

INES (A): How to Engineer Growth?


An engineering consulting firm must define its growth strategy

INES founded in Spain	Working for middlemen	Going for a partnership model	Growth challenge
2004	2006	2008	2010

It was unusual to find a team of civil engineers, PhDs in geology and chemistry, architects, environmentalists, mining engineers, draftsmen and administrative staff under the same roof. Even more so when we consider that this team was well known for its involvement in areas as diverse as developing projects for high-speed trains to providing technical assistance for the reconstruction of an 18th century castle. INES *Ingenieros Consultores*, a Spanish engineering consulting firm, was founded by José Antonio Martín Caro in 2004. The company had done very well in its first years, rapidly increasing the number of engineering projects, revenue and staff members. Since its inception, INES had developed a solid reputation, a highly qualified team and a strong brand name. According to the founder of the company, they focused on “detailed engineering” work, and developed a niche by becoming the only engineering company in Spain that worked on cultural heritage structures in an integral manner. However, the change in the economic landscape and the team’s aspirations for growth put the firm’s strategy as well as its organizational and ownership structure into question.

Focus on conservation and historical sites

“The INES team began as a group of young engineers with some work and research experience, who were, however, still very keen on developing new projects and ‘making the pencil move’.”

The CEO	Firm & Product	Facts & Figures																																				
<p>José Antonio Martín Caro founded INES in 2004. Previously, he had been a researcher at the Universidad Politécnica de Madrid (UPM) and had worked in the FHECOR engineering consulting firm from 1994 to 2004. José Antonio studied Engineering, and in 2001 obtained his PhD in Civil Engineering from the UPM. In addition, from 1995 to 2005 he studied geography and history at the <i>Universidad Nacional de Educación a Distancia</i> (UNED). His doctoral thesis focused on the structural analysis of arched bridges. In 2002, he received the Prize for “extraordinary doctoral thesis” from the UPM and the <i>Asociación Nacional de Constructores Independientes</i> (ANCI). José Antonio taught engineering courses at the UPM from 1999 to 2001. He participates in several national and international scientific associations and conferences.</p>	<p>INES Ingenieros is a structural engineering consulting firm that works on project development, technical assistance, construction, reparation and maintenance with particular focus on bridges, railroads and historical sites.</p> <p>The company structures its work in two departments: production and research & development. The production department focuses on two main areas: conservation and new construction.</p>	<p>Revenues in million €</p>  <table border="1"> <tr> <th>Year</th> <td>2005</td> <td>2006</td> <td>2007</td> <td>2008</td> <td>2009</td> <td>2010</td> </tr> <tr> <td>▲</td> <td colspan="5">= profitable</td> <td></td> </tr> <tr> <td>▼</td> <td colspan="5">= not profitable</td> <td></td> </tr> </table> <table border="1"> <tr> <th>Year</th> <th>Employees</th> </tr> <tr> <td>2010</td> <td>28</td> </tr> <tr> <td>2009</td> <td>29</td> </tr> <tr> <td>2008</td> <td>31</td> </tr> <tr> <td>2006</td> <td>24</td> </tr> <tr> <td>2004</td> <td>5</td> </tr> </table> <table border="1"> <tr> <td>VC-backed</td> <td>✗</td> <td>Start-up capital 12.000 €</td> </tr> </table>	Year	2005	2006	2007	2008	2009	2010	▲	= profitable						▼	= not profitable						Year	Employees	2010	28	2009	29	2008	31	2006	24	2004	5	VC-backed	✗	Start-up capital 12.000 €
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This focus case was prepared by Professor M^a Julia Prats as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. March 2010.

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The Origins of INES

Jose Antonio had always had a passion for structures, engineering and history. He received a degree in engineering, and later a PhD, from the Polytechnic University of Madrid while, at the same time, studying geography and history. For his thesis, he focused on the structures of arched bridges made of stone, bricks or concrete. This topic allowed him to blend his passions by focusing on these historical structures and their conservation. José Antonio's thesis aimed to develop a model for understanding these structures and their behavior and evaluating their conservation needs.

Passion for engineering and history

While conducting the research for his thesis, and working as a consultant in an engineering firm belonging to one of his professors, José Antonio began to see the growing interest in and need for the conservation and repair of historical sites, in particular bridges. He began discussing, with his friend and colleague, José Luis Martínez Martínez, the possibility of working for themselves as engineering consultants. Although they did not consider themselves entrepreneurs, they were intrigued by the possibility of working for their own company. In addition, during his time at the university, they had already developed interesting contacts with the Spanish government-owned railway entity ADIF, which managed the construction and maintenance of the railway infrastructure. Knowing that the railroad network was starting to age, their focus on the maintenance and repair of the historical heritage sector, especially bridges, seemed to be the perfect option.

