STANDARD SUMMARY PROJECT FICHE

1. Basic Information

1.1 Désirée Number: RO-0005.02
1.2 Title: Inter-bank Payments System
1.3 Sector: Financial sector
1.4 Location: ROMANIA

2. Objectives

2.1 Wider Objectives:
- To facilitate the development of the economy by increasing the security and efficiency of the inter-bank payment system.
- To determine the shift to a predominant cashless society.
- The setting up of a well-founded legal basis for the systemically important payment systems and securities settlement systems.

2.2 Immediate Objectives:
- To implement the electronic inter-bank payment system integrating the characteristics required by the connection to TARGET.
- To strengthen the capacity of the NBR to implement the monetary policy by setting up the appropriate support for the development of financial markets and for the improvement of systemic risk management.

2.3 Accession Partnership and NPAA priority:
The NPAA sets clear priorities and objectives for the banking sector on short and medium term perspective with the ultimate goal of having Romanian banking sector in line with EU acquis, increasing its efficiency and lowering intermediation costs. One of the main areas is the increase of efficiency of the inter-bank payment system through:
- introduction of the RTGS and of the Automated Clearing House;
- development through the services carried out by the payment risk information system;
- further compliance of national laws to EU acquis.

2.4 Contribution to National Development Plan:
- not applicable

2.5 Cross Border Impact:
- not applicable

3. Description

3.1 Background and justification:
Starting with 1991, the process of reforming the payment system in Romania has been designed by the National Bank of Romania (NBR) to be implemented in the following two main stages: (1) first stage (1995 – 1998) whose main objectives were: to modernize the inter-bank paper-based payment system; to increase the capacity of the NBR to implement the monetary policy by means of intraday
liquidity surveillance; to lay the foundation of the shift to a predominant cashless society; (2) second stage (1999 – 2002) whose main objectives are those stipulated at point 2.1.

3.2 Linked activities:
In the payment system’s area NBR benefited of the following technical assistance programs financed by PHARE funds:

- To modernize the national payments system (August 1993 – July 1994) having as objective to design a strategy in this area. The objectives of the strategy established at the end of the technical assistance programme were: (1) Standardisation of codifications, (2) Rationalisation of intercounty payment flows, (3) Set up multilateral paper based clearing in Bucharest, (4) Set up separate settlement functions at BNR head office, (5) Centralise settlement in Bucharest, (6) Introduce paperless inter-bank payments, (7) Clearing of all electronic interbank items in Bucharest. Out of all these objectives, NBR has already implemented the first five, being now in the stage of achieving the last two, which are components of the present project.

- In 1998, NBR was subject to an operational audit program that analysed and proposed measures meant to improve NBR’s activity in all areas, including the national payment system’s. The present project was designed in compliance with the main findings and recommendations of that operational audit.

3.3 Results:
The present payment system has to be upgraded to the electronic stage. Taking into account that the financial resources of the NBR are insufficient to cover the needs of investment for a complex electronic payment system according to EU requirements and that Romania does not have experienced specialists in implementing such systems, it needs to be supported for both financial and technical sides. This support is intended to be obtained through the PHARE Interbank Payment System program, which will assist the implementation of the interbank electronic payment system that will consist of the following subprojects:

- Real Time Gross Settlement (RTGS) system including the information security of the new inter-bank payment system in concordance with TARGET characteristics;
- Automated Clearing House and its interface with RTGS;
- government Securities electronic Settlement and depository System and its interface with RTGS;
- Back-up and disaster recovery system.

Other results of the implementation of this PHARE program will be:

- a clearly defined legal and contractual framework regarding participation in the inter-bank payment system, encouraging fair competition amongst participants and promoting efficient and low-cost payment services and
- the completion of the legal framework with provisions related to the electronic funds transfers focusing on the adoption of EU legal requirements on payment systems and securities settlement systems.

The implementation of the PHARE Inter-bank Payment System program will also contribute to the strengthening of the capacity of the NBR to implement the monetary policy by setting up the appropriate support for the development of financial markets and for the improvement of systemic risk management. This immediate objective is fundamental for the achievement of the wider objective of this program, i.e. “to facilitate the development of the economy by increasing the security and efficiency of the inter-bank payment system”.

2
3.4 Activities:

- Total financial PHARE contribution: 10 MEURO out of which:
  - 7 MEURO – allocated for the procurement of the technical infrastructure (hardware, software, communication network) of the electronic inter-bank payment system as follows:
    - 3.4 MEURO for the Real Time Gross Settlement (RTGS) system including the information security of the new inter-bank payment system;
    - 1.7 MEURO for the Automated Clearing House and its interface with RTGS;
    - 1.1 MEURO for the government Securities electronic Settlement and depository System and its interface with RTGS;
    - 0.8 MEURO for the Back-up and disaster recovery system.
  - 3 MEURO – allocated for the procurement of the classical technical assistance related to the project implementation, as follows:
    - 1.5 MEURO for the Real Time Gross Settlement (RTGS) system including the information security of the new inter-bank payment system;
    - 0.7 MEURO for the Automated Clearing House and its interface with RTGS;
    - 0.4 MEURO for the government Securities electronic Settlement and depository System and its interface with RTGS;
    - 0.4 MEURO for the Back-up and disaster recovery system.

