

# IMPACT OF EURO ON ACCOUNTING SYSTEMS: THE CASE OF SLOVENIA

## Abstract

Based on the Slovenian experiences, the purpose of the paper is therefore to analyse the impact of the changeover to the euro on the main fields in accounting and accounting information system, and to form on this basis a model of activities for the preparation for the changeover to the euro in the states which are to adopt the euro. From 1 January 2007 the official currency of Slovenia has been the euro, and the changeover itself to the euro presented additional risks in the field of information technology. The analyses of experiences in Slovenia show that the main reasons for non-functioning or failure of information technology, despite the good preparation and communication within organisations and the general public, were the lack of concrete action plans, non-functioning of some internal controls, lack of instructions to employees and time consuming search of causes for mistakes.

**Key words:** euro, accounting, information technology, conversion, accounting programs

## ACM classification

J.1 ADMINISTRATIVE DATA PROCESSING, *Financial*

## JEL classification

M4 – Accounting and Auditing, M41 – Accounting

## INTRODUCTION

The task of information technology is, beside data saving and processing, also avoiding mistakes, finding them and acting automatically (Wilkinson, 1997, p.75). Slovenia made the changeover to the euro by the »big bang« scenario<sup>1</sup>. One, of the basic activities of the changeover to the euro is the adjustment of the information system<sup>2</sup>, which was a complicated process and therefore those persons assigned for its changeover had to be familiarized with the Slovenian and EU legislation, company operations and the use of information technology, planning and development of information technology, technical aspects of information technology and accounting.

## 1. METHODOLOGY

Using deductive method the paper explores the process of the adjustment of information technology to the introduction of the euro in company<sup>3</sup> by two aspects:

- impact of the euro on accounting<sup>4</sup> and
- impact of the euro on information technology.

On the basis of analysis of the impact of the euro on accounting and information technology the study will help to determine the control activities for the adjustment of information technology in the field of accounting. The paper is using the qualitative methods, these are the description method and the method of analysing the documents to

<sup>1</sup> In this scenario the euro is introduced as deposit money at the same time as euro coins and euro banknotes (Changeover Plan, 2005, p.7)

<sup>2</sup> As the results of the survey of Chamber of Commerce of Slovenia as of 1 March 2006, which was made on a sample of 130 small and medium-sized enterprises (hereinafter referred to as the survey) showed, the three most frequent answers to the question, which are the bottlenecks of the preparations for the introduction of the euro, were the following: I do not know (31%), dual display of prices (23%) and IT (20%)

<sup>3</sup> The term company refers to corporate entities, banks, insurance companies, private entrepreneurs, public enterprises and institutes.

<sup>4</sup> Accounting is a structure of accounting control and assessment of assets, liabilities, revenues and expenditures consisting of accounting, budgeting, accounting control, accounting study and accounting information (Turk, 2000, p.619).

present the impacts of changeover to the euro on accounting information system. Besides, the paper presents some of the results of the survey made by Chamber of Commerce of Slovenia (using compilation method) to confirm the experiences of Slovenian companies by the changeover to euro.

## 2. ANALYSIS OF THE IMPACT OF THE INTRODUCTION OF THE EURO ON ACCOUNTING

Preparations of the introduction of the euro in accounting have to be planned very carefully<sup>5</sup>. Accounting can be described as an activity of value-oriented monitoring and studying of phenomena that are connected to the operations of a business system. Accounting information is quantitative information, which differs from other information in the fact that it is normally expressed in value (Igličar, et al, 1997, p.24). The introduction of the euro required the adjustment of information system in accounting. The introduction of the euro has had the largest impact on historical data and rounding. Therefore all the data included into the conversion had to be identified in the software for a successful changeover to the euro. The software which changes in accounting and in connection with it due to the introduction of the euro is the following:

- Accounting programs (general ledger)
- Electronic payment transactions programs
- Invoicing programs
- Payroll accounting programs
- Subsidiary books of buyers and suppliers (receivables and liabilities)
- Subsidiary books for stock taking (valuation of stocks)
- Subsidiary books for fixed assets (depreciation)
- Production management programs (production in progress)

- Financial planning and monitoring programs
- Integrated business systems (ERP)
- Financial contract management systems

If the introduction of the euro is managed directly from the accounting, there is risk that the following categories of information systems may be overlooked:

- Cash desks and other POS systems
- Subsidiary financial systems which process data prior to their entry into the company's main business system.
- Financial systems which are not used for the accounting purposes (e. g. cost accounting, marketing data).