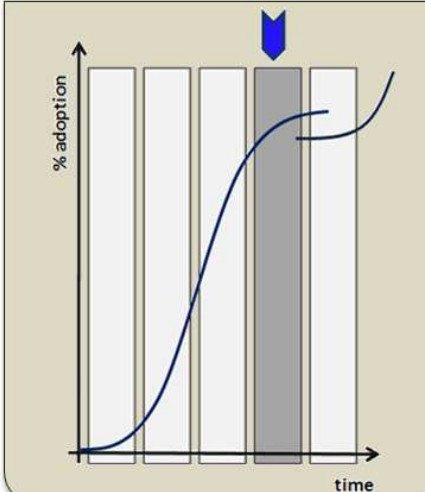
Possibility to work for themselves

"We enjoy our work because we learn. We do not want to do easy and repetitive projects. Increasing revenue has never been an explicit goal for us. Our objectives have always been in line with our personal and professional interests."

Growing From the Beginning

José Antonio started with an initial funding of 12,000 euros, put up half by him and half by his father. He was soon joined by his friend and colleague, José Luis Martínez Martínez. Following their passion, they began working on research projects, based on previous investigation work. They were soon joined by another friend and colleague, Damian Terrasa. As the workload and number of consulting projects began to increase, they hired more staff members.

Initial team

Target Market & Clients	Industry	Industry Maturity
<p>Given the nature and scope of engineering projects (e.g., highways or railroads), a large part of engineering consulting tends to be either for the public sector or for very large companies that undertake large construction projects.</p>	<p>The structure of the engineering consulting industry in Spain was different from that in other countries. In Europe & the U.S., engineering firms were in charge of the design & execution of the project, outsourcing the construction or other activities, but holding final responsibility for the project. These firms could have up to 2,000 or 3,000 engineers. In Spain, eng. firms were, in general, small companies "hired" by large construction firms that in fact had the final say in large projects. In 10/2008, there were 120,152 companies in Spain that provided technical services in architecture, engineering & other activities related to technical assistance. Of these, 1,338 had >20 employees and only 58 had >200. There are a few construction firms that dominate the market and have strong ties to the public administration and other entities that handle large projects.</p>	



INES grew steadily over the years, and the type of projects they undertook shifted over time from being commercially oriented to becoming more and more aligned with the team's capacities and interests. In the first two years, in order to ensure revenue, new construction work made up about 50% of the company's projects. In 2005, they worked on new buildings, offices and malls. However, this was not the type of work that interested José Antonio and his team, since it meant working for big construction firms, and giving them little opportunity to influence the outcome of the project. They worked hard to carve a niche for themselves in specialized projects where their research capabilities could be applied and valued.

Initial projects

Almost from the outset, they were in charge of very complex projects, which was very unusual for a new firm with a very young team. INES always recognized the importance of having highly qualified people working on their projects. The hiring process depended on finding qualified individuals who would fit well into the team, and not necessarily driven by the project needs. In this sense, José Antonio looked for qualified engineers and scientists from all over the world, whose knowledge complemented and strengthened the INES team. Originally, the team was composed only of civil engineers. However, as the number of special projects multiplied, José Antonio realized that conservation required a more integral approach. Therefore, INES began to hire experts in other fields, such as geology and chemistry. In 2010, they already had 32 people: 25% with a doctoral degree (in civil engineering, chemistry and geology) and 60% with a technical degree, while the rest was technical and administrative staff.

Finding their niche

"We like to do things ourselves. To really think about a project, investigate and not just have superficial knowledge of the subject. That's our secret. We do things ourselves; we don't hire someone else to do it for us."

INES would always look for people who combined a technical with a commercial mentality. This made the hiring process more complex, but ensured a better understanding of the client's needs and, ultimately, a more service-oriented mentality. Engineers from many different countries, including Germany, Hungary, Italy and Portugal made for a diverse and open-minded team, which helped in developing better and more creative solutions. A firm of 32 people was effectively competing in the Spanish market head-to-head with other firms with more than 1,000 engineers.

