Business Process Data Flow between Automated and Human Tasks

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Abstract. The paper presents models of data flow between tasks in business processes describing work of a modern restricted access administrative office. The presented models are the result of the analytical work performed by the multidisciplinary team of experts. The team was composed of IT specialist, security systems specialists and employees of the secret office. Business process diagrams and data flow diagrams are presented together to emphasize the importance of data in every business process task to be performed - despite the fact if it is an automated or human task.

Introduction

The second decade of the twenty-first century is a time of increasingly widespread use of electronic documents. Electronic applications, certificates and invoices have become a natural part of reality for Polish enterprises.

However, paper documents still remain of great importance. Agreements, certificates, securities, deeds, records of employees are some of the examples of the documents stored in paper form.

Both storage and archiving of such documents as well as access management constitute a challenge and very often require the use of certain IT-supported procedures.

The offices of modern enterprises are equipped with hardware and software to effectively manage open and classified documents. Complementing the currently used solutions with the opportunity to identify each document using the RFID tags makes it possible to obtain an automated document management system. It offers great opportunities in the field of document security, accountability and traceability.

This paper presents business processes in the restricted access administrative office equipped with the RFID readers placed in cabinets, desks and entrance sluices. By using these readers, it is possible to automatically and immediately read the content of the cabinets, identify documents on the desk and register facts of entry/exit of the document. Taking into account such innovative technological advances, the new business processes of the administrative office were proposed.

In the second part the paper presents models of data flow between RFID devices in a modern restricted access administrative office.

The integration of all software and hardware components in a single system using the dedicated software involves the need to establish strict rules for data exchange between them. In the following chapters, the data flow between these components is described for different cases of application in the office.
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**Business Processes of the RFID-equipped Restricted Access Administrative Office**

As a result of the analytical work, the following business processes of the secret office equipped with the RFID devices have been defined:
- acceptance of the document or documents with the RFID tags from a natural person,
- acceptance of a parcel with documents including the RFID tags, with traces of opening,
- performance of standard procedures when receiving the RFID tagged documents,
- registration of correspondence in the form of the RFID tagged documents,
- classification of the RFID tagged documents,
- registration of the created RFID tagged documents,
- processes related to the storage of the RFID tagged documents,
- preparation for dispatch of the RFID tagged documents,
- sending of the RFID tagged documents via a carrier,
- making the RFID tagged documents available,
- destruction of the RFID tagged documents.

The subsequent chapters outline the most important of these processes.

**Parcel Receipt Business Process**

The parcel receipt business process (Figure 1) is implemented according to the following scenario:

1. The process is initiated at the time of shipment acceptance by an employee of the restricted access administrative office (K), who prepares a start-up form on the date of acceptance of the consignment, enters the data into the records of delivery / schedule of shipments and approves the task.

2. Then the Director receives the consignments and checks them on entry. (S)he introduces the data upon receipt, whereas the sender acknowledges safe receipt of the shipment and enters the data to verify the compliance of the consignment.

3. The head of the secret office notes if the irregularities were detected during the check or if there are suspicions about the shipment.
   a. If Yes (go to step 4).
   b. If Not (go to step 5).

4. The head of the secret office decides whether to accept the consignment or not, despite certain irregularities:
   a. If not, (s)he refuses to accept the shipment and does not notify the authority in writing. This ends the process.
   b. If yes, (s)he starts the process of "acceptance of the damaged or opened parcel".

5. The secret office manager hands over the parcel to an employee of the secret office.

6. The employee opens the parcel.

7. The secret office employee checks the compatibility between the contents of the consignment and the locator numbers inside the envelope.

8. The secret office employee verifies the number of pages, attachments and pages of appendices according to the numbers indicated on the individual cryptographic media.
If the employee finds any irregularities, (s)he makes an entry into the parcel opening register, describing the existing irregularities and includes this information in the official correspondence. Subsequently, (s)he attaches the opening confirmation letter to the cryptographic materials. Then (s)he sends the opening confirmation letter to the original parcel sender (go to step 10).

