Study on Agricultural Machinery Management System

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ABSTRACT

The purpose of Agricultural Machinery certification is to provide good information to user and to promote for export of Agricultural machines and to develop and distribute of good agricultural machines. We have 5 types of Agricultural machinery certification i.e. general certification on performance, safety and technology roadmap, safety management including safety device check for traveling type agricultural machinery, and certification on machinery used in APC(Agricultural Products Processing Center), RPC(Rice Processing Complex), greenhouse etc. and certification in agricultural machinery emissions.

We have developed the Agricultural Machinery Certification Management System (AMMS) during 5 months and field department members have been used since 1th Jan. 2012. The Main functions of this system are requests, accepting and testing of agricultural machinery certification, issue a report for those agricultural machines. Also, we made a process and a standard by all step, and build a database by input theirs result each steps. So, it is possible to analysis and management every each step. The System can provide many types of statistics. Furthermore the system's efficiency and reliability are getting increased by auto-issue a report. We have certified about agricultural machines 937 times on the AMMS in last year. It means that one person have certified for 67 times agricultural machines. And, this system is linked to E-approval system, so user is very easy to use.

Keywords: Agricultural Machinery, Management, Certification, Agri-system, Republic of Korea.

1. INTRODUCTION

The Foundation of Agricultural Technology Commercialization and Transfer (FACT) is a public institution established by the Rural Development Administration and named by the Ministry of Strategy and Finance as a quasi-government organization undertaking activities on behalf of the government; We were designated as the only technology transaction & evaluation organization in the field of agricultural food by Ministry for Food, Agriculture, Forestry and Fisheries. it has been dedicated not only to maximizing the spill-over effect of the agricultural R&D outcomes of the Rural Development Administration, private-sector businesses, local autonomous organizations, etc., but also to increasing the value-added of the agricultural industry since its

foundation. One of them is analysis and certification service. The purpose of agricultural machine certification is to provide good information to user and to promote for export of agricultural machines and to develop and distribute of good agricultural machines. We have 5 types of agricultural machine certification i.e. general certification on performance, safety and technology roadmap, safety management including safety device check for traveling type agricultural machinery, and certification on machinery used in APC, RPC, greenhouse etc. and certification in agricultural machinery emissions.

FACT has been certified agricultural machine by Agricultural Mechanization Promotion Act since 2010. The number of certification requests is increasing every year over 20%. Therefore, we needed to build up AMMS (Agricultural Machinery Certification Management System). So, we were starting to develop AMMS from June 2011 and end users have been started to use AMMS since 2012

2. MATERIALS AND METHODS

2.1 System Design

The AMMS was developed to improve the efficiency of the work and to increase the reliability of the test. AMMS is consisting of two systems. One of them is for user web site (lab.efact.or.kr). A client can ask to certify for his Agricultural machine on web-site. Also a client can check his request, result and all of this process on the internet.
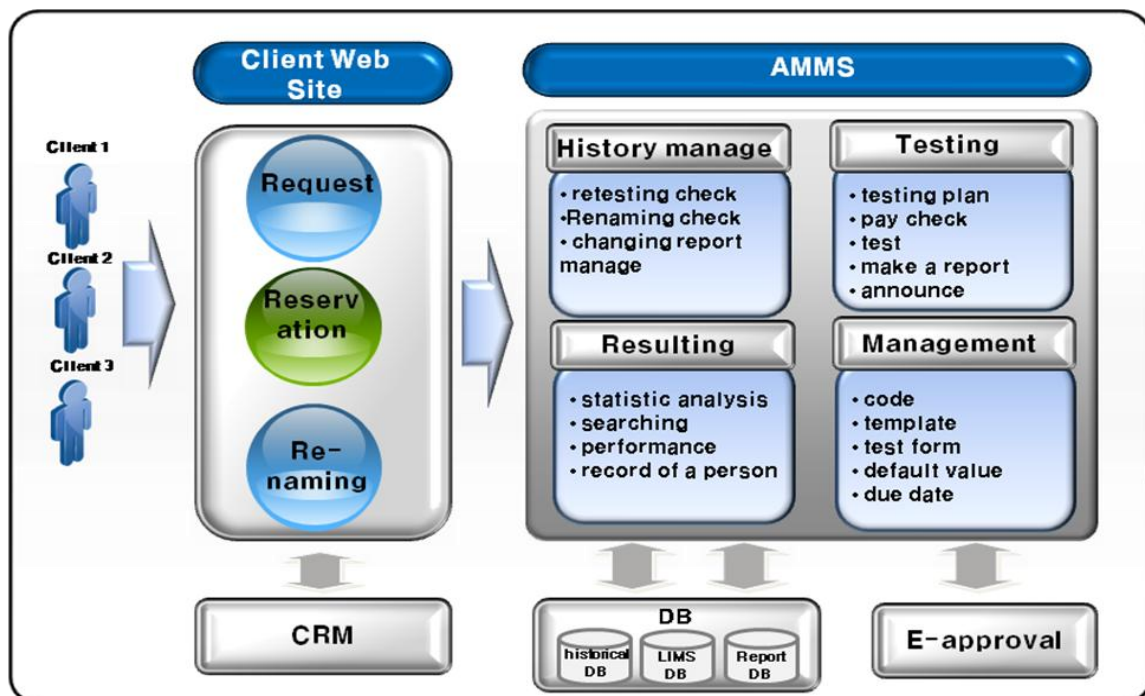

