

Institutional Repository Redesign for SKKU(Sungkyunkwan University)

Sungha Kang

Department of Library and Information Science
Sungkyunkwan University

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I. Introduction

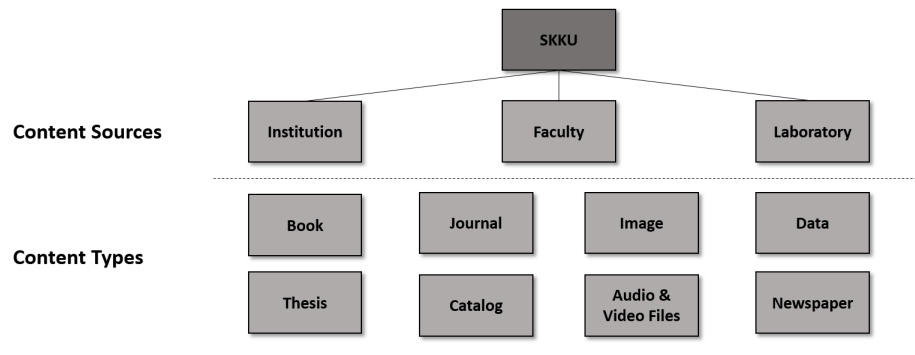
1.1 Context Analysis

Recently, the emergence of a marketing strategy with the concept of a big deal due to the large size of publishers and a system for disseminating academic information through the Internet has led to a decrease in the subscription of academic journals in libraries. As a result, an environment is being created in which access to academic information is difficult for both library users and researchers. For readers, the available academic journal information has decreased, and for researchers, the number of readers of research results has decreased. In order to overcome the crisis of the library's academic journals, an open access movement was launched to directly connect users and researchers, and the establishment of an institutional repository was promoted as one of its core tasks.

An institutional repository(IR) is an archive in which research institutes such as universities store, preserve and disseminate digital copies of the intellectual research materials of members of the institution in electronic form for free. Open access, which emphasizes access and use rather than the archive concept of storage space, is emphasized, and more and more institutions are now building their own repository since it can relieve copyright problems, be constructed easily, and costs low. The main purpose of IR is to build free online study papers as a strategy to cope with large publisher-centered marketing strategies that hinder the distribution of authors' research results and interfere with library functions. In addition, this would be the basis for intellectual growth, including other research, by making it easy for users to access.

University libraries have participated in the open access movement through the establishment of IR. This is because it was seen that the digital preservation of academic resources and the provision of search through archiving were consistent with the unique functions of the library. However, these digital archiving projects have limitations in terms of resource management, which should complement resource conservation and archiving capabilities as well as curation capabilities to discover the value of open-access resources to help manage and reuse quality resources. In particular, SKKU has two campuses, Humanities and Social Sciences Campus and Natural Sciences Campus, and they are located in different cities. Furthermore, each campus operates its own library. It seems necessary to establish IR based on this condition.

1.2 Content Analysis



The content to be provided by SKKU repository, including content map shown above, are as follows. It may contain variety of materials produced by the institution, faculty, laboratory of SKKU like

- Pre print of articles or research reports submitted for publishing the text of journals articular accepted for publication
- Revised text of published work with comments from academic readers.
- Conference papers.
- Teaching material.
- Student's projects.
- Doctoral thesis and dissertations.
- Database resulting from research projects.
- Committee papers, administrative papers.
- Computer software work of art.
- Photographs and video recordings.

1.3 User Analysis

As Schmitz highlighted “Understanding users is a pathway to sustainability”, it is surely important to analyze intention of users. The users of an institutional library can be largely divided into three groups; authors who provide papers in this archive, researchers and the public who want to find references, and managers who manage this IR's database. Among these, the user group that you should pay particular attention to is researchers, students, professors, and public group

who want to visit this website to search, explore and find various materials. Everyone can be a user of this site regardless of gender or age group. You can visit the site to find a prior study of the subject you want to study, to read your colleague or professor's thesis, or to just browse to get inspiration for the study. Each has a different purpose, but one thing is certain: they all have a strong passion for some field of study and a desire to search for and explore materials about it. Therefore, it is sure that usefulness, usability, findability, credibility, desirability, accessibility, value are key factors for these users.

