Database improvements of national student enrollment registry. Link external systems tu NSER DB

~ *Ph. D.* **Cosmin Cătălin Olteanu** *(Faculty of Business and Administration, University of Bucharest, Romania)*

Abstract: *The main purpose of the paper is to illustrate how we can link external informatics systems to National Student Enrollment Registry, a national database, a distributed information system, of all students from higher education system. The general idea is to improve NSER database to have a strong unique informatic system where all the data should be collected from all universities. Employers and all academic institutions can check someone's background easy through a national portal just by log in. As a result of the paper, the author found that this system has it's flows but can be improved.*

Keywords: Informatic system for management of students, MSSQL db improvements, ID student number.

1. Introduction

The purpose of National Student Enrollment Registry is to have a national database, linked through a distributed information system, of all students from higher education system.

In a way, we can say that a functional system like this could provide the full path of a student – an individual record of all academic studies.

For such a result, all academic

institutions (universities) have been linked through a UE project that provided an informatics system linked to a local database connected also to a national one.

The results of such a system are useful to employers, students and others academic institutions.

Why employers? Because a PR can easy check if a candidate for a job has been told the truth in his/her cv just by log in in a national portal and search by name or ID.

Why useful for students? The answer is simple. One student can also log in in the national portal and check his academic path. This way he/she is sure that the studies are recognized and the diplomas are real and provided by Minister of Education.

Why for academic institutions? If a student want's to enroll for superior studies like master or PhD, his background can be checked and no one could came from fake universities / faculties, like in the past.

2. Literature review

National Student Enrollment Registry (NSER) may become the only way students could avoid in future receive of diplomas without legal protection (România Liberă, 20 July 2009).

In the context where 4 universities have been discovered to enroll students on fake faculties or fake form of faculties and moreover to print diplomas for them, a change was needed. This change was to be made by a national database of unique numbers for every student (license studies, master studies or doctoral studies) – Lex et Scientia , no. 2 , 2009, pag. 514.

This way NSER will lead to a coherent picture of human capital involved in higher education system and detailed information will be available for implementation of education policies and strategies (Market Watch, 18 September 2010 and 3 June 2011).

3. Paper Content

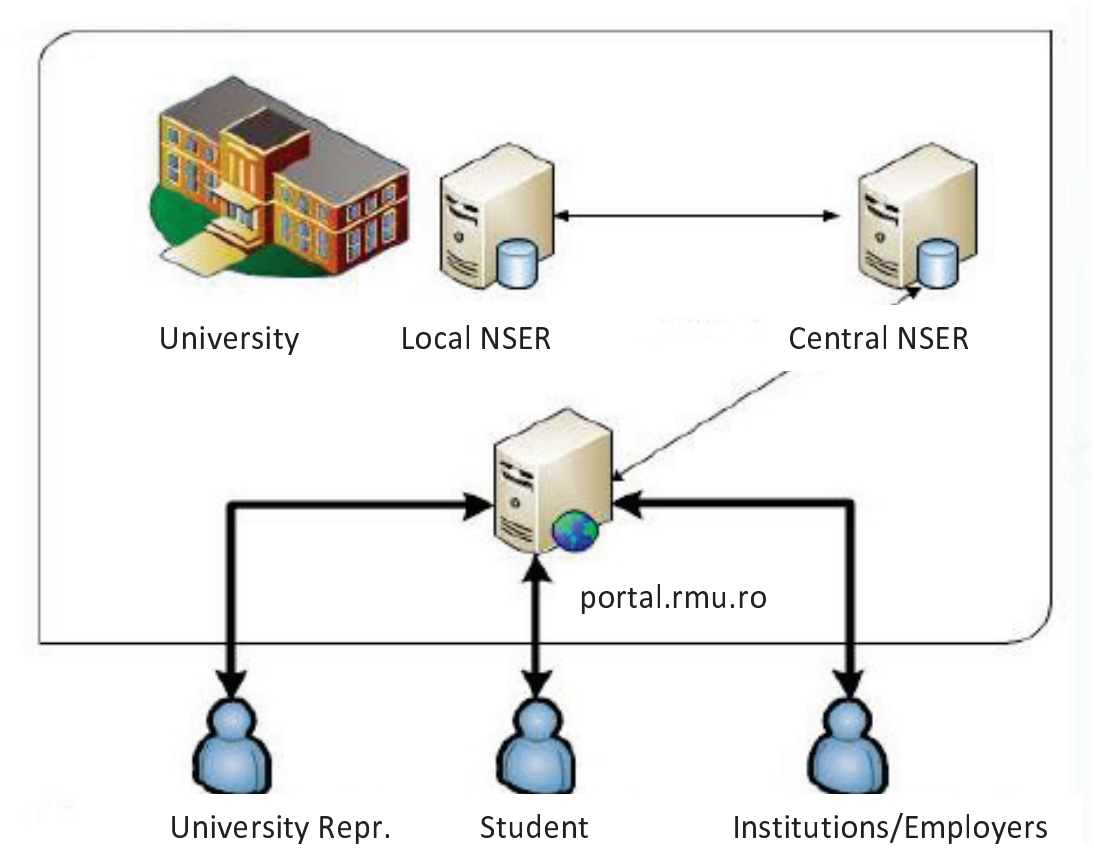
National Student Enrollment Registry (NSER) is reglemented by the law 1 from 2011 and, this year, by the minister order 3313 from 2012. This way the legal environment is very well defined in order to have a strong informatic system.

