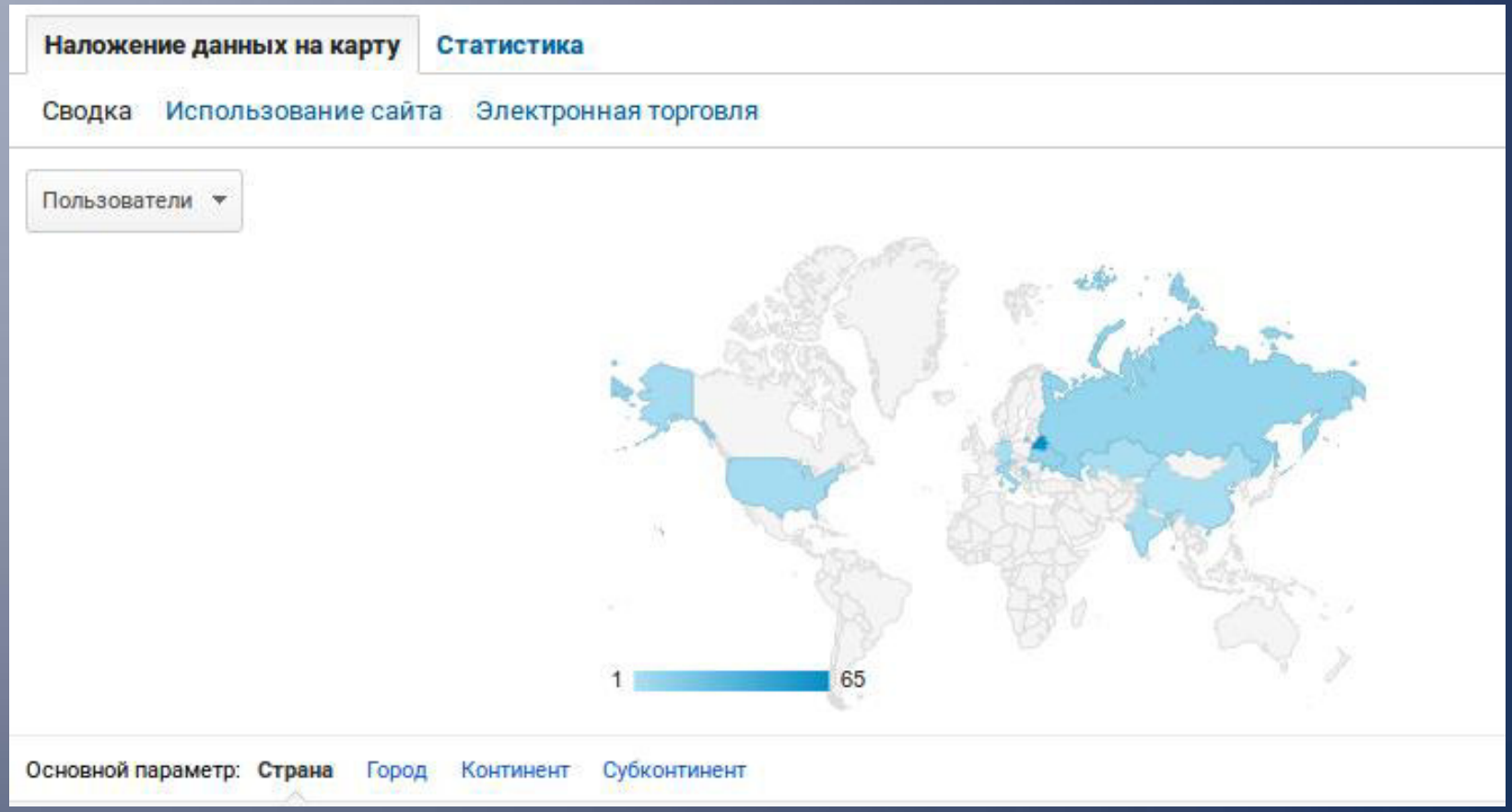
Analytics.Google.com