Importance of highly qualified staff

Partly as a consequence of its size, but also in response to a strongly held belief, the firm's structure was very flat. Their philosophy was to be close to the client and to the solution: the person responsible for the project was to be present throughout, in client meetings, researching the solutions, preparing the reports and coordinating the project. After a few years they were becoming experts in areas such as structures, geotechnical and material engineering and conservation.

Close to the client & project

Working at the Detail

INES' portfolio of consulting services was divided into five main areas: technical studies and reports, infrastructure inspection, project design, project management and IT consulting for geographical databases.



Their preferred approach to these services was to “manufacture” instead of “just coordinating” them. They were the “experts of last resort,” i.e., the ones to find the most suitable solution, do the design and the calculations and oversee the execution. In José Antonio’s words: “we are very good at manufacturing: deciding on the technical solutions that I am going to use, being on the field to take the samples, understanding the geotechnical problems, considering whether there are any new solutions or new materials that would improve the work, defining the structures, doing the drawings, and so forth. At the beginning, we did all these jobs for bigger engineering firms and construction companies... we were the specialists...”

The INES approach

However, this position was becoming very strenuous. During the construction boom in Spain (2002-2007), big engineering firms contracted a lot of professionals to manage new projects. Unlike INES, with their experience and tradition, these young engineers who were hired had never managed a project before. Consequently, they totally lacked the knowledge and skills that would have allowed them to do a good job in outsourcing the “detailed” engineering work to a specialist such as INES. This made the process a nightmare for everybody: inefficient communication, resulting in delays, higher costs and, ultimately, worse solutions for the client.

Annoying position

Tired of working for middlemen, INES knew that in the future they wanted some changes. Their work would have to be in a sector that required specialist technical expertise, where they could work directly with their clients and meet them face-to-face to explain their proposals, and with limited competition to allow them to grow steadily.

Need for a different approach

Therefore, they shifted their focus towards working on smaller projects that were significantly more profitable than bigger ones, and which allowed them to have a direct relationship with the client. However, this strategy had a downside: the most interesting projects were usually too large for such a small firm, forcing them to always bid in partnership with other companies. Consistent with the objective of having face time with the client, their philosophy here was to look for complementary partnerships, where each partner would bring different capabilities into the project. This was highly appreciated by the sophisticated clients, while at the same time clearly defining the contribution of each partner. INES also followed the principle of only partnering with friends and firms that they trusted.

Working with trusted partners

In parallel, José Antonio developed the necessary contacts to win public bids for both construction and conservation projects with a wide range of public institutions. For instance, INES technically assisted the outstanding rehabilitation of the castle in Sancti Petri Cádiz, originally built in 1740, and the rehabilitation of the *Molino the mareas del Río Arillo*, both of which were sponsored by the Spanish Ministry of the Environment, as well as the Rioja Museum in Logroño, which was sponsored by the regional government and the rehabilitation of the Puente del Zuazo, which was sponsored by the Spanish Ministry of Public Works.

Getting into public bids

“We are pioneers. We are not inventing anything new, but we are taking new techniques from other specialties (e.g., conservation, air and space, etc.) and adapting them to our work. We apply these new methods in a coherent way. We try to record all our work and publish it, so that others may use it.”



As INES began to grow in size and recognition and started accessing public funding for a wide range of projects, they started moving away from construction projects that involved working for intermediaries. In 2010, six years after their creation, this type of work made up only about 10% of their portfolio. They specialized in conservation (about 60% of all projects) and new construction projects where they worked directly with their clients (30% of all projects). INES became the specialist boutique for special projects, instead of being, in José Antonio's words, "the obscure engineering firm that it could have become had we not got out of the fish-tank...."

Specialist boutique for special projects

Importance of Knowledge Creation

From the outset, INES had been involved in knowledge creation and research work. They had worked on research projects with national and international entities and organizations. Thus, its research and development department had two main targets: internal (improving processes and training and strengthening the knowledge of the INES team) and external (research projects developed according to the client's needs).

Focus on research

INES prioritized investment in human resources and information programs and applications that allowed them to record and capitalize on the knowledge acquired. In this sense, they had worked on the development of tools and models for structural analysis, as well as databases and information management systems that could be used in their work. They also published several books, manuals and working papers together with entities such as ADIF and UIC. The possibility of applying theory and research to actual engineering projects gave the INES team useful applied knowledge, which presented a very specific advantage.