The task of accounting is to register events into books of account and tax records correctly after the receipt of bookkeeping documents, and therefore most changes occurred in this field when the euro was introduced. In the field of accounting the following changes had to be considered<sup>6</sup>:

- On or before 31 December 2006 the official currency in Slovenia was the Slovenian tolar (hereinafter referred to as SIT), but from 1 January 2007 the euro (EUR) has been the official currency.
- Organizations prepared financial statements for 2006 in SIT. This means that the organizations whose financial year equals the calendar year had to carry out all the accounting, prepare the closing balance sheet and other financial statements and the annual report for 2006 in SIT.
- Organizations reported in SIT for business and statistical needs for 2006.
- All events referring to the period up to 31 December 2006, the corresponding bookkeeping documents had to be prepared in SIT and included into the annual report for 2006. Organizations issued invoices and other documents for events in 2006 in SIT<sup>7</sup>.
- Payroll accounting and the reimbursement of costs for December 2006 were

<sup>5</sup> As the survey showed, answers to the question about how long the preparation of the IT support in the field of accounting, customer relationship and cash operation takes as many as 64% of those asked said that up to 3 months and 18% up to 6 months.

<sup>6</sup> Explanatory note 1 to the Introduction to the Slovenian Accounting Standards.

<sup>7</sup> This applied also to invoices or other documents issued in 2007, but referred to the events that took place up to 31 December 2006. These invoices were paid in euros. All the events and all the tasks in the period up to 31 December 2006 (this means also stocktaking) had to be accounted for in SIT.



prepared in SIT and included into the annual report for 2006<sup>8</sup>.

- Organizations converted the opening balance<sup>9</sup> for 2007 from SIT to EUR according to the balance as of 1 January 2007 by the official conversion rate<sup>10</sup>. The organizations made a special account for the differences occurring from all conversions. After all the conversion had been carried out, other revenues and other expenditures was recognized as the balance of this account.
- Due to the introduction of the euro, organizations were not allowed to revalue assets, liabilities and equity capital, but only convert them from SIT to EUR by the official conversion rate.
- Financial statements for 2007 were prepared in euros. Comparative figures in financial statements for 2006 needed to be converted from SIT into EUR. For the conversion of all items in all statements for comparative periods of 2006, the official conversion exchange rate of the Bank of Slovenia was used on the last day of the comparative period of 2006.
- Conversions of financial statements for the previous years (that is up to 2006) officially did not have to be made. Such conversions can, of course, be conducted for own needs, and the corresponding exchange rates can be used for each year.
- All the data within the subsidiary and other records for the periods prior to 31 December 2006 remained in SIT. No conversions had to be made for them.
- Data for the period prior to 31 December 2006 are prepared and also kept in the official currency for that period, that is in SIT.

- Companies, whose financial year does not coincide with the calendar year, had to make the annual report for the period ended after 1 January 2007 in EUR. This means that also the comparative data for the previous period had to be reported in EUR (converted by the official exchange rate of the Bank of Slovenia as of the reporting day).

On the basis of these rules an accounting problem related to the balance sheet continuity<sup>11</sup> and balance sheet balance<sup>12</sup> may arise. The task of accounting is to record events denominated in monetary units. Consequently, due to the introduction of the euro, the events from 1 January 2007 on had to be first recorded in EUR. The recording comprised also the preparation of the (opening) balance sheet as of 1 January 2007; however, when preparing it violation of the principle of balance sheet continuity can occur. The sum of all opening balances in the balance sheet as of 1 January 2007 was not the same as the sum of closing items in the balance sheet as of 31 December 2006. The violation of the balance sheet continuity thus occurred both on the formal level as well as on the substantive level. The violation on the formal level was evitable in such a way that the absolute amount (balance sheet total) of all opening balances as of 1 January 2007 did not equal the absolute amount (balance sheet total) of all closing balances as of 31 December 2006 (balance sheet currency as of 31 December 2006 was still SIT, but balance sheet currency as of 1 January 2007 was EUR). The actual accounting problem occurred in the substantive violation of the principle of balance sheet continuity. The reason of the substantive violation lies in the conversion method for items in SIT into items in EUR<sup>13</sup>. In the conversion of items of the

<sup>8</sup> If salaries and reimbursements of costs for December 2006 were paid in 2007, they were paid in euros.