- The preparation of the investment will be made by the NBR, which will support all the costs related to this activity. The NBR will seek the cooperation (fine-tuning and assessment of the overall design of the project, TORs and Tender dossiers, all prepared by NBR) with experts from one ESCB member, on a bilateral basis. The 3 MEURO financial PHARE contribution allocated for technical assistance will not be used for the preparation of the investment (e.g. TORs, Tender dossiers, etc.), but to accompany the implementation of the investment.

- The technical infrastructure (hardware, software, communication network and office equipment) of the present NBR inter-bank paper-based payment and settlement system (DECONT? BNR) evaluated at 1 MEURO will be either integrated within the future electronic inter-bank payment system or used for the institution building of the company, which will manage this system.
  - The costs related to the Romanian personnel needed for implementing the project will be covered by this company.

- The NBR contribution of 2.3 MEURO will be added to PHARE 7 MEURO contribution for the procurement of the technical infrastructure (hardware, software, communication network) of the electronic inter-bank payment system. Out of 2.3 MEURO, 0.3 MEURO will be obtained from World Bank under PIBL program.

- The commercial banks will contribute with 1.9 MEURO, which will be allocated mainly for the acquisition of a proper location either as real estate or under a leasing contract.

- The TRANSFOND Company (see chapter 4) will contribute from its own revenues with 0.8 MEURO to the acquisition of a proper location either as real estate or under a leasing contract.
4. Institutional Framework

- For the time being, the NBR is the unique owner, manager and operator of the national inter-bank payment system.
- In order to ensure the cooperation with the banking sector in the management of the inter-bank payment system, the NBR Board decided in 1999 to set up a joint stock company having the NBR and the commercial banks as shareholders. By approving the establishment of this company, the NBR intends to initiate a transparent development process of the payment system with the final goal of implementing modern non-cash payment methods and technical mechanisms. The administrative arrangements decided by the NBR for this company (TRANSFOND) envisaged the split of the present Settlement Department from the central bank and the use of its personnel for the management and the operational tasks.
- The role and significance of TRANSFOND for the Romanian financial banking system will be mainly:
  - to ensure the management of the inter-bank payment system (ROMTRANSFOND) and the operational links between all banks, State Treasury and other financial intermediaries which provide payment services; and
  - to develop and provide the technical platform needed for the connection of the Romanian inter-bank payment system to TARGET, which represents a key element in the Romania’s process of integration in EU.
- The participation of the shareholders in the ownership of TRANSFOND, proposed by NBR and which is now subject to negotiation, is the following: the NBR - around 35%, other shareholders - around 65%. The shareholders of TRANSFOND will notify the Commission, if they decided to change these ratios. The transfer to TRANSFOND of the assets purchased with PHARE support by the NBR will not influence the balance of shareholding within the company.
- For all the subprojects of the investment project the “Engineer” will be appointed by means of the contracts concluded according to DIS Manual.
- The “Employer” will be the NBR, which will become owner of the assets after the project completion.
5. Detailed Budget

<table>
<thead>
<tr>
<th>Phare Support</th>
<th>Phare Support</th>
<th>Total Phare (I+IB)</th>
<th>National Co-financing</th>
<th>IFI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Time Gross Settlement (RTGS) system including the information security of</td>
<td>3.4</td>
<td>1.5</td>
<td>4.9</td>
<td>1</td>
<td>-</td>
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<tr>
<td>the new inter-bank payment system</td>
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<tr>
<td>Automated Clearing House and its interface with RTGS</td>
<td>1.7</td>
<td>0.7</td>
<td>2.4</td>
<td>0.5</td>
<td>-</td>
</tr>
<tr>
<td>Government Securities electronic Settlement and depository System and its</td>
<td>1.1</td>
<td>0.4</td>
<td>1.5</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>interface with RTGS</td>
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<td></td>
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<tr>
<td>Back-up and disaster recovery system</td>
<td>0.8</td>
<td>0.4</td>
<td>1.2</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>2</td>
<td>0.3</td>
</tr>
</tbody>
</table>

- The NBR co-financing will be decided in due time by the NBR Board.
- The NBR co-financing to be received from the World Bank is in course to be demanded through a project, which has to be submitted during the first quarter of 2000.

6. Implementation Arrangements

6.1 Implementing Agency:
- For the whole project and its all subprojects the Implementing Agency will be Central Finance and Contracts Unit (CFCU) which will be responsible for tendering, contracting, administration, accounting, payments and financial reporting.
- Contact details: PAO – Mrs. Daniela Gheorghe, director general, CFCU, 36-38 Mendeleev street, 4th floor, room no. 157 sector 1, Bucharest, phone no. 401/313.66.30 fax no. 401/315.35.36.
- The beneficiary institution – National Bank of Romania through PIU and the Settlement Department will be fully responsible for the technical implementation and for all procedural and administrative management of the project.

