

**Designing and developing “The intelliGENT
Project “ using The Viable System Model in
Colombia**

THE APPROACH TO THE PROBLEM

Understand the problem situation: to generate portable capacity in software development

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

Evaluation of the problem situation: To diagnose the TIP using the VSM

Making to work the problem situation TIP: Facilitation Plan.

Understand the problem situation: to generate portable capacity in software development

Colombia has been a competitive country in the topic of software development. Knowledge is the main added value in the Information Technology World Industry. The formed human capital is the critical resource in this industry.

The Intelligent Project (TIP) was developed in order to generate export capacity in the software industry. TIP develops knowledge, training and certification of the human resource in technologies of Information. It was created for increase levels of international competitiveness and development the capacity of assisting the demand of the local and international markets in the software industry.

Understand the problem situation: to generate portable capacity in software development

ENVIRONMENTAL CONDITIONS

ECONOMICAL CONDITIONS



Approval to Colciencias budget by the Colombian Government
Incentives to the foreign investment

SOCIAL AND POLITICAL CONDITIONS



- Unemployment
- Decentralization
- Regional development

GOVERNMENT REGULATIONS



Regulations for the agreement with the entity
Administrator of resources
Regulations of the Minister of Finance
Compes document 3072; Connectivity timetable
National System of Science and Technology

TECHNOLOGICAL CONDITIONS



- Quick development of technological systems
- Technological alliances.

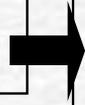
Understand the problem situation: to generate portable capacity in software development

DEVELOPED ADDED VALUED IN THE INFORMATION TECHNOLOGY SECTOR

Human
Talent with
formative
potential

Quality
Certified
Center

Qualified Human
Talent



Understand the problem situation: to generate portable capacity in software development



ACTORS



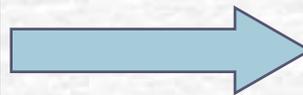
INTELLIGENT PROJECT
Certified Centre,
Administrative entity of
resources

CLIENTS



Beneficiaries: employed of
scarce resources and
unemployed

OWNERS



- **Colciencias**
- **DAPRE**



Understand the problem situation: to generate portable capacity in software development

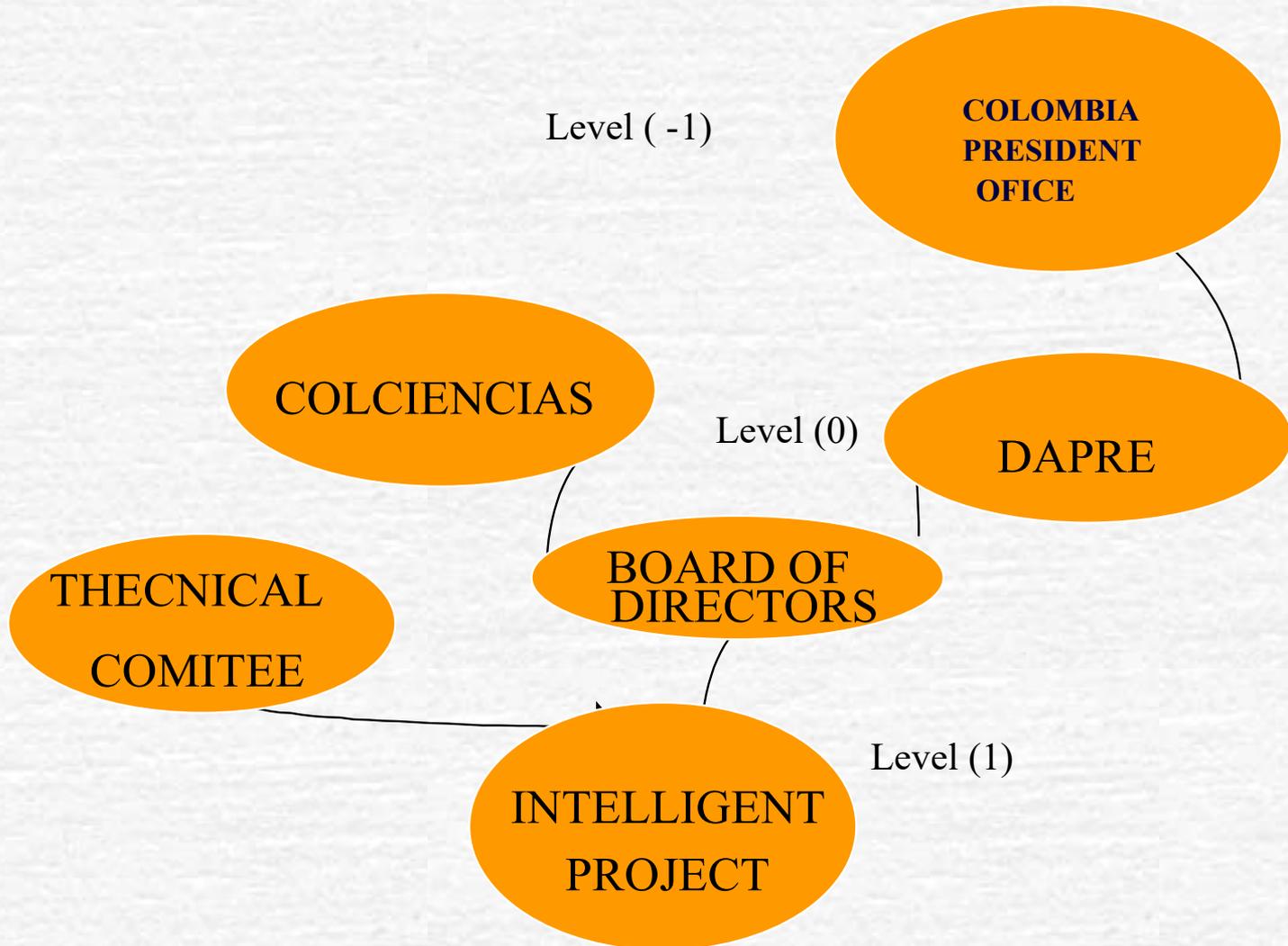
NORMATIVE CONTEXT

The TIP is ahead by COLCIENCIAS (The Colombian National System of Science and Technology) with the Support of the Administrative Department of the Presidency of the Republic.

Colciencias create programs, strategies and science activities which belong to the National System of Science and Technology.

