1 INTRODUCTION

The Rio Grande do Sul Federal University (UFRGS) is a centennial institution which mission is established in accordance to Article 5, Title II on its Statute: “The Rio Grande do Sul Federal University has as primary purpose higher education and production of philosophical, scientific, artistic and technological knowledge integrated in the education, in research and extension”. (Rio Grande do Sul Federal University, 2011). The University has its intellectual production gathered and registered by the Library System (SBUFRGS) teams, composed by thirty two (32) libraries. It offers eighty nine (890) undergraduate courses and eight (8) online courses, seventy two (72) master degree programs, sixty nine (69) doctorate programs, nine (9) professionalizing master programs and one hundred and seventy (170) lato sensu courses, in all knowledgeable areas.

In 2013, a total of twenty thousand two hundred and twelve (29.212) graduation students, twenty three thousand one hundred and eight (23.108) master degree students, one thousand and thirty one (1.031) basic, technical and technologic education students, two thousand seven hundred and thirty three teachers and two thousand seven hundred ninety nine technical-administrative employees (Rio Grande do Sul Federal University 2013).

The increase in knowledge production is a concern for higher education institutions and development agencies, once the broad publication of scientific production avoids unnecessary expenditure in repeated research and allows for the use of such results to accelerate advances in science. Universities, institutes and research centers are increasingly more concerned with science diffusion and, therefore, are committed to implement mechanisms to facilitate access to what is being developed by
The continuous and systematic collection of the institutional intellectual production (PI) by libraries and its respective registration on the Library Automation System (SABi), online catalog, are a priority for SBUFRGS. The work performed by the libraries for the past twenty five years guarantee the database for the SABi System
to become a registration and dissemination instrument of PI and provides subsidies for Central Management in decision making, planning and general management.

Since the implementation of the SABi System, back in 1989, a 9XX field was created in bibliographic format as defined by SBUFRGS, described under MARC21, for the identification of the scientific, academic, technical, artistic and administrative production by the University. It’s use is mandatory for documents produced by faculty members, technical-administrative personnel and students in general, given that such receive proper guidance from teachers, the University and for all documents produced by UFRGS. It also includes the following informational fields: Unit / Department / Organization, Production Type, Course / Master’s Degree Course, Specialization Course, Graduation Course, Professional Education Course and Financing Organization.

The sort of production currently registered on the SABi database is: handbooks; computer files; publishing articles; published article in periodic indexed abroad; published article in periodic indexed nationally; published article in periodic not indexed abroad; published article in periodic not indexed nationally; courses catalogs for graduation, masters, extension, etc.; events catalogue; academic or professional master degree thesis; administrative and/or planning document; interview; book; cartographic material; graphic or visual material; music; lectures; patent; architectural project; landscaping project; urbanistic project; serial publication; administrative regulation; technical and research report; review; thesis; thesis chairs / associate professor; presentation text; qualification examination text; professional education final conclusion work; specialization course conclusion work; graduation course conclusion work; professional master degree course conclusion work; professional education discipline conclusion work; specialization discipline conclusion work; graduation discipline conclusion work; doctorate discipline conclusion work; academic master degree discipline conclusion professional master degree discipline conclusion work; work published in event summary performed outside the country; work published in event summary performed within the country; technical work / study; translation and entry, which may cover other documents that, whenever identified the need to register or identify such separately, such receive a specific code. (Oliveira et al. 2004).

This categorization was created based upon the country’s development agencies instruments, such as, the Coordination for Improvement of Higher Education Personnel
(CAPES)\(^1\), Foundation from the Ministry of Education (MEC), which exerts a fundamental role in the expansion and consolidation of the *stricto sensu* masters degree, master and doctorate, in Brazil, and Lattes Platform\(^2\), National Council for Technological and Scientific Development (CNPq), Innovation, Technology and Science Ministry (MCTI), which main attributions are foment technological and scientific research and stimulate the formation of Brazilian researchers.

From a total of 851,446 records on the SABi database, on 12/31/2013, 260,119 records correspond to Intellectual Production, which equal to 30%. Table 1 presents the evolution in Intellectual Production records inclusion for the last four years, in relation to the total records.