6.2 Twinning:
Twinning arrangements are not envisaged for this project.

6.3 Non-standard aspects:
The PHARE DIS Manual will strictly be followed.

6.4 Contracts:
The expected number of contracts under PHARE DIS Manual is 7 and their total value amounts to 10 MEURO.
7. Implementation Schedule

7.1 Start of tendering/call for proposals:
December 2000.
7.2 Start of project activity:
August 2001.
7.3 Project Completion:
March 2003.

8. Equal Opportunity
The proportion between men and women in the personnel involved in the project design and implementation will be balanced, with no discrimination regarding women’s tasks and salaries compared to the men’s.

9. Environment
No environmental changes will be induced by the implementation of the electronic inter-bank payment system.

10. Rates of return
- The estimated financial rate of return, calculated as the average for the period 2000 – 2002, is 29%.
- The estimated economic internal rate of return, calculated as the average for the period 2000 – 2002, is 39%.
- The feasibility study of TRANSFOND for year 2000 including the financial rate of return of this company was completed in October 1999. The pre-feasibility studies of the whole project taking into account data related to investment funds provided by PHARE were completed for this standard summary project fiche purpose.

11. Investment criteria

11.1 Catalytic effect:
The PHARE Inter-bank Payment System program will catalyse the process of setting up the electronic inter-bank payment system integrating the characteristics required by the connection to TARGET. In the absence of this program the national financial resources are insufficient for the development of such a complex system because the available national resources could cover only the implementation of a system having not all the TARGET linking requirements.

11.2 Co-financing:
This project will be co-financed from national public and private sources as well as by the contribution of the World Bank.

11.3 Additionality:
- The PHARE grants for this project, as it has been described in points 3.4 and 4, will not displace other financiers. The completion of the whole project entailed by its complexity needs a total value of around 16 MEURO, which are envisaged to be covered from PHARE funds, national public funds, international financial institutions funds and private banking sector funds, as well.
• The levels of the estimated financial rate of return (29%) and economic internal rate of return (39%) compared to deposit interest rate offered by Romanian banks make attractive the investments from the private banking sector.

• In the feasibility study of TRANSFOND is stated that, during the first five years, the main part of the company’s profit will be reinvested for the system development purposes, principle agreed during the negotiations held between the potential shareholders. The calculation of the above-mentioned estimated rates of return did not take into account the capitalization of the net profits recorded for years 2001-2002.

11.4 Project readiness and Size:
• Pre-feasibility studies have been prepared by the NBR Settlement Department following mainly the guidelines formulated by the NBR Operational Audit from 1998 and taking into account the stage of development and the basic features of the present inter-bank payment system (DECONT? BNR). A part of these studies related to the establishment of an electronic clearing, settlement and depository system for government securities was submitted in September 1999 to the World Bank, which has agreed that it may constitute the basic plan to be followed in this area.

• The business plan of TRANSFOND has been elaborated by the NBR Settlement Department according to the pre-feasibility studies, approved by the NBR Board and submitted to the banks for agreement.

• The total value of the investment support for this project, received from PHARE funds, is 7 MEURO, as described at point 3.4 and 5.

1.5 Sustainability:
• The investment will be sustainable in the long term and will comply with EU norms and standards and will be in line with EU sector policy acquis as previously showed at points 2.2, 3.3 and 11.1.

• The future maintenance and operating costs of the inter-bank payment system will be covered from TRANSFOND own revenues.

1.6 Compliance with state aids provisions:
All the state aids provisions of the Europe Agreement will be followed and complied with.

1.7 Contribution to National Development Plan:
- not applicable

12. Conditionality and sequencing
• The company will be set up by December 2000.

• The technical specification proposed by the NBR for the RTGS must receive the agreement of a majority of TRANSFOND’s shareholders before the start of tendering.

• TRANSFOND will present a business plan demonstrating its financial viability, which has the support of the majority of its shareholders and is acceptable to the Commission before the start of tendering.

• TRANSFOND and NBR will present to the Commission a plan on how to transfer the assets purchased with PHARE support to TRANSFOND before the start of tendering. This plan must have the agreement of a majority of the shareholders and must be acceptable to the Commission.
ANNEXES TO PROJECT FICHE