The programs of National System of Science and Technology are structured by objectives, goals and fundamental tasks that become projects that public or private entities, community organizations or natural people will carry out

Understand the problem situation: to generate portable capacity in software development



Understand the problem situation: to generate portable capacity in software development

COLCIENCIAS

Its responsibilities are :

- To participate in the Committee of Selection of beneficiaries Evaluation of training institutions and financial funds condonation.
- To negotiate the financial resources for the Project
- To participate in the selection process and subscription of agreements with the training institutions
- To hire the administrating entity of the resources
- To hire the external Audit
- To operate the Project administratively (selection of team of the work, administration and control of the contracts and information systems etc.)
- To order the expense of the financial resources

Understand the problem situation: to generate portable capacity in software development

DAPRE

Its responsibilities are :

- To negotiate the financial resources for the Project
- To elaborate the reference terms
- To participate in the selection process and subscription of agreements with the training institutions
- To hire the administrating resources
- To hire the external Audit

Understand the problem situation: to generate portable capacity in software development

The Intelligent Project has implications in the academic, the financial and the legal tasks that should be managed through an **HOLISTIC SYSTEM**, properly coordinated, with coherent processes and under monitoring and control functions that guarantee its effective contribution to the total achievement of the objectives of the project.

The viability of the TIP depends on the continuous understanding to reach its strategy, its objectives and its goals.

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

THE INTELLIGENT PROJECT

General Objective

- To consolidate a critical mass of Colombians that can have the abilities to be training in recognized information technologies which are required by the global market and recognized by the supplier of the respective technology.

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THE INTELLIGENT PROJECT

Specific Objectives

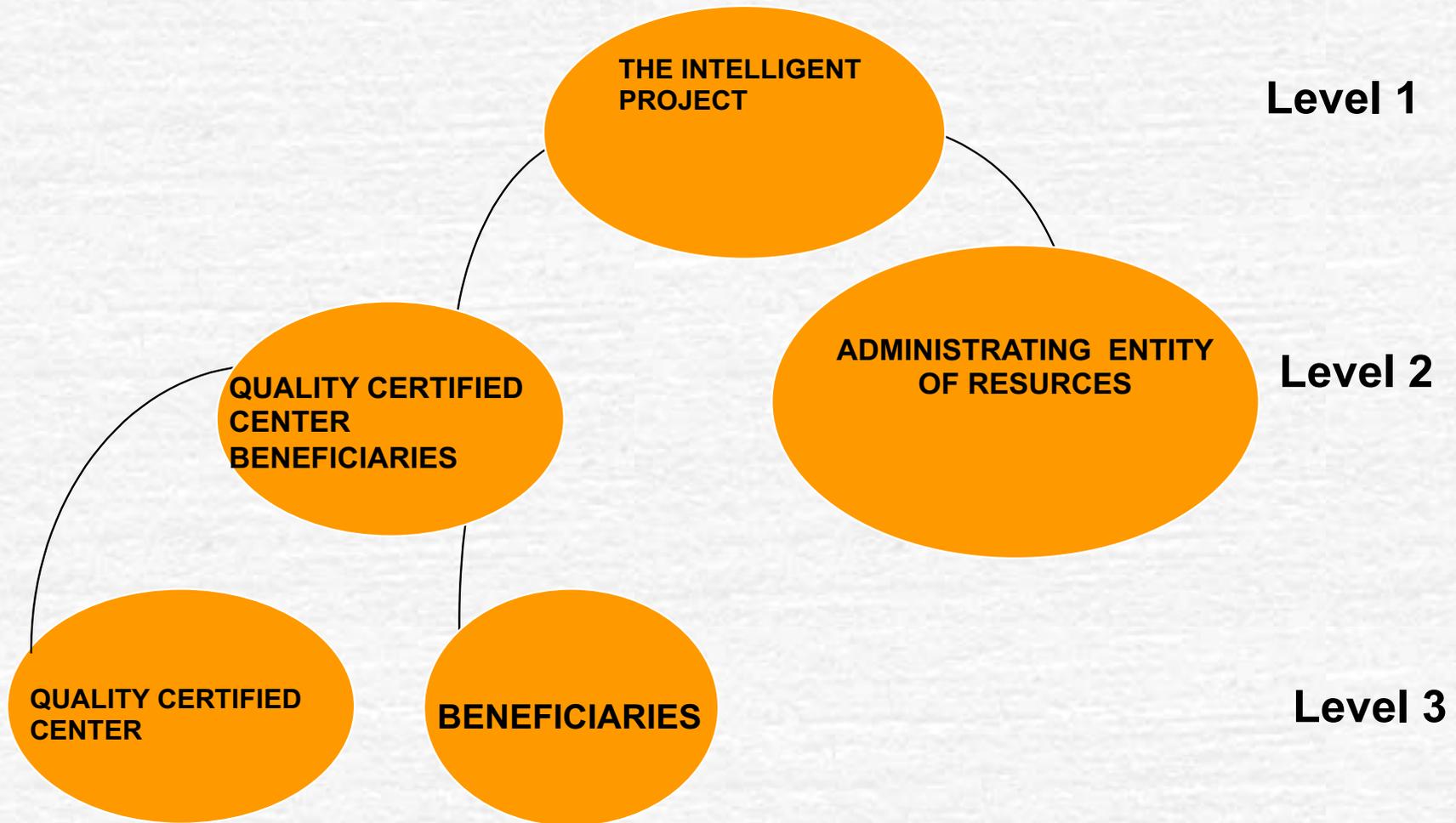
- To consolidate a number of 5000 Colombians trained in the development of software programs and services which guarantees international recognition and quality in the Information Technology World Industry.
- To promote the creation of training institutions that have international experience and the capacity to offer different programs of training that allows beneficiaries to obtain certification, in the software development and/or related services,

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TIP's STRATEGY:

- To evaluate the institutions that fulfill the established requirements of the Intelligence Project
- To select the Colombians that will be beneficiaries after be admitted by the participants institutions of the Intelligence Project
- The registration payment to the Colombian beneficiaries of the Intelligence Project by the National Government in order to finance the student training
- The condonation plan to the beneficiaries of the Intelligence Project , that are able to fulfill the requirements, by the National Government

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model



TIP: certification and training in science and technology national project

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MISSION

Training around 5000 Colombians, in programs of software development base on financial and self financial contracts

VISSION

Promotion of the strong, consolidated, and competitive Colombian information and technology global industry.

