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**Consulting Services of**  
**Institut Strategies Industrielles**  
**Industrial Strategies Institute**  
**Instituto Estrategias Industriales**

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Dear customer,

On behalf of Institut Strategies Industrielles (isiconsultant), I thank you of your interest to work with us for the expansion of your organization. This letter introduces isiconsultant and summarizes how it can collaborate with your organization.

Isiconsultant is a research and consulting company created in 1987 in the region of Canada's capital (Ottawa-Gatineau) and located in Montreal since 1994. It includes a staff of doctors in engineering and management with industrial experience. Isiconsultant has published the results of its research worldwide. In addition, it has been consulted by many companies located in North-America.

Isiconsultant supports private companies in business development and organizational efficiency. In general, these activities are done by external consultants because the staff of a company is busy making daily production. **Business development** includes the expansion of the current markets and isiconsultant offers the following services: Strategic planning and exportation market research. **Organizational efficiency** includes the increase of the company performance and isiconsultant offers the following services: Production system improvement, supply chain improvement, business model management, product development project course, lean-agile supply chain course, service information automation and production operations automation.

Isiconsultant supports also public organizations in policy development and organizational efficiency. In general, these activities are done by external consultants to avoid conflicts between stakeholders. **Public policy development** includes the definition of the framework for the expansion of the country welfare and isiconsultant offers the service named visual public policy. In addition, **the public organization efficiency** can be improved using one of isiconsultant services mentioned above.

**The value of a company is increased** to skyrocket its equity and the value of its shares in order to sell it or to acquire its materials suppliers or distributors. Isiconsultant offers the service named company value increase. The **technology acquisition** includes the development of a new product and the procedures to make it in high volume. The technology acquisition by companies of developing countries is supported by isiconsultant. For technology acquisition, isiconsultant offers its service named Technology transfer.

We will send you leaflets detailing each one of isiconsultant services above as soon as we receive an Email request from you. You can also visit our web site at the address below. Of course, a representative of isiconsultant is always interested to meet you for a free diagnostic of your organization.

I thank you very much and hope we will work jointly for the expansion of your organization.



J. Macedo, Ph.D., engineer

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## PROGRAM OF TEAM STRATEGIC PLANNING (TSP)



**Motivation.** A firm is defined by its mission. In addition, the firm is embedded in an evolving PESTE (political, economic, sociocultural, technological, ecological) macro-environment that includes opportunities and threats. The firm needs to anticipate the opportunities of the next three to five years and plan its actions to get them and expand its current business income.

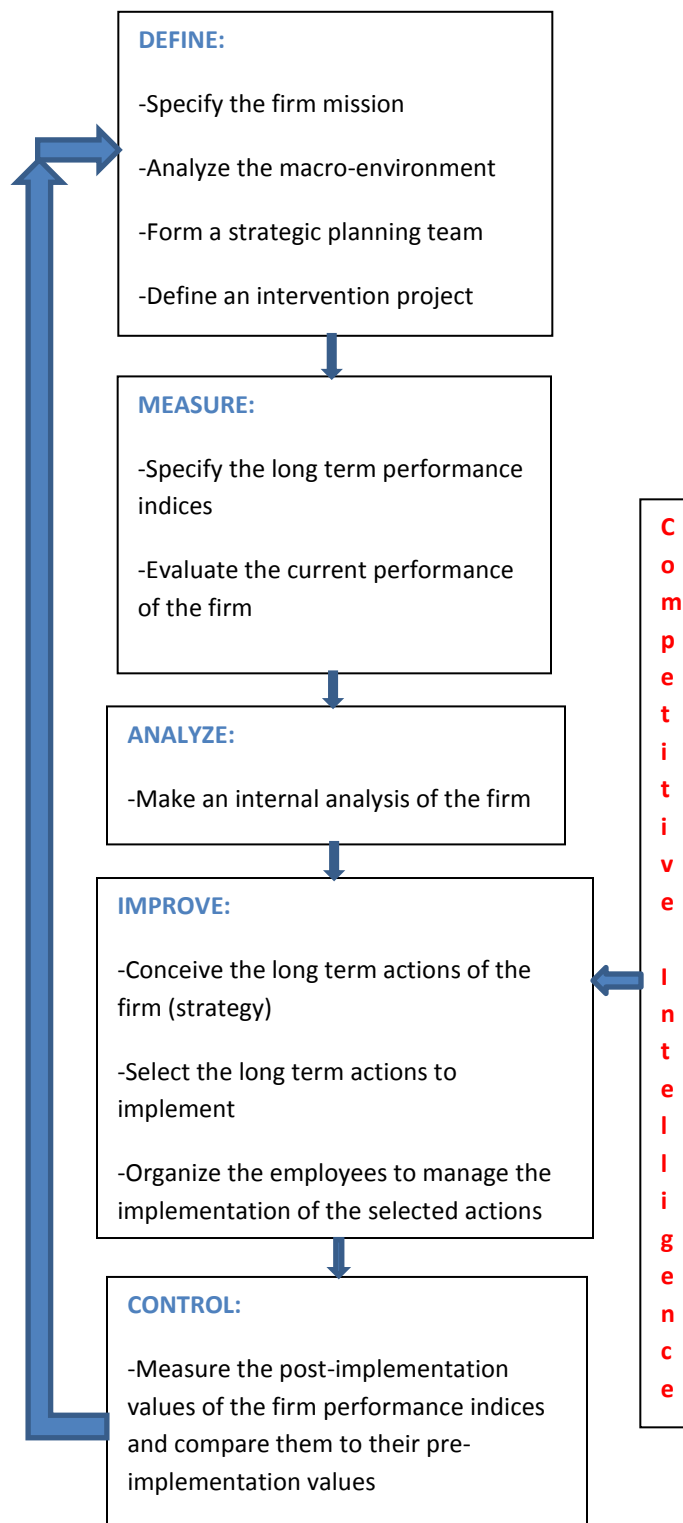
**Goals.** The team strategic planning program (TSP) is a set of continuous activities directed to conceive the firm long term actions (strategy) to get the anticipated macro-environment opportunities. As a consequence, the value of the firm increases becoming more attractive for the stakeholders.

**Program overview.** The TSP includes the activities in the shown flowchart. The employees of the firm are coached by our experts and participate.

**Weaknesses of current approaches to conceive the strategy.** Most approaches to conceive the long term actions that a firm can implement do not include tools to evaluate the multiple effects of these actions. In addition, they do not support the identification of technology based actions.

**Advantages of our improvement program.** In our program, the firm employees and our experts in international markets and technology participate in the identification of the long term actions that the firm can implement. In addition, our approach uses qualitative simulation models that evaluate the multiple effects of any potential action suggested by

a participant. These models ease the participants' consensus on the actions to implement and support the identification of the indices to control their performances.