**Table 1 – Relation between total records and Intellectual Production Records on the SABi Database**

<table>
<thead>
<tr>
<th>Ano</th>
<th>Average percentage of annual growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>Total Records</td>
<td>687,435</td>
</tr>
<tr>
<td>IP Records</td>
<td>193,313</td>
</tr>
</tbody>
</table>


Due to the broad exposure of this work within the University and from requests performed to Departments, allied to the importance for the extension of teachers available in Departments and for the functional progression of teachers, there has been a significant increase on the SABi database. It is also necessary to consider the increase in Intellectual Production by teachers as well, encouraged by the criteria used by the development agencies such as CAPES, which uses scientific production data to distribute resources for research, and for the increase in institutional investments in master degree program’s infrastructure in the last few years.

### 3 LUME – UFRGS DIGITAL REPOSITORY

The UFRGS Digital Repository – Lume – was implemented in 2008, based on the UFRGS Essays and Thesis Digital Library (BDTD), implemented since 2001, with the intent of publishing and preserving a continuous growth collection, by adding a theme and bibliographic description, the entire document’s text. The idea to expand the BDTD to a Repository assumes a relevant role on the task of gathering the digital collection

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\(^1\) http://www.capes.gov.br/

\(^2\) http://lattes.cnpq.br/
from other existing collections in the SBUFRGS and disperses collections in other organizations within the University, optimizing its organization, management, maintenance and resources sharing. To the final users, it enables to perform searches in a single information portal with unrestricted access.

The population in Lume started with the thesis and essays from the BDTD, as aforementioned, and other Intellectual Productions were gradually incorporated. All metadata and respective digital objects come from several sources, to be known: Library Automation System (SABi), Photographic Collection System and Institutional Events System (SEI).

An auto file module is also used available by the DSpace tool to include metadata which are not available for the systems aforementioned or in any other used by the University. This module is made available by means of the authorization policies from DSpace and made available to users previously authorized and authenticated by the LDAP System, valid for the authentication of all systems used by the University. The users are authorized to deposit items in specific collections after fulfilling a submission form, thus, allowing for the control of all deposited items.

This new systematic required deepened studies regarding the process and establishment of a submission flow and revision of all metadata, in order to ensure the consistency of such and correct description of all documents for posterior publishing and recovery of information. The types of documents existing were analyzed and a set of metadata was defined, according to the Dublin Core standard, which met the needs for description of each typology, allowing for its recovery in a fast and precise manner.

The data related to the IP which are already on the SABi and were already contemplated in some of the Lume communities, are transferred daily (incremental harvesting) to the repository. For such, a compatibilization of the MARC fields with the Dublin Core fields was performed for the collection of metadata. In cases of communities which metadata proceed from SABi, the process is much simples once all documents are already described in a normalized and consistent manner by the librarians. For the remaining cases, it is necessary greater care in terms of consistency and standardization of all data.

Chart 1 lists all communities / sub communities / collections which are an integral part of Lume, currently, with the indication of the respective data source.
The inclusion of new communities, sub communities and collections occurs in a gradual manner. When identified the interest and/or the need to record and make available any given collection, meetings are scheduled with the personnel responsible for such collections in order to identify the peculiarities of such and the specific recuperation needs. At first, the metadata are defined for the description of all documents, creation of a registration form for such and next, defining the indexes and filters that will be used for the recovery, as well as the presentation formats for the recovered information. By such, it is expected to comply with the particularities of all sorts of documents and qualify the information recovery.

### 3.1 Actions

Having a starting point the experience with the BDTD System, the Lume System creation was a natural path to be followed by the University’s Data Processing Center (CPD) personnel, in conjunction with the UFRGS Library System (SBUFRGS). It is important to highlight that taking into consideration the information and communication technologies (TICs) available on the market and on the Institution and qualified human resources for such, allied to the quantity of documents in immediate availability conditions, in complete text, under the repository. Many actions were taken which culminated on the creation of the repository. In reality, these are strictly related to the

<table>
<thead>
<tr>
<th>Communities</th>
<th>Sub Communities / Collection</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collections</td>
<td>CEME – Sport Memory Center</td>
<td>DSpace Auto File</td>
</tr>
<tr>
<td></td>
<td>UFRGS TV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physics Institute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>University Museum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heritage Sector</td>
<td></td>
</tr>
<tr>
<td>UFRGS Events</td>
<td>Teaching Hall</td>
<td>Institutional Events Systems</td>
</tr>
<tr>
<td></td>
<td>Scientific Initiation Hall</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific Initiation Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Science Teaching and Popularization Fair</td>
<td></td>
</tr>
<tr>
<td>Academic and</td>
<td>Specialization Course Conclusion Work</td>
<td>SABi System</td>
</tr>
<tr>
<td>Technical Work</td>
<td>Graduation Courses Conclusion Work</td>
<td></td>
</tr>
<tr>
<td>Intellectual</td>
<td>Periodic Articles</td>
<td>SABi System</td>
</tr>
<tr>
<td>Production</td>
<td>Books and Book’s Chapters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intellectual Property – Patents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Event’s Work</td>
<td></td>
</tr>
<tr>
<td>Thesis and Essays</td>
<td>Thesis and Essays Defended at UFRGS</td>
<td>SABi System</td>
</tr>
<tr>
<td></td>
<td>Thesis and Essays Not Defended At UFRGS</td>
<td></td>
</tr>
</tbody>
</table>