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AGREEMENT

RESPONSIBILITIES:

To prepare a budget that allows to establish how many of the assigned resources should be dedicated to administrative expenses, technical and marketing of the Intelligence Project

To monitor the advance contractors which guarantee the survival and control of Intelligence Project activities

To call institutions or training establishments centers to choose the best beneficiaries and training programs

To contact officials in order to authorize the licenses to the training institutions on time

To present to the Technical Committee the information for the evaluation of the training centers

To settle down the agreements that imparts the Technical Committee

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

STAGES OF THE PROJECT

1

Structuring and offer of Courses and Quality Certified Centers

2

Handling of payments and treasury funds

3

Approaches of Financing and Condo nation of Credits to Selected Beneficiaries

5

Location of the Human Talent in companies of certified software or support to the creation of information technology companies

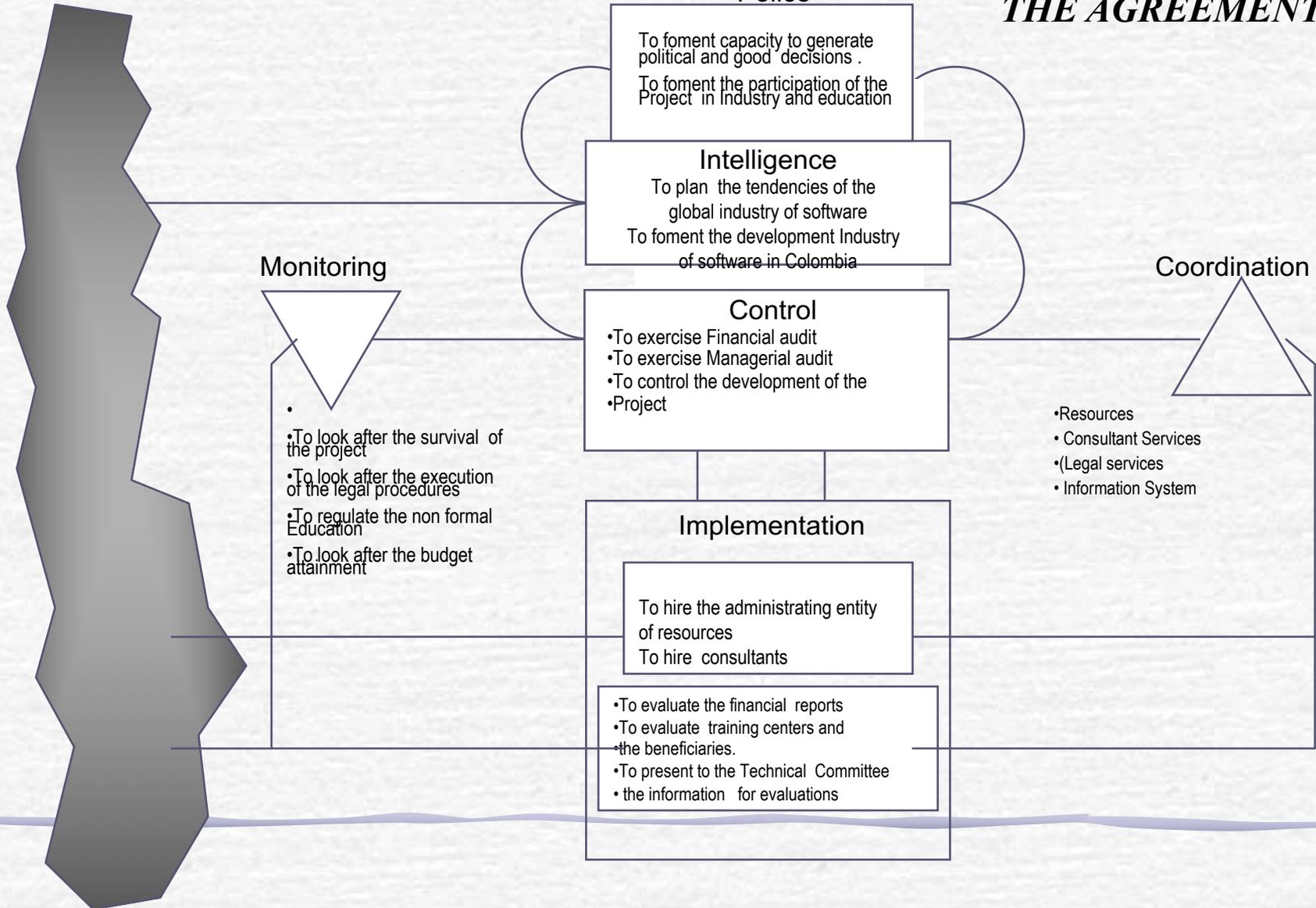
4

Internal operation of the project: planning, execution and evaluation

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

VIABLE SYSTEM MODEL APPLIED AT LEVEL : 0 **THE AGREEMENT**

Environment



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

TIP PROJECT



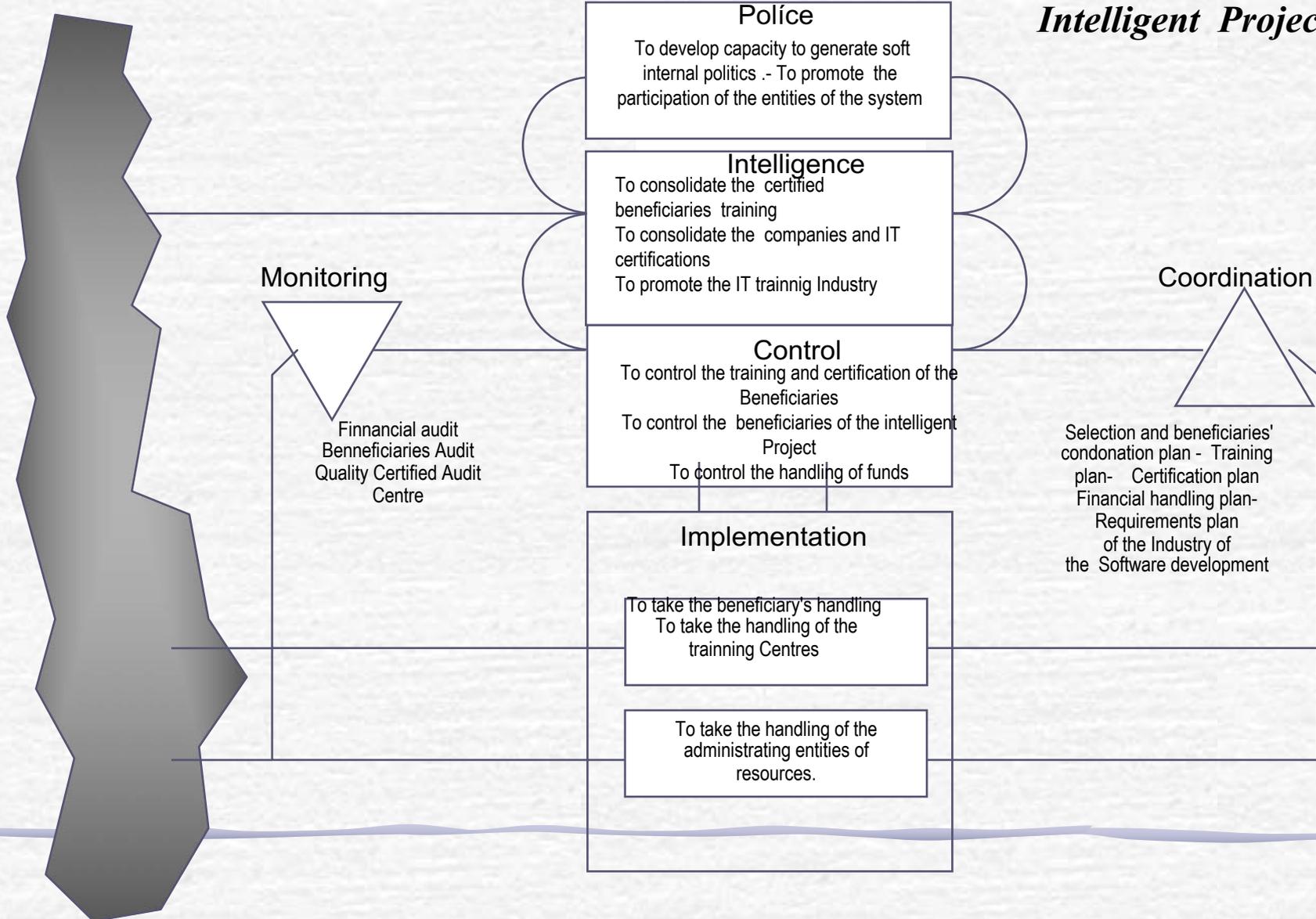
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Environment