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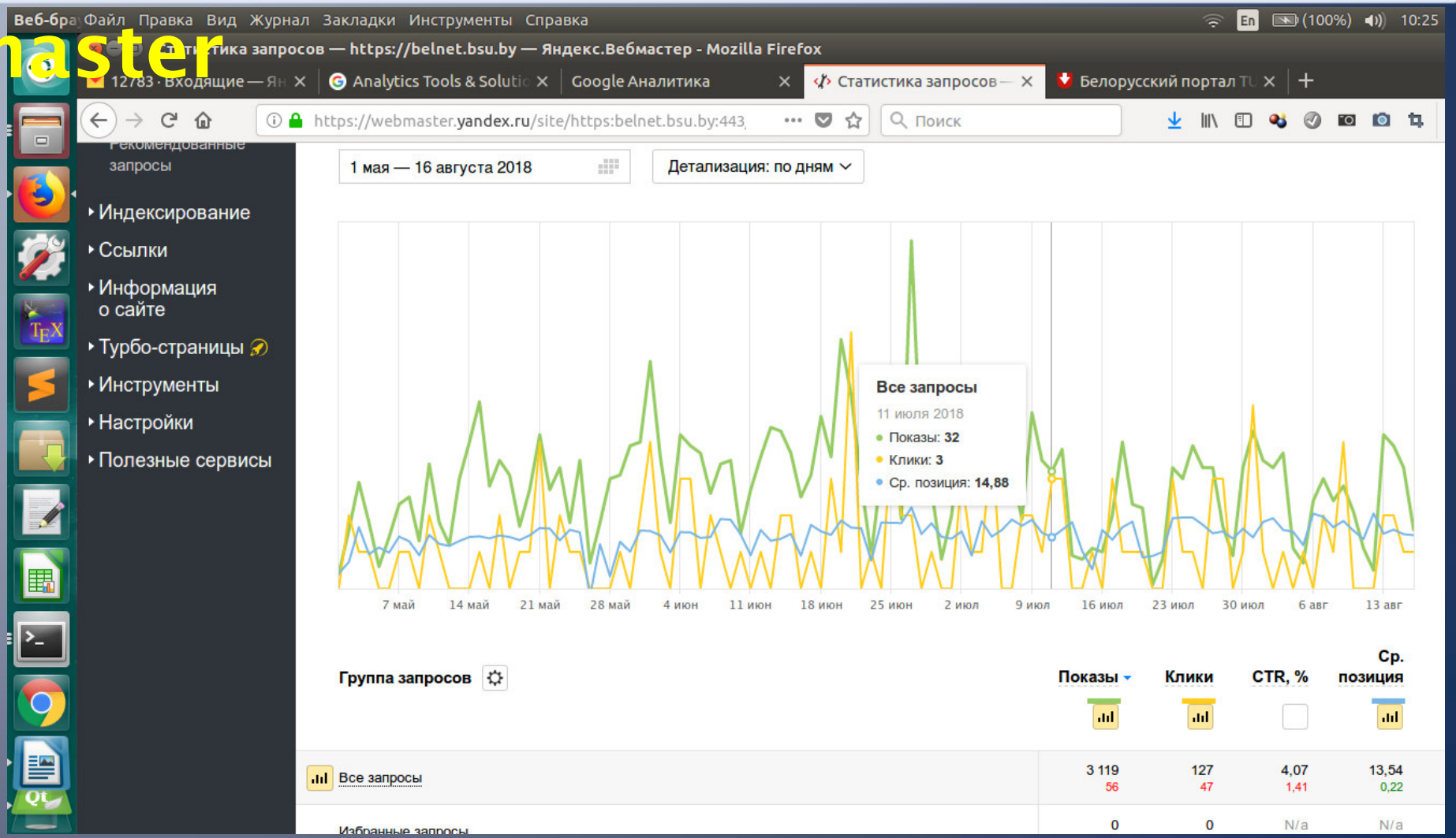
Yandex Webmaster