Based on the study of IR users of three institutions(KOASAS, S-Space, and Dspace@INHA), the intended user could be analyzed as follows. First, the purpose of users' use of the university IR is to find data necessary for research and to understand the latest academic trends. One thing to note is that users' expectations for IR are free academic information. Therefore, IR shows that the registration of high-quality academic information that can be shared is important, and that it is provided free of charge to institutional members within the scope of copyright permission is an important factor. Second, it was found that users relatively prefer simple search as a matter of search, but the use of detailed search, browsing, and search through other platforms was also found to be significant. These results show room for various interpretations, but it is believed that it is necessary to provide various search possibilities to users through the provision of more diverse search functions. Finally, they perceive the use of IR as unfamiliar and inconvenient, and they can find a response that they do not trust that there will be any desired data. In the case of users with experience, the satisfaction level of the data was generally high, but the satisfaction level of providing the necessary help and feedback was low.

II. Redesign Institutional Repository of SKKU

2.1 Benchmarking Analysis

Before redesigning the SKKU Repository, I would like to compare and analyze systems and hompages of the three IRs(S-Space, YUH Space, and ADS) below to comprehensively reflect their advantages.

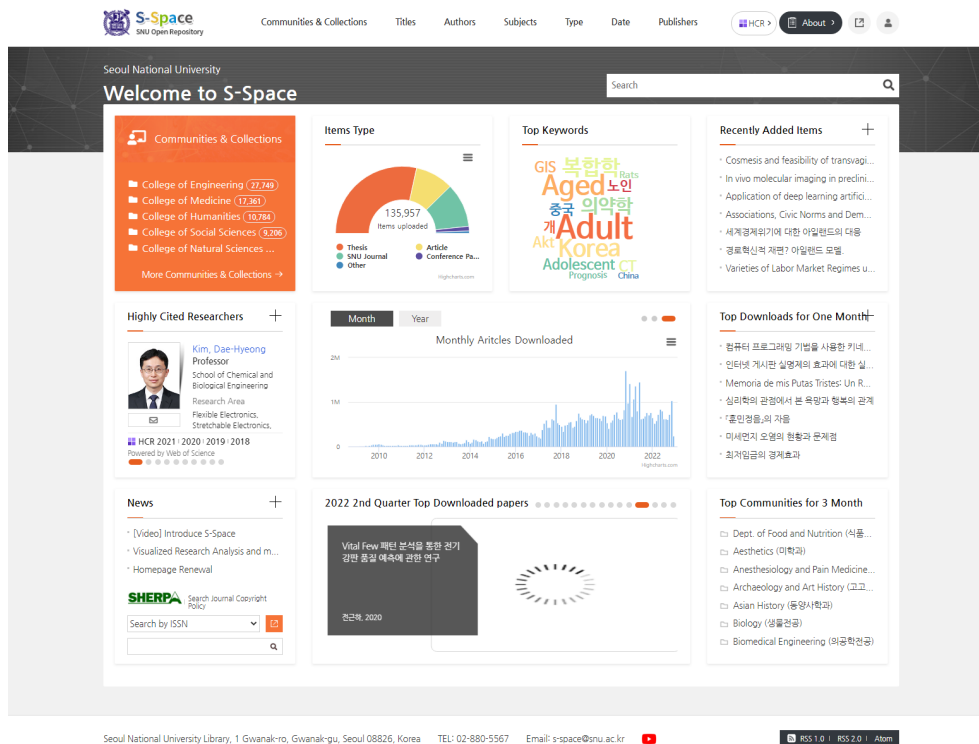
All three sites organize data through the topical organization scheme. Academic courses and departments, newspapers, and the chapters of most non-fiction books are all organized long topical lines. The classification itself as community, college, and collection is a topical scheme, and it is also a topical scheme that is classified as an access point to data such as title and author. The thing to keep in mind here is that in designing a topical organization scheme, you need to

define the universe of content that users will expect to find within that area of the website. It is important to define the breadth of coverage.

In order to facilitate movement throughout the site, strategic navigation and a search systems are tailored to the predetermined goals and implemented. Word(labels, sections, etc.) choices, images, graphics, layout, grids, placement and other IA components are created and arranged in methods that best anticipate users' major needs. In S-Space, its construct structure aims to answer users' questions such as these; (1) Where am I? (2) I know what I'm looking for; how do I search for it? (3) How do I get around this site? (4) What's important and unique about this organization? (5) What's available on this site? (6) What's happening there? (7) How do I engage with them via various other popular digital channels? (8) How can I contact a human? (9) What's their address? (10) How can I access my account? In addition, the labeling system seems to have made appropriate word choices that everyone can understand.

Let's take a closer look at the characteristics to be examined on each site.