Chart 1 – Data source which feed the communities, sub communities and collections in Lume
own objectives of the institutional repositories, amongst which, the following are highlighted:

a) Provide broad visibility and access to the complete text for documents produced within the University and, consequently, to the author-researcher;
b) Guarantee access and preservation of the institutional production;
c) Increase the impact and dissemination of the research developed by the University;
d) Promote, internal and externally, the University;
e) Dispose the information and statistical data which contribute to the management and follow up of academic and research activities within the Institution.

It is also necessary to mention that consideration was made to the several initiatives from universities and research institutions throughout the world which pointed to the direction of the institutional repository creation. All research and studies performed guided the actions and decisions made by the University.

The initiatives in favor of the Free Access are propagated worldwide also, most surely, added to the UFRGS team actions.

3.2 Considerations

The implementation and maintenance of an institutional repository implies in transposing barriers and overcome challenges. It is important to observe that in the best definition of both words, be it barriers and challenges that, most certainly, shall add to the professional growth of all involved on the task and the satisfaction of accomplishing such with success. It relates to an activity which shall be developed institutionally, with the support of higher organizations within the Institution, given its relevance and coverage.

3.2.1 Regulation, Policies and Mandates

The support provided by UFRGS Central Administration and regulation of the actions considered crucial for the BDTD implementation and, posteriorly, the Lume System, were and continue to be essential for its continuity and consolidation.

The participation of the Graduation Pro Rectory, with regards to graduation courses conclusion work, and Master Degree Course Pro Rectory, with regards to thesis and essays, has been extremely important for the establishment of policies, workflow
and mandates or obligatoriness for the delivery of documents and respective authorization to be made available by the Lume System, by Rector decree, has largely contributed in the process of population and promotion of the repository within the Institution. Furthermore, it is highlighted the elaboration, publication and promotion of the Institutional Policy of Information for the Lume System, established also by means of a decree issued by the Rector. The entire regulation process provides support to the work performed and strengthens the repository as an institutional instrument.

The difficulty to gather all institutional intellectual production is recognized, without the use of more effective collection mechanisms that, in such manner, directly reverberate in improvements in the staff’s career or that there is an obligatoriness imposed by the institution to bind such and/or for development agencies. In this sense, the policies and mandates, properly regulated by the institution, by development organizations and national actions towards Free Access of scientific knowledge are fundamental for the success of the repositories population.

In Brazil, CAPES, which access and promotion of the scientific production is within its scope, published the Decree Number 013, from February 15th, 2006, which institutes the obligatoriness to digitally publish thesis and essays produced, starting on March 2006, by renowned master’s degrees and doctorate degrees programs.

It is also important to mention the worldwide initiatives towards free access which, without a doubt, contribute to raise awareness and increase promotion of authors-researchers.

In October 1999, during the Santa Fé Convention (New Mexico, USA), the OAI Model (Open Archives Initiatives) was established, a interoperability model to integrate the e-print repositories initiatives. According to Kuramoto “this model was the technological basis for the development of free access actions throughout the world.” After the convention, the BOAI Movement (Budapest Open Access Initiative, 2002), the Bethesda Meeting (2003) and the Berlin Declaration (2003) had major influence on the consolidation and dissemination of the free information access and knowledge movement. In Brazil, the Brazilian Manifest in Favor of Free Access (2005), published by the Brazilian Institute for Technology and Science Information (IBICT) outlines recommendations for academic institutions, researchers, development agencies, commercial and non-commercial publishing houses with regards to the methods of contribution to speed up the institutional repository creation process and allow the free access to scientific literature. (Costa, 2006).
Currently, a Senate Project of Law PLS 387/2011 is about to be voted related to the implementation of institutional repositories for Brazilian universities and research institutions, as well as, the obligatoriness of researchers / professors from such institutions to deposit a copy of respective scientific production in these repositories.