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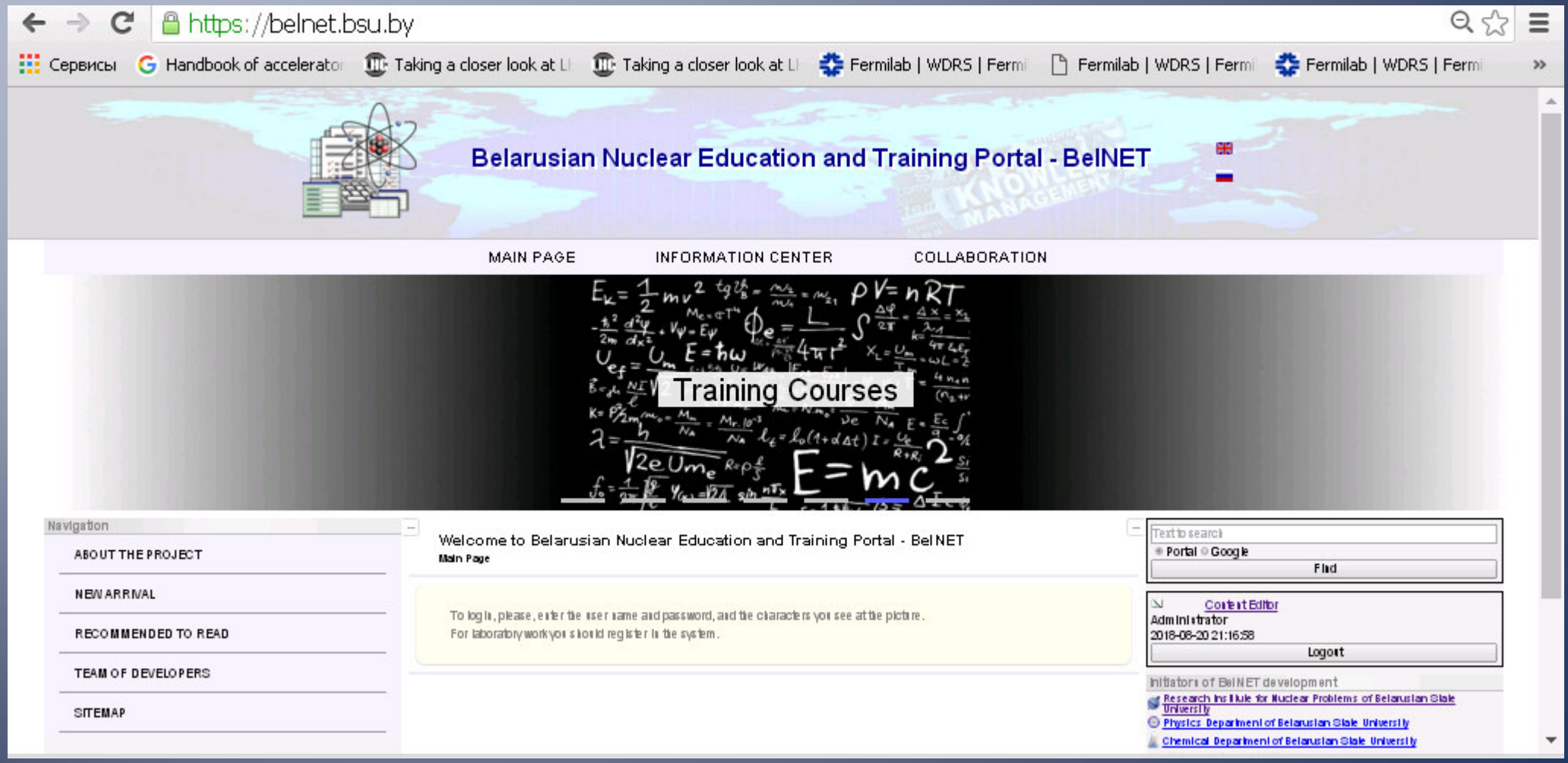

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New training materials for BelNET:

Methodical materials to the General laboratory practice "Physics of the nuclei“ (12 labs, 180 pages, 86 test questions) by Department of Nuclear Physics of BSU

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Our plans and propositions:

1. Adapted on-line course "Safety of nuclear and radiation technologies" for various categories of users of the electronic portal of nuclear knowledge BelNET (2019-2020)

It includes key concepts on the safety of nuclear and radiation technologies, including necessary knowledge from the following fields: mathematics, physics, chemistry, biology, the fundamentals of nuclear and radiation safety, nuclear technologies, management and culture of nuclear knowledge, information technologies.