<sup>9</sup> Conversions were carried out according to individual items of subsidiary records, that is according to buyers, suppliers, fixed assets and others.

<sup>10</sup> The conversion rate is irrevocable and permanent exchange rate between the tolar and the euro. Fixed exchange rate of the exchange of tolar into euros was set out in Council Regulation (EC) No 1086/2006 on 11 July 2006 amending Regulation (EEC) No 2866/98 on the exchange rates between the euro and the currencies of the Member States adopting the euro (Official Journal of the European Communities No 195 of 15 July 2006, p.1). The conversion rate in Slovenia was 239.640 Slovenian tolar for one euro.

<sup>11</sup> Principle of balance sheet continuity: At the end of financial year a closing balance sheet is prepared, which signifies an opening balance sheet for the following financial year (Kokotec-Novak, et al, 2002, p.300).

<sup>12</sup> Principle of balance sheet balance: The sum of asset items must equal the sum of liability items.

<sup>13</sup> In the conversion from SIT into EUR the Council Regulation (EC) 1103/97 had to be considered in accordance with which the monetary amounts to be paid or accounted for are to be rounded up or down to the nearest cent. If the result of conversion is an exact mid-value, it is to be rounded up (e.g. the sum EUR 0.014 is to be rounded to EUR 0.01 and the sum EUR 0.015 is to be rounded to EUR 0.02).

closing balance as of 31 December 2006 from EUR into SIT into the items of the opening balance as of 1 January 2007 differences occurred due to the rounding on the second decimal place. These differences caused that the balance sheets totals of assets and liabilities in EUR did not equal<sup>14</sup>.

### **3. ANALYSIS OF THE IMPACT OF THE INTRODUCTION OF THE EURO ON INFORMATION TECHNOLOGY**

For a successful currency conversion into euro it is important that all the data which need to be included into the conversion are identified in the information system. These are mostly fields with monetary amounts and currency signs (codes)<sup>15</sup>.

At the conversion of amounts in subsidiary books such as: customer and supplier items, VAT book, register of fixed assets, attention should be paid to avoid mismatches with the general ledger due to rounding of the partial sums. The conversion of sums needs to be carried out in orders, invoices and credit notes that have not been entered, yet. In these documents the exchange rate valid at the creation of the document is to be used instead of the conversion rate set by the Council of the European Union.

Program solutions that process and/or save accounting information are the main fields of the information system that demand detailed review. From the point of view of the introduction of the euro, information system solutions had to be found in the following fields:

- Preservation of historical data. Some historical data that need to be converted into the euro will have to be kept in tolar due to the requirements of the legislation in order to ensure the audit trail.

- Conversion of historical accounting data.
- Treatment of rounding problems.

#### **3.1. HISTORICAL DATA**

Historical data are all accounting data prior to the changeover to the euro, which are needed after the changeover to the euro (transactions: orders, payments, receivables, liabilities, assets ...). Therefore a decision of the management is needed which historical data will be converted, whether also the data from the period prior to the introduction of the euro need to be converted, which data are needed for "internal" company needs, and which for "external" reporting. If the data that are many years old are to be converted, a decision should be made whether to use the exchange rate on the day of the event or that of the year end, or even use the conversion rate as its use does not have a large impact on the review of certain movements, for example income. It is usually unacceptable that the amounts of transactions in the information systems do not match the amounts on the physical documents that formed basis for those transactions.

Slovenian legislation<sup>16</sup> requires that these documents need to be saved for at least 5 to 10 years. The company has to be able to re-write bookkeeping documents in their original form. There are two possible solutions:

- Copying of bookkeeping documents on paper: Prior to the changeover to the euro, the company writes out all bookkeeping documents in tolar.
- Double system: Use of two versions of the existing information system simultaneously. One of the systems is used to preserve historical financial information in tolar. The other system includes current information in euros and a copy of historical information converted into euros. In this case changing the past data has to be avoided.