VIABLE SYSTEM MODEL APLIED TO SYSTEM

1

Intelligent Project



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

QUALITY CERTIFIED CENTER

RIGHTS

To receive on time the payment of the training programs according to the established agreements

RESPONSIBILITIES

To obtain the operation licenses required in the country

To have appropriate educational facilities for the training

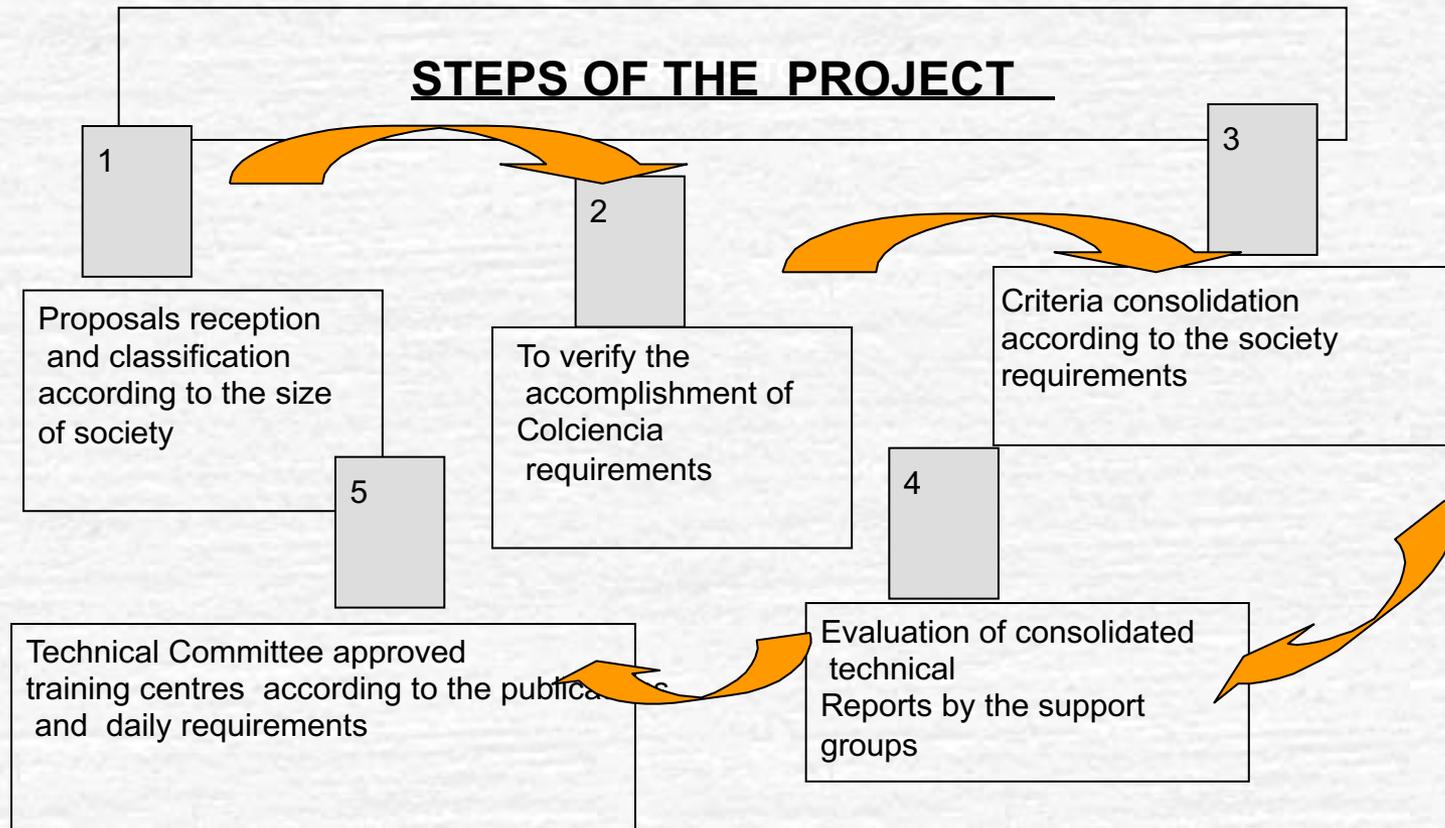
To have enough certified professors according to the number of students

To present to the Committee until 5 proposals of training programs and certification in the area of information technologies software development to get the best curricula of the Project

To subscribe and to fulfill the document of participation agreement in the Project

