Automating Graduate Tripartite Agreements Management and Employment Status Statistics at Lanzhou Institute of Technology

Intelligent Systems and Process Automation CA

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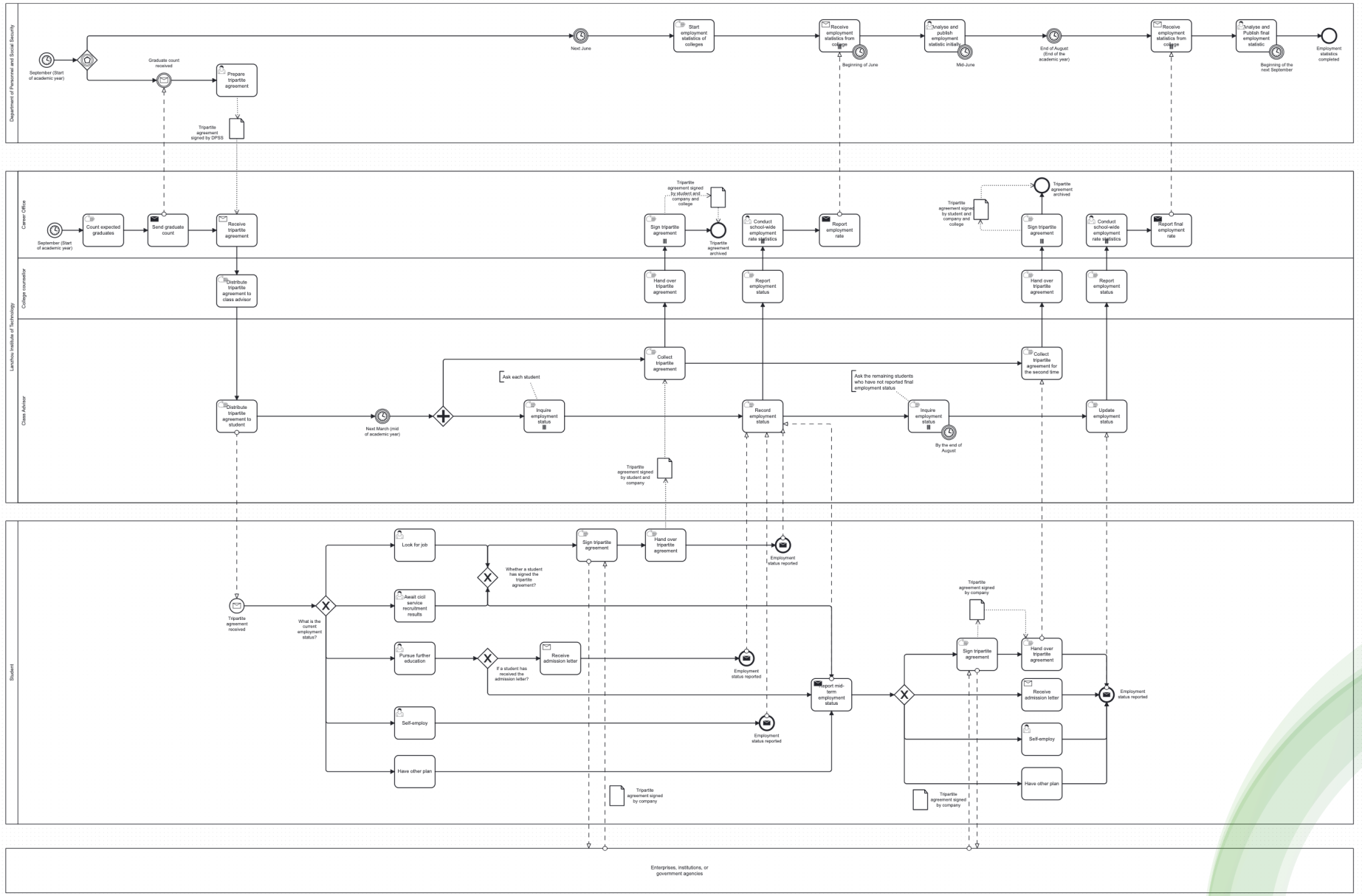
Context

- The **tripartite agreement**: “National Employment Agreement for Graduates of General College and Universities”, signed between graduates, employers and universities to clarify the rights and obligations from all parties.
- The **Department of Personnel and Social Security** (DPSS): Records and reports employment statistics for each academic year. The initial employment statistics are published in mid-June and the final edition is released at the beginning of the next academic year.