<sup>14</sup> Due to the assurance of the principle of balance sheet balance, in this case priority has to be given to the principle of balance sheet balance over the principle of balance sheet continuity. This means that the created differences due to rounding to one cent have to be accounted correspondingly in order to balance the opening balance sheet. Organizations recorded differences from all conversions to a special account or to other expenditures and other revenues, with little influence on tax basis. Tax basis at companies is the result of operation in profit and loss account after adjustments, according to taxable income law (Surovy, 2007, p.345).

<sup>15</sup> Some companies keep the general ledger also in other currencies due to the reporting to foreign owners or other reasons. When they make the changeover to the euro they have more possibilities how to act. If they used euro as an additional currency, they can choose the tolar and thus preserve historical data in tolar directly in the system (which does not apply to all systems). If the additional currency was not euro, the conversion has no impact on this field.

<sup>16</sup> Taxation Procedure Act, Official Journal RS, No 21/06



### 3.2. CONVERSION OF HISTORICAL DATA

The conversion of historical accounting data presents a major problem for the majority of accounting information systems, if the functionality for the conversion of historical balances with the use of the fixed rate is not incorporated in them. Possible solutions are the following:

- Manual conversion: Historical data are manually converted into the euro and then re-entered into the information system. This solution demands a lot of manual work and it is very likely that mistakes will occur. The price of this solution is of the lowest cost for small companies, which do not keep many historical data. Large companies can use this approach in case of a new system implementation.
- Conversion tool: Historical data can be converted automatically. Such approach requires a special tool to be developed for the conversion. This tool is designed for single use only.
- System adjustment: In this case the conversion tool is integrated into the information system. This approach offers the highest flexibility to the users of the financial information system.
- Encapsulation: Historical financial data remain preserved in toolars, but are converted into euro or vice versa when used. The encapsulation can only be a temporary solution as the conversion is inconvenient when using data, and differences occur due to rounding.

The theory of relational databases requires database normalisation, which enables the preservation of data only in one place. This is a reasonable guide, but sometimes developers give up these principles due to efficiency and other practical reasons. Accounting information systems

preserve data in several places, an example are the data in the subsidiary book and the general ledger and the data in the closed periods<sup>17</sup>:

- Subsidiary books are used to keep details of transaction whereas the general ledger conserves only a part of these data in a summary form.
- Many systems have the option of “closing” the previous accounting periods (e.g. financial year). This means that the entry of the accounting information into the closed period is no longer allowed. In some cases the system even calculates and saves cumulative values at the end of the closed period. These cumulative values are then used for certain calculations and reports.

### 3.3. ROUNDING

Having converted data from toolars into euros we witnessed inevitable differences due to rounding. The majority of information system users foresee that all the necessary modifications will be carried out by suppliers themselves. The task of business information systems is to understand and define the treatment of rounding differences in such a manner that the influence on the information system operation will be as small as possible. Rounding differences are inevitable despite the upgraded program logic. Their influence can thus be noted in the conversion of individual and cumulative amounts before and after the conversion on the day of the introduction of the euro.

The rounding is set out in detail in Council Regulation<sup>18</sup>. The purpose of these rules is to reduce the number of open questions on rounding and conversion; however, certain problems still appear. Nevertheless, inevitable differences in rounding can

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<sup>17</sup> When converting historical data it is important that the data saved more than once remain consistent. When analytical and cumulative data are inconsistently converted into euros, the accounting information system can supply unreliable data or even stop operating. For a correct conversion of cumulative data, analytical data therefore should be converted into euros and cumulative data should be re-established on the basis of the converted analytical data. Any other method that does not create cumulative data on the basis of the converted analytical data is subjected to problems due to rounding. Re-establishment of cumulative data can be complicated as many systems calculate cumulative data on the basis of other cumulative data. Where the re-establishment of cumulative data is not possible, the following solution can be used: amounts can be converted with special processing from toolars into euros and offset items are entered where this is necessary.