In accordance to the data obtained from the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP) there are still few institutions which possess or record its information policy or mandate. Of the 591 countries represented, only 26 repositories from South America record its policies, in accordance to the presented by Chart 2.

**Chart 2 – Number of Repositories in South America and respective sort of mandate registered at ROARMAP**

<table>
<thead>
<tr>
<th>Country</th>
<th>Mandate of Type</th>
<th>Total Repositories</th>
</tr>
</thead>
</table>
| Argentina | 2 Multi Institutional  
2 Thesis  
1 Other (Non-Mandate) | 5 |
| Bolivia | Thesis | 1 |
| Brazil | 1 Multi Institutional Proposal  
6 Institutional  
2 Thesis | 10 |
| Columbia | 3 Other (Non-Mandate)  
1 Thesis | 4 |
| Peru | 2 Other (Non-Mandate)  
1 Thesis | 4 |
| Venezuela | 2 Institutional | 2 |

*UFRGS is framed within this mandate modality.

3.2.2 Techniques: DSpace Tool

During the conception of the Lume System, the best way to implement it was carefully studied and considered. At the time, the DSpace tool presented as an open code tool for the creation of repositories which possessed a very active development community, which is true until today. Furthermore, the DSpace Tool possess several important functionalities which were amongst the desirable characteristics identified by the University team, such as ease of internationalization, capacity to be customized, indexing of content by the main search websites, support to any sort of digital document and support to protocol OAI-PMH.
The fact that it is a free open code tool allowed the performance of modifications of its functionalities and development of specific modules to comply and meet the Lume System needs, becoming a part of the tool’s standard installation package. It was also chosen to use the XMLUI Interface that, despite allowing better customization, required learning the XSLT programming language for its full usage.

In order to guarantee permanent access to digital documents, independently from any server address change, a license was acquired, with an annual cost, for the use of the Handle System\(^3\), as service provided by CNRI – Corporation for National Research Initiatives, which consists of attributing persistent identifiers for each digital document guaranteeing that, even if the repository server address is changed, the resources remain being referenced univocally.

The interoperability with other digital repositories and/or other information systems is enabled by the use of a metadata collection protocol from the open file initiative OAI-PMH, allowing for the transfer of data among each other by means of exposing the complete content of the repository in XML format. Even though it requires hard work for its customization, the DSpace is proving to be a very robust tool, allowing the addition of content by authors or from other systems. Despite the increase number of accesses and downloads, which more than doubled in 2012, the deposited items, which increased the repository’s size in 74% in 2012, the tool also maintains a good performance and agility for research answers and visualization of documents.

In Table 2 the number of items included in Lume are presented for the past three years and quantity of accesses and downloads performed on the same period, in such manner as to illustrate how expressive is the amount of transactions performed over the year.

\(^3\) The Handle System <http://www.handle.net/>.
Table 2 – Number of Documents Included, accesses and downloads from Lume – 2011-2013.

<table>
<thead>
<tr>
<th>Communities</th>
<th>Included Items</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Accesses Number</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Download Number</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collections</td>
<td></td>
<td>50.395</td>
<td>82.020</td>
<td>140.547</td>
<td>10.552</td>
<td>45.697</td>
<td>152.351</td>
<td>422</td>
<td>1.143</td>
<td>1.252</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UFRGS Events</td>
<td>-</td>
<td>146.454</td>
<td>615.213</td>
<td>-</td>
<td>264.427</td>
<td>653.204</td>
<td>-</td>
<td>14.534</td>
<td>16.953</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.231.035</td>
<td>5.093.217</td>
<td>6.124.426</td>
<td>2.507.005</td>
<td>10.194.103</td>
<td>10.082.934</td>
<td>10.455</td>
<td>27.215</td>
<td>68.310</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is important to observe the significant growth in the number of documents included in the Collection community, due to the incorporation of the Sport Memory Center (CEME), and the increase of over 160% of the total items included in 2012 with regards to the total items included in 2011 and over 150% in 2013 with regards to 2012, which is mostly due to the inclusion of the UFRGS Events community inclusion.

The accesses to the Lume System contents are registered whenever a user navigates through the repository, but downloads do not come necessarily from accessing the website, once such may be performed though search engines such as Google, for instance. This explains the increase in the number of downloads being larger than the number of accesses and also shows the importance of registering such information.