When the system will be fully functional, a PR can easy check if a candidate for a job has been told the truth in his/her cv just by log in in a national portal and search by name or ID. One student can log in in the national portal and check his academic path. This way he/she is sure that the studies are recognized and the diplomas are real and provided by Minister of Education. And more if a student want's to enroll for superior studies like master or PhD, his background can be checked and no one could came from fake universities / faculties, like in the past.

First of all I will present the NSER system, from a former job where I was the IT manager with responsibilities also of NSER.

On a first look the system is quite simple. We have a local component (client and database) and a centralized one (database and advanced client) at the UEFISCDI core – Fig.1.

Fig. 1 NSER system.



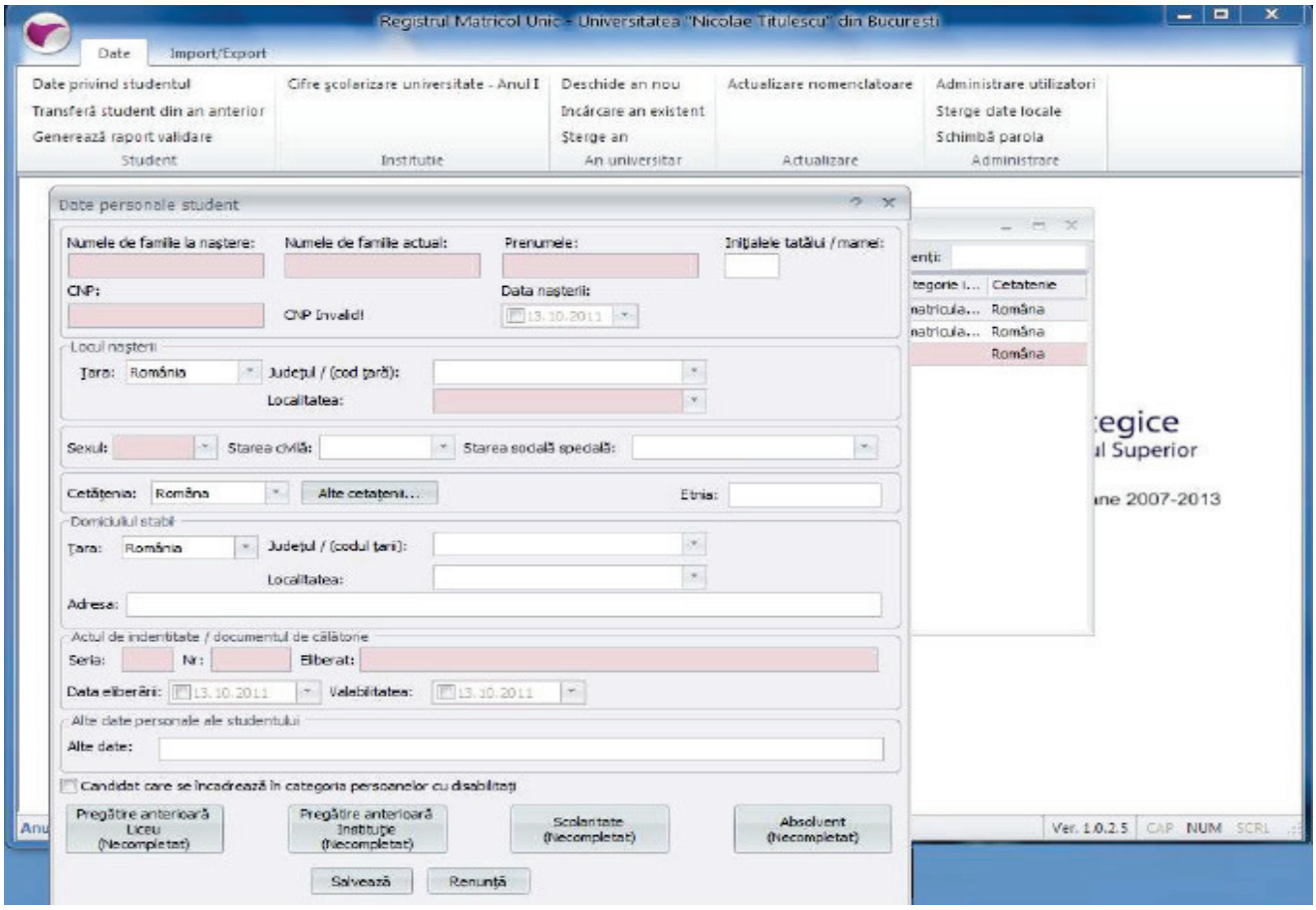
From Fig. 1 we can deduce that the information flux is quite simple.

