

Research of and practical application of electronic commerce services based on wireless communication solutions in agriculture sector of Kyrgyzstan and Central Asia region

Interim Narrative Report

Table of contents

<u>1. SYNTHESIS</u>	<u>2</u>
<u>2. RESEARCH PROBLEM</u>	<u>2</u>
<u>3. RESEARCH FINDINGS</u>	<u>2</u>
<u>4. FULFILLMENT OF OBJECTIVES</u>	<u>3</u>
<u>5. PROJECT DESIGN AND IMPLEMENTATION</u>	<u>3</u>
<u>6. PROJECT OUTPUTS AND DISSEMINATION</u>	<u>5</u>
<u>7. CAPACITY BUILDING</u>	<u>5</u>
<u>8. PROJECT MANAGEMENT</u>	<u>6</u>
<u>9. IMPACT</u>	<u>6</u>
<u>10. OVERALL ASSESSMENT</u>	<u>6</u>

1. **Synthesis**

The research problem of the project was research of and practical application of electronic commerce services in agriculture sector. At the present moment within the framework of the project 2 needs assessments and technological research were conducted. Were selected groups of specialization in agricultural products, and target villages in Issyk-Kul area were chosen. The SMS-based system of information interchange have been developed and started.

Now we can say that the need in such system definitely exists, that can be demonstrated from the results of surveys and active usage of the system. Altogether with the primary goal, implementation of agriculture trade system allowed to solve the important problem of the remote regions: absence of telecommunications. Further it is planned to expand functionality of system and to research opportunities of its implementation at a regional level.

2. **Research Problem**

Research problem

The research problem of the project - research of and practical application of electronic commerce services based on wireless communication solutions in agriculture sector of Kyrgyzstan and Central Asia region

In other words, primary goal of research was to introduce wireless system of electronic commerce in countryside in practice to check up opportunities of its use, at country and regional level.

Evolution of vision of the research problem

During realization of the project many questions are repeatedly reconsidered, including the main research problem. At the initial stage of the project the main priority was to implement information interchange through SMS. During the realization it was found out that many operators, not accustomed well with sending SMS, transfer the information by phone much more effectively. In this connection it was necessary to hire telephone operator accepting data from regional operators and transmitting them to the content administrator.

3. **Research Findings**

Within the framework of research activity big amount of works has been done: 2 needs assessments (in the beginning of the project - with primary goal to define a target audience, and in the middle of the project - to estimate results of activity and to correct strategy of the project), and one technology research.

The results include:

- Structure of agriculture of the Issyk-Kul region
- Set of priority agricultural crops for export
- The coding and format of data transmission about agricultural production
- The villages selected for participation in the project
- The software for SMS exchange

4. Fulfillment of Objectives

The objectives of the project and their fulfillment

The general objective of the project - research of opportunities of practical application of electronic commerce with use of wireless communication in agriculture - is partly completed within the framework of Kyrgyzstan. For full completion of the project's general objective it is necessary to check up serviceability of system on the full agricultural period and to assess prospects of its implementation in the Central Asia.

The specific objectives of the project and degree of their completion are described below.

1. Research of needs of agricultural manufacturers in application of electronic commerce for selling their production: it was completed by realization of the first needs assessment. Needs assessment is continuing together with functioning of the information exchange system. The third needs assessment at a regional level is planned.
2. Creation of optimal SMS-based agricultural trade information exchange system for inhabitants of remote regions. The system has been created, is fully functional, revision and improvement proceeds.
3. Practical implementation of the system in Issyk-Kul areas. Objective completed, research of prospects of expansion is planned.
4. Research of prospects of the system's implementation in the Central Asia. Planned for the end of a summer of 2004.
5. Distribution of results of the project for all interested subjects. In progress.

The new objectives, reasons of their occurrence and degree of completion.

During implementation of the project one more important objective was included: the maintenance of public access to a telephone system in the remote areas of the Issyk-Kul area. Many remote villages till now are deprived access to telecommunication, notwithstanding that they are situated in the coverage area of cellular network, and even to call the doctor inhabitants have to go for tens kilometers. Distribution of cellular phones in these villages could be a significant step in development of the Issyk-Kul area.

For realization of this purpose a number of actions were carried out. Operators are providing cellular telephones for calls to villagers by the cost price with the small margin (10 %). Now such system successfully functioning, as has shown the second needs assessment. Almost all operators living in such remote areas consider the usage of cellular telephones for calls as the greatest effect of the project.

As a whole it is possible to tell that this new objective within the framework of the project is realized in all remote villages, deprived telecommunication and participating in the project.

5. Project design and implementation

Kinds of activity within the framework of the project

Within the framework of the project the following researches were planned:

- 3 needs assessments
- Technological research
- Research of prospects

First two kinds – needs assessments and technological research were carried out, realization of research of prospects of the project is planned to July - August 2004.

Needs Assessment

The first research of needs was carried out in June and has proceeded in July, 2003. Problems of this research were definition of commodity specialization and selection of participant villages of the project. Focus-groups and interviews were carried out. Expert estimations also were used. A target group for interrogations consisted of inhabitants of the remote villages of the Issyk-Kul area and of participants of the credit unions.

The basic results of this research:

1. Structure of agriculture of the Issyk-Kul area
2. Target products
3. Target villages
4. Structure of potential clients of the project

The second needs assessment was carried out in January, 2004. Problems of this research were opinions of end-users of the SMS exchange system. The assessment was carried out by interviews with farmers, operators and employees of the project.