## EXPORTATION MARKET RESEARCH (EMR)



**Motivation.** The growth of global markets offers increased opportunities for firms. For instance firms that heavily depend on long production runs can export and benefit from reaching more customers, in addition, market saturation can be avoided by lengthening or rejuvenating the product lifecycles in other countries. Large firms are active in international markets but smaller firms are major players too. For instance, 50% of German exports are created by firms with 19 or fewer employees while 97.6% of American exporters are medium and small sized firms.

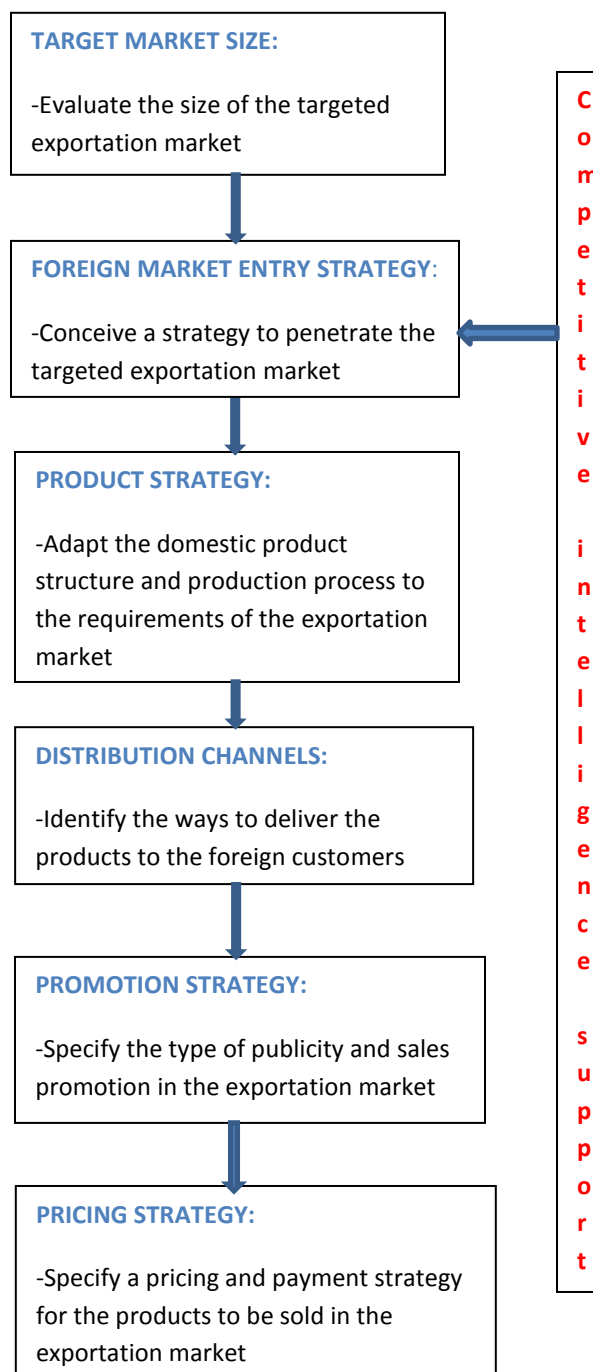
**Goals.** International opportunities require careful exploration. The Exportation Market Research (EMR) is a set of activities directed to confirm the existence of a targeted international market and to adapt the North-American firm and its product to this market.

**Service overview.** The EMR includes the activities in the shown flowchart. These activities are done by our experts that travel to the country where the targeted market is located.

**Weaknesses of current approaches.** Most market analyses take the product “untouched”, as designed for the needs of the domestic market, and check if it is accepted in the targeted international market. Hence, there is no an adaptation of the structure, price, promotion and other attributes of the domestic product. This type of analysis leads to the lack of acceptance by the foreign consumers and the failure of the exportation project.

**Advantages of our approach.** Our EMR includes the adaptation of the North-American firm to the targeted foreign market. We adapt the current structure of the product, its price, promotion and

channels of distribution to the targeted international market. In particular, our engineers support the adaptation of the product structure and manufacturing process. In addition, our foreign offices include local consultants that know the culture and consumer behavior of the local people. These consultants know the best way to penetrate the targeted exportation market.



## PROGRAM OF PRODUCTION IMPROVEMENT (PPI)



**Motivation.** Most factories and services (banks, insurances, healthcare centers and municipalities) grow by the unstructured aggregation of equipment and people through the time. Hence, their delivery delays, costs, quality and variety of products differ from the ones desired by the customers.

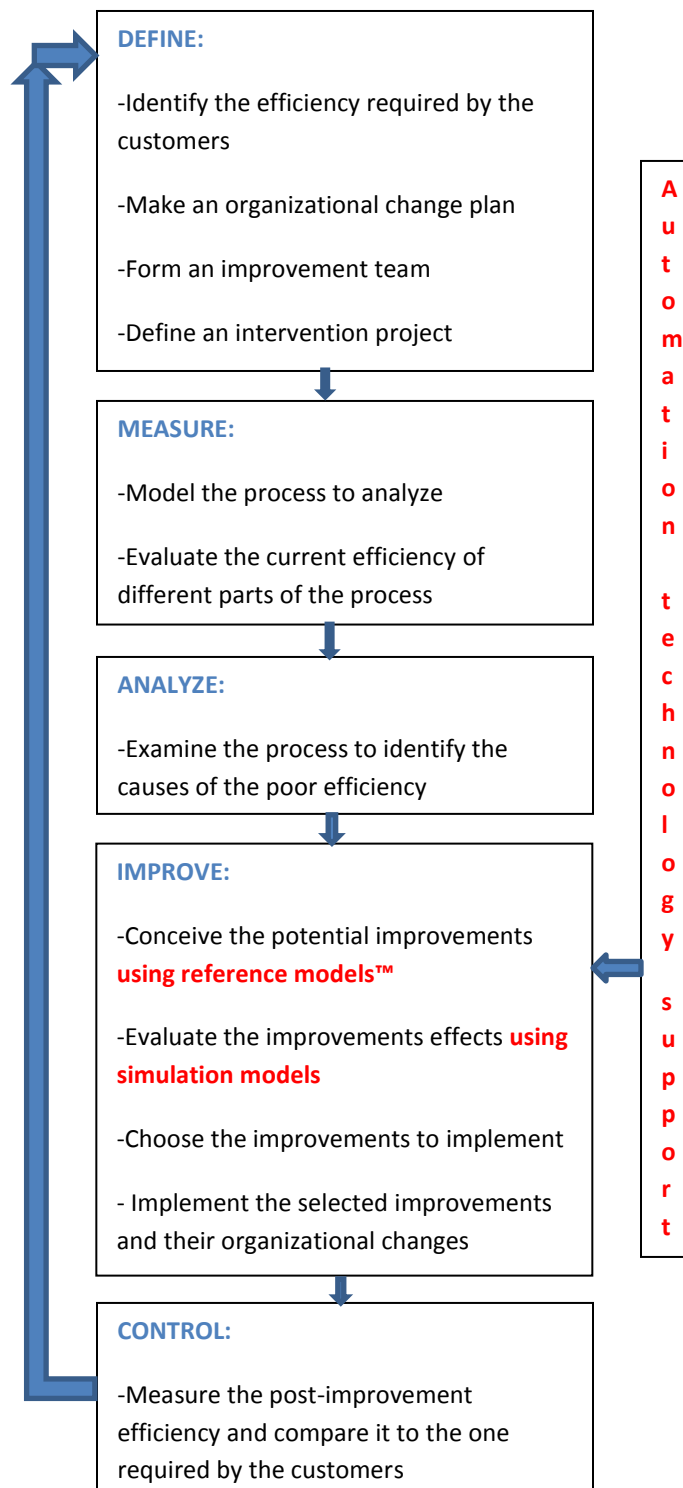
**Goals.** The program of production improvement (PPI) is a set of continuous activities directed to re-organize the factories and services so that they work with the efficiency required by the customers. As a consequence, the firms get more customers and make more profits. This program is compulsory for firms that make components for integrator firms.