University employees add students data to the local university database through the local client (Fig. 3). When all the data are added, the IT manager with the Rector, electronically sign the package and send it to national database. When all the data collected from all the universities are in the national / central database, students – by theirs own accounts- employers – again by theirs own accounts- and university representatives can access an Internet portal (http://portal.rmu.ro) to check the data (Fig. 2).

In this way when a student or graduated student apply to a job, the employer easy can check the future employee by accessing the NSER portal (Fig. 2).

Fig 2. NSER Portal

Fig. 3 NSER Client



. 4 Local Informatic system for management of students

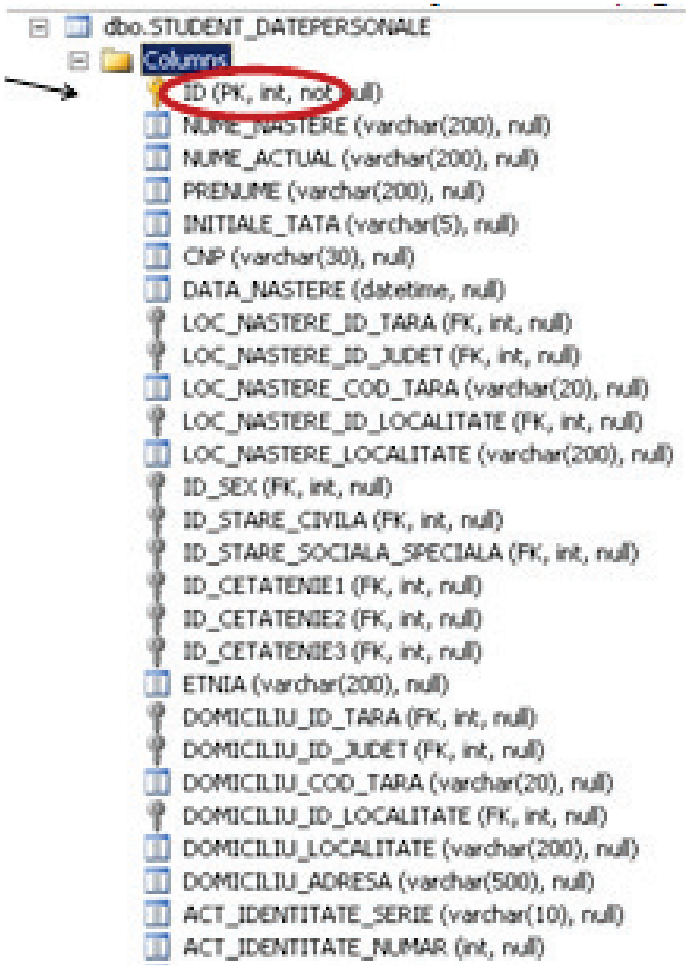
Nr	Nume student	Grupa	Nr Matricol
1	Ababei A. Andreea	DR.1.1.11	DR.1.286.11
2	Abraşu V. Gabriel	DR.1.1.05	DR.1.346.11
3	Adam I. Andrei	DR.1.1.13	DR.1.515.11
4	Adăscăliţei D. Ana-Ioana	DR.1.1.01	DR.1.176.11
5	Alecu I. Costin-Alexandru	DR.1.1.07	DR.1.215.11
6	Alexe I. Iulia	DR.1.1.18	DR.1.189.11
7	Alungulesei L. Luciana-Georgiana	DR.1.1.03	DR.1.315.11
8	Andrasov M. Bianca-Irina	DR.1.1.10	DR.1.509.11
9	Andrei C. Irina-Cristina	DR.1.1.14	DR.1.265.11
10	Andrei E. Elena-Alexandra	DR.1.1.04	DR.1.105.11
11	Andreiu I. Teodor-Alexandru	DR.1.1.09	DR.1.208.11
12	Anghel A. Ştefan	DR.1.1.06	DR.1.354.11
13	Arsene V. Ionuţ-Alexandru	DR.1.1.13	DR.1.465.11
14	Arvinte M. Maria	DR.1.1.08	DR.1.580.11
15	Avram V. Andreea	DR.1.1.18	DR.1.028.11