<sup>18</sup> As provided for in Council Regulation EC No 1103/97, the amounts in toolars are converted by dividing the amount in toolars by the conversion rate. The Regulation does not permit the use of inverse rate (SIT 1 = EUR 0.00417), as it could result in significant inaccuracies in conversion.

appear<sup>19</sup>. A large number of existing accounting information systems use the methods of cross and inverse rates of conversion (inverse rates are not permitted) for the conversion of currencies. Modification of such information systems for the needs of operations in euro can be very expensive. Therefore the following two solutions can be used for the rounding purposes:

- Use of very high accuracy (e. g. 15 significant decimal places or more). Such accuracy almost never causes problems in rounding, but it probably requires changes of solutions, which are very complex.
- Treatment of unnecessary rounding differences, due to incorrectly implemented conversion rules, can even be more expensive than the correct implementation of these rules.

### 3.3.1. CUMULATIVE AMOUNTS

Problems in rounding can appear when converting individual values and the cumulative amount of the same values. The use of rules for conversion and rounding in individual items and the sum of individual results does not necessarily lead to the accurately the same result as the use of these rules in cumulative amounts.

Table 1: An example of a difference due to rounding in cumulative amounts<sup>20</sup>

Description	SIT	EUR
A	100,000.00	417.29
B	100,000.00	417.29
C	100,000.00	417.29
D	100,000.00	417.29
Total:	400,000.00	1669.16
Control:	400,000.00	1669.17
Difference:	0.00	0.01

Source: Own calculations.

In accounting programs problems can appear when debit (chargeable) and credit pages in the underlying document do not match after the conversion into euro (the

difference is not zero). Accounting program will allow booking of such underlying document only when an additional line is added for booking the difference in rounding on an account defined to this end.

### 3.3.2. RECONVERSION

The second example of the rounding problem appears in situations where amounts are converted into euro and back. Let's see an example: Company A decides to convert data and tolaras into euro, but it later recognizes that it still needs data in tolaras. Therefore, it decides to reconvert the amounts in euro into tolaras.

Table 2: An example of a difference due to rounding in reversion<sup>21</sup>

	SIT	EUR	SIT
Conversion into euros	198.10	0.83	
Conversion back into tolaras		0.83	198.90

Source: Own calculations.

The conversion of the amount in euro back into tolaras does not give the original amount in tolaras. The reason lies in the loss of a part of accuracy as the smallest euro unit, a cent, is higher than one hundredth part of a tolar, a stotin. In other words, one cent presents a higher value than one stotin (this is usually called the granularity problem). Reconversion from tolaras into euro and back into tolaras thus causes rounding problems, because a part of accuracy is lost already in the first conversion from tolaras into euro.

Therefore, it should be provided in the information system that the conversion of accounting information is not carried out more than once (it is therefore important that also the original amounts in tolaras are saved).

### 3.3.3. TREATMENT OF SMALL VALUES

When treating very small values or margins, the significance of rounding can be essential for the company. The accumulation

<sup>19</sup> A typical problem of inevitable rounding difference that can appear in accounting is the example of an asset with the value of 1,000 units that has a three-year useful life. Depreciation charge for the first two years is 333.33. For the third year this charge must be 333.34, if this asset is to be fully depreciated. Evidently, no level of mathematical accuracy can remove this difference.

<sup>20</sup> Used conversion rate: EUR 1 = SIT 239.640

<sup>21</sup> Used conversion rate: EUR 1 = SIT 239.640



of rounding differences in the prices of small amounts can lead to margin loss. Checking stocks of products with small value (for example of a plastic bottle cap) in the value of SIT 3, we can see a 20% rounding effect per stock, which is certainly not a quantity deviation from the situation but only a value deviation. The stock of plastic bottle caps will not be lost – it will be valorised in a different way. The company that has a stock of items with the price of 3 tolar can have a 20% lower income in selling such an item due to rounding.

Company A decides to convert data and tolar into euro, as it is shown in the example. Even up to 100 percent value deviations to positive or negative can appear.

**Table 3: Examples of differences due to rounding in small values<sup>22</sup>**

SIT	Exact EUR	Rounded EUR	Consequence of deviation
1	0.004172926	0	-100%
2	0.008345852	0.01	20%
3	0.012518778	0.01	-20%
4	0.016691704	0.02	20%
5	0.02086463	0.02	-4%
6	0.025037556	0.03	20%
7	0.029210482	0.03	3%
8	0.033383408	0.03	-10%
9	0.037556335	0.04	7%
10	0.041729261	0.04	-4%

Source: Impact on information systems, 2006, p.11.