At present, there is no analogue of the proposed course in the world and in Belarus, in particular.

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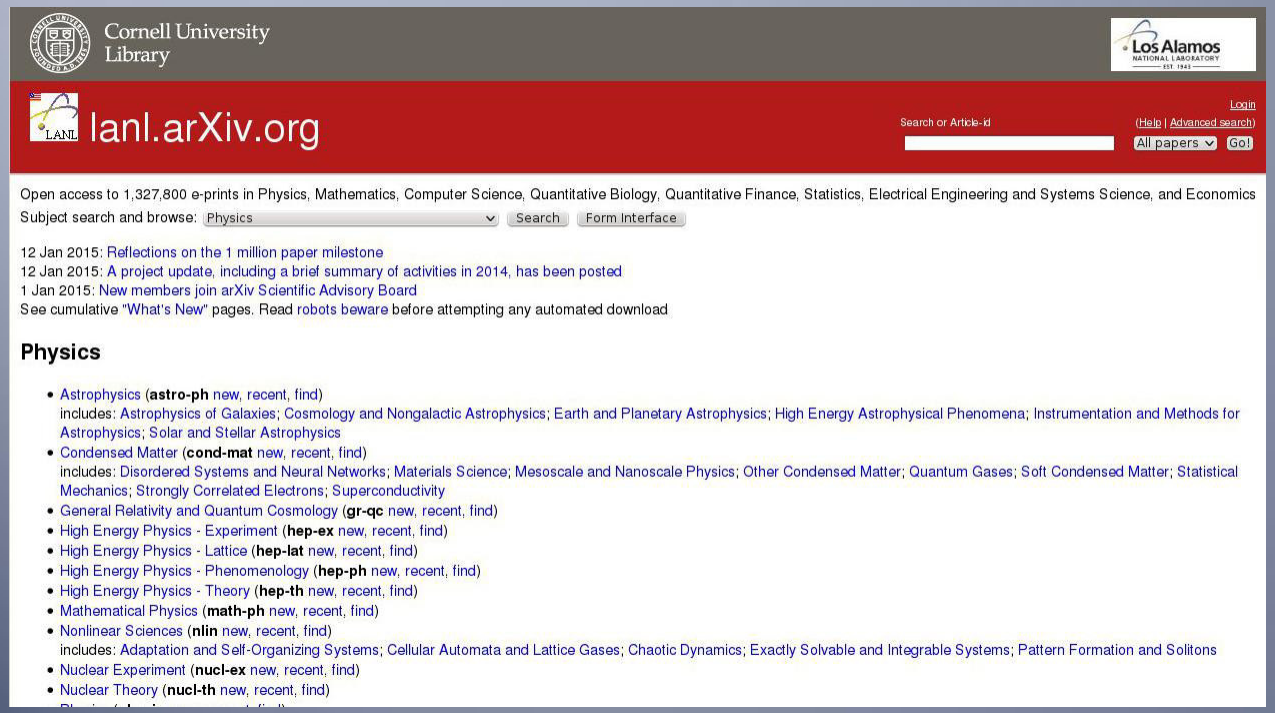