2.1.1 SNU Open Repository (S-Space)¹



¹ <https://s-space.snu.ac.kr/>

S-Space is Seoul National University's unique DSpace² operated by its library. It uses Top-Down approaches, which uses categories to group pages and applications throughout the site. Additionally, a systematic set of labels is designed and used to represent the site's content. Among the three sites presented, It is also the site that most clearly presents the category on the main page.

What is regrettable here is that the categories based on topical organization should be adjusted a little more noticeably, and the search box should also be larger, centered, and at the same time enabling detailed searches, allowing users to find the resources they want faster. The former, category modification will make browsing easier, and the latter, search system supplementation will make it.

2.1.2 Yonsei University Health System Repository (YUHSpace)³



YUHSpace is an Institutional Repository managed by Yonsei University Medical Library. You can search research papers published at Yonsei University Health System, College of Medicine · Dentistry · Nursing, and Graduate School of Public Health.

What is impressive about YUHSpace is the fact that the site of each department is constructed similarly to the main website presented above. Since medical libraries have distinct and complete characteristics for each department, it is important to induce users to acquire

² DSpace is an Open Access Self-Archiving System co-developed by MIT and HP that is used as an institutional repository for collecting and sharing intellectual products by more than 400 universities/laboratories worldwide.

³ <https://ir.ymlib.yonsei.ac.kr>

professional information by providing more specific particulars. The picture below is a link that connects when you click the ‘biomedical science instrument’ tab in College list. On other websites, only the materials of each department are often listed, but the site provides its own website Data visualization with keywords, and journal categories or additional information such as hot articles is meaningless on a all-around website where various departments are mixed. For example, if you access a repository to read philosophical papers, and all the statistics or details provided are natural science, the information will be useless. In that sense, it seems appropriate to emulate the establishment of an independent website that enables its own search systems, information provision, and browsing.

[»](#) > 1. College of Medicine (의과대학) > BioMedical Science Institute (의생명과학부)

BioMedical Science Institute (의생명과학부) [Researcher List](#)

in search for [Go](#)

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Keyword Cloud

Journal Categories

CELL BIOLOGY : 10%

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LANCET, Vol.384(9938) : 164-172, 2014

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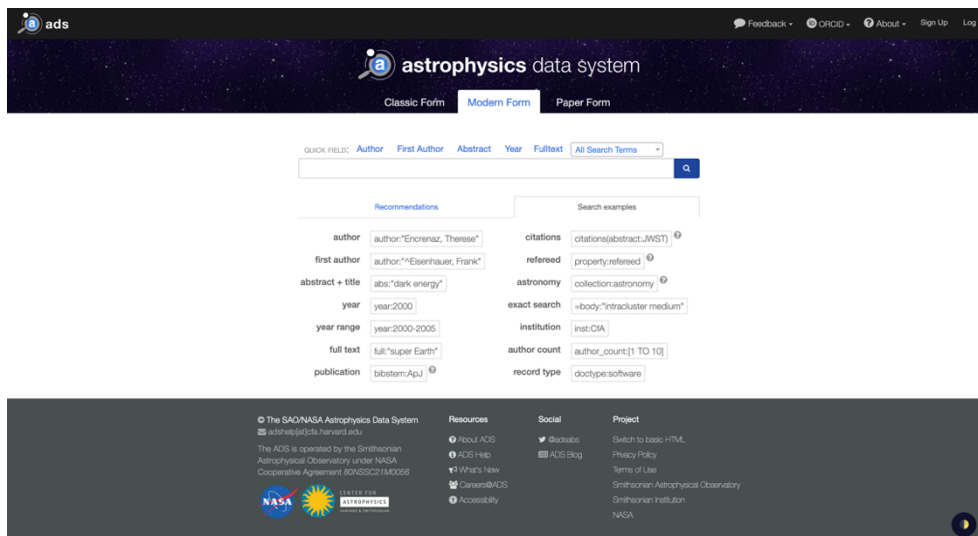
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2.1.3 Astrophysics Data System (ADS)⁴