1. Logical framework matrix in standard format
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter for full duration of programme (including disbursement period)
4. Reference to feasibility /pre-feasibility studies. For all investment projects, the executive summary of the economic and financial appraisals, and the environmental impact assessment should be attached.
<table>
<thead>
<tr>
<th>LOGFRAME PLANNING MATRIX</th>
<th>Programme name: and number:</th>
<th>Date of drafting: 11 February 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERBANK PAYMENTS SYSTEM</strong></td>
<td>Contracting period expires: 30.11.2002</td>
<td>Disbursement period expires: 30.11.2003</td>
</tr>
<tr>
<td><strong>Project Number</strong></td>
<td><strong>Total budget:</strong> 16 MEURO</td>
<td><strong>Phare contribution:</strong> 10 MEURO</td>
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<tr>
<td>RO-0005.02</td>
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</tr>
<tr>
<td><strong>Wider Objectives</strong></td>
<td><strong>Indicators of Achievement</strong></td>
<td><strong>How, When and By Whom Indicators Will Be Measured</strong></td>
</tr>
<tr>
<td>To facilitate the development of the economy by increasing the security and efficiency of the interbank payment system</td>
<td>Increased total transactions value per GDP ratio (at annual rate):</td>
<td>TRANSFOND statistical reports based on volume and value of transactions</td>
</tr>
<tr>
<td></td>
<td>➢ 1999: 8 times</td>
<td>NBR statistical reports</td>
</tr>
<tr>
<td>To determine the shift to a predominant cashless society</td>
<td>Increased volume and value of wholesale funds transfers</td>
<td>Periodically, as required, in order to provide the data needed to design the project and to assess the results of the project implementation</td>
</tr>
<tr>
<td></td>
<td>➢ 1999: volume: 216,000; value: 65,000 MEURO</td>
<td><strong>BY WHOM:</strong></td>
</tr>
<tr>
<td>The setting up of a well-founded legal basis for the systemically important payment systems and securities settlement systems</td>
<td>➢ 2003: volume: 7 million; value: 463,000 MEURO</td>
<td>NBR and TRANSFOND</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Assumptions and Risks</strong></td>
</tr>
<tr>
<td></td>
<td>Increased volume and value of retail cashless payments</td>
<td></td>
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<tr>
<td></td>
<td>➢ 1999: volume: 12 million; value: 26,000 MEURO</td>
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<tr>
<td></td>
<td>➢ 2003: volume: 63 million; value: 51,000 MEURO</td>
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<td></td>
<td>Increased number of cards and cash dispensers</td>
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<tr>
<td></td>
<td>➢ 1999: 350,000 cards; 521 cash dispensers</td>
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<tr>
<td></td>
<td>➢ 2003: 2,000,000 cards; 3000 cash dispensers</td>
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<tr>
<td></td>
<td>Increased degree of concordance between domestic legal framework and the EU specific legislation</td>
<td></td>
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<tr>
<td><strong>Immediate Objectives</strong></td>
<td><strong>Indicators of Achievement</strong></td>
<td><strong>How, When and By Whom Indicators Will Be Measured</strong></td>
</tr>
<tr>
<td>To implement the electronic interbank payment system integrating the characteristics required by the connection to TARGET.</td>
<td>Decreased settlement time lags (value date) from the payor to the beneficiary:</td>
<td>TRANSFOND statistical reports</td>
</tr>
<tr>
<td></td>
<td>➢ 1999: - 3,67 days</td>
<td>NBR statistical reports</td>
</tr>
<tr>
<td>To strengthen the capacity of the NBR to implement the monetary policy by setting up the appropriate support for the development of financial markets and for the improvement of systemic risk management</td>
<td>Lower costs of interbank payment services</td>
<td>Periodically, as required, in order to provide the data needed to design the project and to assess the results of the project implementation</td>
</tr>
<tr>
<td></td>
<td>➢ 1999: for wholesale: 8.18 EURO; for retail: 0.6 EURO</td>
<td><strong>BY WHOM:</strong></td>
</tr>
<tr>
<td></td>
<td>➢ 2003: for wholesale: 1.3 EURO; for retail: 0.3 EURO</td>
<td>NBR and TRANSFOND</td>
</tr>
<tr>
<td></td>
<td>Improved liquidity management both at the level of the central bank and the participants to the system as reserve turnover ratio</td>
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</tr>
<tr>
<td></td>
<td>➢ 1999: 19 times</td>
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<tr>
<td></td>
<td>➢ 2003: 35 times</td>
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<tr>
<td></td>
<td>Rate of exchange at 31.12.1999 = 18.331 ROL/EURO</td>
<td></td>
</tr>
</tbody>
</table>

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1) Rate of exchange at 31.12.1999 = 18.331 ROL/EURO
• Development of the market for payment services both domestically and internationally (offer and quality)

intraday liquidity required by the smooth functioning of the RTGS system by deepening the interbank money market and developing its open market operations based on the availability of relevant collateral

### Outputs

<table>
<thead>
<tr>
<th>Implementation of the interbank electronic payment system (ROM-TRANSFOND) which will consist of the following subprojects:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Real Time Gross Settlement (RTGS) system including the information security of the new interbank payment system</td>
</tr>
<tr>
<td>• Automated Clearing House and its interface with RTGS</td>
</tr>
<tr>
<td>• Government Securities electronic Settlement and depository System and its interface with RTGS</td>
</tr>
<tr>
<td>• Back-up and disaster recovery system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicators of Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Design of the subprojects</td>
</tr>
<tr>
<td>• Testing of the subprojects</td>
</tr>
<tr>
<td>• Implementation of the subprojects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How, When and By Whom Indicators Will Be Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOW:</td>
</tr>
<tr>
<td>• According to detailed time chart and consultants’ reports</td>
</tr>
<tr>
<td>WHEN:</td>
</tr>
<tr>
<td>• At the end of each indicator’s time completion and, if needed, during the project progress</td>
</tr>
<tr>
<td>BY WHOM:</td>
</tr>
<tr>
<td>• By EC technical advisors and supervision consultants and by Romanian experts (NBR, Government, TRANSFOND, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Steady investment efforts made by the banking sector, aiming to achieve the technical level required by the use of ROM-TRANSFOND infrastructure</td>
</tr>
<tr>
<td>• Due to insufficient development of the free market economy mechanisms and in the absence of a strong cooperation within the banking sector, in the first stage of ROM-TRANSFOND functioning, may arise the risk that the low cost payment services offered by this infrastructure will not represent a benefit for the ultimate users (non-banks)</td>
</tr>
</tbody>
</table>

