Design and Implementation of the System of Foresight, Technological Surveillance, and Organizational Intelligence (PREVIOS) in the National Learning Service (SENA) of Colombia

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Abstract

This paper expounds an experience of social construction of the future and the institutionalization of a foresight system, namely, the National Learning Service of Colombia's (SENA) System of Foresight, Technological Surveillance, and Organizational Intelligence—PREVIOS. It explains how the foresight processes that constitute PREVIOS were conceived, how they work, and what are the implications for the field of vocational training and education for work in Colombia. PREVIOS provides the SENA with a collaborative work platform, a trained team and a set of structured processes of foresight, surveillance and organizational intelligence that allow it to manage tools to guide the long-term strategic direction of the institution, in compliance with its mission and contribution to the productivity of the people and the companies in Colombia.

Keywords: Foresight system, Learning curves, Maturity Model, Technological surveillance, Organizational intelligence, Colombia, SENA

Introduction

The purpose of this paper is to understand how the learning curves of a foresight[1] system operate in a specific context, i.e., the *Servicio Nacional de Aprendizaje*[2] (SENA, from now

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[1] In this paper, the terms *foresight* and *prospective* are considered equivalent. This does not mean, of course, that the authors disregard their difference or the traditions behind each term and their application.

on) with the support of the *Instituto de Prospectiva, Innovación y Gestión del Conocimiento*[3] from Universidad del Valle. In its implementation, professionals from both institutions participated during two work cycles carried out between 2015 and 2017, preceded by an initial phase during 2007-2010, which outlined its fundamental strategic guidelines. Rafael Popper and Ian Miles from the MIOIR / VTT / HSE conceptually supported the process in 2008 and 2015.

The SENA trains 1.3 million Colombians in technical and technological programs per year. It is an institution of considerable organizational complexity since it operates nationwide: it has 33 Regional Offices, 117 Training Centers, 10 Techno-parks, 15 Techno-Academies, and 146 Mobile classrooms (fluvial and terrestrial), with a budget of USD 1,096 million in 2017.

The SENA's System of Foresight, Surveillance and Organizational Intelligence, "PREVIOS[4]" (from now on), is a reference for professional training organizations and training-for-work in developing countries. PREVIOS provides the SENA with a collaborative work platform, a trained team and a set of structured processes of foresight, surveillance and organizational intelligence that allow it to manage tools to guide the long-term strategic direction of the institution, in compliance with its mission and contribution to the productivity of the people and the companies in the country. PREVIOS facilitates the anticipation of new institutional offer, the modernization and technological update of the training programs, the new occupational profiles, the future learning environments, and the services that the institution will offer in the next 20 years. It is located on a computer platform specially designed as a flexible corporate knowledge management tool, with material available in various digital formats (audio and video).

PREVIOS proposes eight processes, guided by four types of Foresight, namely: Technological, Occupational, Sectorial, Territorial, and a work process in technological surveillance and organizational intelligence. The design of PREVIOS establishes conceptual frames of reference and situates the context for the institutionalization of the

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[2] National Service of Learning of Colombia.

[3] Institute of Foresight, Innovation and Knowledge Management.

[4] In Spanish, PREVIOS stands for: *Prospectiva, Vigilancia e Inteligencia Organizacional*.

system, generating methodologies to carry out foresight projects in the different fields of work, adapted to the regional and sectoral needs of Colombia. It proposes 11 methods of foresight, surveillance and organizational intelligence, and provides bibliographic references of 30 other methods. PREVIOS has developed pilot cases in each field of action. For example, territorial foresight in the Guajira region, biotechnology in the Pacific region, policies on institutional welfare, and technological surveillance solutions for decision making in technological infrastructure (Medina et al, 2018 a y b).

To analyze this experience of social construction of the future, first the organizational context of SENA is described as well as the starting point in 2007-2010, then the model re-created in 2015 is synthesized and, finally, the design and implementation of PREVIOS in 2017 – 2018 is analyzed.

1. Moment I: The SENA organizational context and initial experience (2008-2010)

The SENA is a huge Colombian institution that, in 2018, celebrates 61 years of trajectory. It significantly affects the production, and the social and massive transfer of knowledge, generating free professional training and education for work. It is a national public entity spread nationwide. It is present in 33 regions and in all municipalities in Colombia; it has about 21,000 instructors and manages 267 branches of its own. Its main income comes from parafiscal taxes paid by companies enabling the SENA to consolidate a robust educational offer; the institution offers, for instance, around 200 thousand courses per year about all subjects.