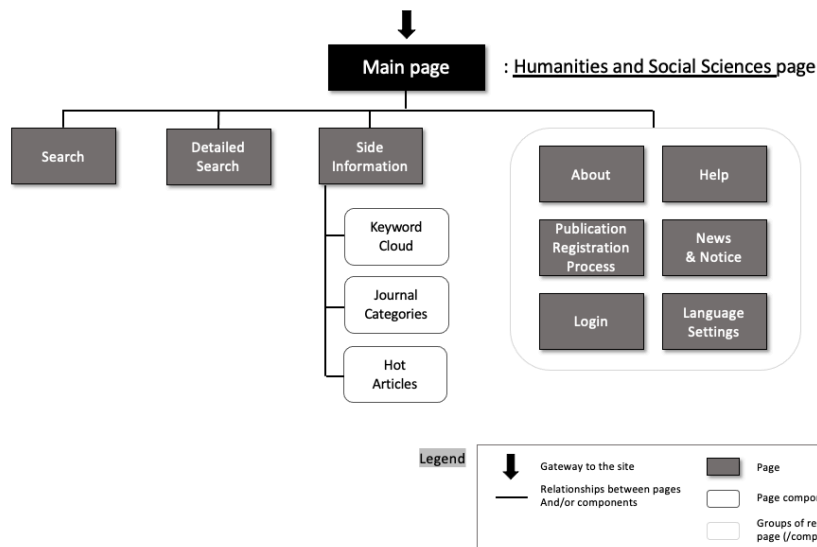
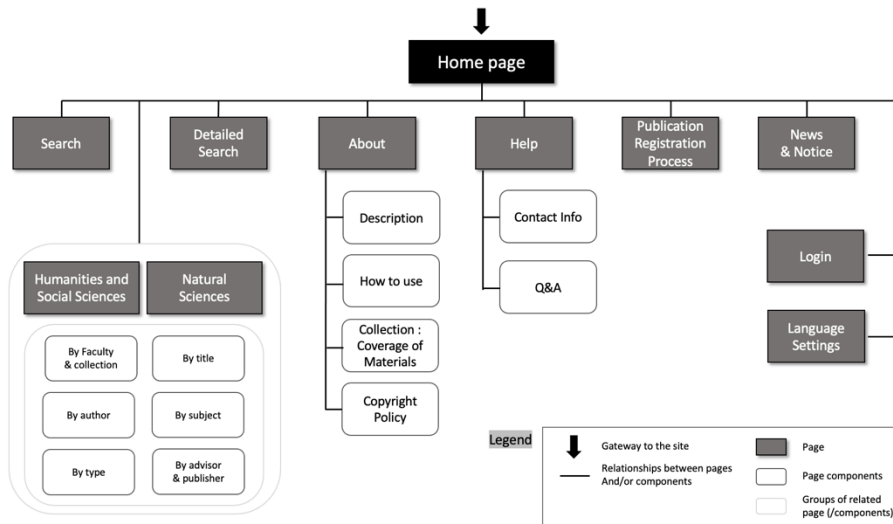
The SAO/NASA Astrophysics Data System (ADS) is a digital library portal for researchers in astronomy and physics, operated by the Smithsonian Astrophysical Observatory(SAO) under a NASA grant.

The simplicity and ease of search of ADS are noteworthy. The two most important functions of IR are to build a reliable and high-quality database and to build a system that makes it efficient and easy for users to use. In that sense, ADS is extremely functional because there is no unnecessary and ostentatious information such as bunch of useless statistical visualizations. Obviously, it is both useful and important to provide details about the collection. However, as mentioned earlier, it is important to provide 'wanted' information by users. In addition, in the case of ADS, it is difficult for the general public to find data because it is a somewhat professional and unfamiliar field. Therefore, it is necessary to provide some additional figures while maintaining the present simplicity. In the SKKU Repository, it is crucial to completely conduct user analysis to provide only the necessary information and at the same time to provide help so that there is no problem with browsing even if there is no background knowledge. As well, the search example in the search box below provides you with things you know but cannot think of when searching, which reduces your search process. By pressing each example tab, it is automatically entered into the search box, and based on this, users can modify the query, and search for Boolean operators including 'and', 'or', 'not'.