The main problems that results from managing such a system was that all or almost all universities had already a informatic system developed locally(Fig 4).

That means the administrative personal had to add the same data in two different systems because the NSER database is somehow closed from external clients.

In order to link such systems an ***id for external identification*** should be defined in tables. Now, there is only an ***internal one*** which cannot be accessed from other systems/db(Fig 5).

Fig. 5 NSER internal ID from Student_Datepersonale Table



Another thing was that all the select fields were not updated with all the information needed. To update or add a field to a select field, the procedure takes almost 5 weeks. In this situation adding data is quite difficult. There is an import component but is way far from be sync one.

When the data is added for a year and you have to start another year the first thing to do is to download new tables for select fields which are added as new tables. Let say that you work for 2011-2012 and you have a table, for example, country2011-2012. If you continue for 2012-2013, you will have another table country2012-2013. This way is wrong(Fig 6). Suppose you work for 10 years. You'll have 10 tables for country. And this just for one field.

Fig. 6 NSER Tables name – year

After the external ID is added is possible to link a MYSQL/PHP system with MSSQL NSR database.

Tables that should be populated in NSER DB =>

STUDENT_DATEPERSONALE
STUDENT_DATESCOLARITATE
STUDENT_DATEADMINISTRATIVE
STUDENT_PREGATIRELICEU
STUDENT_PREGATIRESTUDENT
STUDENT_ABSOLVENT