Knowledge creation as competitive advantage

Ownership and Incentives

As the company grew over the years, they had to develop their payment and incentive structure, in order to suit a team increasingly growing in number. In order to foster commitment to the company and its projects, INES had adopted a scheme with relatively low wages, but in which benefits were shared among the shareholders. Thus, the shareholders' compensation was based on company results. José Antonio owned 67% of the company, José Luis owned 20% and the other partners owned 5%, 5%, 2% and 1%. However, out of 29 staff members, only six were partners.

Incentive structures

The partners and shareholders were entitled to certain rights, such as participation in discussions regarding the company's strategy, full medical insurance, access to a company car, and so forth. However, they were also required to ensure exclusivity to INES (they could not work as professors or in other capacities), and if they were to leave the company they would be obliged to sell their shares back. Since the company was not publicly traded, it was valued using the book value. Due to the relatively small number of partners, company strategy and major decisions were discussed among the shareholders, however, no formal

Partners' rights & duties

"I have a very difficult time understanding those people who do not commit to what they are doing. Most of us (and maybe this is part of the problem) come from very vocational areas, where personal responsibility and intellectual curiosity are very important. This is very strange for me, and it's very hard for me to deal with such attitudes."



decision-making procedures had been put in place and no formal voting took place.

Despite this incentive structure, José Antonio was having a difficult time ensuring commitment to the projects, especially among the younger staff, who he found to be unmotivated and absentminded. *Problems*

Going Forward

INES' prestige had already become a reality in the Spanish engineering landscape. However, the infrastructure sector was heavily affected by the cost-cutting implemented as a result of the financial and economic crisis, and the firm needed to look for international projects. Competing against Anglo-Saxon engineering firms such as Ove Arup, Atkins and HNTB would not be easy. While in Spain any construction firm would work with INES directly, often ignoring other big engineering firms that had become less flexible and creative, outside the Spanish borders they were practically unknown. *Unknown outside of Spain*

There was genuine opportunity for new projects in their niche, but José Antonio was wondering whether the firm was ready to leap. On the one hand, their international team, who were becoming more expert by the day, was building up an appetite for getting into better and more exciting projects. On the other hand, their size could make it difficult to bid for big international projects, even as part of a partnership. Similarly, the probability of winning bids for historical heritage projects outside Spain required specific knowledge that was not always easy to gain. Moreover, the founding team was not exactly excited about the personal and financial investment that would be required to confront serious international competition, including the need for more travel to develop the necessary institutional knowledge. *Big enough for the next leap?*

"Going from 30 people to 100 people is a matter of scale. You have more projects and more money, but then you have to devote yourselves to managing the company... If it keeps growing, it means I can no longer spend any time on engineering projects... something that would bother me."

A Warning Sign

INES had been working with the Spanish firm Cintra in several consortiums. The latest contract they had won had been the Indiana toll road contract. Part of this project was to assess the stage the various infrastructures were at. Cintra wanted INES to carry out this task (which would have meant a contract worth around \$1.5 million for INES), however, INES was too small to oversee such a project. Consequently, they were only able to ensure the project as advisors but not as coordinators (resulting in a contract worth around \$100,000). *Great potential in danger?*

Are we Ready to Continue Growing?

José Antonio realized that INES had great potential, and that he had to decide which way to lead the company. He understood that INES' success was based on its highly qualified human resources, their specific knowledge and integral and focused approach. He also realized that they had a huge growth potential for the next few years, given the conservation and construction needs in Spain and Europe. *Does growth imply change?*

He knew that growth would affect the structure and size of the company, and that this would affect his own experience. As he explained: "the company is doing better and better, but I am not happier



and happier.” He realized he was spending more and more time managing the company and its staff, and devoting less and less time to research and other engineering projects. As he explained, he and José Luis, his partner, had a phrase that they like to use: “Do you remember when we were poor and happy?”

*Better,
but not
happier*

Despite the deep recession that Spain was facing, José Antonio realized that INES could grow, on the basis of its expertise. The drastic budget cuts, especially in the fields of infrastructure and renovation, could push the firm to look for other markets. In fact, many emerging countries were now receiving subsidies and implementing packages to develop the infrastructure significantly. However, he was not sure how to best promote this growth, nor in what direction he should aim. In addition, he was afraid of losing the focus on knowledge creation and research that characterized INES.

*Quo
vadis,
INES?*

Lead Questions

- **How can José Antonio spur company growth, while building on its strengths and capabilities and maintaining its focus on research and knowledge creation?**
- **What ‘model’ of engineering consulting firm should INES strive for?**
- **If the company grows, how can they ensure their team’s commitment, especially among the younger members?**
- **How should they structure the company to motivate the team and promote growth?**