⁴ <https://ui.adsabs.harvard.edu>

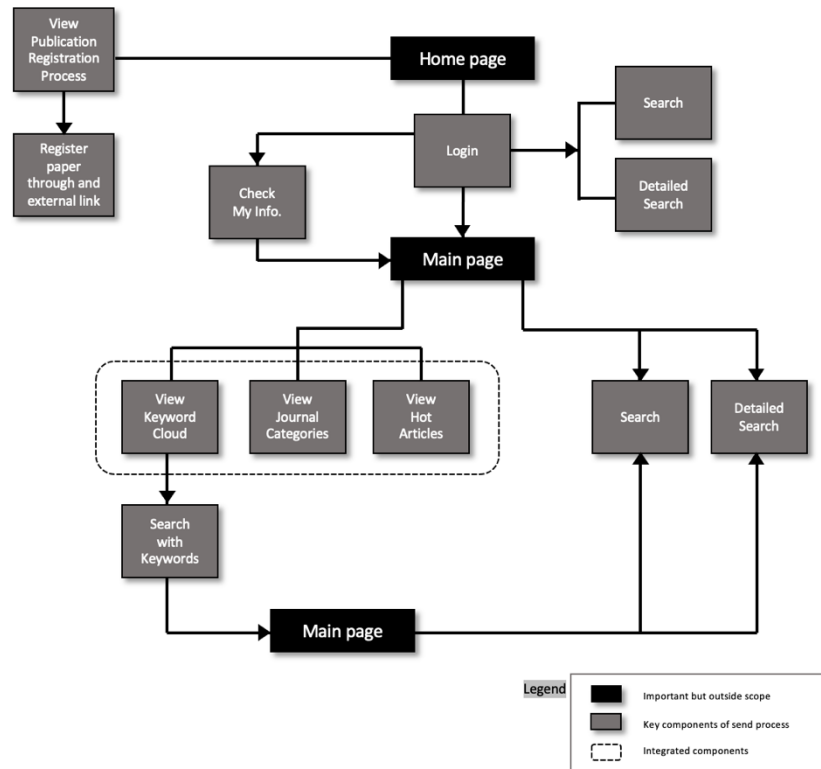
2.2 Proposal of Structure

2.2.1 High-level Sitemaps



The two high-level sitemaps presented are home page and main page sites, respectively. Here, it is assumed that the Home page is the main web page of a website. The term may refer to the start page show in a web browser when the application first opens. And the main page is a page that can perform a little more various functions, including browsing. Since, SKKU has two campuses located in different places, and each has its own characteristics, an independent page was built for each.

2.2.2 Lower-level Sitemaps



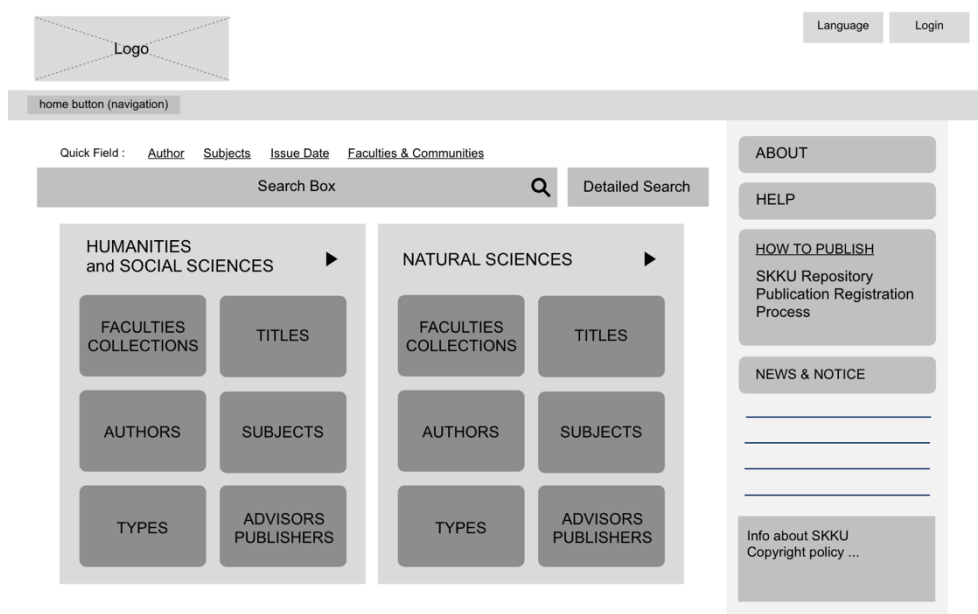
In lower-level sitemap, you can clarify what tasks can be performed in high-level sitemap in more details, focusing on users. In this lower-level sitemap, it is assumed that the only user is a person belonging to the institution.

2.2.3 Justifications about the Proposed Structure

Sitemaps show the relationships between information elements such as pages and other content components, and can be used to portray organization, navigation, and labeling systems. As mentioned earlier, SKKU has two independent campuses. However, because there is also a common and integrated part, the search on the SKKU Repository's home page is made possible immediately, and the information of the repository, how to use it, publication registration procedures, and announcements were also built so that they could be checked here. If you go to the main page of each campus, you can browse and search under various conditions based on departments and communities. By preparing two separate systems through the link, users can use the display more intuitively and concisely.