### Inputs

<table>
<thead>
<tr>
<th>Total financial PHARE contribution: 10 MEURO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The present NBR integrated and centralized interbank paper-based payment and settlement system (DECONT+BNR):</td>
</tr>
<tr>
<td>• technical infrastructure (hardware, software, communication network and secretarial equipment) = 1 MEURO</td>
</tr>
<tr>
<td>• needed personnel for implementing the project</td>
</tr>
<tr>
<td>Co-financing: the NBR contribution: 2.3 MEURO; the private banking sector contribution: 1.9 MEURO; TRANSFOND contribution from its own revenues: 0.8 MEURO.</td>
</tr>
</tbody>
</table>
# DETAILED TIME IMPLEMENTATION CHART FOR PROJECT NUMBER RO-0005-02

## INTERBANK PAYMENTS SYSTEM

<table>
<thead>
<tr>
<th>Activities</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real Time Gross Settlement system including the information security of</strong></td>
<td>D D D D D</td>
<td>C C C C C C</td>
<td>I I I I I I</td>
<td>I I I I I I</td>
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<tr>
<td>the new payment system</td>
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<tr>
<td><strong>Automated Clearing House</strong></td>
<td>D D D D D</td>
<td>C C C C C C</td>
<td>I I I I I I</td>
<td>I I I I I I</td>
</tr>
<tr>
<td><strong>Government Securities electronic Clearing Settlement and depository</strong></td>
<td>D D D D D</td>
<td>C C C C C C</td>
<td>I I I I I I</td>
<td>I I I I I I</td>
</tr>
<tr>
<td><strong>Back-up and disaster recovery system</strong></td>
<td>D D D D D</td>
<td>C C C C C C</td>
<td>I I I I I I</td>
<td>I I I I I I</td>
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</tbody>
</table>

*D = Design (preparation of the overall project, TORs, Tender dossiers according to 3.4 of the Project Fiche)*

*C = Contracting*

*I = Implementation*
## INTERBANK PAYMENTS SYSTEM

### CUMULATIVE CONTRACTING AND DISBURSEMENT SCHEDULE 10 MEURO

**DATE: 11.02.2000**

<table>
<thead>
<tr>
<th></th>
<th>31/03/01</th>
<th>30/06/01</th>
<th>30/09/01</th>
<th>31/12/01</th>
<th>31/03/02</th>
<th>30/06/02</th>
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<th>31/03/03</th>
<th>30/06/03</th>
<th>30/09/03</th>
<th>31/12/03</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONTRACTED</strong></td>
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<tr>
<td>Real Time Gross Settlement system including the information security of the new payment system</td>
<td>4.9</td>
<td>4.9</td>
<td>4.9</td>
<td>4.9</td>
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</tr>
<tr>
<td>Automated Clearing House</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
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<td>Government Securities electronic Clearing Settlement and depository System</td>
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<tr>
<td>Back-up and disaster recovery system</td>
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<tr>
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### DISBURSEMENT

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<td><strong>Total</strong></td>
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EXECUTIVE SUMMARY OF THE ECONOMIC AND FINANCIAL APPRAISALS

Starting with 1991, the process of reforming the payment system in Romania has been designed by the National Bank of Romania (NBR) to be implemented in two main stages. The table below refers to feasibility and pre-feasibility studies for these two stages.

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>FIRST STAGE AND THE CURRENT STATE OF THE INTERBANK PAPER-BASED PAYMENT SYSTEM</th>
<th>SECOND STAGE AND THE FUTURE STATE OF THE INTERBANK ELECTRONIC PAYMENT SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>II. WIDER OBJECTIVES:</td>
<td>1. To modernize the interbank paper-based payment system.</td>
<td>II. WIDER OBJECTIVES:</td>
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<td>2. To lay the foundation of the shift to a predominant cashless society.</td>
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<td></td>
<td>3. The setting up of the legal basis for the paper-based payment system.</td>
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<tr>
<td>III. IMMEDIATE OBJECTIVES:</td>
<td>1. The implementation of DECONT + BNR.</td>
<td>III. IMMEDIATE OBJECTIVES:</td>
</tr>
<tr>
<td></td>
<td>2. To increase the capacity of the NBR to implement the monetary policy by means of intraday liquidity surveillance and applying procedures for the management of systemic, credit and liquidity risks in DECONT + BNR.</td>
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<tr>
<td>IV. ACTIONS:</td>
<td>A. Actions related to wider objectives:</td>
<td>A. Actions related to wider objectives:</td>
</tr>
<tr>
<td></td>
<td>1. The issuance of regulations on paper-based payment order, cheque, bill of exchange, promissory note, direct debit, standing order.</td>
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<tr>
<td></td>
<td>2. The issuance of regulation regarding the interbank multilateral clearing.</td>
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<tr>
<td></td>
<td>3. The issuance of regulation regarding payment risks information.</td>
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<tr>
<td></td>
<td>B. Actions related to immediate objectives:</td>
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</tbody>
</table>
1. The design and implementation of DECONT+BNR.
2. The design and implementation of the accounting system of DECONT+BNR.
3. The issuance of operational procedures of DECONT+BNR.
4. The design and implementation of the technical system of DECONT+BNR.
5. The design and implementation of the communication system of DECONT+BNR.
6. The design of operational procedures regarding risk prevention, monitoring and reduction measures for the final settlement in DECONT+BNR.