In order to populate tables with data we have concatenate id fields and then to add data:

```
// unique id based on the two fields concatenation
$o->ID_STUDENT = $o->rmu_tableID.'000'.$o->rmu_student_id;
// STUDENT_DATEPERSONALE
//$STUDENT_DATEPERSONALE['ID'] = $o->ID_STUDENT;
$STUDENT_DATEPERSONALE['NUME_NASTERE'] = $o->rmu_numelanastere;
$STUDENT_DATEPERSONALE['NUME_ACTUAL'] = $o->rmu_numeactual;
$STUDENT_DATEPERSONALE['PRENUME'] = $o->rmu_prenume;
$STUDENT_DATEPERSONALE['INITIALE_TATA'] = $o->rmu_initiala;
$STUDENT_DATEPERSONALE['CNP'] = $o->rmu_cnp;
$STUDENT_DATEPERSONALE['DATA_NASTERE'] = date_stupid_format($o->rmu_datanastere);
$STUDENT_DATEPERSONALE['LOC_NASTERE_ID_TARA'] = $o->rmu_locnastere_tara;
$STUDENT_DATEPERSONALE['LOC_NASTERE_ID_JUDET'] = $o->rmu_locnastere_judet;
$STUDENT_DATEPERSONALE['LOC_NASTERE_COD_TARA'] = $o->rmu_locnastere_tara;#
$STUDENT_DATEPERSONALE['LOC_NASTERE_ID_LOCALITATE'] = $o->rmu_locnastere_localitate;
$STUDENT_DATEPERSONALE['LOC_NASTERE_LOCALITATE'] = $o->rmu_locnastere_localitate;
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$STUDENT_DATEPERSONALE['ID_SEX'] = $o->rmu_sex;
$STUDENT_DATEPERSONALE['ID_STARE_CIVILA'] = $o->rmu_starecivila;
$STUDENT_DATEPERSONALE['ID_STARE_SOCIALA_SPECIALA'] = $o->rmu_staresociala;
$STUDENT_DATEPERSONALE['ID_CETATENIE1'] = $o->rmu_cetatenie;
$STUDENT_DATEPERSONALE['ID_CETATENIE2'] = $o->rmu_cetatenie2;
$STUDENT_DATEPERSONALE['ID_CETATENIE3'] = $o->rmu_cetatenie2;#
$STUDENT_DATEPERSONALE['ETNIA'] = $arr['etnii'][$o->rmu_etnie];
$STUDENT_DATEPERSONALE['DOMICILIU_ID_TARA'] = $o->rmu_domiciliu_tara;
$STUDENT_DATEPERSONALE['DOMICILIU_ID_JUDET'] = $o->rmu_domiciliu_judet;
$STUDENT_DATEPERSONALE['DOMICILIU_COD_TARA'] = $o->rmu_domiciliu_tara;
$STUDENT_DATEPERSONALE['DOMICILIU_ID_LOCALITATE'] = $o->rmu_domiciliu_localitate;
$STUDENT_DATEPERSONALE['DOMICILIU_LOCALITATE'] = $o->rmu_domiciliu_localitate;#
$STUDENT_DATEPERSONALE['DOMICILIU_ADRESA'] = $o->rmu_domiciliu_adresa;
$STUDENT_DATEPERSONALE['ACT_IDENTITATE_SERIE'] = $o->rmu_ci_serie;
$STUDENT_DATEPERSONALE['ACT_IDENTITATE_NUMAR'] = $o->rmu_ci_numar;
$STUDENT_DATEPERSONALE['ELIBERAT_DE'] = $o->rmu_ci_eliberat;
$STUDENT_DATEPERSONALE['ELIBERAT_DATA'] = date_stupid_format($o->rmu_ci_dataeliberare);
$STUDENT_DATEPERSONALE['VALABILITATE_DE_LA'] = date _format($o->rmu_ci_dataeliberare);