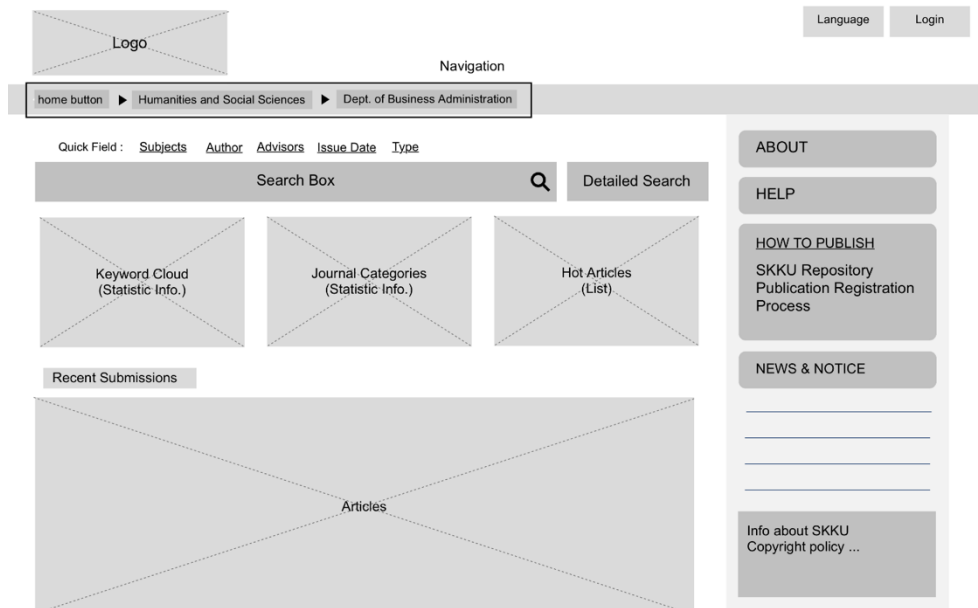
2.3 Proposal of Layout

2.3.1 Home page Wireframe



Based on benchmarking the other three institutional repositories, the wireframe on the homepage is designed to be concise and intuitively obtain what users want information and use. What was discussed regarding layout and page components was 'excessive intervention of unnecessary information', and this wireframe/layout minimize the intervention. Users can find the basic information of the site on the right side of the page (About, Help, SKKU Repository Publication Process, News & Notice). And, the 'service' of the site is available on the left. If the user clearly knows what he or she wants, the procedure of moving to the main page of the department may be an unnecessary procedure. Therefore, a search box and a detailed search box are provided to minimize the search path.

2.3.2 Main page Wireframe



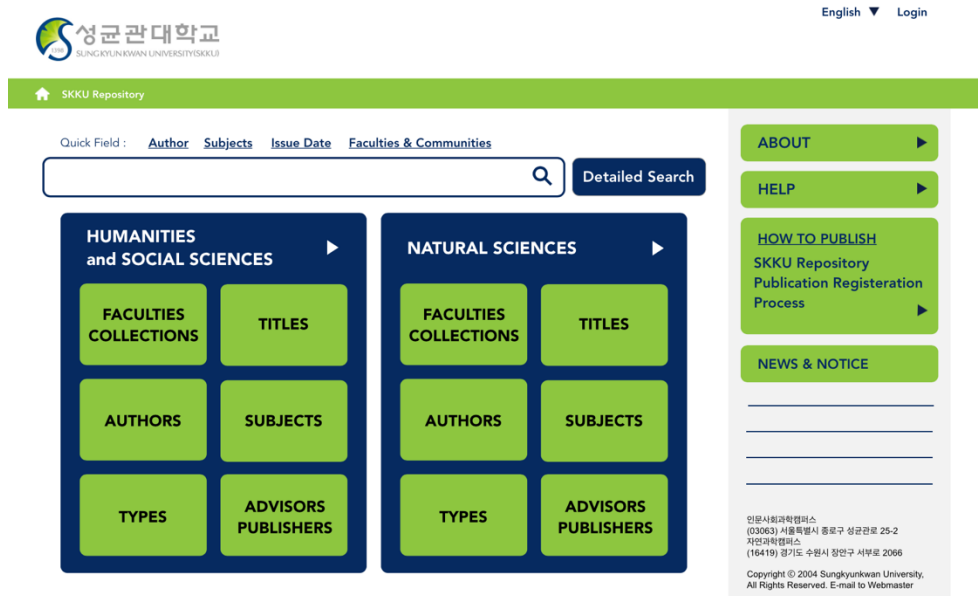
Here, the main page is a link to the campus to which the user belongs or wants to find resources. The main page is the 'campus' page, but its layout and design are the same as those of the home page. The wireframe presented above is a link to the 'department of business administration' of the 'Humanities and Social Sciences Campus'. You can choose the department of the campus directly with the filter tabs presented on the website, or you can browse through the filter after accessing the campus site. If you know the department from which you want to use the data, you will be able to select the department through the 'Faculties & Collections' tab directly on the website. Statistical data and additional information were not presented on the home page and main page, but when a user selects a department, these useful information can be visually checked. As discussed earlier, the purpose of this repository redesign is to provide concise and 'wanted' information. By providing such guidance in the undergraduate link, it became possible to provide meaningful information by comparing and analyzing information on a narrower range and similar subject.