7. The implementation of risk management measures (pledged collateral, loss-sharing schemes, membership criteria for securities settlement systems regarding the final settlement in central bank books) on contractual basis.

V. Results:
A. Results of the actions related to wider objectives:
1. A homogenous legal framework governing the payment instruments and interbank settlement procedures and payment risks.

2. The standardization of payment instruments formats, implementation of a compulsory set of rules for settlement circuits and timing needed to complete the transactions and their related charges at the national level.

3. A greater transparency and protection for the commercial banks’ customers provided by the legal framework.

B. Results of the actions related to immediate objectives:
1. The implementation of the sole Romanian interbank payment system – National Payment System DECONT+BNR.

2. DECONT+BNR is fully owned, managed and operated by the central bank.

3. DECONT+BNR consists of the following subsystems:
   - Gross settlement subsystem;
   - Net settlement subsystem;
   - Special settlement subsystem;
   - Government securities electronic settlement and depository subsystem;
   - Payment risks information subsystem.

4. The main features of each of these subsystems are:
   4.1 The gross settlement subsystem
      - direct participants are:

1. The design and implementation of ROM-TRANSFOND.
2. The design and implementation of the accounting system of ROM-TRANSFOND.
3. The issuance of operational procedures of ROM-TRANSFOND.
4. The design and implementation of the technical system of ROM-TRANSFOND.
5. The design and implementation of the communication system of ROM-TRANSFOND.
6. The design of operational procedures regarding risk prevention, monitoring and reduction measures for the final settlement in ROM-TRANSFOND, including online monitoring and analysis of the credit and liquidity risks that participants pose to the system.

7. The enlargement of the contractual basis for the implementation of risk prevention, monitoring and reduction measures based on strict specifications of the responsibilities devolved both upon the system operator and upon the participants and based on the risks incurred by each of them.

8. The development of the operational procedures by including risk management decisions through limits of exposures, by pre-funding or collateralizing obligations, management of transaction queues.
41 bank headquarters and the State Treasury, in the NBR headquarters; 493 bank branches and 45 State Treasury branches, in the local branches of NBR; processes daily (telex transmission): large-values transfers in relation with the State Treasury exceeding ROL 500 million; interbank large-value transfers ordered by the customers of the banks exceeding ROL 500 million; interbank transfers related to the Government securities primary market, money and foreign exchange markets; the settlement is performed only in the case of sufficient funds available in the payers’ current accounts, either commercial banks’ or the State Treasury’s; because this subsystem is not electronically connected with the banking system, no information on incoming payments is available before end-of-day settlement; this subsystem operates as an end-of-day gross settlement system; the average duration of the settlement cycle is 2 days; the subsystem settles daily: a volume of 860 payment instruments and a value of 259 MEURO; 

4.2 The net settlement subsystem
- functions as a clearing network consisting of 41 districtual interbank clearing houses (one in each NBR branch) and one interbank clearing house located in the NBR headquarters;
- processes transactions related to paper-based payment instruments: credit instruments with a value of less than 500 million ROL and debit instruments irrespective their value;
- direct participants are: the State Treasury, in the bilateral clearing; all the commercial banks in the multilateral clearing, with no more than one of their branches, in each district of the country;
at present, two capital markets operate in Romania: the Bucharest Stock Exchange (BVB) and the over-the-counter (OTC) market (RASDAQ), both only for equities (shares) issued by private and/or state owned companies;

in order to be able to provide final settlement services for these two markets, the NBR has authorized both the BVB and SNCDD (for the RASDAQ market) to act as interbank clearing houses and to hold a settlement cash account with the NBR;

this subsystem finally settles the net positions calculated by VISA and EUROPAY systems for card transactions denominated in ROL;

excepting the funds transfers in relation with the State Treasury that are transmitted by means of telex, all the other operations are paper-based;

the netting performed by the NBR clearing houses is conducted manually;

settles all the bilateral or multilateral positions the same day they have been calculated or submitted to the NBR, in the participants’ current accounts;

the settlement of the net net debit positions is completed only if the participants have sufficient funds or collateral to cover them;

the average duration of the clearing cycle for credit payment instruments is 3.67 days and for debit payment instruments is 5.16 days;

the subsystem clears daily:

- a volume of 47,800 payment instruments and a value of 103 MEURO;

4.3 The special settlement subsystem

- operates daily, on a gross basis, all the funds transfers related to insolvent banks;

- the settlement process is based on a gross end-of-day procedure under which the value of each payment instruction is compared to the funds available in the current account of each bank settling within this subsystem.