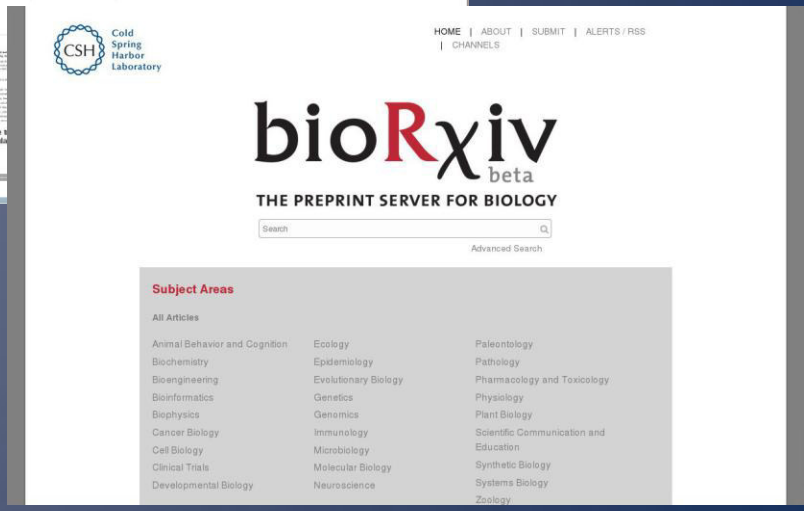

Existing scientific archives

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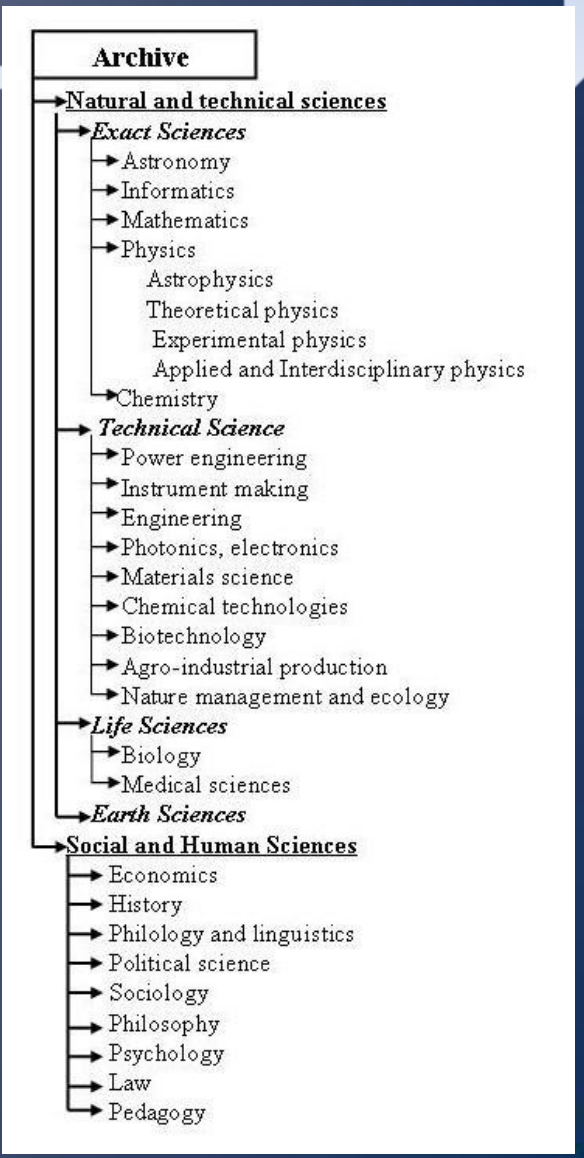
Belarusian electronic scientific archive on the basis of eLab-Science

- Archive of publications of the natural and humanitarian profile.
- The site for the operational placement of scientific articles, including preprints, pre-publications, with strict copyright control and anti-plagiarism.
- Languages of publications - English, Russian, Belarusian, etc. with a mandatory summary in English.
- The possibility of publishing not only articles, but also presentations, video materials, etc.
- Ability to create full-fledged Internet pages on scientific topics with formulas, graphics, drawings, video.
- The purpose of the archive is to promote the dissemination and dissemination of scientific knowledge.