The origin of PREVIOS began in 2007 through the support of the National Program of Technological and Industrial Foresight of COLCIENCIAS[5], year in which the pre-foresight phase was carried out, producing the previous analyses and the design of the work project. The first phase of the process was carried out during 2008—2010, it sought to understand the complexity and nature of the institution to design a relevant foresight and technological surveillance model for the training response according to its institutional context. This option meant not simply copying pre-existing models in the world, but thoroughly studying

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[5] COLCIENCIAS is the Administrative Department of Science, Technology, and Innovation of the Government of Colombia.

the particularities of the context to generate a model to be implemented at all levels of the organization (SENAI, 2005; Keenan y Popper, 2008).

The key idea is that the systematic start-up of foresight requires the specialized use of methods, processes, and systems, which avoid speculation, provide rigor, and structured reflection about the future, allowing transcending occasional interventions and facilitating the accomplishment of iterations or successive rounds of exploration and environment analysis. Foresight systems involve the constitution of permanent teams, the development of learning curves and professionalization, and the possibility of recurring work cycles over several years. Therefore, they imply a relevant organizational development to gain in scope and degree, the structuring of the work (Medina et al, 2018a y b).

This process involved the implementation of face-to-face, blended and online training for the entire managerial staff, training of a high-performance team and the production of specific academic materials, which laid the theoretical and methodological foundations of the subsequent process, as well as a series of concrete applications of specific issues of strategic interest to the institution. This foundation was expressed through a theoretical and a practical text with real applications and examples worked by a high-performance team that helped adapt foresight methods tailored to the language and purposes of the institution (Medina et al., 2011 a y b).

The model designed responded to the SENA's minimum essential needs, based on the principle of the cone of progressive reduction of uncertainty (Wack, 1985 a y b), through which five successive phases could be traced for (i) the targeting of projects, (ii) the environment analysis, (iii) the analysis of performance gaps between the current situation of the SENA and international standards, (iv) the analysis of scenarios and strategic options, and (v) the monitoring and follow-up of critical monitoring factors.
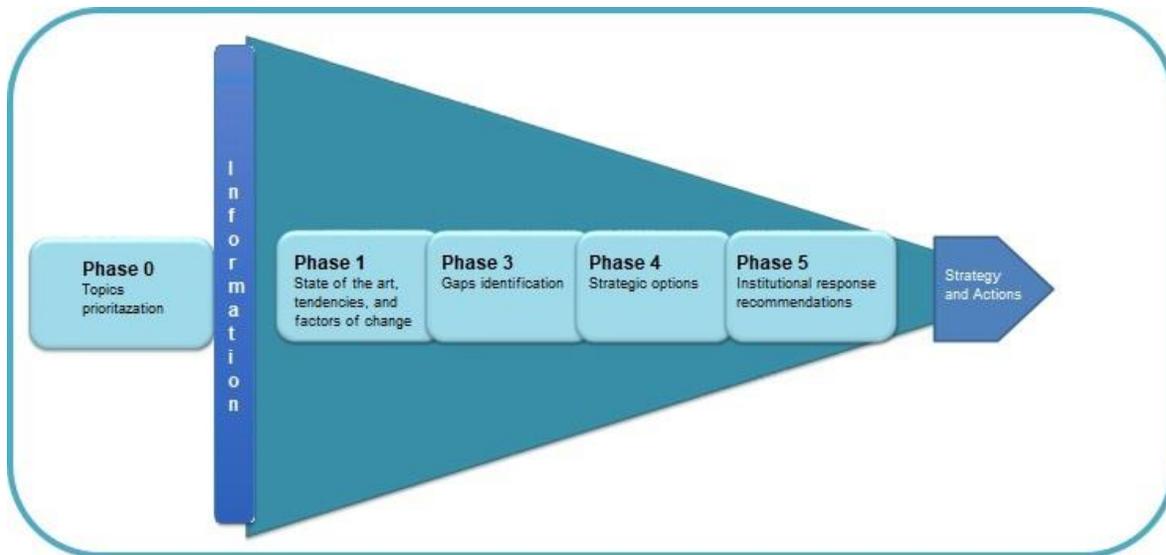
Graphic 1 Cone of progressive reduction of uncertainty. Source: own elaboration, Instituto de Prospectiva, Universidad del Valle, 2010