3.2.3 Operational: Flows and Personnel Involved.

The creation of new communities or collections in the Repository required rigorous planning, that must be discussed and elaborated in a collaborative and participative manner between all teams involved. The close relation between IT professionals, librarians and personnel responsible for the collections is fundamental during the definition of metadata, of the research filters, terminology to be used by the final user and the fields which shall be shown in the search results, which reverberate directly on the quality of the final product and success in the communities population. It is necessary that all personnel involved have complete understanding and clarity over the processes and actions to be implemented.
Furthermore, the processing of documents and the work stages performed up to the availability of any given item in the Lume System involve many different people from distinct organizations and differs according to a community or collection. In this case, mapping all processes is very important for the repository management team and even for others involved, in such manner as to identify responsibilities, possible faults in the activity’s flow, and thus, promote improvements in the sense of simplifying the processes and/or making such more agile. To illustrate, in general lines, the flow for populating the Thesis and Essays community, sub community Thesis and Essays defended at UFRGS, includes:

1) Master Degree Program Secretariat – responsible for receiving the printed copy and electronic copy and by the authorization term to make the thesis or essay available on the Lume System, simple verification and forwarding to the library;
2) Library – responsible for the document’s technical processing and registration on the Library Automation System (SABi);
3) Lume System Team – responsible for the actions to make the document available on the Repository;
4) Central Library – responsible for filing and maintenance of the printed authorization term.

Those communities which responsibility shall by of other organizations, and not the library, populating shall be performed through auto file and the process is simplified for the Repository managers, given that authorization controls and registration metadata must be performed by the respective personnel responsible for such collections. It is interesting to mention that there is a centralized and organized action for the Repository management process which, during certain phases and depending on the community, are more or less controlled by the Repository coordinating team.

The requirement for a technical and operational group dedicated to the Lume System, at UFRGS, is indispensable for the evolution of the community and work. The designation of the Managing Committee may also have an extremely important role in the consolidation and institutionalization of the Repository.

3.2.4 Copyrights and Use Licenses

Copyrights constitute a clear difficulty in the repository populating process. The legislation related to copyrights in Brazil, Law Number 9.610, from 02.19.1998, is clear
with regards to the exclusive right from the author to use, enjoy and expose the literary, artistic or scientific work and depends upon previous written consent from the author to use the work, independently from the modality. Since 2007, a reform of the Copyright Law started to be discussed which is lagged with regards to the advances provided by new information and communication technologies (TICs). Once approved, the reform shall bring many benefits for the creation and populating of the institutional repositories.

In the University there is a requirement for the authorization by the author for the availability of documents which naturally are not available for open access. In case of retrospective thesis and essays, for instance, such has been a barrier for a more agile availability of such publications, once it requires localization of the authors and authorization request for the availability of such by the Lume System. In case of recent publications, it was established a work flow which foresees the fulfillment of a form with respective authorization and delivery of the electronic document.

All digital objects available on the Lume System are under the same Creative Commons License which allows for socializing knowledge without removing the right from the author. It is a renowned license by judicial decision of Copyright Law which regulates use preventing alteration and commercialization of the originals. The license used by Lume System allows: sharing (copying, distributing and transmit the work) and remix (create derived work), given that credit is given to the original work in the specified manner as determined by the author or licensee (but not in a manner which suggests that these concede any consent to you or the use of the work), the work may not be used for commercial purposes and if altered or transformed the resulting work shall be licensed under the same license, or under a similar license to the current one.

4 LUME SYSTEM STATISTICS

The statistical data for the use and content of an institutional repository may be used as one of the indicators of the intellectual production quality for a given higher education institution and as an institutional management instrument at local and national level. These indicators may be understood as statistical data used to better comprehend scientific and technological production of a given private or public institution.

The construction and use of indicators are studied by several knowledge areas, being used both for the planning / follow up on the execution of policies, to evaluate if such actions that are being properly implemented with regards to the scientific research
are in accordance with the planned for the research and development programs, as well as for the scientific community to gain better understanding on the system in which is inserted.

When dealing with productivity indicators, in most studies, there is a great concern in identifying which are the most appropriate indicators, if those that inform the quantity of publications produced by a given area or group or if those that indicate work which provided a greater degree of objectivity. This raises question for which are the most suitable indicators, the quantitative or qualitative indicators.