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QUALITY CERTIFIED CENTER



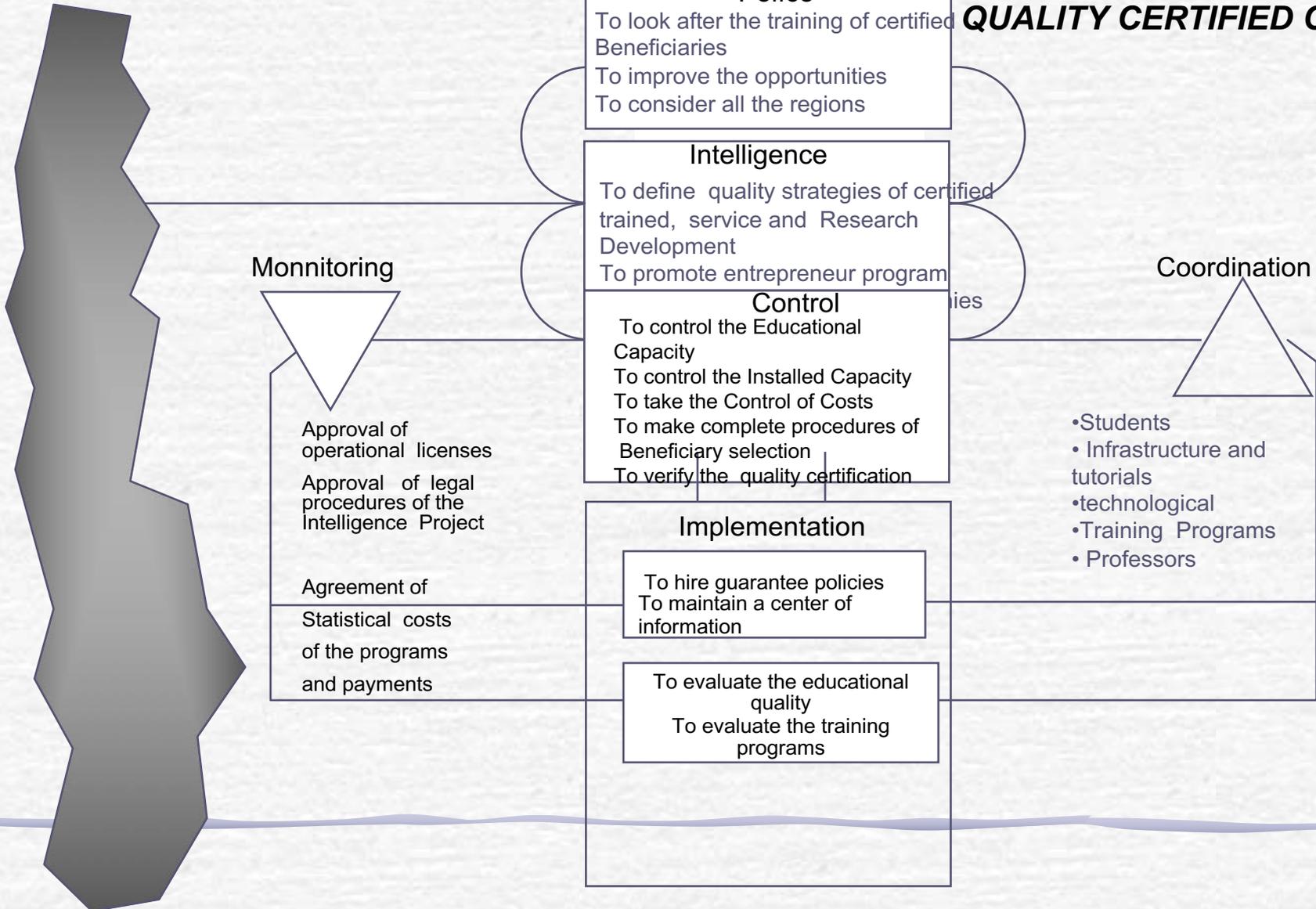
Solve the problem situation: design and develop "the intelligent project"(TIP) using the Viable System Model

Environment

VIABLE SYSTEM MODEL APLIED TO SYSTEM

: 2

QUALITY CERTIFIED CENTER



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

- Training route
- Academic yield
- Certification to receive condonation

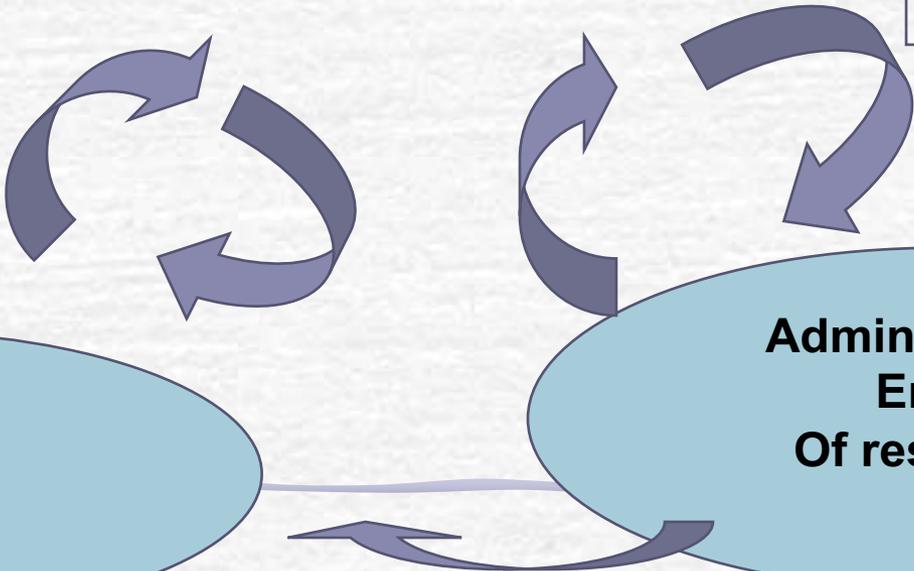


- Approval of the credits
- Academic orientation

- Informative publicity
- The beneficiaries' selection
- Programs to offer according to training routes
- Transmission of information - teaching