2. Moment II: PREVIOS system and its main processes (2015-2017)

In the second phase, which began in 2015, there was an interesting experience of coupling between the needs of the SENA and the proposal of the Instituto de Prospectiva, accompanied by the contributions of Ian Miles and Rafael Popper, from the University of Manchester. A new high-performance team from the SENA was constituted and the current system was conceptualized, which in 2017 was called PREVIOS, which means SENA's Foresight System, Technological Surveillance and Organizational Intelligence. It is currently in a third phase of execution, in full academic and institutional development. [6]

The main advance, compared to the first phase, was to diversify the foresight processes to cover, in greater scope, the institutional needs of the SENA, so that, in addition to the training programs, occupational, sectoral, territorial, technological, and managerial demands were taken into account. Accordingly, the repertoire of processes was broadened

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[6] In several recent works, emphasis has been placed on improving the understanding of foresight organizations as well as the systematic processes of evaluation and production of foresight. This is carried out and understood in a moment of transition and conceptual and methodological evolution of foresight (Cfr. Aguirre-Bastos & Weber, (2018); Gokhberg, Meissner, Sokolov A. (2016); Miles, 2013 & 2013; Miles, Meissner, Vonortas, Carayannis (2017); Petit (2017); Poteralska, Sacio-Szymánska (2014).

to include occupational, sectoral, territorial and technological foresight, in addition to applying technological watch to the strategic decision making of the Training Centers. This diversification of the repertoire of processes, is explained in Table 1:

Figure 1 PREVIOS basic processes. Source: SENA *http://senaprevios.com/que-es-el-sistema/*.
Personal translation

Table 1 PREVIOS foresight processes

Process	Definition	Aim	Scope	Expected Results
Territorial Foresight	The systematic process through which the institution investigates the future alternatives of the territory; it focuses on dimensions of analysis relevant to the territory and from which it can bring about implications for the strategic decision-making based on its mission axes.	Analyze the **future alternatives of a given territory**, which allows orienting **strategic decision-making** based on the mission axes of the SENA.	Analyze **the present and future dynamics** on the following dimensions of territory analysis: • Economic development • Sociodemographic development • Scientific-technological development • Institutional development • Environmental-Territorial development - territorial • Infrastructure	• Hard and emerging trends in the territory. • Factors of change of the territory. • SWOT analysis of the territory. • Future scenarios of the territory (Inertial, incremental and structural change). • Challenges of the territory in the scenarios. • Strategic implications of the territory's future scenarios. • Strategic responses to obtain the scenarios. • Potential alliances with strategic actors.

Sectoral Foresight	The process of anticipating the dynamics of transformation of the economic sectors, enabling the alignment of the SENA services offer with an articulated response to the current and future needs of the economic environment.	Bring about the SENA's response to the needs of the context, based on **the analysis of economic sectors and their productive transformation**.	Provide elements to the SENA to define or guide its service offer in articulation with the trends and needs of the sector, based on the following dimensions:
			Economic dimension:
			- Growth of the sector - related sectors
			- Employment, underemployment, inflation, GDP, among others.
			Socio-cultural dimension:
			- Social and cultural factors related to the sector.
			Political-legal dimension:
			   - Political context-legislation of the sector
			Technological dimension:
			   - Technological change
				• Identification of **sectoral growth**.
				• **Future training requirements** for the sectors.
				• Offer of **new programs** according to the opportunities and challenges of the sector.
				• **Challenges** of the sectors