### 3.3.4. TREATMENT OF INEVITABLE DIFFERENCES IN ROUNDING

Although economic aspects of technical rounding effect are largely negligible for most of companies, they can have great influence on the information system operation. If the management does not define the acceptable tolerance level of rounding differences, the consequences can be noted even in the nullification or refusal of processing of a part of transactions due to integrated internal controls for the operation of the system and the provision of adequate audit trails. Inevitable differences can be arranged in the information system in the following ways:

- **Tolerances:** Certain differences due to rounding can be inconvenient, but they have no influence on the information system operation. An example: When converting stock value of 50,000 items from tolar into euros, the highest difference due to rounding can theoretically be EUR 17.91 (with five decimal places per measurement unit). Such a difference is usually still acceptable in the valuation of the stock of 50,000 items.
- **Built-in tolerances:** In cases where the information system tries to find matching items based on matching amounts, the tolerance of a few euro cents can be built in. An example: Instead of looking for an invoice in the amount of EUR 25,344.85, the information system can look for an invoice with the amount between EUR 25,344.80 and EUR 25,344.90.
- **Automatic reconciliation of differences:** Clearing of mismatching balances can be an annoying task, which requires several separate steps in the information system and additional approvals from several persons. These processes are usually introduced to prevent frauds. For companies it is useful to enable the automatic reconciliation of differences of small values (e. g. differences smaller than EUR 0.25). Automatic processing for reconciliation could record differences on an account defined for such differences.
- **Use of original amounts:** Sometimes differences due to rounding are impermissible. In such cases amounts must always be available also in the original currency. When an amount is required in a currency that is not the primary currency in the system, there must be a mechanism that enables the user to use amounts in the original currency (e. g. an amount in tolar before the changeover to the euro).
- **Avoidance of small amounts:** In most cases we can avoid the influence of rounding on small amounts by using values for 100 or 1000 units instead of expressing value per unit. This way we avoid problems due to rounding. This is especially simple in cases when items are already packed in large quantities and cannot be sold in smaller quantities.

<sup>22</sup> Used conversion rate: EUR 1 = SIT 239.640

### 3.4. INTERFACES BETWEEN SYSTEMS

Due to organizational and practical reasons, it is not desirable that all computer information systems make the changeover to the euro at the same time. When certain systems use euros and others still use toolars, interfaces should be provided between such systems. Interfaces convert amounts from one currency into another.

Many companies have their systems interconnected also with the systems of other companies (e. g. electronic document exchange, electronic payment systems). In this case a coordinated changeover to the euro should be agreed in these interconnected systems.

Special attention should be paid to the avoidance of incorrect combination of amounts in different currencies. Companies should therefore:

- Ensure that they will be able to re-establish the initial situation in such cases (e. g. making backup copies more frequently).
- Errors can remain unnoticed for a long time due to non-regular use of certain data. In such cases a backup copy does not help as it contains wrong data for a long time. As a precaution, it may be necessary to check data periodically and establish whether they contain wrong values.

### 4. MODEL OF CONTROL ACTIVITIES OF THE CHANGEOVER TO THE EURO

The key activity in the concluding part of the introduction of the euro is the adequate testing (Kržišnik, 2007, p.27) or checking of the operation of program changes before the actual changeover to the euro<sup>23</sup>. Beside timeliness, which has to be the guiding principle, the following list of activities must be done for a successful changeover based on the analysis of the impact of the euro on accounting and information technology:

- Formation of a project group for the preparation for the changeover to the euro

<sup>23</sup> A survey showed that even 80 % of companies had no intention to perform the test of IT changeover to the euro.

<sup>24</sup> A survey showed that most problems are expected in the adjustment of information systems when IT support depends on outsourcers (58 % of answers)

<sup>25</sup> According to the research results, small and medium-sized enterprises have less personnel and financial resources, and the responsibilities regarding the preparation for the euro fall directly on the manager, therefore there is no project organization.

- Definition of the scope and requirements of the changeover
- Definition of changeover scenarios
- Identification of the dependence on outsourcing solutions<sup>24</sup>
- Employee training
- Time schedule

### 4.1. PROJECT GROUP

From the view of information systems, the changeover to the euro is a complex process, which should not be underestimated. Therefore, all companies, except the smallest ones<sup>25</sup>, must establish a project team that will lead through the process of the introduction of the euro. This project team must be familiarized with:

- The Slovenian and the EU legislation
- Company operations and the use of information system, which means it must cooperate with the management and users
- Planning and development of information systems
- Technical aspects of information systems, which means cooperation with programmers
- Accounting and bookkeeping, which means cooperation with accountants and auditors.