$STUDENT_DATEPERSONALE['VALABILITATE_PANA_LA'] = date_format($o->rmu_ci_datavalabilitate);
$STUDENT_DATEPERSONALE['ALTE_DATE'] = $o->rmu_altedatepersonale;
$STUDENT_DATEPERSONALE['CANDIDAT_PERS_DISABILITATI'] = $o->rmu_dizabilitati;
$STUDENT_DATEPERSONALE['VALID'] = 1; # for the moment $o->ID_STUDENT;
// check if we need INSERT or UPDATE
$q_ck_STUDENT_DATEPERSONALE = "SELECT * FROM STUDENT_DATEPERSONALE WHERE ID = ".$o-
>ID_STUDENT."";
$r_ck_STUDENT_DATEPERSONALE = $db->GetRow($q_ck_STUDENT_DATEPERSONALE);
if(count($r_ck_STUDENT_DATEPERSONALE) > 0)
{   $db->AutoExecute('STUDENT_DATEPERSONALE', $STUDENT_DATEPERSONALE, 'UPDATE', 'ID ='.$o-
>ID_STUDENT.'');
    $export_update = 'UPDATE RMU SET lastexport_STUDENT_DATEPERSONALE = "'.date("Y-m-d H:i:s").'"
WHERE rmu_tableID = '.$o->rmu_tableID.' AND rmu_student_id = '.$o->rmu_student_id.' LIMIT 1;';
    $db->Execute($export_update);}
else
{   $db->AutoExecute('STUDENT_DATEPERSONALE', $STUDENT_DATEPERSONALE, 'INSERT');
    $o->RMU_ID_STUDENT = $db->Insert_ID();
    $export_update = 'UPDATE RMU SET lastexport_STUDENT_DATEPERSONALE = "'.date("Y-m-d H:i:s").'"
WHERE rmu_tableID = '.$o->rmu_tableID.' AND rmu_student_id = '.$o->rmu_student_id.' LIMIT 1;';
    $db->Execute($export_update);}
// STUDENT_PREGATIRELICEU
$STUDENT_PREGATIRELICEU['ID'] = $o->RMU_ID_STUDENT;
$STUDENT_PREGATIRELICEU['ID_STUDENT'] = $o->RMU_ID_STUDENT;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_LICEU'] = $o->rmu_studpre_denumire;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_TARA'] = $o->rmu_studpre_tara;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_JUDET'] = $o->rmu_studpre_judet;
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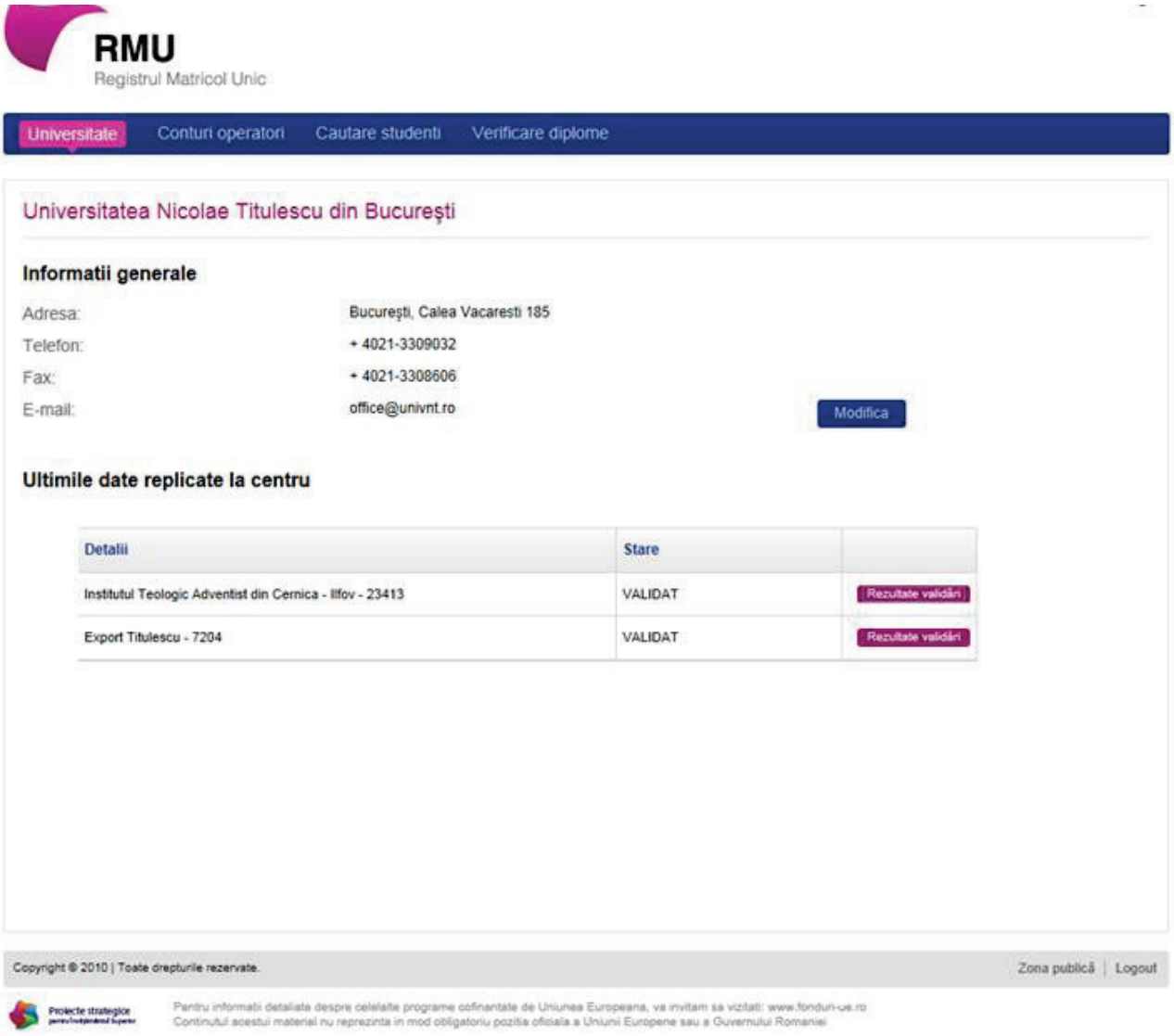
```
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_LOCALITATE'] = $o->rmu_studpre_localitate;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_DOMENIUPROFIL'] = $o->rmu_studpre_profil;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_DURATA'] = $o->rmu_studpre_durata;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_AN_ABSOLVIRE'] = $o->rmu_studpre_anabsolvire;
$STUDENT_PREGATIRELICEU['STUDII_LICEU_ID_FORMA_INV'] = $o->rmu_studpre_finv;
$STUDENT_PREGATIRELICEU['DATE_DIPLOMA_ID_TIP'] = $o->rmu_studprediploma_tipul;