**Program overview.** The PPI includes the activities in the shown flowchart. The employees that are coached by our experts participate in these activities.

**Weaknesses of current approaches to improve the efficiency.** There are several approaches to improve the efficiency of the factories and services: Total quality management, lean, kaizen, value-added, six sigma. All these approaches include the activities in the shown flowchart. However, they do not include formal tools to identify the potential improvements, nor to evaluate their multiple effects.

**Advantages of our improvement program.** Our program includes the training of the intervention team on reference models™. Using the latter this team can conceive immediately a multitude of improvements. The reference models are artificial intelligent models that capture the improvements

implemented by the efficient firms. In addition, our program includes the construction of simulation models that quantify the multiple effects of the improvements avoiding the implementation of flaw improvements.



## PROGRAM OF SUPPLY CHAIN IMPROVEMENT (SCI)



**Motivation.** Any focal company is embedded in a supply chain so that its products are the result of a joint effort i.e. the effort of the supply chain partners. However, each partner firm has its own organization and working procedures so that the delivery delay, cost, quality and variety of the supply chain products differ from the ones desired by the customers of the focal firm.

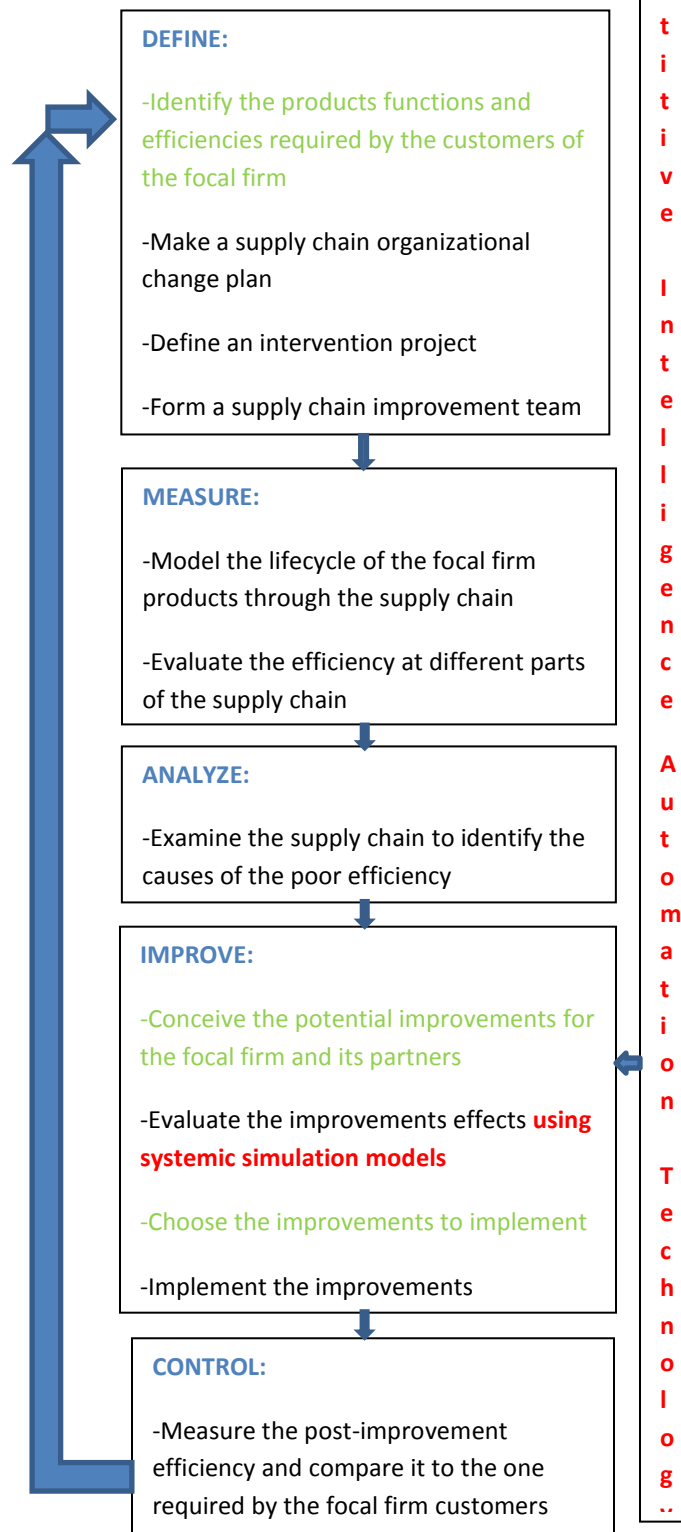
**Goals.** The program of supply chain improvement (SCI) integrates the organization and working procedures of the focal firm with the ones of its partners. Hence, the products have the efficiency desired by the focal firm customers and this one gets more customers. This program is for firms that assemble products and its suppliers of components.

**Program overview.** The SCI includes the activities in the shown flowchart. The employees of the focal firm and the ones of the partner firms participate.

**Weaknesses of current approaches.** They suggest hardware solutions to improve parts of the supply chain without evaluating their joint effect and link with the strategic plan. Hence, there is no guarantee that these improvements allow making products with the focal firm customers' desired efficiency.

**Advantages of our improvement program.** Our approach conceives improvements covering fully the product lifecycle: Product development and mass production (materials supply, mass production, sales

and distribution). In addition, we use systemic models that support the integration of the improvements suggested for the supply chain partners. These tools evaluate also their joint effect.



## BUSINESS MODEL AIDED MANAGEMENT (BMM)



**Motivation.** The engineers build simulation models of the physical systems to observe the behavior of the products they are designing. These models allow them to try alternative products functions to identify the ones that satisfy the customer requirements. A business model describes the rationale of how a firm creates and delivers value to earn money from its customers. Many managers do not have computerized business models that allow them to try alternative strategies to create value for their customers. Hence, they cannot identify the most effective strategy.