Process	Definition	Aim	Scope	Expected Results
			factors **Environmental dimension**: - Impact of climate change- Natural Resources	
Technological Foresight	The exploration and anticipation of the effects of current and future technologies in the development of the institution's services offer, enabling **the adjustment of investments, offers and alliances** to the local, regional, national and international competitive environment, through the analysis of the scientific and technological evolution of the fields, themes and / or strategic technology lines.	Analyze the **scientific and technological evolution** of the fields of knowledge and innovation that make possible the identification of the existence and use of **critical and emerging technologies**.	Analyze the **present and future dynamics** on the following dimensions of analysis of technologies: • Conceptual definition • Scientific -technological component • Commercial component	• New technologies (materials, design). • Patent Opportunities for training centers. • Research projects. • Technological infrastructure. • Technological networks. • Leading institutions in technology. • Technological suppliers. • Identification of strategic activities for the future development of technology or technologies associated with it.
Occupational Foresight	**Anticipate the new educational offer for work**, promote the analysis of emerging occupations and occupational trends, the realization of comparative studies of training for work and monitoring for continuous observation of the labor market and its occupational impacts.	Provide inputs to the SENA to **anticipate** its new educational offer based on the country's occupations, and thus be able to transform its **educational offer**.	Find the **most relevant occupations in the labor market** related to the subject, which will allow the SENA to **transform** its educational offer. The following dimensions must be analyzed: • Educational • Economic • Sectoral	• New educational offer **trends** for the SENA. • **Gaps** in relation to other referents. • Resources and capacities that will contribute to the change of the educational offer. • **Future alternatives** for the SENA in relation to its educational offer. • Recommendations for **strategic decision-making** in the SENA.
Technological Surveillance and Organizational Intelligence	**Systematic and permanent process** of capturing, processing and analyzing information from the competitive, technological,	Carry out **exercises of surveillance and organizational intelligence** that address the strategic decisions that the SENA	Analyze the dynamics present in the following analysis dimensions: **Conceptual definition**	• Analyze the behavior of current, potential and emerging competitors. • Identify trends of new apprentices and courses. • Identify critical technologies for the

Process	Definition	Aim	Scope	Expected Results
	scientific-technological, legal, cultural and geophysical environment in order to generate institutional responses to permanent strategic decisions, allowing the SENA to optimize, anticipate and timely respond to the needs of the environment.	must take in the short term.	- Conceptualization of the technology under study. **Competitive surveillance** - Surveillance on current and potential competitors. **Business surveillance** - Surveillance on customers, suppliers, markets, and personnel's behavior. **Technological surveillance** - Surveillance on the technologies that affect the institution. **Strategic surveillance** - Political, economic, environmental, and social surveillance, macrotrends	process of developing technical and technological training capacities. • Anticipate risks and opportunities for decision-making in the here-and-now of the Centers.

3. The Maturity Model[7]

3.1. Conceptual foundations, uses, and learning levels

The PREVIOS System's Maturity Model and its operating logic can be understood from the following concepts[8]:

- The Maturity Model seeks the institutionalization of PREVIOS that is, leading PREVIOS to be part of the daily life of any Training Center. Thus, while PREVIOS applies foresight methods and processes for the generation of high-quality technical studies, the Maturity Model seeks to institutionalize such practice.

- The Maturity Model of the System seeks, in the long term, to provide the 117 Training Centers of the SENA with planning, foresight, monitoring and organizational intelligence (PVeIO, in Spanish) capabilities. It faces the challenge of coordinating, on a day-to-day basis, the development of new learning, capitalizing on its experiences and responding to the needs of the country. The Maturity Model provides a methodology that allows advancing in orderly steps towards the acquisition and institutionalization of the said capacities. In this way, it establishes an orderly method of improvement, based on the appropriation of practices in the said Centers through an instrument called Roadmap.

- The improvement process consists on the gradual development of the Maturity Levels based on compliance with the practices and activities stipulated in the Road Map and operationalized through an Action Plan. The main responsibility rests on the Corporate Management and Planning Direction, which coordinates and directs the exercise from the General Directorate of the SENA.

- In this way, a bidirectional and synergistic relationship is established. On the one hand, the most basic practices (level 2 of maturity) of the Maturity Model guide the step-by-step that readies all the Center to use the PREVIOS System. But,

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[7] The Maturity Model designed for the SENA is based on a work about project management carried out by Sánchez, Solarte & Motoa (2014) of Universidad del Valle, which has been specially adapted for this institution.