2.3.3 Justifications about the Proposed Layout

All tabs in this layout (of home page and main page) do not provide information. For example, in the case of the 'About' tab, the description of the SKKU Repository cannot be obtained just by looking at this tab. The part where you can get even a little information without

clicking will be the 'News & Notice' part. The reason for this design is 'clarity'. If there is too much information on the website, users would have to scroll to get the information they want. However, by providing only label, when accessing the site, users could directly access the place they wanted, and it means that the user's information acquisition path is shortend.

2.4 IA Strategies



2.4.1 IA Administration⁵

Administering a library publishing program through an institutional repository adds complexity to what might be run-of-the-mill guidelines for content, access and preservation, because using the platform to create content, rather than merely collect and provide access to previously published content, means that not all types of content are the same. Library publishing introduces a greater degree of responsibility for content from the library, and the policies should engage with this responsibility.

Guidelines of repository policy should include three areas in the majority of publicly available IR policy documents: these are content guidelines, access policies and preservation policies. Content guidelines or policies govern what sorts of material are eligible for inclusion in an IR and who is eligible to submit that material. Access policies outline which users are able to

⁵ Kelly Riddle, "Creating policies for library publishing in an institutional repository : Exploring purpose, scope, and the library's role", University of San Diego, 2014.

access content and which might state under what circumstances restricting access to content is appropriate. Preservation policies provide assurance that material in the repository will be protected for future access, often giving an overview of the backup and preservation mechanisms in place and providing some indication of what will happen to the material in the event of the termination of the repository. Together, these should form a practical expression of the purpose and scope of the repository and its services.

2.4.2 Technology Integration

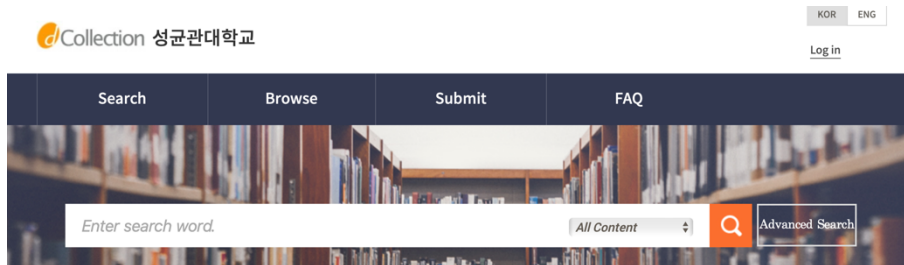
The image shows a detailed search window for the Astrophysical Journal Supplemental Data (ADS). At the top, there are radio buttons to limit the query to 'Astronomy' (selected), 'Physics', or 'General'. A 'Search' button is located to the right. Below this, there are two columns for 'Author' and 'Object' searches, each with radio buttons for 'AND' (selected) or 'OR'. The 'Author' field has a placeholder '(Last, First M) one per line'. The 'Object' field has a placeholder 'SIMBAD object search (one per line)'. A 'Publication date between' section contains two date input fields (MM / YYYY) separated by 'and'. Below that are 'Title' and 'Abstract/Keywords' fields, each with radio buttons for 'AND' (selected), 'OR', or 'BOOLEAN'. There are also checkboxes for 'Refereed only' and 'Articles only'. A 'Publication(s)' section includes a text input field with the placeholder 'Comma-separated bibstems of journal titles' and a note 'Press Return Key To Add Publication'. At the bottom left, there is a 'Sort' section with a 'Date' dropdown menu. At the bottom right, there are 'Clear' and 'Search' buttons.