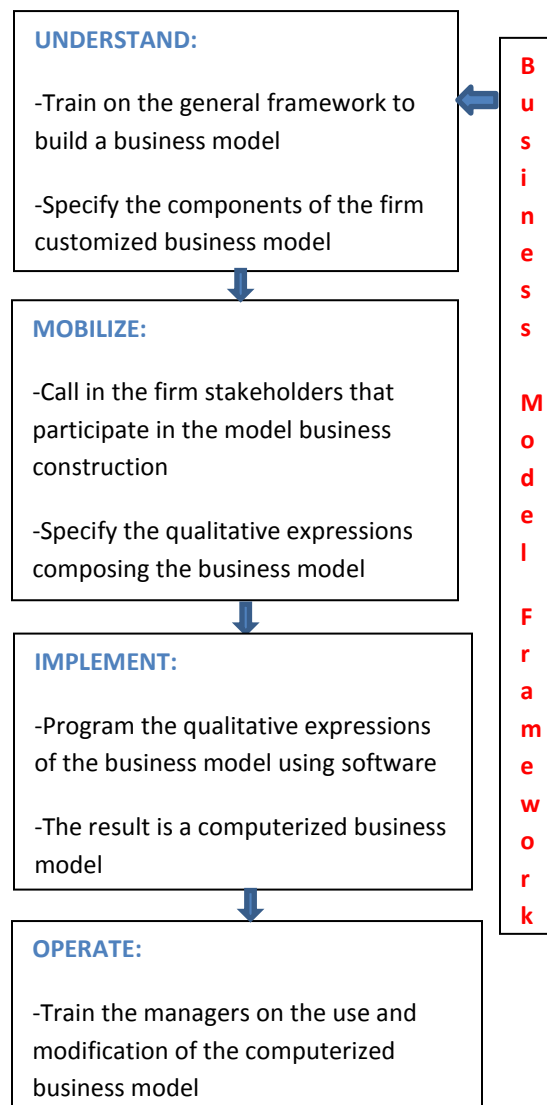
**Goals.** The program of business model aided management (BMM) is a set of activities directed to build a computerized business model of the firm. This model is presented as user friendly software that allows the manager to introduce alternative strategies to make money. This software simulates the behavior of the introduced strategy and shows its multiple effects. Note that a business model includes aggregated activities because it supports the strategic decisions. The detailed activities of the working procedures are included in other models that support the operational decisions.

**Program overview.** The BMM includes the activities in the shown flowchart. The employees of the firm are coached by our experts.

**Weaknesses of the current approaches.** Most approaches to make strategic planning include a set of steps but not a computerized business model. These approaches represent the business model using a sketch or a description. Hence, the manager

does not have a tool to simulate the behavior of a strategy he has conceived to expand the current business and see its multiple effects. In addition, this manager cannot easily conceive new strategies with the participation of the firm stakeholders and choose the most effective strategy.

**Advantages of our program.** Our program includes the construction of a computerized business model using qualitative expressions. The latter allows easy model building and modification by the manager. This is in contrast to available generic business models that use high level mathematics. In addition, the manager understands the logics and multiple effects of a strategy by following the cause-effect structures of the qualitative expressions.





## COURSE: PRODUCT DEVELOPMENT PROJECT



**Justification.** Many high-tech firms (electronics, pharmaceuticals, software) focus their activities on developing new products that will be produced in series by a subcontractor. These firms manage their research and development projects using a push approach: A manager plans all product development activities and makes a follow-up when the prototype is ready. The designers work independently and do not interact continuously with the customer, the subcontractors and the materials suppliers.

**Goal.** This course presents the procedures to manage a product development project using a pull approach: The team of designers plans and executes the development activities. In addition, continuously this team reviews the product development progress, interacts with the customer and re-schedules the product development activities. Otherwise, the product design takes into account the product lifecycle.

### Content.

- Principles to manage projects using push and pull principles (1 hour)
- Procedure to manage product development using agile principles (2h)
- Principles to design a product considering its lifecycle (1h)

- Overview of software to manage product development using agility(1h)
- Overview of software to design a product considering its lifecycle (1h)
- Strategies to introduce agile and lifecycle management in firms (1h)

**Material.** The attendees receive a collection of papers covering the five topics above.

**Lecturer.** J. Macedo. Former full-time professor at the University of Montreal (Business School) and the University of Quebec (Textile and Apparel School). He holds a Post-doctorate certificate in manufacturing systems engineering from Virginia Polytechnic Institute (USA), a Ph.D. in industrial engineering (operations research) from the University of Sevilla (Spain), a master in business administration from University Laval (Canada) and a certificate in business modeling using system dynamics from the Massachusetts Institute of Technology (USA). He is co-founder of the consulting firm Institut Strategies Industrielles. He has consulted by many firms on production system design, productivity improvement and supply chain management. He has written 50 academic papers, 2 books and is reviewer for top academic journals covering these subjects. He is co-founder of Flash Textiles industrial group where he acted as a global operations manager. He was a speaker in operations management conferences in 15 countries in America, Europe and Asia.

**Date of the course.** *To be defined.*

**Course classroom.** *To be defined.*

**Registration process.** *To be defined.*

**Course fees.** *To be defined.*

**Registration dates.** *To be defined.*

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## COURSE: LEAN-AGILE SUPPLY CHAINS



**Justification.** In the 90's the customers required low priced products so that the firms eliminated the no value activities by implementing lean principles. In this new century, the competition has moved from inter-firms to inter-supply chains. In addition, the customers require continuously new products at low prices. Hence, the firms are transforming their manufacturing systems from lean to agile and even more, they are looking to be imbedded in lean-agile supply chains.

**Goal.** A lean-agile supply chain allows the rapid development of new products and the rapid reconfiguration of the supply chain to satisfy the customer demands variations. In addition, it reduces the no value activities. This course presents the principles, conception and implementation of lean-agile supply chains in the framework of manufacturing of products.

**Content.** Five topics are presented:

- Principles of mass and lean supply chains (1 hour)
- Principles of agile supply chains (1 hour)
- Conception of lean-agile supply chains (2 hours)
- Technologies to implement lean-agile supply chains (1 hour)
- Organizational change to introduce lean-agile supply chains (1 hour)

**Material.** The attendees receive a collection of papers covering the five topics above.

**Lecturer.** J. Macedo. Former full-time professor at the University of Montreal (Business School) and the University of Quebec in Montreal (Textile and Apparel School). He holds a Post-doctorate certificate in manufacturing systems engineering from Virginia Polytechnic Institute (USA), a Ph.D. in industrial engineering from the University of Sevilla (Spain), a master in business administration from University Laval (Canada) and a certificate in business modeling using system dynamics from the Massachusetts Institute of Technology (USA). He is co-founder of the consulting firm Institut Strategies Industrielles. He has consulted by many firms on production system design, productivity improvement and supply chain management. He has written 50 academic papers, 2 books and is reviewer for top academic journals covering these subjects. He is co-founder of Flash Textiles industrial group where he acted as a global operations manager. He was a speaker in operations management conferences in 15 countries in America, Europe and Asia.