The basic results of this research:

1. The attitude to the project
2. Inconveniences for farmers, operators and employees of the project are revealed

In connection with the received results the program of strategy improvement was developed.

Technological research

Technological research was carried out since May till July, 2003 and consisted of two parts: selection of user terminals and development of communication system.

Selection of user terminals. At the beginning of the project it was determined that for communication cellular telephones of GSM standard will be used. Selection of phone model was carried out on the basis of conformity to the following parameters:

1. Convenience of use and functionality
2. Duration of work without additional charge
3. Reliability of the phone and availability of service
4. The range of connection provided with the phone
5. Price

Proceeding from these parameters, the following models were picked up: NOKIA 3110, 5110, 6110. These phones are widely enough distributed in Central Asia, and there is no problem with their purchase in the necessary amount. The given models have all necessary functions and long time of independent work, the big capacity of the transmitter and the external aerial that provides the sure connection on long distances, are simple in use.

For the project it was purchased 86 phones (85 for regional operators and 1 for the operator on voice data reception).

Also the brief instruction on drawing up of SMS on offers on sale of agricultural production was developed, and it was distributed among operators together with phones and charge devices.

Development of data exchange system. The following stages entered into development of a server part:

1. Selection of SMS terminal
2. Development of module transferring SMS to the web site and vice versa
3. Development of multilingual web interface

Selection of SMS terminal was carried out quickly enough as there was a limited number of the devices appropriate to requirements. SMS terminal NOKIA 30 was chosen. This device is

completely compatible with client phones NOKIA 3110, 5110, 6110, provides necessary reliability and has sufficient resources for the further expansion of system.

The module transferring SMS to the web site and vice versa was developed as PHP module and works with SMS terminal through COM port at the web server in a mode of constant monitoring entering messages. All entering messages are being transferred into MySQL database with which the web interface works. Sending of SMS by the terminal is carried out by a call of separate function. The module is finished and will be improved in view of end-users requirements.

The multilingual web interface was constructed also on basis of PHP. The system with 3 working languages originally reflected: Russian, English and Kyrgyz. We decided to cancel usage of the Kyrgyz language after the first needs assessment when it was found out that all potential clients of the project know Russian. But the web interface is easily upgradable in view of language compatibility.

Methods of research and analysis

The research activities, having the purpose of finding out of people opinion, applied the following methods:

1. Questioning
2. Interviewing
3. Focus groups

In the researches connected to the sanction of concrete questions - definition of сѐл-participants of the project, definition of commodity specialization, besides the above-stated methods, the method of expert estimations was widely used.

6. Project outputs and dissemination

Outputs of the project include:

- The report on research of needs of agriculture in electronic commerce
- SMS-based system of information exchange
- Knowledge dissemination: web site, seminars, trainings for operators, printed materials, publications in mass media
- The developed software at the end of the project will be distributed as open source on the terms of GNU Public License.

Planned, but not received results

- The report on research of prospects of application of electronic commerce in an agriculture of the Central Asian region
- On a site of the project the published materials will be incorporated into a full manual on creation of similar system. This manual can be used by educational organizations, private companies and governments for overcoming backlog of development of the rural areas, for reduction of "digital divide".

7. Capacity building

Institutional reinforcement and sustainability of the research organization

The grantee has purchased the SMS terminal which will be used also for realization of mobile interrogations.

Established the network of users with mobile phones allowing contacting them quickly and effectively, especially for surveys.

The qualified programmers were involved. They will cooperate with the grantee in future.

The software for interaction of GSM terminals with the Internet was developed.

Increased research or administrative skills of the researches involved

The grantee has gained experience of researches in regions with wide range of research methods used.

For the first time in Kyrgyzstan the operational experience with a wireless communication facility for e-commerce was received.

The administrative personnel received operational experience with a wide regional network of operators.

Contribution to Capacity Building of Women

41 regional operator from 85 are women. Besides many farms sending the information to the exchange system are being managed by women. More detailed data on demographic structure of farmers will be received within the framework of the 3rd needs assessment and estimation of results of the project.

8. Project Management

Administration by the research organization was carried out on the basis of stakeholders' consultations. Decisions were directed to a management team of the project as advised. Final decisions were approved by management of the project.

The scientific management on researches was carried out with extensive support provided by "Information assistance" Public Foundation and Kyrgyzstan Development Gateway. The scientific management was carried out basically in the field of methodology of researches.

The technical management was carried out by the technological coordinator. Also on some questions guest consultants were involved.

As a whole the management of the project was duly and adequate. It was achieved due to high qualification of heads and skill of executors, and also due to assistance of partners of the project.

9. Impact

- Enforced economic development in Issyk-Kul area
- Introduction of effective modern technologies for practical application
- Maintenance with telecommunications of inhabitants of the rural areas
- Influence at a regional level - on operation of sale and purchase of the countries of the Central Asia and on export-import transactions between the countries

Results of researches of the project will be placed in open access and can be used by experts for an estimation of agriculture of the Issyk-Kul.

10. Overall Assessment

As a whole the project it is possible to characterize as having key value for economy of Kyrgyzstan which in many respects is based on agriculture. Moreover, at the end of the project prospects of introduction of the system in the other countries of Central Asia will be appreciated. The system has can give a pulse for development of agriculture and processing industry and for economic integration of the region.

The general evaluation of results of activity of the project will be carried out in July and August, 2004, within the framework of prospects research.