The project group must have an active role in the management and implementation of the strategies in the fields of information systems, questions of law, accounting, sales and marketing.

### 4.2. SCOPE AND REQUIREMENTS OF THE CHANGEOVER TO THE EURO

Before the planning for the introduction of the euro is started, a company must have a good overview of its accounting information system. This step is more of technical nature as it requires the company to prepare a list of information systems that process accounting information. Companies often only subsequently establish that they use more information systems than they imagine. Many



auxiliary systems (for example tables<sup>26</sup>) are usually overlooked, when information systems are considered. The underestimation of the number of systems that cooperate in the introduction of the euro can cause great troubles as they are not comprised in the changeover strategy. Before the introduction of the euro<sup>27</sup>, the technical details of implemented information systems should be checked:

- Was the system bought from an outside IT provider or was it dedicatedly developed for the company? This relates to the question whether the company software is a standard one or it was developed especially for the company.
- Which program language or architecture was used for system implementation? Well documented systems that are written in a modern program language are simpler to adjust.
- Does the introduction of the euro have influence also on hardware? Certain program problems are linked also with hardware. An example is software that is “embedded in” the system as “firmware” (e.g. cash desks).
- It should be considered which parts of operations will be affected by the euro, besides accounting and IT, and how. These are most frequently sales, marketing, logistics, personnel and others. Therefore it should be checked whether all information technology systems are compatible with the euro, whether currency codes can be unambiguously recognized, and which systems should be adapted.
- What kind of system interdependence is there? Interdependence does not exist only between company internal systems. Outside interdependence with clients, suppliers and other business partners can also exist. System interdependence strongly increases the complexity of the changeover. This relates to the question

whether there are interfaces that interconnect different systems?

- A company can encounter problems in spite of all preparations. Too optimistic assessment of the changeover project (and in general of IT projects) can be made due to enthusiasm or the desire for an early solution of problems.

#### 4.3. SCENARIOS OF THE CHANGEOVER TO THE EURO

The next step in the process of the introduction of the euro should be the determination of scenarios of the changeover to the euro. Priorities for the adjustment of the information system depend on:

- System importance; systems that are of key importance for company operations must get higher priority.
- Complexity; modification of a complex system requires more time and effort. As the day of the introduction of the euro is fixed, the work on complex systems needs to be started as soon as possible. Therefore adjustments of these systems have higher priority.

Despite the planned changeover with a big bang, the planning of the changeover of the entire information system can be implemented in several different scenarios. We can select between the combinations of phase conversions of applications and/or data, and the big bang scenario of application and/or data conversion. Companies with a wide range of applications and databases largely choose the scenario of phase conversion for applications and the big bang scenario for data conversion.

When the company makes the changeover on all information systems at the same time, the so-called big bang changeover, it avoids problems that are the consequence of the use of mixed systems (something in EUR, something in SIT). Accurate planning and testing is needed in order to avoid IT

<sup>26</sup> Accounting data can be in the so-called tables, which are prepared for reporting on company operations for various purposes. When data are converted in tables, problems appear, such as doubled data, non-standard forms, difficulties in defining table fields for the purposes of conversion. General conversion of a large number of non-standardized tables should be avoided. When the number of tables is reduced, it is recommendable to convert them manually or step by step, and thus be sure what was comprised in the conversion and what not.

<sup>27</sup> The introduction of the euro can also be a reason for the replacement of the information system, but it is not safe to replace too many things at the same time. In such cases the company can also consider replacing the information system (Ferlinc, 2002, p.52). The implementation of a new system requires quite some time for the execution of eventual additional treatments, setting, data transfer and training. This should be considered when making a time plan.

failures. It is important to plan enough time for the conversion of all the necessary historical data. If this processing requires too much time, additional hardware should be considered or the decision for a gradual conversion should be taken. The fact that accounting transactions in most systems are linked to the financial period presents an additional complication in the use of the big bang changeover<sup>28</sup>.