Figure1. System Design

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2.2 System Configuration and Function

The Client web site is as following Fig. 2. If you can access on internet, you can always request on the web site. This web site was opened since 2010 and the number of visitors is about 1,500 per month.

Fig. 3 is the main page of the AMMS. This system is based on IIS server and ASP. The main function of this system is recording of test, issue the report and connection with E-approval system. A person in charge of the certification can do all the process in this system.
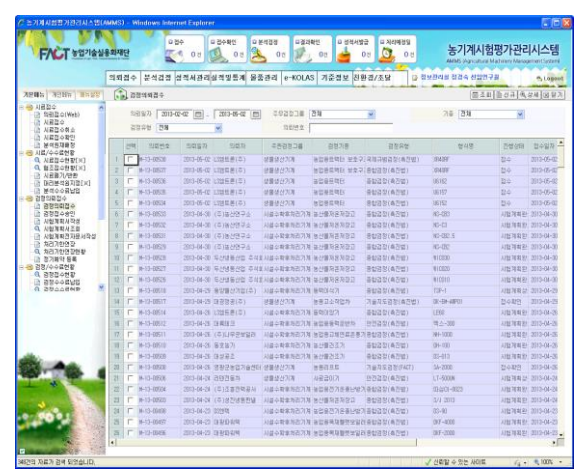

Figure 2. Client Web Site   Figure 3. AMMS

2.3 System Process

If a client requests to certify of his Agricultural Machinery, a dispatcher will classify by according to certification type. We have 5 types of agricultural machine certification i.e. general certification on performance, safety and technology roadmap, safety management including safety device check for traveling type agricultural machinery, and certification on machinery used in APC, RPC, greenhouse etc. and certification in agricultural machinery emissions. It is depends on the client.

The dispatcher should confirm whether a client bring in their Agricultural Machinery or not to our place. And then he will assign certify to each expert. The expert has to figure out testing plan and he should notice to client about his testing plan and cost.

If a client pays by the due date, a tester will start to test about Agricultural Machinery. The testing items are varied. If you choose the type of certification by the system, the item will select automatically. We support each Agricultural Machinery images. So, a tester can select adaptable photo. And we record historical data, so if a tester wants to reload a previous data of same Agricultural Machinery, it also can be reloaded.

We make a connection with our E-approval system for each steps, the expert can make documentation directly. After experts finish their certification, they should notice the result of certification to client. The results of certification are three types: success, fail,

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stop-filed. The expert has to finish their certification about Agricultural Machinery in the due date, and the due date is depends on type of certification.