**Date of the course.** *To be defined by the customer firm.*

**Course classroom.** *To be defined by the customer firm.*

**Registration process.** *To be defined by the customer firm.*

**Course fees.** *To be defined by the customer.*

**Coffee break.** *To be defined by the customer.*

**Registration dates.** *To be defined by the customer firm.*

**Organizer.** Institut Strategies Industrielles.

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## SERVICE INFORMATION AUTOMATION (SIA)



**Motivation.** A service process is a set of activities to dispense a service. The customer expects a service delivered with a desired performance (desired price, delay, quality). When the contents of the process activities and their sequence vary, the employees make duplicated and incoherent activities. Hence, the service desired performance is not reached. In addition, too many papers are manipulated and the employees' performances cannot be evaluated objectively. The automation of the business process is a solution to this low service performance.

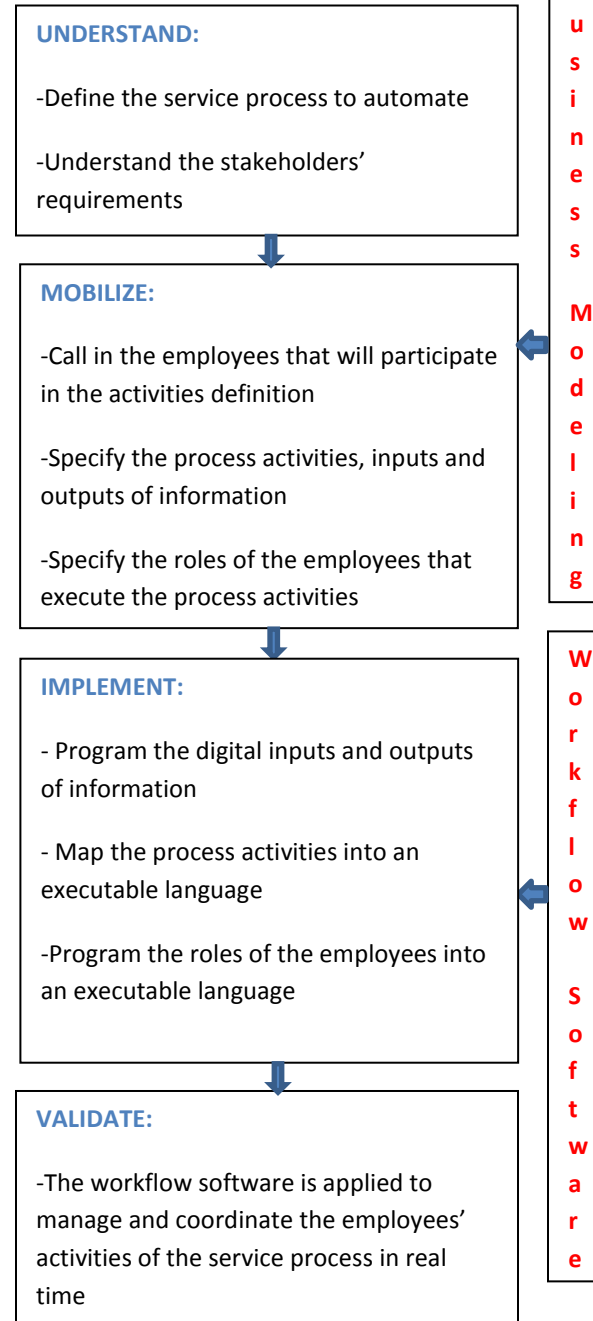
**Goals.** Workflow software is programs that manage business processes partially or completely. The input and output of the information are digital documents and the computer coordinates the employees' activities according to the service process and the employees' pre-defined roles. The program of service information automation (SIA) is a set of activities to implement workflow software.

**Program overview.** The SIA includes the activities shown in the right side flowchart. The employees of the firm are coached by our experts.

**Weaknesses of current approaches.** Most workflow software (including Enterprise Resource Planning software), include pre-defined process templates. Once this software is implemented, the employees are forced to follow the activities of these templates. However, many service firms have proprietary procedures for their critical activities. These procedures are the result of many years of validation

in their particular environments. Hence, their employees are reluctant to implement template procedures. Our approach consists of respecting the current processes of the firm, optimizing when necessary and then automating them.

**Advantages of our approach.** The automation of customized working procedures has acceptance by the employees. In addition, the knowledge of the firm is preserved.



## PRODUCTION OPERATION AUTOMATION (POA)



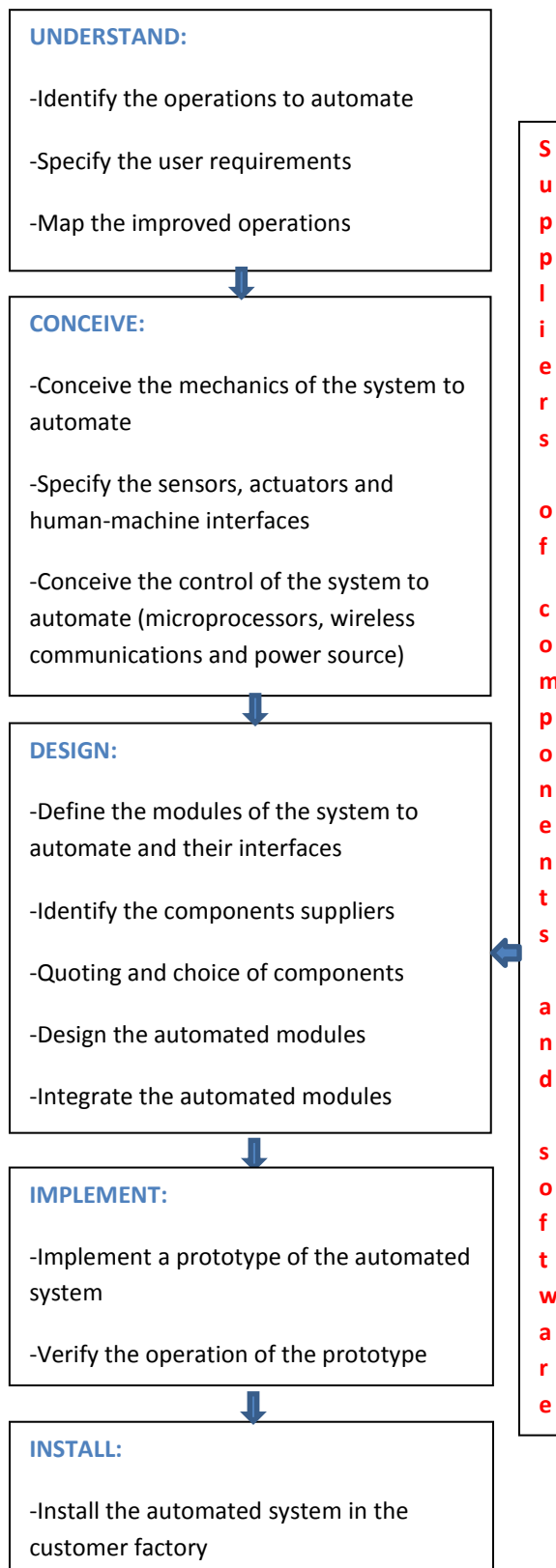
**Motivation.** In bulk production, repetitive activities are uneconomical to be done manually. In addition, they are demotivating for the operator. Hence, when possible, these activities should be automated.