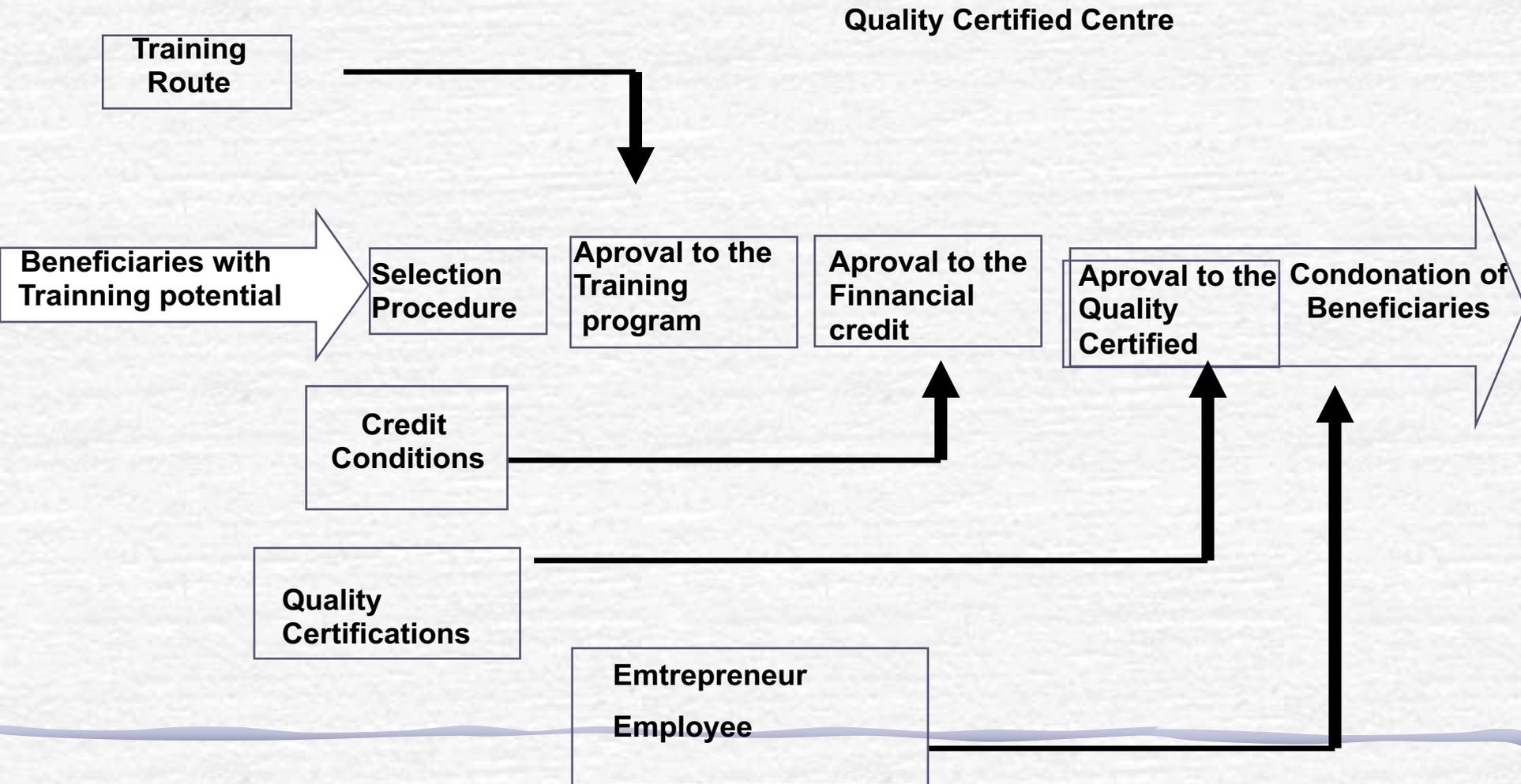
Beneficiaries Model

- Financial information
- Refunds



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

Beneficiaries Diagram level 2

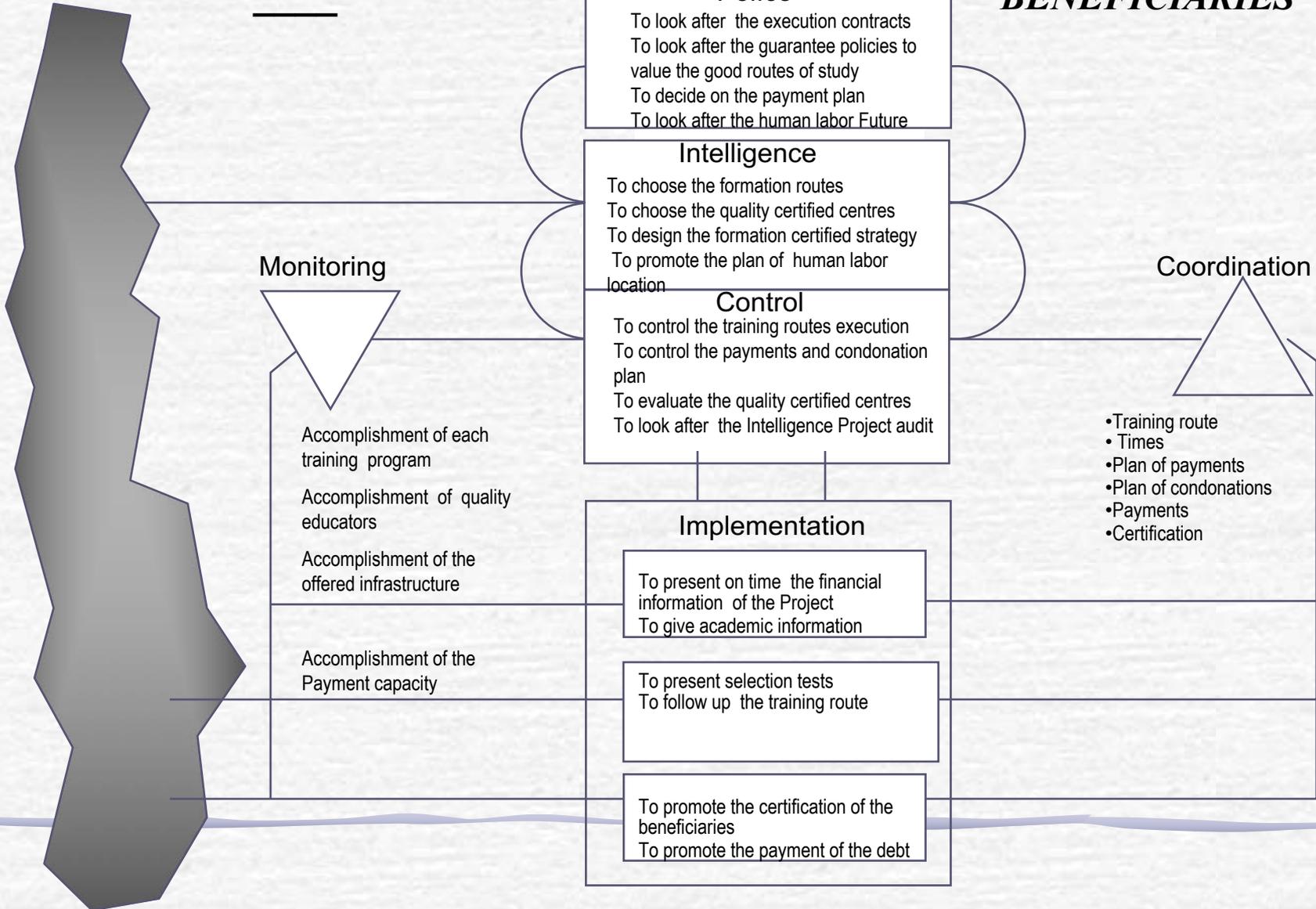


Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

VIABLE SYSTEM MODEL APLIED TO SYSTEM : 2

Environment

BENEFICIARIES



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

ADMINISTRATING ENTITY OF RESOURCES

RIGHTS

To receive the payment of the necessary resources for the execution of the Intelligence Project