4.4 Government securities electronic settlement and depository subsystem

- the NBR performs, for the time being, the settlement of the primary market operations for the Government debt instruments. There is no regular secondary market for these instruments;

- the NBR performs the functions of the central depository for Government securities by operating it on a manual basis.

4.5 Payment risks information subsystem

The NBR designed and implemented (1997) the Payment Incidents Bureau (CIP) as the national center for data exchange and administration, regarding payment incidents involving cheques, promissory notes and bills of exchange. The goal of CIP is to tighten

- direct participants will be:

  - all the commercial banks and the State Treasury in the multilateral clearing, with no more than one of their branches, in each district of the country;
  - the netting performed by the TRANSFOND clearing houses will be automated;
  - the settlement of the net net debit positions through RTGS will be completed only if the participants have sufficient funds or collateral to cover them;
  - the average duration of the clearing cycle for electronic credit payment instruments will be 2 days and for paper-based debit payment instruments will be 3.5 days;
  - the system will clear daily:

    - a volume of 251,000 payment instruments and a value of 203 MEURO;

4.3 Government securities electronic settlement and depository system:

- the TRANSFOND will perform the settlement of the primary market operations for the Government debt instruments;

- ROM-TRANSFOND will perform the clearing, settlement and registrar functions for Government securities secondary market through an integrated electronic system;

- the settlement of funds and securities will take place on a delivery versus payment basis;

- the settlement of securities will be made on a gross basis and the settlement of funds, on a net basis;

- the settlement and the registration will take place in T+1.

4.4 Payment risks information system:

The Payment Incidents Bureau (CIP) will be adapted to the characteristics of ROM-TRANSFOND.
5. The accounting system of DECONT+BNR is based on the book keeping of centralized current accounts of commercial banks and State Treasury in headquarters of the central bank. These accounts are divided in sub-accounts allocated for each component subsystem of DECONT+BNR.

6. The procedures regarding risk prevention, monitoring and reduction measures for the final settlement in DECONT+BNR are applied to the unique intraday position of each centralized current account of commercial banks and State Treasury.

7. The main features of the technical system of DECONT+BNR are:
   7.1 The design and implementation of the technical system of DECONT+BNR aimed to ensure a secure, flexible and scalable system, in order to integrate new technologies and to face the growing demand for hardware and software resources in client/server (with branches) and Intranet (with banks and branches) structure. The structure of the IT system is build around Oracle RDBMS using CASE methodology and performant products. The reason of Intranet solution is heterogeneity of banks equipment and the flexibility of WWW solution, without modification and adaptation of software. The actual applications using this processing infrastructure present a number of limitations for future developments.

7.2 As concerns hardware/cabling, the structure is built by distribution in 41 branches of PCs (mainly 486 and Pentium II) with OS DOS 6.22, Win 3.1, Windows 95, servers (33 pieces Compaq 1500, 8 pieces Compaq PL 6500) with OS Novell Netware 5.0, hubs (Synoptics), printer (HP), UPS (APC) on Ethernet 10BaseT local networks with around 20 nodes. The LAN headquarters consist of over 200 nodes coupled through a FDDI backbone only on servers level (Compaq PL 2000-5000 with Windows NT for application Servers and OS Novell 4.1) and Ethernet 10 Mbps at PC-level (OS Windows 3.1, 95 or NT). The infrastructure is mostly UTP&STP category 3 and 5 cable for interconnection hubs (3COMs) and switches (FORE 3500-7000). Protocols used are IP/TCP and IPX/SPX and most of devices are SNMP manageable (HP Open View).

7.3 As concerns software/database, applications are in-house made and most of them were developed using Oracle Technology.

The information system for the clearing and settlement operations is a decentralized current accounts of commercial banks and State Treasury in headquarters of the central bank. These accounts are divided in sub-accounts allocated for each component subsystem of DECONT+BNR.

5. The accounting system of ROM-TRANSFOND will be based on the same principles as those of DECONT+BNR.

6. The risk prevention, monitoring and reduction measures for the final settlement in ROM-TRANSFOND will be the same as for DECONT+BNR.

7. The main features of the technical system of ROM-TRANSFOND will be:
   7.1 The design will have a unique system philosophy centered on growing the integration, ensuring uniformity for technologies on solid platforms. The use of modern developing platforms of high productivity, like CASE tools and works area of Internet type, will represent an important element for the increase of the efficiency and quality of programming activities, an easier maintenance by centralized administration of the network and applications and minimizing installations. The objectives of new IT systems will be to improve, by a high degree of automation, the financial services, speed up the payment transfers, reduce payments and business risks, reduce processing costs, supervise liquidity. An important aspect is the implementation of an AQ system with all components.