The use of quantitative techniques is characterized by the adoption of a modelled strategy for natural science and based upon empirical observations to explicit facts and perform predictions and aim objectivity through a formal logic method with neutrality in the investigation process (Baptista 1999). In virtue of the difficulty in judging the scientific quality, where the main problem is define what is quality and univocally acknowledge its characteristics, the quantity indicators have been the most used due to the ease of which such can be collects, measured and evaluated, providing an objective base for planning.

The scientific production indicators are construed by counting the number of publications by document sort (books, articles, reports, etc.), by institution, by knowledge area, country, etc. The basic indicator is the number of publications, which aims at reflecting the characteristics of the production or efforts made, but does not measure the quality of such publications. One last matter related to the indicators related to the need that statistical collection is performed in a systematic manner and obeying the same data standard. Only then such are capable of generating reliable and comparable historical series, providing scientific performance information by means of counting the publications. It is a clear and transparent way which allows the University to evaluate the scientific production volume from its staff, as well as establish the indicators which may serve as support to the planning process, follow up and evaluation of the management program for the education areas and institutional research.

The Lume System Statistics Module, developed based on interviewed researchers’ suggestions during preceding research work, allows that access and download data to be presented in several ways: grouped by community or collection; grouped by author or keyword, or from a group of items resulting from an advanced search. The development and implementation of the Lume System Statistical Module, beyond those offered by the DSpace Tool, on its standard format, have the intent to broaden the possibilities for
the extraction of statistical data from its use. The following are available at Lume’s Portal:

a) Summed Statistics by community, collection or item;

b) Statistics per items from an author or by keyword;

c) Statistics for advanced research items; and

d) General statistics per communities / collections.

The summed statistics by community, collection or item are available for all communities, collections and items contained on the repository. Such are accessible by means of an icon present on the main page of the elements to which such belong to. Such present data related to accesses and downloads for the community, collection or item with its annual distribution. It is even possible to visualize the monthly data distribution and limit the access and download statistics period using the month and year filters. At the end of the page, the 10 countries with the largest number of accesses and downloads are presented, and immediately below there is an option to visualize all countries.

The statistics per items of an author or keyword are generated from the items recovered by the indexes of author and keyword, available in Lume. At the beginning of the page, five items are shown as most downloaded and five items shown as least downloaded. Next, are presented very similar data to those presented in the community or collection statistics. The information of the five most or five least downloaded works are important data to decide in which line of research to follow, the themes that can be explored, amongst others.

In the advanced search it is possible to perform searches using a combination of filters, by complete text, title, author, keyword and year, and also, show the statistics produced from the items recovered by the search performed. In the recovered results, by clicking on the Statistics icon, statistical data very similar to those presented for authors and keywords is presented, however, only for the results of the search performed.

This new module allows to compare access statistics between communities and collections which are found in the same hierarchical level in the Lume System. This option is available by the authentication of authorized users by means of a UFRGS user login in the menu below. Initially, this module directs the user to a page which presents the compared statistics for all communities in the first hierarchical level of the Repository. If the user is interested in lowering the hierarchical level in order to compare the statistics from sub communities / collections, it is possible to do so by
clicking on the name of the community in which it is desired to enter, for example, Intellectual Production. By doing so, the statistics for all sub communities / collections below the community chosen will be shown. It is also possible to filter the period per year or month.

Despite all data available, it is necessary to consider that only quantitative data may be insufficient for comparative analysis, once it is necessary to take into consideration, among other variables, the differences in scientific communication between knowledge areas.

The statistical data for use and content provided by several Brazilian institutional repositories may subsidy not only the administration of the repository maintaining institutions, such as development agencies for the identification of productivity indicators, which enable to dimension results, by academic products made available to society, and in the processes for decision making, planning and management. Thus, the institutional repositories other than its function to store, preserve, publish and provide access to the intellectual production from university communities, as well as promote and provide broad visibility to this production together with society, may contribute providing statistical data, which constitute a rich source of information for the planning, follow up and institutional evaluation processes.

5 FINAL CONSIDERATIONS

The implementation and maintenance of the Lume System is characterized by a systematic and uninterrupted work performed by such teams, guaranteeing the continuous growth and improvement since its creation, despite several considerations and challenges imposed to the teams during all process stages. The motivations, however, are even greater and more stimulating.

The repositories are, without a doubt, a very important tool for the management and socialization of knowledge produced by higher education institutions and research institutes. Supported by movements and manifests in favor of its open access to information, the initiative gains even greater space at UFRGS providing broad visibility to the institutional production and to its researchers.
REFERENCES