The expert should finish within 45days for general certification on performance, within 30days for safety and technology certification, within 60days for OECD certification and within 20days for alteration certification. The process of each step is Figure 4.
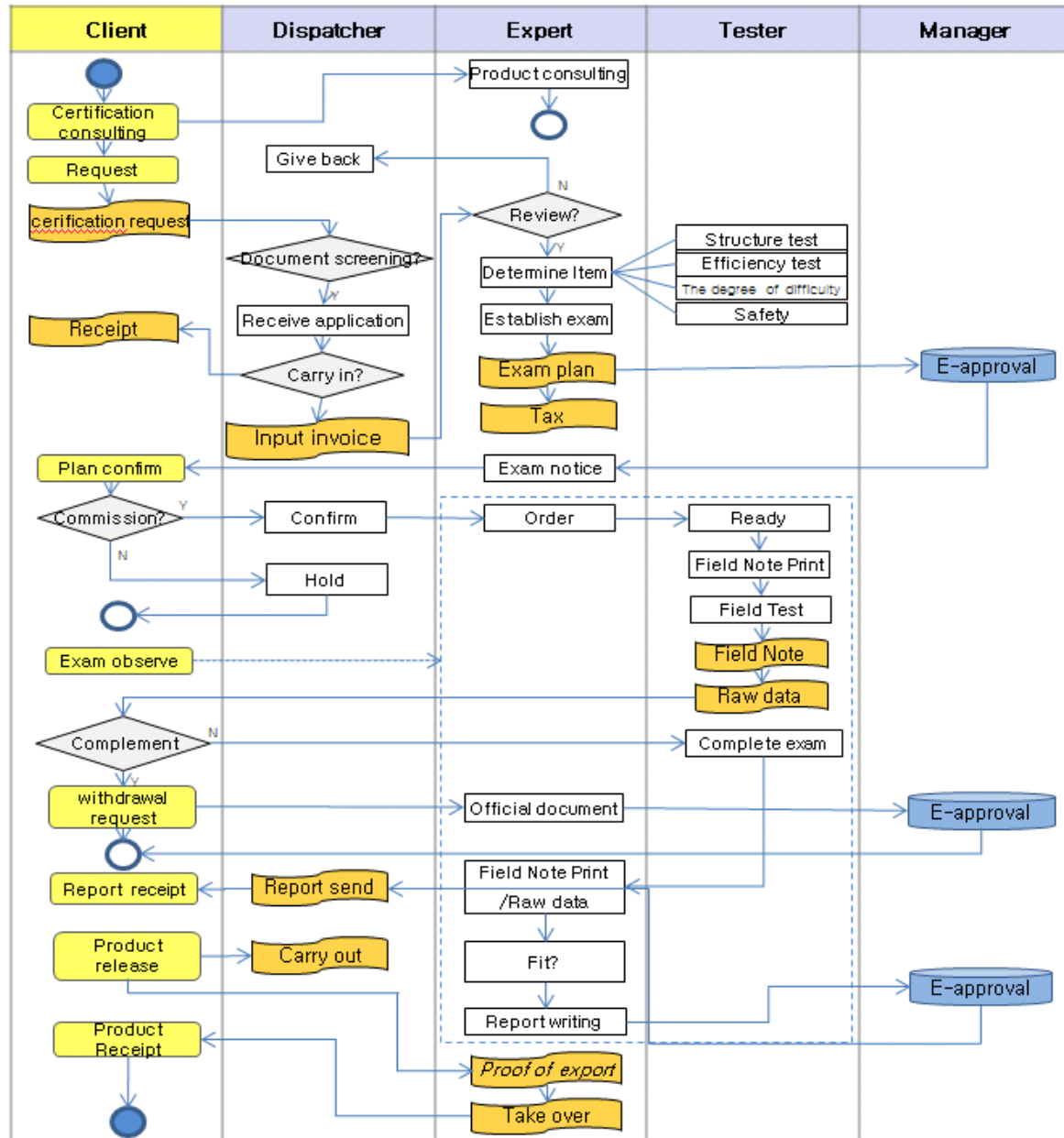
Figure4. System Process

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The system has a DATABASE of each item, types of certification, and every year. So, AMMS can support to analyze about the result of certification statistically. AMMS have an alarm function about the due date every step by e-mail or text message. So the expert can handle his certification plan by schedule. By analyzing a historical data of Agricultural Machinery, we can predict customer's needs and market environment condition.

When we make up the report, we supply reporting tool. This reporting tool is a commercial product. But the report is appropriate and flexible by customizing what we want. So, when we issued a test report, it is a very fast and easy to modify. A test report is issued automatically at AMMS.

The system is designed to improve for high quality of a report through efficient image processing. When they need E-approval from their boss, they can report directly using the connection system at each step. So, this system is very convenient and easy to use.

The certification time was reduced more than 15%, and the number of certification requests increased over 24%. In addition, we were able to obtain the improvement of the reliability and the integrity of original report.

We can check that this test is retest or not. And it is not only guaranteed the continuity of the existing data by DB system but ensure the transparency of the certification fee through the issuance of tax bills.

3. CONCLUSIONS

We have developed the Agricultural Machinery Certification Management System (AMMS) during 5 months and a field department members are using from 1th Jan. 2012 years.

The Main functions of this system are as following:

- Requesting of the certification on the internet.
- Standardization of testing process with Information system.
- Improvement of the integrity and accuracy.
- Management of the cost for the certification.
- Statistical analysis of the each machinery data.

The Main functions of this system are requests, accepting and testing of agricultural machinery certification, issue a certificate for those agricultural machines.

Also, we made a process and a standard by all step, and made a database by input theirs result each steps. So, it is possible to analysis and management every each step.

The System can provide many types of statistics. Furthermore the system's efficiency and reliability are getting increased by auto-issue a certificate. FACT had certification for 937 agricultural machines during last year. It means that one person verified for 67 agricultural machines. And, this system is linked to E-approval system, so user is very easy to use.

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