9. The secret office employee accepts the parcel.

10. The secret office employee forwards the parcel in the following manner:
   a. If it is an urgent parcel, go to step 11.
   b. If it is an ordinary parcel, an office worker may be in no hurry with the transfer of the consignment. The employee starts the process of the "registration of the document in the restricted access administrative office".

11. The secret office employee passes the parcel immediately. (S)he includes this fact in the notes of the muster apparatus specifying the date and time of the delivery. The employee starts the process of the "registration of the document in the restricted access administrative office".

![Figure 1. Parcel receipt (source: own elaboration).](image)

**Business Process Registration of the Document in the Restricted Access Administrative Office**

The business process - "Registration of the document in the restricted access administrative office" (Figure 2) is implemented according to the following scenario:

1. The head of the secret office or other authorized employee verifies whether the correspondence contains the notation 'by hand':
   a. If not, go to 2.
   b. If yes, go to 7.

2. The head of the secret office or other authorized employee applies a stamp effect on the first page of the cryptographic material.

3. The head of the secret office or other authorized employee makes seal imprints on the annexes.

4. The head of the secret office or other authorized employee completes more items in the official correspondence.
5. The head of the secret office or other authorized employee enters the date of registration in the document.

6. The head of the secret office or other authorized employee enters the item the "document storage" is initiated.

source: own elaboration

Figure 2. Registration of the document in the restricted access administrative office.

7. The head of the secret office or other authorized employee leaves the shipment in a closed inner wrapping.

8. The head of the secret office or other authorized employee includes in the official correspondence the information contained in the inner packaging.

9. The head of the secret office or other authorized employee includes in the official correspondence date of receipt.

10. The head of the secret office or other authorized employee puts the notation 'by hand' in the Comments section.

11. The head of the secret office or other authorized employee puts the stamp imprints on the consignment.

12. The head of the secret office or other authorized employee includes a registration number in the official correspondence.

13. The head of the secret office or other authorized employee puts the date information on the consignment.
14. The head secret office or other authorized employee transfers the load directly to the addressee or authorized person.

15. The recipient or authorized person decides whether the consignment will be sent back to the office:
   a. If yes, go to 16.
   b. If not, end the process.

16. The recipient or person authorized returns the parcel to the office:
   a. Parcel opened (go to 2).
   b. Parcel closed (go to 17).

17. If the service delivery is closed the shipment is returned to the office. The head of the secret office or other authorized employee puts the stamp imprints in the form of round numbers or their names.

18. The head of the secret office or other authorized employee notes that the consignment is stored in the form of a sealed package in the "Remarks" section in the official correspondence. The process of the "document storage" is initiated.

Data flows between the system and RFID devices

The rfiDoc system communicates with the devices via CrossTalk AppCenter and Cosmos. The Cosmos system ensures communication between the photocopier and rfiDoc, whereas CrossTalk AppCenter supports communication between rfiDoc and such devices as sluice, cabinet, tray and tunnel.

Figure 3. Diagram of flows between the rfiDoc system and Cosmos and CrossTalk systems as well as devices used in the secret office (source: own elaboration).
Conclusion

The management of the classified and non-classified document flow, the document access control, supervision of their copying as well as the document access management constitute basic functions of the solution proposed in the research project.

The implementation of the system contributes to the growth and competitiveness of the sector of workflow systems in Poland. This is due to the fact that the advanced solutions based on the radio and automatic document identification does not exist in Europe. With such technology, Polish institutions and companies become a leading supplier of the solutions for the European market, and later also worldwide.

The dedicated monitoring and authenticating interfaces ensure complete data flow between the devices, which support the work of the secret office and the rfiDoc system. The operations of the secret office are supported by the rfiDoc system and the following equipment: sluice, cabinet, tray, tunnel and photocopier.

The rfiDoc system exchanges with the devices the information on the authorization rights and messages concerning their operation in the secret office. The lack of authorization to operate the device or handle the document stored in the secret office is signalized by way of certain messages sent by the system, which affect the behavior of the equipment. Unauthorized actions are blocked by the rfiDoc system.

References


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