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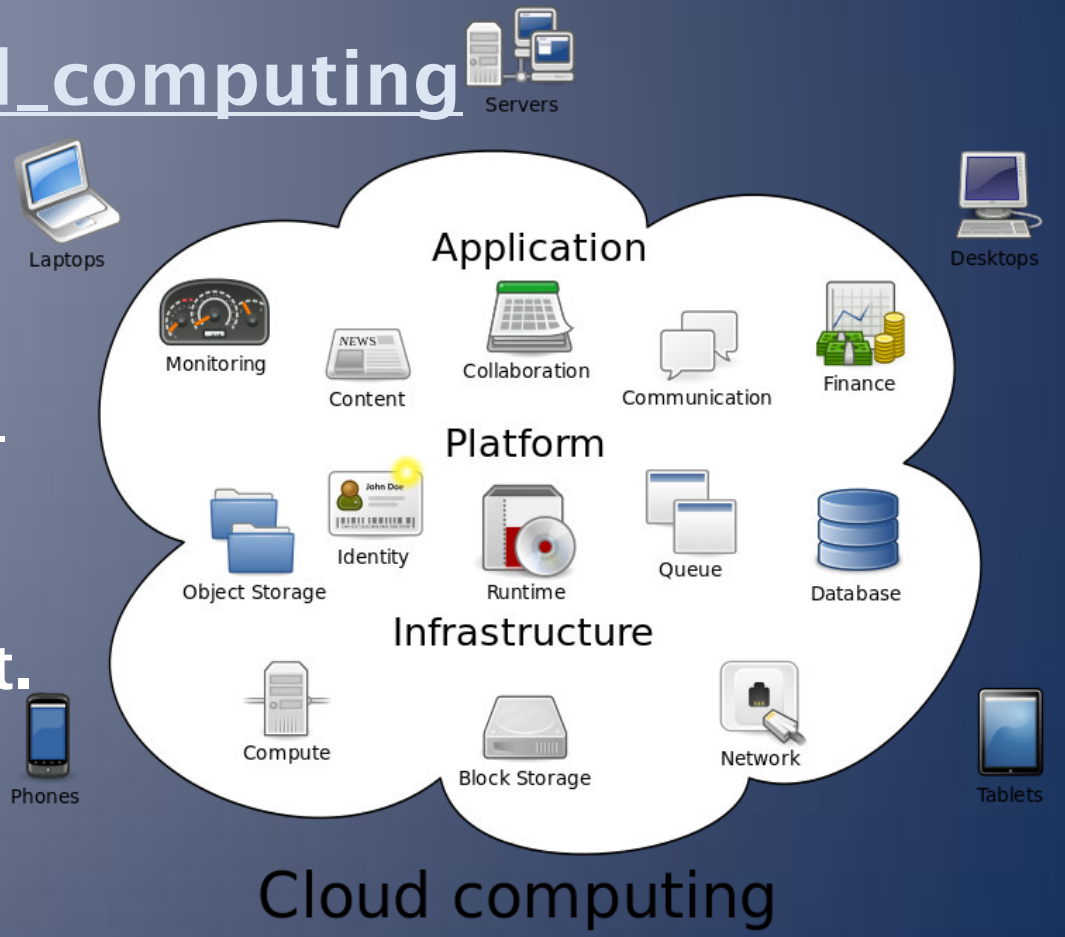
https://en.wikipedia.org/wiki/Cloud_computing

Cloud computing is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.