**Goals.** The program of production operation automation (POA) is a set of activities directed to develop an automated system that will mimic the manual operations.

**Program overview.** The POA includes the activities shown in the right side flowchart. The employees of the firm participate in the development of the automated system.

**Weaknesses of current approaches.** In many cases, the manual operations are automated by introducing an automatic system available on the shelf. Because this system was developed for a generic production process, it includes a multitude of operations of which few are useful for the current automation. Hence, the customer is paying for many useless functions.

**Advantages of our approach.** We conceive a customized system that includes exclusively the operations deserving automation. Although the components of this automated system are made by external suppliers, we make an exercise of conception and integration. In addition, we can make customized designs of the microprocessor that controls the automated system.



## PROGRAM OF VISUAL PUBLIC POLICY (VPP)



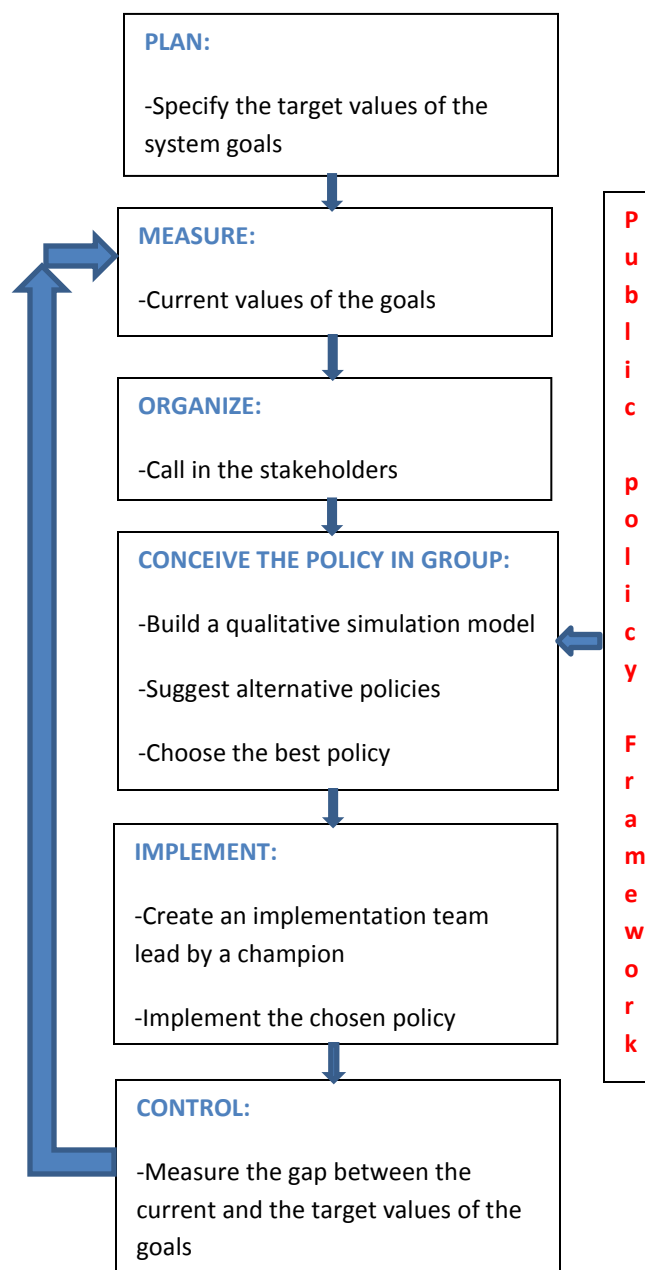
**Motivation.** A municipality, a University, a ministry, a parliament, any public organization conceives policies. This conception is done by stakeholders that most of the time present and justify their policy proposals verbally. Hence, the policy proposal logic of one stakeholder is not well understood by the other stakeholders. In addition, the multiple effects of the suggested policy are not visualised. Hence, the stakeholders have hard time to reach a consensus on what policy to choose. As a consequence, the best policy is not always chosen and its implementation fails because its logic is not well understood by all the stakeholders.

**Goals.** The visual public policy program (VPP) is a set of continuous activities directed to conceive a public policy.

**Program overview.** The VPP includes the activities in the shown flowchart. The stakeholders are coached by our experts and participate in these activities.

**Weaknesses of current approaches to conceive public policies.** On one hand, many approaches to conceive public policies do not include tools allowing the visualisation of the logics of the policies that are proposed. On the other hand, some approaches include models that allow this visualisation. However, these models are high mathematical so that their construction and modification require specialized model builders. Hence, these models are not built, nor used by the stakeholders to support their discussions during the policy conception meetings.

**Advantages of our improvement program.** Our approach uses qualitative simulation models that evaluate the multiple effects of any policy. These models are built in real time by the stakeholders and used to support their logic during the conception of a policy. These models have a cause-effect structure that allows the stakeholders to understand the proposed policies and reach a consensus on the best policy to implement. In addition, they point out the performance indices to control during the policy implementation.



**SERVICES IMPROVEMENT PROGRAM (SIP)**



**Motivation.** Many services organizations (banks, insurances, healthcare centers, municipalities) grow by the unstructured aggregation of equipment and people through time. Hence, the performances of their services differ from the ones required by their stakeholders. In addition their processes are not well aligned with the stakeholders’ strategy.