To receive the fulfilled payment for the Intelligence Project

RESPONSIBILITIES

To administer the agreement resources of the Intelligence Project with the regulation settled down by Colciencias

To elaborate and manage the credit contracts, with the students beneficiaries by the Intelligence Project, according to the reference terms

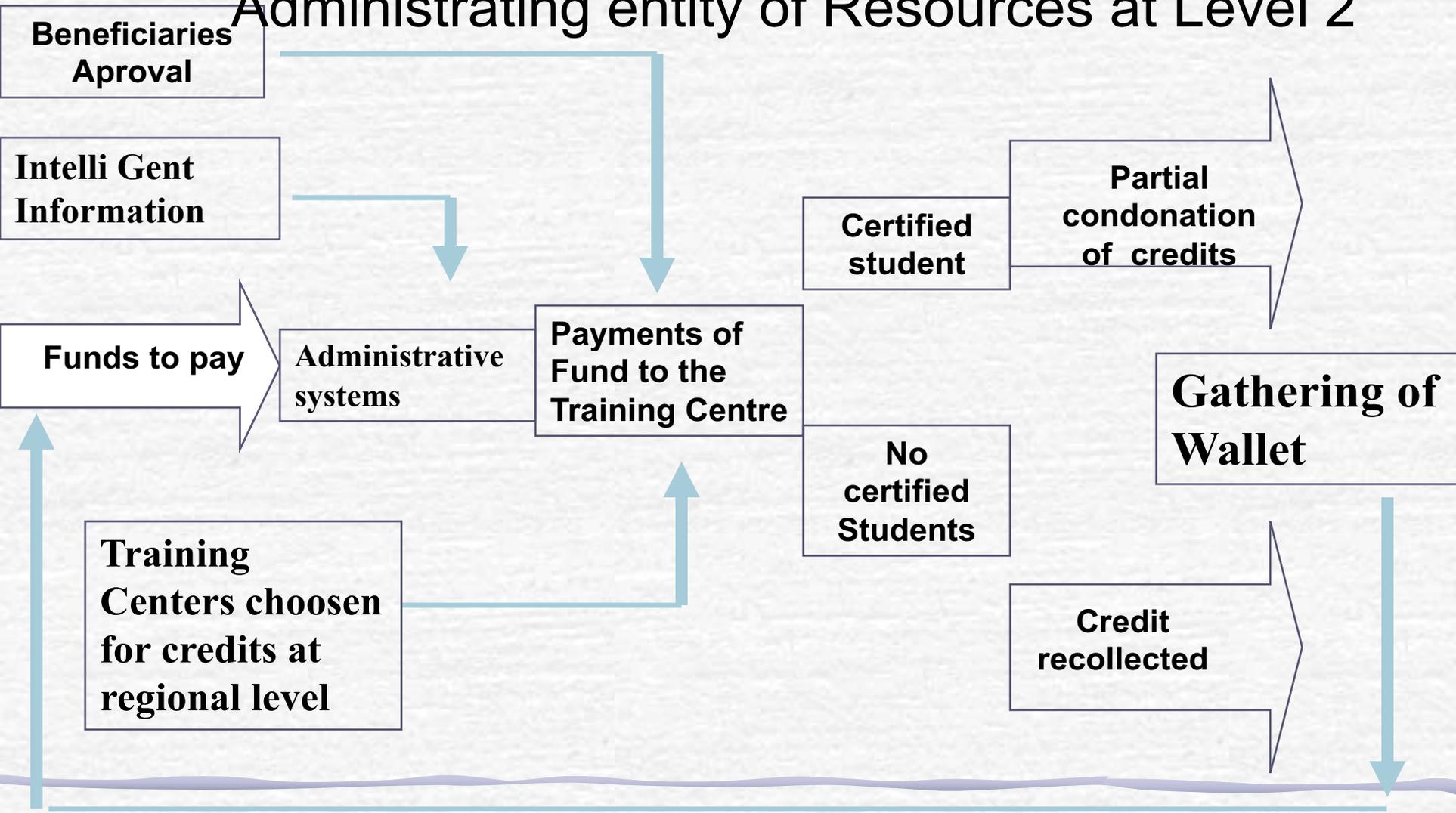
To develop a Managerial Information System and accountable in order to manage and monitoring the Intelligence Project

To administer processes of financial recovery

To authorize the General Committee and the external audit to carry out their function of monitoring according to the procedures

Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

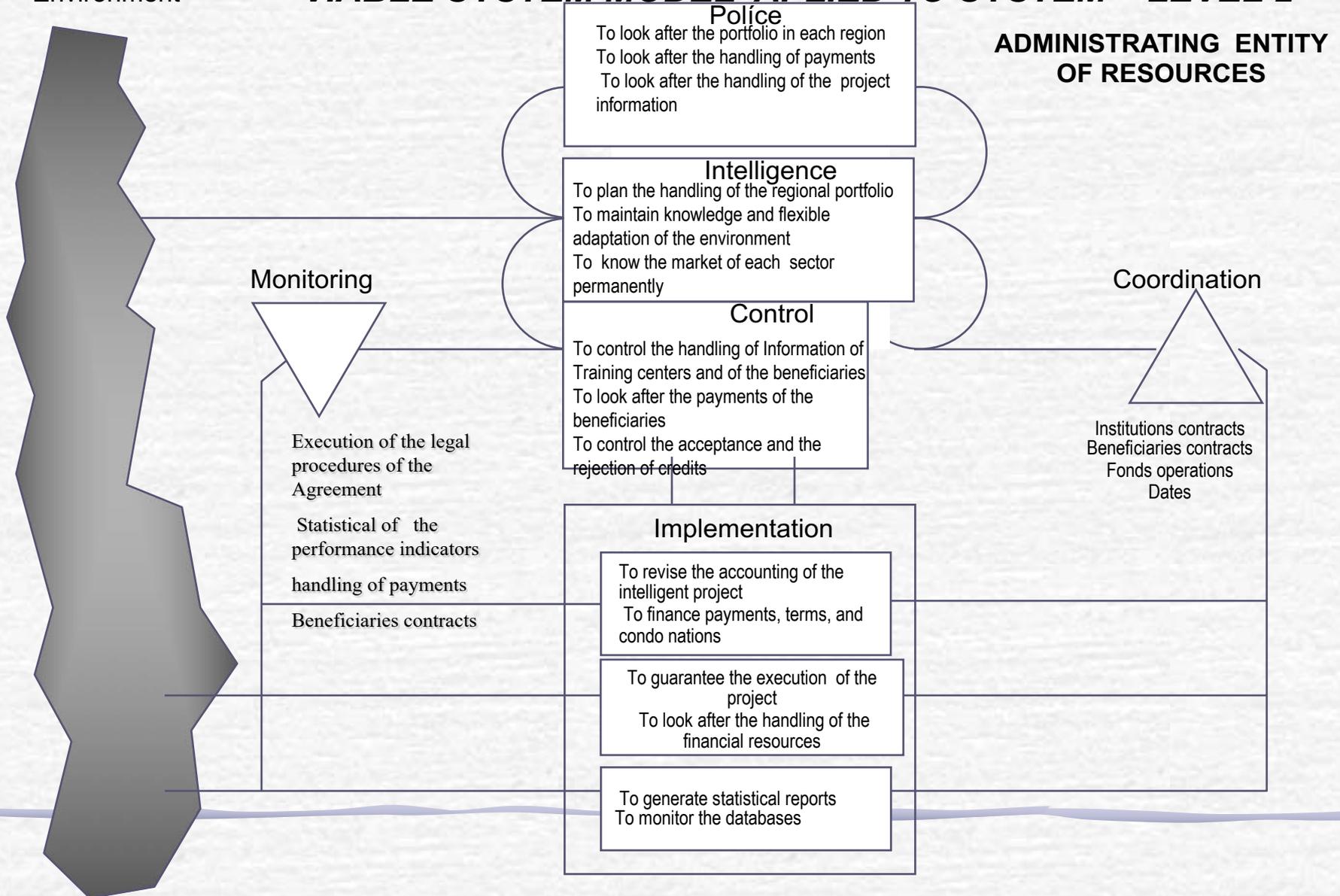
Administrating entity of Resources at Level 2