$STUDENT_PREGATIRELICEU['DATE_DIPLOMA_SERIA'] = $o->rmu_studprediploma_serie;
$STUDENT_PREGATIRELICEU['DATE_DIPLOMA_NUMAR'] = $o->rmu_studprediploma_numar;
$STUDENT_PREGATIRELICEU['DATE_DIPLOMA_ID_EMITENT'] = $o->rmu_studprediploma_emitent;
$STUDENT_PREGATIRELICEU['DATE_DIPLOMA_ANUL'] = $o->rmu_studprediploma_anemitere;
$STUDENT_PREGATIRELICEU['ALTE_OBSERVATII'] = $o->rmu_studpre_obs1.' '.$o->rmu_studpre_obs2;
// check if we need INSERT or UPDATE
$q_ck_STUDENT_PREGATIRELICEU = "SELECT * FROM STUDENT_PREGATIRELICEU WHERE ID_STUDENT
= ".$o->ID_STUDENT."";
$r_ck_STUDENT_PREGATIRELICEU = $db->GetRow($q_ck_STUDENT_PREGATIRELICEU);
if(count($r_ck_STUDENT_PREGATIRELICEU) > 0)
{   $db->AutoExecute('STUDENT_PREGATIRELICEU', $STUDENT_PREGATIRELICEU, 'UPDATE', 'ID_STU-
DENT ='.$o->ID_STUDENT.'');
    $export_update = 'UPDATE RMU SET lastexport_STUDENT_PREGATIRELICEU = "'.date("Y-m-d H:i:s").'"
WHERE rmu_tableID = '.$o->rmu_tableID.' AND rmu_student_id = '.$o->rmu_student_id.' LIMIT 1;';
    $db->Execute($export_update);}
else
{   $db->AutoExecute('STUDENT_PREGATIRELICEU', $STUDENT_PREGATIRELICEU, 'INSERT');
    $export_update = 'UPDATE RMU SET lastexport_STUDENT_PREGATIRELICEU = "'.date("Y-m-d H:i:s").'"
WHERE rmu_tableID = '.$o->rmu_tableID.' AND rmu_student_id = '.$o->rmu_student_id.' LIMIT 1;';
    $db->Execute($export_update); }
-------------------------and so on with others tables-----------------------------------------------------------
```

This way NSER DB would be populated with data in real time and employees should work only in one system.

When you export the data to central database, you sign the data package digitally but after the send action you don't have nothing, no prove, that the export was done successfully (Fig. 7). On the first export I have sent correctly the data but in the central core were recorded to a different institution (Fig .8).

Fig. 7 Success on exporting data

Fig. 8 Exported data to a different institution



5. Conclusions and implications

This system is now on a right way of development but is far away from a mature system.

Right now, local informatic system is linked with NSER database and the client just need to validate student personal information. An ID student and the data are manipulated and synchronized in both databases.

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