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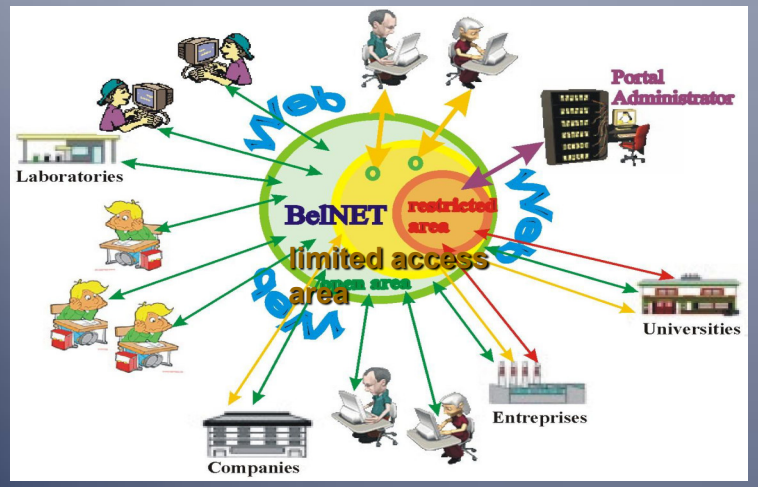
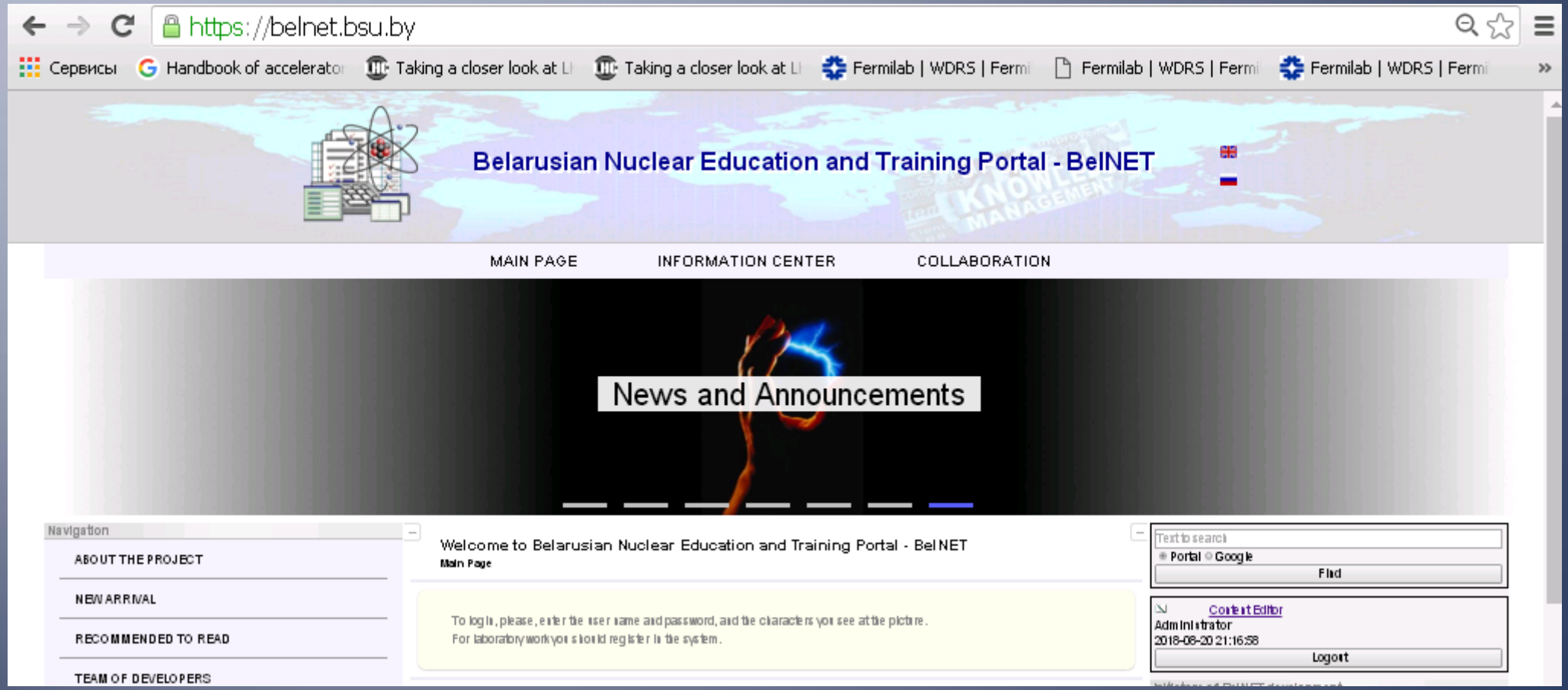
Electronic scientific resources (clouds) on the basis of eLab-Science



THANK YOU FOR ATTENTION!



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