As-Is


Department of Personnel and Social Security
September (Start of academic year)
Graduate count received
Prepare tripartite agreement
Tripartite agreement signed by DPSS
Next June
Start employment statistics of colleges
Receive employment statistics from college
Beginning of June
Analyse and publish employment statistic initially
Mid-June
End of August (End of the academic year)
Receive employment statistics from college
Analyse and Publish final employment statistic
Beginning of the next September
Employment statistics completed
Lanzhou Institute of Technology
Career Office
September (Start of academic year)
Count expected graduates
Send graduate count
Receive tripartite agreement
College counsellor
Distribute tripartite agreement to class advisor
Class Advisor
Distribute tripartite agreement to student
Next March (mid of academic year)
Ask each student
Inquire employment status
Collect tripartite agreement
Tripartite agreement signed by student and company
Hand over tripartite agreement
Sign tripartite agreement
Tripartite agreement signed by student and company and college
Tripartite agreement archived
Conduct school-wide employment rate statistics
Report employment rate
Report employment status
Record employment status
Ask the remaining students who have not reported final employment status
Inquire employment status
By the end of August
Collect tripartite agreement for the second time
Hand over tripartite agreement
Sign tripartite agreement
Tripartite agreement signed by student and company and college
Tripartite agreement archived
Conduct school-wide employment rate statistics
Report final employment rate
Report employment status
Update employment status
Student
Tripartite agreement received
What is the current employment status?
Look for job
Whether a student has signed the tripartite agreement?
Sign tripartite agreement
Hand over tripartite agreement
Employment status reported
Await civil service recruitment results
Pursue further education
If a student has received the admission letter?
Receive admission letter
Employment status reported
Self-employ
Employment status reported
Have other plan
Report mid-term employment status
Tripartite agreement signed by company
Sign tripartite agreement
Hand over tripartite agreement
Receive admission letter
Employment status reported
Self-employ
Have other plan
Tripartite agreement signed by company
Tripartite agreement signed by company
Enterprises, institutions, or government agencies