#### 4.4. DEPENDENCE ON OUTSOURCING SOLUTIONS

If a standard information system solution of an outside IT provider is used, the attentions must be paid to the following:

- In such cases companies have almost no influence on the type of solution for the changeover to the euro that provider will choose. The provider will completely alone select which functionality for the changeover to the euro it will support, and they can decide not to support all the necessary scenarios.
- The lack of influence can cause inability to plan the changeover to the euro. If the provider still has not prepared the necessary solutions for the changeover to the euro, the company cannot make the changeover to operations in euro.
- Providers might not have enough financial resources or qualified personnel for an effective preparation of the necessary solutions for the changeover to the euro.
- An updated version of the solution that supports operations in euros can be less reliable than the existing version. The company should plan enough time for the examination of the new version. It should also prepare alternative strategies in case large problems appear.
- The price of a new version of the solution that supports operations in euros can be uncertain. The price can be excessively high, when the basic solution was badly planned. There is also a possibility that some providers will take advantage of the situation.

- It should be checked whether the contract with the IT provider covers also the costs of the changeover of information system to the euro.

Companies that use outsourcing solutions should not wait to the last moment for the preparation for the changeover to the euro. Blind trust in providers' promises is also not recommendable.

#### 4.5. COST PLANNING

Substantive changes due to the introduction of the euro were similar in small enterprises as well as in large enterprises, and the differences between them were in changeover costs. The costs represented a higher share of their income to small enterprises than to large enterprises. Small enterprises have lower number of employees and therefore less time for education, and for this reason costs were considerably increased (The checked list of the introduction of the euro for companies and auditors/accountants, 2006, p. 28). Therefore it is important that a company also plans the costs of the introduction of the euro, beside planning of activities, time and employees.

#### 4.6. EMPLOYEE TRAINING

User training is extremely important for a successful changeover to the euro. The introduction of the euro can cause lack of IT personnel. Some providers have a large number of customers, and they will not be able to be present at the same time. Users should be trained to assist in the implementation of the changeover. In certain solutions functionality that will enable operations in euro will need to be extended, therefore users should be trained to use this new functionality. Manual conversions of amounts in different currencies can cause errors that are difficult to identify. Users should be trained to identify such errors. Some time will be needed that people get used to the new currency. There is an increased risk of errors related to currencies until people get

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<sup>28</sup> The changeover of individual systems in the gradual changeover is made "where necessary" or when they are prepared. This way certain risks of the big bang changeover are avoided. The weakness of this approach is that certain systems already use EUR, while others still use SIT. This requires special interfaces that convert the currency between these systems. The gradual changeover requires a comprehensive internal coordination and a high level of concentration through a long period of time, which is difficult in itself.



accustomed to euros (e.g. conversion errors, currency mixing, entry errors).

#### 4.7. TIME SCHEDULE

The implementation of the changeover to the euro is carried out by the following steps:

- Installation of an application package version with modifications for EUR;
- Start-up of the processing for the conversion of amounts in SIT into EUR for starting operations on 1.1.2007;
- Start-up of the processing for the conversion of historical data: all historical data that are used for analyses must be converted into euros. This is not necessary in case the company decides for the collection of these data from 1.1.2007 on;
- Control of conversion: Control of the final conversion can thus be made only on a sample of its results. For example, control of a few tens or hundreds of random prices.

Table 4: Euro project: Conversion plan

Application –Activity	Date
Closing of operations	
Close accounts	
Close the year	
Opening in 2007	
Transfer of values to accounts	
Booking of rounding differences	
Opening in the journal	
Conversions	
Account balances	
Transactions	
Production	
Test of the transfer of values	

Source: Horvat, et al, 2006, p.13.

#### CONCLUSION

Information technology enables the accounting to render its services in a fast, precise, consistent and easier way. Good quality accounting is threatened without proper functioning of the information technology. For the final implementation of the changeover, a detailed plan of control activities for the introduction of the euro should be made

for a defined software solution (application and data part) as well as for individual business functions, in our case for accounting. The exact time of the implementation of conversion certainly depends on the organization's decision and determined priorities, as not all application solutions and historical data are needed in the first days after the conversion. When preparing for a black scenario of paper operations, an already made plan for uninterrupted operations and information security management system can be of great help.

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