7.2 The hardware/cabling architecture will support the technologies and requirements of new applications that will manage the huge volume of future transactions. Therefore, in the branches, the servers have to be renewed for growing the processing (like dual-server Compaq 1850 with Windows NT and Oracle platforms) and storage capability for a structure to work off-line when temporary lose of connection to headquarters occurs. The actual servers will be used for actual applications and local needs. The IP protocols in the LANs will be generalized. A part of the PCs have to be renewed to support the new operating systems. The backbone of LAN in headquarters will be rebuilt in ATM technologies, replacing totally the old FDDI structure. The cabling system has to be changed to category 6 and ATM or GigaEthernet. The increased processing capabilities in headquarters needed for a centralized system, impose a new high-level server-machine; the actual servers will be used for other activities (accounting, other complementary services etc). The networking system (switching-hubs) have to be renewed.

7.3 The software/data base system will ensure a centralized lifetime fully integrated modular system with data warehousing capabilities for a national transaction and batch processing system which will serve the banks and other financial institutions directly or by branches (one or multiple points of entry). The structure will be built on a relational database management with reliable back up and disaster recovery center with on-line continuity and research capabilities. The IT system will ensure
module. Data transmission to the clearing and settlement operations information system is carried out electronically using the NBR’s internal network for the net settlement subsystem and telex for the gross settlement subsystem. In the NBR headquarters data are consolidated and processed automatically, after manually input for large-value funds transfers. For the net system, only the final centralization is automated.

Data transmission to the payments risk information system and to the electronic payment messages information system is carried out electronically using Intranet technology connecting the BNR headquarters with all the commercial banks’ headquarters and the NBR’s branches. The data input into the system is carried out by the reporting institutions (commercial banks’ headquarters and NBR branches). The applications’ core is developed around RDBMS Oracle 8.0.5.0.0 using Oracle Application Server 4.0.8 (PL/SQL Cartridge) and the statistical module for the payments risk information system is developed with MS Visual Basic 6.0, Oracle Objects for OLE and Oracle Developer 2000-Reports 3.0.

Highly secured transactions and storage by encryption, authentications, digital signatures and using its own certification authority with up-to-the-minute access to services.

The IT system will ensure an end-to-end processing, straight through processing, scalability and connectivity, integration in each location and will have also comprehensive audit and security controls, risk management, intra-day monitors and management in a MIS capabilities, on-line inquiry and will ensure a reduction of costs per operation. The Intranet solutions will be taken into consideration for applications and activities within RDMBS like Oracle database, applications and tools.

8. The main features of the communication system of DECONT-BNR are:

8.1 The design begun in 1995 with the goal to create a system with high disposability, flexible configuration function, high security, automatic commutation of data transfers on alternative media route and efficiency. Other important parameters i.e. transmission speed, delay in network, redundancy, modularity and powerful administration do not present the optimal level.

8.2 The communication system interconnects all branches and headquarters of banks using a multiprotocol routing Cisco system and VSAT Hughes networks (for branches backup). All locations use public data communications operators using X25 protocol in a star network, at low speeds, assuring interconnection of local LAN. All components have backup facilities for branches only. The information security is structured only at the operators level by access points, close user group, filter politics, VPN-tunneling technique and encryption of communication sessions (DES 56 bit keys). Routers make the encryption, which delays the processor charging. Administration is made by monitoring, alarms, on-line interventions, configuration and analysis using Ciscoworks and HP OpenView.

8. The main features of the communication system of ROM-TRANSFOND will be:

8.1 The design will follow similar lines with present system that will be integrated, but aiming at implementing new and more productive protocols and equipment in order to ensure a high disposability also for banking headquarters that will be connected in the same uniform and integrated network. The technical performances will be developed to increase the speed, reduce delays and integrate new services.

8.2 The communication systems will choose new WAN protocols like Frame-Relay or IP in the terrestrial networks and will encapsulate only IP from LANs. An important aspect will be related to the new connections from the banks in a system that will ensure a backup solution by VSAT. The security will be integrated at all OSI levels and will be made by specific devices separated by routers.

VI. The EXECUTIVE SUMMARY OF economic and financial appraisals:

1. DECONT-BNR is the sole interbank payment system in Romania.

2. During 1995 – 1998, NBR invested in the technical infrastructure and human resources. The technical infrastructure with an actual value of 1 MEURO will be transferred to TRANSFOND.

3. DECONT-BNR covered the operational costs and recorded net profits all over its functioning period.

V. The EXECUTIVE SUMMARY OF economic and financial appraisals:

1. Taking into account the present situation in Romania, with a unique payment system, at least on medium term the place of TRANSFOND in the Romanian banking system will be the unique institution providing fund transfers and settlement services.

2. There is the possibility that this unique position be maintained at least on medium term, because of the large costs related to the design, development and implementation of such systems, of the cost-effective rate and because of long time period to put into practice such type of projects.

3. For the period 2000 – 2002 the estimated financial rate of return is 29% and the economic internal rate of return is 39%.

4. The levels of the estimated financial rate of return (29%) and economic internal rate
of return (39%) compared to deposit interest rate offered by Romanian banks make attractive the investments from the private banking sector.

5. The future maintenance and operating costs of the interbank payment system will be covered from TRANSFOND revenues.

6. During the first five years, the main part of the company’s profit will be reinvested for the system development purposes, principle agreed during the negotiations between the potential shareholders.