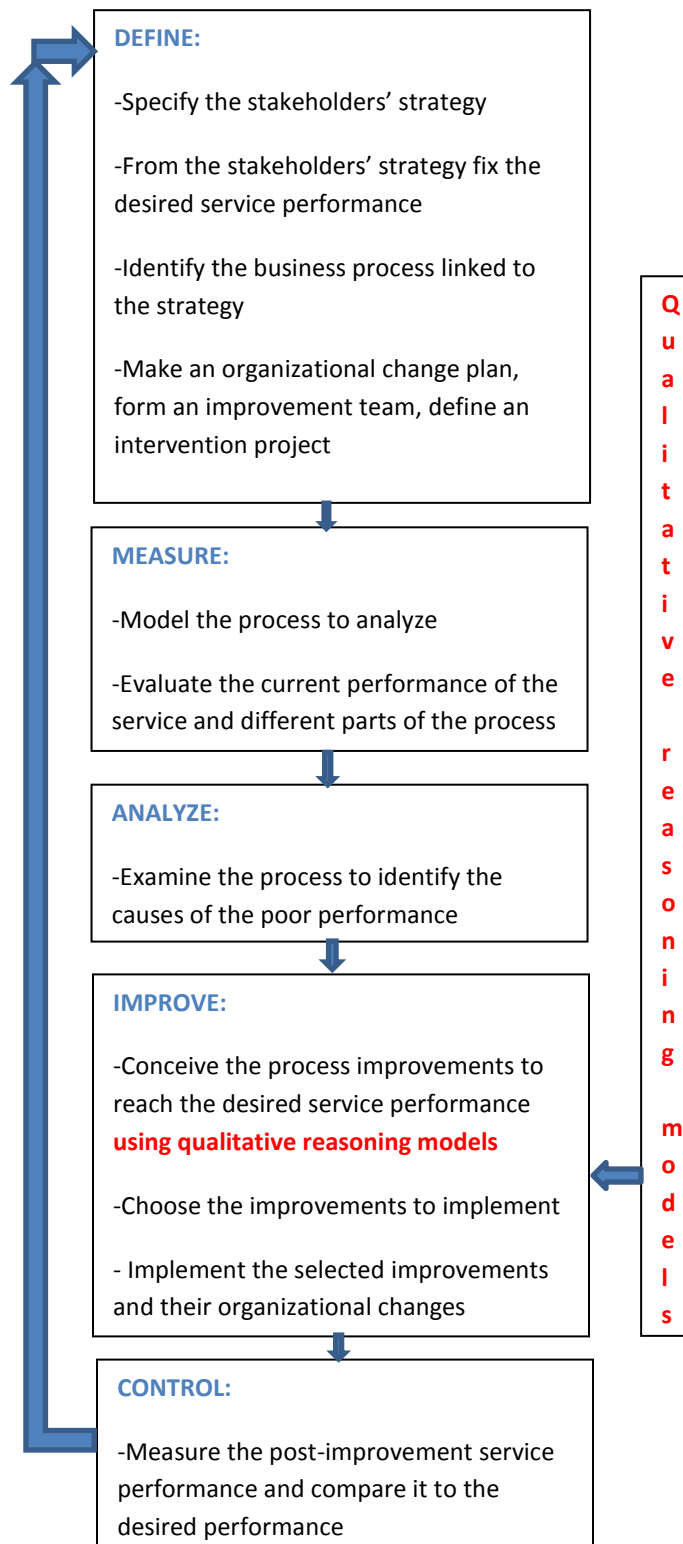
**Goals.** The services improvement program (SIP) is a set of continuous activities directed to re-organize the processes so that the service has the performance desired by the stakeholders’ strategy. As a consequence, the service organization gets more stakeholders and grows.

**Program overview.** The SIP includes the activities in the shown flowchart. The employees that are coached by our experts participate in these activities.

**Weaknesses of current approaches to improve the efficiency.** There are several approaches to improve the efficiency of services organizations: Total quality management, reengineering, lean, kaizen, value-added, six-sigma. However, they do not include a formal tool to verify that the suggested process improvements allow reaching the service performance desired by the stakeholders.

**Advantages of our improvement program.** Our program uses qualitative reasoning models that support the conception of the process improvements. These models are used by the conception team members that can try alternative improvements and see their effects on the service

performance. These effects cannot be estimated manually because the service performance includes multiple criteria and each improvement has multiple effects on different parts of the process.



## COMPANY VALUE INCREASE (CVI)



**Motivation.** The value of a company is the sum of the cash flows it generates. Sometimes, in order to sell the company or to attract more buyers of its shares, the management wants to skyrocket the current value of the company. Other times, the management wants to buy one of its materials suppliers or products distributors and then increase their current values.

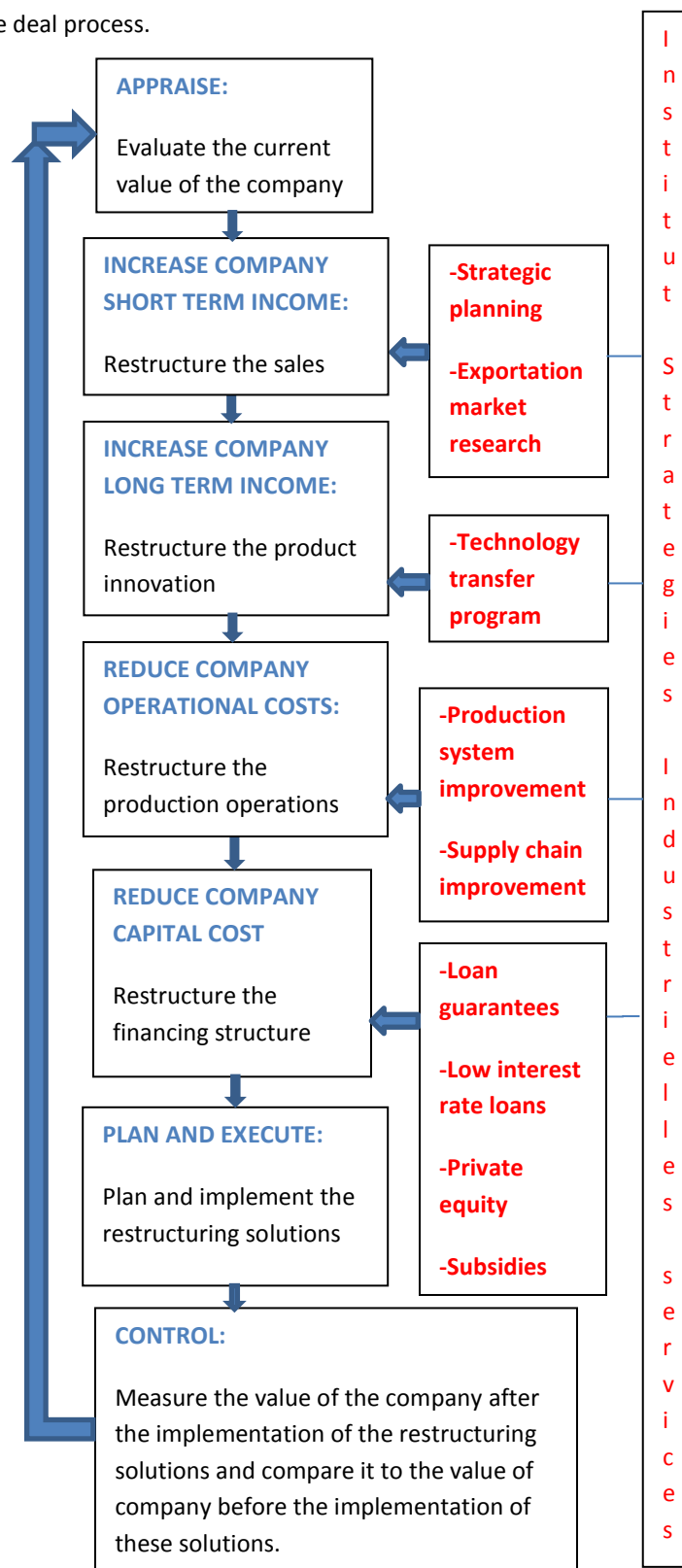
**Goals.** The program of company value increase (CVI) is a set of activities directed to increase the value of the company by restructuring it. As a consequence, the current and future cash flows of the company grow. Hence the company equity increases.

