202 Case Study

On-Nala: Administrative documents organizing system of the Korean Government

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Overview

This organizing system can be Achilles’ heel of the South Korean government. If this system goes down, every single government agency will be paralyzed. The name of the system is “On-Nala”, which means “all across the country” in Korean. It organizes “Gong-Moon”, which can be translated into an official document. However, this word-for-word translation cannot include every context and semantic of the original Korean word. It is more like a mail which is guaranteed and authorized by government, and none of agencies can execute any administrative action without producing Gong-Moon. The first open of On-Nala system was in 2006 and 267 agencies are using it in 2016. With this system, the Korean Government has successfully replaced all paper administrative documents with digital documents. More than 100 million digital documents are produced and transmitted per year. However, as time passes by and the quantity of documents increases, new challenges and requirements have emerged and a remodeling project is under progress.

What is being organized?

The main resources which this system organizes are administrative documents which have legal force. There are 2 types of documents by usage: documents for communication between government entities and documents created to be approved by supervisors. Usually the former is a transactional document, and the latter is a narrative documents. The number of the latter is increasing these days. There are 2 ways of producing a document: a document can be directly created by the system or by scanning image of paper document. Both documents can be processed by the same architecture because the system is designed to mimic paper documents. For example, each document has a unique identifier which can be created manually by human. An identifier consists of the name of agency, consecutive number within a year, and year in 4 digits. When a document is transmitted, a receiving agency must assign a new identifier with its name to the received document. Therefore the number of documents with identical contents will be the same as the number of receiving agencies plus 1. This eccentric process mimics fax transmission or paper copy distribution.

The system also organizes the hierarchy of agencies and departments to use them as receivers and senders. Each agency or department is represented by a standard code
instead of its name which may cause vocabulary problems easily. The users of the system are another essential resources to organize.

**Why is it being organized?**

The users of On-Nala system are central and local government employees including ministers, mayors, and governors. The most important goal of this system has been faster and safer communication between agencies. The interactions supported by the system are creating, editing, viewing, approving, sending, receiving, searching and archiving. The interactions related to communication are implemented in great quality and details. For instance, the system supports quick and powerful user interface to deliver documents to proper receivers. Documents can be redirected and retransmitted very easily. Senders can know who has received and viewed the documents. In addition there are several unusual interactions like putting a stamp image on a digital document to prove authenticity of documents. On the contrary, interactions for searching were significantly insufficient. The system supported only 3 search conditions: dates, agencies, and titles. Web interfaces were also not user friendly and performance was very poor. These problems are being fixed recently because the Korean government wants the system to be a knowledge bank for policy making in the long term. Moreover, various big data analyses may be possible with the accumulated documents.

**How much is it being organized?**

Gong-Moons are mainly classified by the departments which created them. They also can be classified by policy domains which could have been the important descriptor to understand the context of documents better but inconsistency in the granularities of policy domains hindered that. For example, common tasks like “budget” and “acquisition” may be on the same level of domain hierarchy with specific tasks like “document system remodeling.” It is difficult to classify a document about a software acquisition which is required for the system remodeling. This problem is inevitable because each department may add their own policy domain without understanding its whole hierarchy. There can be two types of solution to this. The first one is standardized every level of policy domain hierarchy and remove inconsistency. The second one is using tags to express additional information about the policy domain. The first solution is a fundamental solution. However, it is too difficult and expensive to reorganize the vast amount of documents according to the new standard. Therefore, the Korean Government is considering the second solution, which may be a palliative but enough to support more efficient search interactions.

**When is it being organized?**

Currently almost all descriptors are filled by users on the way in during the creation. Searching and archiving can be considered as interactions involving on the way out organizing. The most recent version of the system supports searching by keywords from
text contents of documents. Keywords should be extracted and organized on the way in to support better on the way out organizing based on contents.

By whom is it being organized?
As the system is organizing digital resources, it is obvious that everything is being processed by computers but they are just tools to help organizing because the inputs from individual users make organizing decisions. Meanwhile the first step to automated computational classification based on text analysis started in 2016. However, the local de facto standard document format, which is called “HWP”, has become a huge obstacle because there are few solutions supporting HWP and meets other technical requirements. The remodeling project team has changed some part of the system based on ODF format in 2016, and is still researching about the solution.

Where is it being organized?
For security reasons, On-Nala system is located on the intranet for Korean government. Every agency had its own servers and storages and documents were being organized in document “silos”. This is the major reason why the regulations based on paper documents did not caused much trouble. However, the Korean government has started to integrate separated servers and storages of On-Nala since 2016 to break information barriers between agencies. These changes bring unprecedented confusions about the old regulations. For example, documents should be “moved” to separate archiving systems five years after creation although it does not match with the new goal of On-Nala. Currently the way to revise document regulations is being discussed among related agencies.

Other Considerations
The future vision of On-Nala is huge. It wants to be the sole communication portal and the knowledge bank of the Korean government. To achieve this vision, individual systems like e-mails, instant messengers, and knowledge management systems are going to be integrated with On-Nala. In my opinion, integrating data resources and business processes is far more important than integrating infrastructures. TDO can be the basic framework to analyze the resources and interactions of these systems and design a truly integrated organizing system architecture.
Artifacts

Overview of the On-Nala System infrastructure remodeling

1. Before 2016

2. After 2016
The properties which should be filled by users to create a document
- Screenshot of the online document property editor

- Screenshot of the online contents editor
Sample Document #1
- A transactional document requesting a form submission
- Created by the system (Born in digital)
- A document for communication between agencies
Sample Document #2
- Narrative Document explaining an annual strategy
- Image of a paper document scan (the first page of a multi-page document)
- A document to get an approval from supervisors
  (Director, General Director, Vice President, President)
Solutions for the policy domain category problem

1) Rebuild the Hierarchy

Pros) Fundamental solution
Cons) May cause re-organizing of a huge number of documents.
2) Using tags to search by policy domain

When users search by policy domain, use its tags as a search condition as well.

Pros) It costs less and takes less time.
Cons) It does not solve the problem itself.