Solve the problem situation: design and develop “the intelligent project”(TIP) using the Viable System Model

Environment

VIABLE SYSTEM MODEL APLIED TO SYSTEM LEVEL 2



Evaluation of the problem situation: To diagnose the TIP using the VSM

The Viable System Model methodology allows :

The visualization of the Intelligent Project as a System

The periodic evaluation of performance indicators of the Quality Certified Center, the Beneficiaries, and the Administrating Entity of Resources

The periodic evaluation of the Intelligent Project.

The definition of evaluation approaches through the identification and design of the indicators

The definition of the parameters for measuring the indicators.

Evaluation of the problem situation: To diagnose the TIP using the VSM

The Viable System Model according to the Quality Certified Center, the Beneficiaries, and the Administrating Entity of Resources allows:

- The identification and definition of selection criteria for training Institutions and the curricula programs according to academic, organizational and logistical aspects
- The identification and definition of performance indicators that supports technologies and academic audit related to relevant contents, methodologies and technologies
- The identification of performance indicators that support the definition of programs and routes of training according to the profiles, abilities and interests of the Beneficiaries
- The definition of approaches and procedures for the condonation of the Beneficiaries credits

Evaluation of the problem situation: To diagnose the TIP using the VSM

The Viable System Model according to the Whole Management System allows:

To monitor and evaluate the Quality Certified Center, the Beneficiaries, and the Administrating Entity of Resources in a Total System.

To manage approaches that facilitate the formulation, integration and evaluation of performance indicators,

To work under the environmental conditions

To develop an observatory for the implementation of the Intelligent Project considering a quantitative analysis in relation with return of investment, costs, good distribution of Beneficiaries among others.

Making to work the problem situation TIP: Facilitation Plan

The TIP as a whole will be in charge of the coordination and execution of the individual projects that cover the academic and economic aspects.

Government

- To define the Government roll, It is just focus to manage financial budget.
- To approved the training institutions in relation to quality standards. It is difficult to predict perfect training.
- To evaluate the TIP as a whole. It is made separately for partial indicators considering each institution, professors' quality, computers, etc.
- To obtain ISO 9000 quality certification is less important than the quality of the education. For example some of the international partners' clear commitments are not based in the curriculum design and quality.
- To decentralize TIP in different cities and regions according to the regional investments and under centralized quality partners.

Government

- To define a good execution entity for TIP. It is important not to live sending the project from one executer for another.
- To define standards for the financial condonations. It seems that some courses have too many exams in front of others.

Academic audit

- To give support in the definition of the approaches for the execution of the academic Audit
- To support under the definition of the reference terms and the conditions of recruiting of the audit entity

TIP assembly strategies

- To communicate strategies to support the training entities in the definition of programs and routes of training, keeping in mind the profiles, abilities and the beneficiaries' interests. (Web pages, pamphlets, newspaper and official statements)
- To design the Management Information System which consolidates the individual information subsystems beneficiaries, training entities and the administrating resources entities.
- To design the Evaluation System which consider the beneficiaries' evaluation in coordination with the training entities and the administrating of resources entities.
- To develop counseling for the beneficiaries about the conditions and training institutions and their offer certifications.

-

TIP assembly strategies

To define and to coordinate the application procedures, approval and concession of the resources for the beneficiaries, and to control the application of such procedures.

-To contribute in the definition of the approaches and procedures of condonation of the credits for the beneficiaries in coordination with the others entities.

The Training Entities

-To support the Technical Committee in the identification and definition of patterns for selection of the training Institutions and the curricula

-To support the Technical Committee in the evaluation of the answers presented by the training entities

Making to work the problem situation TIP: Facilitation Plan

The Training Entities

- To identify, to define, and to adjust the different approaches according to academic, organizational and logistical aspects
 - To define the curricula according to the beneficiaries.
 - To have a clear definition of what courses are finance by the Government and which courses are values added like business planning or English courses.
- To have an information system that include the writing reports that students or institutions request.
- Some virtual courses are based on Internet, but not all of them depend on internet permanently.
- Students admission exams should be made according to training curricula.
 - To include all the materials that the trained courses considered CD's, DVD's with practical exercises.
- To have a clear definition of the training routes and certification considering the number and the cost of each exams to present.
 - To give special attention to the students.

Beneficiaries:

- To promote hard work.
- To promote self responsibility
- To promote self study considering the importance of government scholarships.
- To have the opportunity to change training centers considering equal results
- To produce periodic evaluation reports.

Assembly of the TIP Managerial System

To generate TIP Managerial System that manages the training entities, beneficiaries and the administrating entities of resources in a total system.

To design the managerial information system and the administration control system with the managerial indicators for the beneficiaries, the training entities and the administrator entity of resources.

To develop different analysis tools that facilitates the formulation, the integration and the evaluation of the managerial indicators according to the environment.

To develop an observatory for monitoring the necessary adjustments of the TIP managerial system in relation with the environmental changes (certifications, software development, costs, among others).