Currency
(Problems in equipment monitoring)
Possession of equipment like possession of anything is supposed to be controlling. Controlling on equipment implies check of availability, position, state, guarantee, level of usage and so on. But now such controlling is connected with some difficulties in many companies. Often paper documents are used. And it takes much time to do any request like checking availability or getting information about guarantee, location, owner and so on. Often the way of doing it is not as convenient as people want it. In case company is quite big, that means it has many division or equipment units, equipment monitoring is getting more difficult.

There may be more than 100 equipment units for 1 responsible person. Moreover this equipment can be owned by another person. It means formal accounting doesn’t reflect the actual situation. Complication of monitoring is that there are many states of equipment. State depends on stage of life cycle and state’s attributes in 1 state. Let us have a look at life cycle of equipment.

Life cycle of equipment
First company which wants to buy equipment announces tendering. Then winner of tender delivers equipment. Then equipment is registered. Then equipment is put into operation. Then it is used. At the end equipment is struck off the register.

Often to solve the task of equipment monitoring the “accountant’s approach” is used. But it includes only 2 stages: registration of equipment and striking off the register. For better monitoring it needs reflection in system as many processes as it’s possible. That’s why it needs the system supporting all stages. Let us have a look at the existing systems.

Existing technical solutions
Criteria were got for evaluating the existing technical solutions. Criteria were based on tasks of life cycle’s steps. Those are history (logging) of equipment, statistics, visualization, information support of each life cycle’s stage, search in database, report service, web-interface and reminder of equipment events.

3 solutions have been found in the internet: Irwin invent[1], 1С: Учёт оборудования[2], Simple Soft: computer monitoring[3]. Each found solution has their own features:

Irwin invent is specialized in networking. Supports history, life cycle, search in db, report service, reminder.

1С: Учёт оборудования supports life cycle, search in database. But it is specialized in barcodes.

Simple Soft is specialized in computers. Supports search in db, reminder.

There is no system which covers all criterions. So it’s reasonable to make system covering more people’s demand. So it would be more useful and demanded. Creation system demands knowledge of system requirements and user groups.

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<th>Table 1. The existing solutions</th>
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<td><strong>Irwin invent (Only for networking)</strong></td>
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<td>1С: Учёт оборудования barcodes</td>
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<td>Simple Soft: Computer monitoring Only for computers</td>
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<td>EMoSy (My future system)</td>
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System Requirements
The developed system has to give users such possibilities as:
- Storing information about equipment in DB
- User registration
- Granting users appropriate rights.
- Users authentication
- Web-access
- Support for data integrity (Only one user can change data at the one moment.)
- Simple user interface
- Access according to rights (Role).
- Reliability
- System must still be working with 100 users.
- Resistance to degradation. Performance of the system shouldn’t decrease over time.
User groups (Roles)
Here are user groups and their main functions.
Administrator:
Person who monitors and controls the system.
Owner:
Person who possesses equipment without a broker.
Responsible person:
Person who is responsible for equipment. In company documents this person is marked as responsible person.
Spectator:
Person who can watch the activity of several people (associated list) and their equipment.

Application Architecture
“Accounting department” with its self or with “administrator” adds information about equipment using either “Sql stream import” or “Interface for adding data”. All information is stored in data base. Access to the data base can be got via web-application. Web front end includes 4 interfaces.

-Interface for “Responsible person”
Includes interface for “owner”. Allows to see history of owners.
-Interface for “Spectator”
Allows to view information about equipment registered for “Responsible persons” associated with this “Spectator”.
-Interface for Administrator
Allows to grant users rights. Allows to register new users. Includes interface for adding data. Includes interface for “spectator”. It should be noted that the structure is not static and may be modified in the future.

Conclusion
The future system is intended to satisfy requirements of users, to cover all life cycle, to cover fields that are not covered by existing systems. At the present situation big part of system is realized. That is interfaces for “owner”, “responsible person”, “administrator”. The rest is interface for “accounting department”, statistics possibilities, visualization. You can see in Figure 2 screenshot of one page.

References
[2]1C’s site. URL: http://www.1c.ru