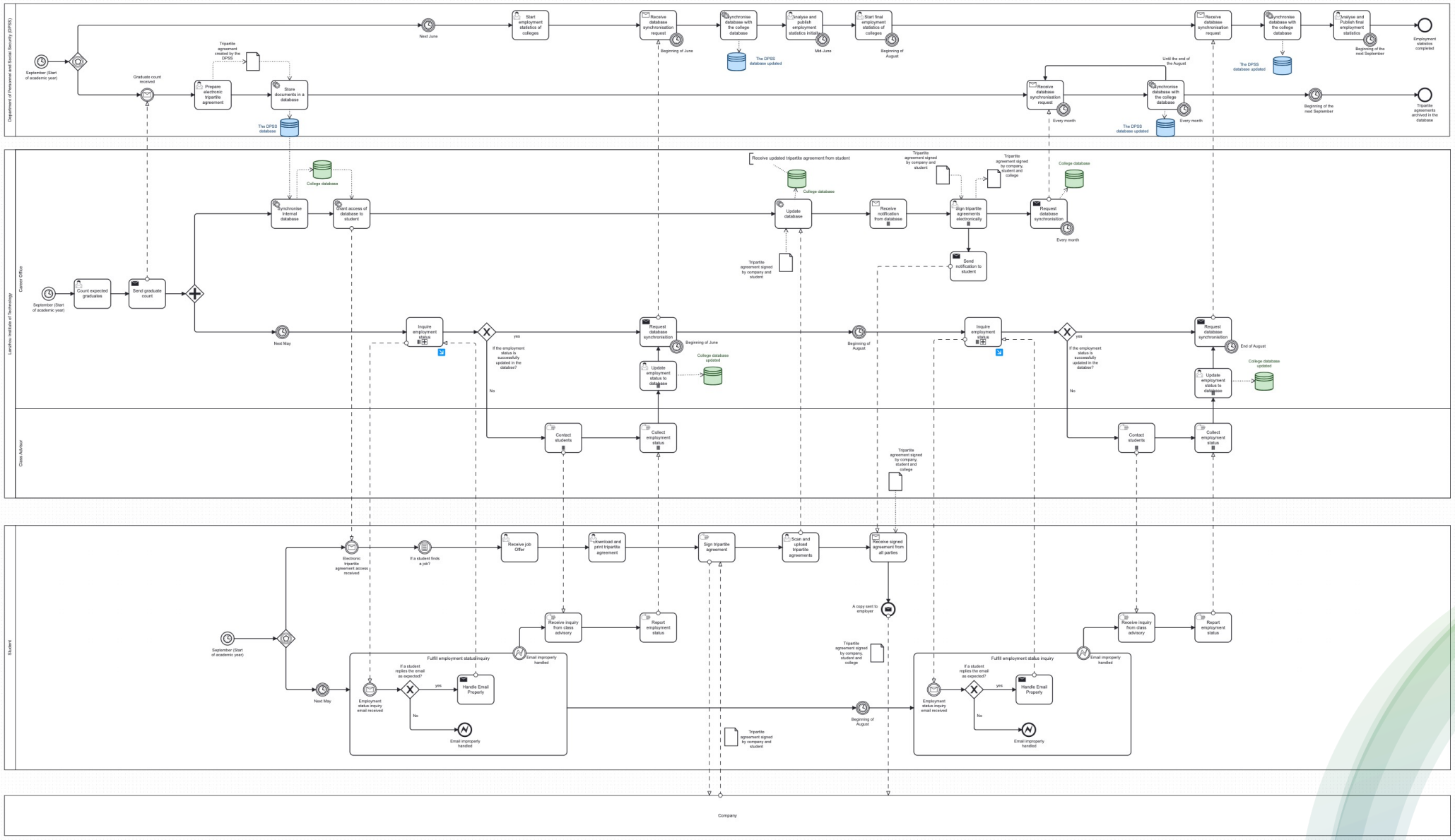
As-Is

- Manual tasks
- High error rates
- High cost
- Time-consuming
- Low productivity

To-Be Solutions

- Minimise manual tasks: Simplified processes and clear task assignments.
- Digitized documents: Replaced physical documents with digital ones using databases.
- Automated workflow: Emails, data extraction, and registration are automated.
- Reduced staffing: Fewer staff needed; counsellor role eliminated.
- Centralized oversight: Career office intervenes only in exceptions.

To-Be


Department of Personnel and Social Security (DPSS)
Career Office
Lanzhou Institute of Technology
Class Advisor
Student
Company
September (Start of academic year)
Graduate count received
Prepare electronic tripartite agreement
Tripartite agreement created by the DPSS
Store documents in a database
The DPSS database
Next June
Start employment statistics of colleges
Receive database synchronisation request
Beginning of June
Synchronise database with the college database
The DPSS database updated
Analyse and publish employment statistics initially
Mid-June
Start final employment statistics of colleges
Beginning of August
Until the end of the August
Every month
Beginning of the next September
Employment statistics completed
Tripartite agreements archived in the database
Count expected graduates
Send graduate count
Synchronise internal database
Grant access of database to student
College database
Next May
Inquire employment status
If the employment status is successfully updated in the database?
yes
No
Request database synchronisation
Update employment status to database
College database updated
Contact students
Collect employment status
Receive updated tripartite agreement from student
Update database
Tripartite agreement signed by company and student
Receive notification from database
Sign tripartite agreements electronically
Send notification to student
Tripartite agreement signed by company, student and college
Request database synchronisation
End of August
Electronic tripartite agreement access received
If a student finds a job?
Receive job Offer
Download and print tripartite agreement
Sign tripartite agreement
Scan and upload tripartite agreements
Receive signed agreement from all parties
A copy sent to employer
Receive inquiry from class advisory
Report employment status
Fulfill employment status inquiry
Email improperly handled
If a student replies the email as expected?
Handle Email Properly
Employment status inquiry email received

As-Is Cost Impacts

Graduate Employment Statistics and Tripartite Agreements Management Costs

Type of costs	Costs per year (€)
Direct payroll expenses of conducting employment status inquiry	12,000
Direct payroll expenses of managing tripartite agreements	5,000
Payroll expenses of administrative staff	15,600
Overhead costs	15,000
Total estimated costs	**47,600**

To-Be Cost Improvement

- **67%** annual costs reduction
- Less than **2** years break-even period
- Highly **profitable**!