**Program overview.** The CVI includes the activities in the shown flowchart. The stakeholders and employees of the company participate

**Weaknesses of current approaches to increase the company value.** In general, the firms of the financial sector offer services to increase the value of a company. These firms restructure only the capital structure of the company. This is not enough because the company cash flow is mainly influenced by the sales income and the operational costs.

**Advantages of our company value program.** Our CVI program increases the company income by restructuring the sales and new product development, reduces the company operational costs by restructuring the production operations and reduces the company capital cost by restructuring

the financing structure. We can also identify the materials supplier or distributor whose acquisition is interesting, increase its current value and support the deal process.



## PROGRAM OF TECHNOLOGY TRANSFER (PTT)



**Motivation.** Technology transfer means moving an invention (new product or service) to customers. Many times the technology transfer fails for two reasons. First, the invention is available but was developed without a focus on the needs of a target market. Second, the invention is focused on a target market but it was not designed for mass production so that its production in bulk makes products without the efficiency required by the target market.

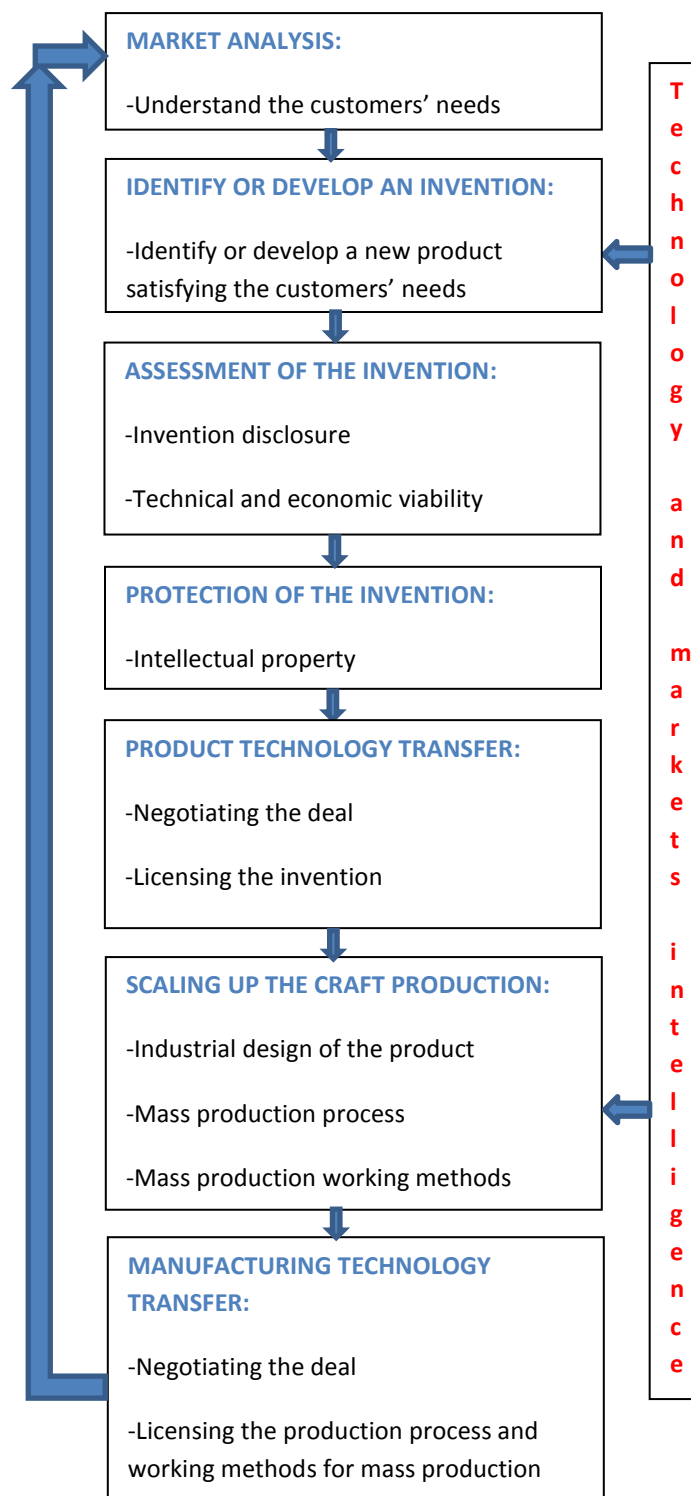
**Goals.** The program of technology transfer (PTT) is a set of activities directed to get an invention that satisfies the needs of a target market and fine tune it to be made in bulk. Hence, the firm uses more its current production capacity and increases its sales.

**Program overview.** The PTT includes the activities in the shown flowchart. The stakeholders are coached by our experts and participate in these activities.

**Weaknesses of current approaches for technology transfer.** Most approaches are focused on the intellectual property protection and licensing of the invention. These approaches do not include the identification of an invention or the development of new products satisfying the customers' needs nor the scaling-up of its manufacturing operations.

**Advantages of our technology transfer program.** Because our Institute has published and presented its research in top academic conferences worldwide, it has created links with state of the art research institutions. Hence, we can identify inventions and support the development of new products in some industrial sectors. In addition, because we have

improved the production systems and supply chains of many North-American companies, we know how to scale-up the craft manufacturing processes and working methods of many products. This know how is not available in the public literature.





## TECHNOLOGY TRANSFER PARTNERS

In order to make large or in deep projects we can expand our current workforce, with the support of our partners located in North-America:

- **V2 software:** A software development company including 30 software engineers. It is specialized in the development of ERP (Enterprise Resource Planning), PLM (product life management) and supply chain software mainly for the textile and apparel industries.
- **Int software:** A software development company including 30 software engineers. It is specialized in the development of workflow software for services as for example banks, insurers, government offices.
- **In micro:** A company specialized in the development of micro-electronic products for several industries as for example medical, aeronautic, telecommunications. It includes 40 electronic engineers and a manufacturing facility of microprocessors.
- **In Design:** A company specialized in the development of products in metal and plastic for different industries as for example, medical and transportation. It includes 20 mechanical engineers.
- **Se process:** A company specialized in the scaling-up and automation of the unit operations of continuous processes for different industries as for example food and metallurgy. It includes 75 chemical engineers.