The strategy must address opportunities to leverage existing tools and identify needs for additional technologies to develop or manage the information architecture. When a user inputs a query, the words containing the keyword should be listed below so that they can be referred to, and it should be possible to search a combination of various filters. In addition, when classifying and listing materials, it may be automatically adjusted without direct user intervention, and several elements of the website can be modified and used according to individual preferences. And for this technology integration, a solid database and software will be needed. The picture above is the detailed search window of ADS.

2.4.3 Document Type Identification

To identify document and object types (e.g., article, report, white paper, financial calculator, online course module) and to collaborate closely with the content authoring and management teams are also necessary strategies. Various stakeholders who structure and identify the information architecture of IR should work with the same standards. It is necessary to identify the types and characteristics of all materials held, managed, and disclosed, to prepare and distribute regulations and standards for them, and to encourage producers to follow the standards.

2.4.4 Organization and Labeling Systems



The new design is a variation of many of the existing SKKU dCollection. In particular, the organization of the current website is disordered. Although the search window is presented on the main page, the 'Search' tab is prepared (not an advanced search system, but only the search box is presented the same as on the main page). Topical organization can be used to shorten the browsing path, but is unnecessarily added to hinder the process. In other words, SKKU dCollection is taking a unsystematically weaved task-oriented organization, and it is only an needless process intervention. The redesigned SKKU Repository clearly presents the reference points that users can choose with topical organization and eliminates all the problems of the current one.

- ☐ 교내 기타학술자료(29)
 - ☐ 경영전문대학원 혁신보고서(29)
- ☐ 교내 학술지논문(11,820)
 - ☐ RISS 학술논문(2,386)
 - ☐ 기구축 학술지 Article(9,434)
- ☐ 석박사 학술논문(2)
 - ☐ 퓨쳐학술논문(2)

In addition, there are many labelings that are unappropriate and not correct in current IR. For example, the pictures presented above are the filters presented when browsing to 'Community & Collection'. Academic resouces, academic journal papers, and academic journals are confusing users by exploiting material names that look the same at first glance. If these are documents that mean exactly different things, then clearly different names should be used, and if they mean the same thing, they should be presented integrally using one identical classification, and classified specifically in it.

2.4.5 Navigation and Search Systems

As can be seen in Wireframe and the temporary website window presented, users can easily check where they are and what kind of work they are performing, including global navigation. And on the possible tabs connected by a link, an arrow was drawn to clearly indicate that there was additional information on this tab.

In this article, it is not clearly presented how detailed searches will be organized. However, earlier in this report, how the search system should be built, the elements to be included, and how it should be configured is presented with the detailed search example of ADS. The search window is noticeably placed at the top of the page, and various conditions that can help users create query words are also given.

2.4.6 Metadata Fields

In addition, the construction of a search system, which began with text search centered on research papers and data on studies, has recently expanded from structural data-oriented search to non-structural data-oriented search such as document search, web search, and multi-media search. In order to efficiently find the desired information among the numerous fields of data indiscriminately and vastly spread on the web, the system should be developed so that the data can be classified in a standardized form according to guidelines and searched efficiently. In other words, new values should be created through interconnection and sharing between data. And metadata is the key. Metadata is “data that provides information about other data”, but not the content of the data, such as the text of a message or the image itself. In other words, it is data that structures the attributes of data on a network and describes content, format, management, and location identifications through its structure. A common commitment to the meaning and expression of information resources is needed, and it is essential for ease of search and management.

III. Conclusions

3.1 Summary

So far, the context of institutional repository and Sungkyunkwan University, the content it will include, and the users who will use it were analyzed. By benchmarking the existing three repositories, the advantages to be modeled and the things to be corrected and supplemented were identified, and based on this, which repositories should be designed through sitemap and wireframe. Finally, the features of redesigned IR through the information architecture strategies was discussed. SKKU Repository is redesigned based on the keywords 'simple' and 'functional', and as of now, software, databases, metadata, and vocabulary to support it should be discussed steadily.

3.2 Reflections

It was beneficial to be able to do one big project by sequentially reviewing the elements related to the information architecture that had been analyzed through each discussion. In particular, when writing sitemap, I felt strongly that I could design this site properly only when I knew exactly what intention and purpose the users of this site wanted. If metadata was the thing I thought it is necessary for the last assignment, the most necessary and important thing for this project was 'user analysis'. With this project, I felt strong urge to learn methods to properly consider and analyze them. Also, it is regrettable that I could only show the map of repository, I hope there will be a day when I can completely show what I want by making my own institutional repository.