Break-Even Analysis

	Euro (€)	Percentage	Time
As-Is annual costs	47,600		
To-Be Implementation costs	35,750		
To-Be annual costs after development	15,745		
Total costs in the initial year	51,495		
Costs change in the first year		108%	
Costs change in the subsequent years		33%	
Annual costs saving after development		**67%**	
Cost recovery period			**2 years**

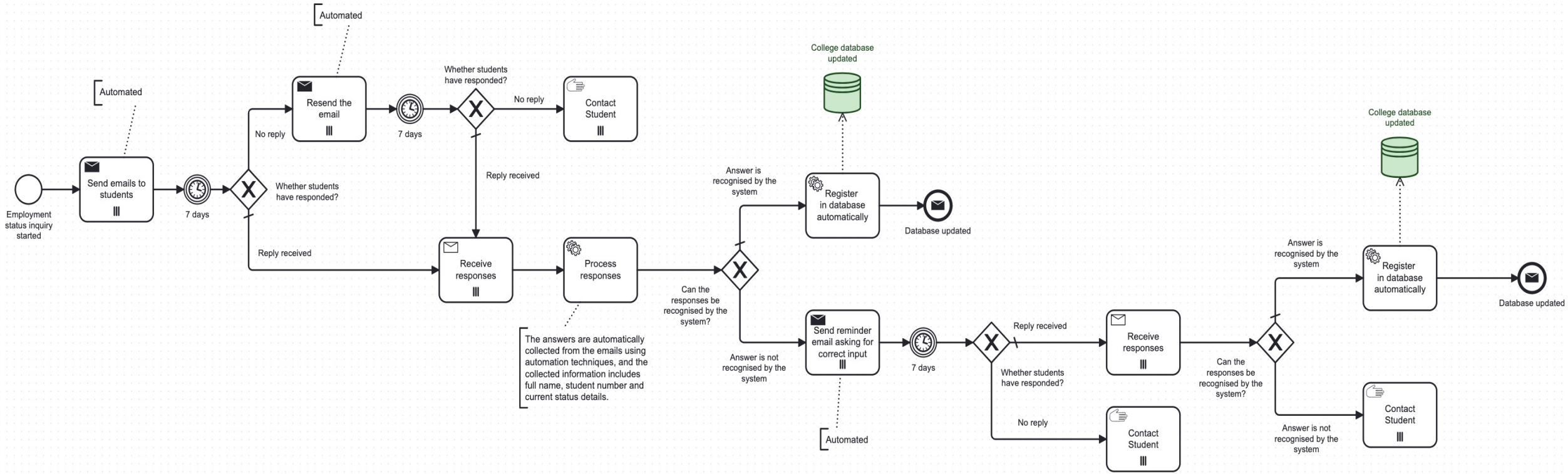
Maintenance and Cloud Infrastructure Costs in Subsequent Years

	Costs per year (€)
Software maintenance	2,145
Cloud infrastructure	6,000
Payroll expenses	7,600
Total annual costs	**15,745**

Costs of Implementing the Automated System in the Initial Year

	Annual salary (€)	Number	Time (months)	Costs (€)
Project manager	25,000	1	3	6,250
Database engineer	20,000	1	3	5,000
Backend engineer	20,000	2	3	10,000
Front end engineer	15,000	1	3	3,750
Integration engineer	18,000	1	3	4,500
Automation and infrastructure engineer	25,000	1	3	6,250
Total development costs				**35,750**
Cloud infrastructure				6,000
Software maintenance				2,145
Payroll expenses				7,600
Total costs in the first year				**51,495**

Automating Employment Status Inquiries



Automating Employment Status Inquiries

Tools:

- GitLab automation pipelines
- GitLab pipeline schedules
- MySQL database

Demo:

Acknowledgments:

- Professor Mark Cudden: For guidance and support throughout this project.
- Hua Dong from Lanzhou Institute of Technology: For providing valuable information.

Thank you!