[8] The Maturity Model for the institutionalization of the PREVIOS System is defined as a working methodology that establishes an orderly step-by-step for improvement based on the appropriation of practices and capacities in the SENA Training Centers (CMMI Product Team, 2006).

additionally, once the foresight methods and processes of the PREVIOS System have been used, the Model requests the systematization of learnings through lessons learned, which capitalizes experiences to move to more advanced levels that imply a systematic and strengthened use of the PREVIOS System, generating a learning curve.

- The value of the Maturity Model is that it defines specific practices of Foresight, Surveillance and Organizational Intelligence (PVeIO) and a series of activities in a certain order that allows them to be implemented, thus leading to progress in the institutionalization of the PREVIOS System.

- To measure the progress in the institutionalization of the PREVIOS System in any Training Center, the practices and activities are organized into five groups called Maturity Levels, which, being listed from 1 to 5, provide an idea of orderly progression.
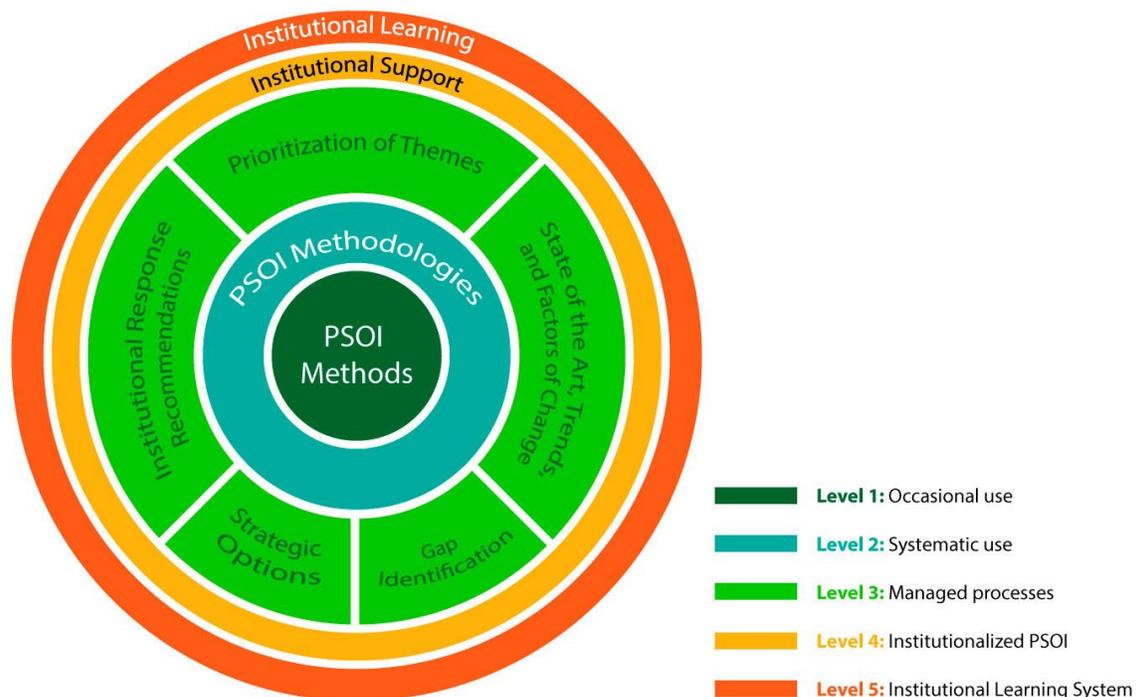

Figure 2 Learning Levels in the PREVIOS Maturity Model. Source: Instituto de Prospectiva, Innovación y Gestión del Conocimiento, Universidad del Valle, 2017

On the basis that a Training Center can start from a level in which, despite having some experience, it is assumed as occasional, ignoring PREVIOS System tools such as the

services of the PVeIO Unit (i.e., the level 1), each Training Center must implement each and every one of the practices and activities of Maturity Level 2, to be validated as a Level 2 Center. While this occurs and, even if it has progresses in certain practices of the said level (2), it will be considered as of Level 1. The same criterion applies for levels 3, 4 and 5. Thus, a Center already validated as Level 2 must carry out all the practices and activities of Level 3 to be validated in this new level, and so on. On the other hand, for the specific case of Level 2, and since it is the first time that a Center uses the PREVIOS System, there is an additional criterion: to validate the existence of certain minimum points in the final report of its first Foresight Exercise.

3.2 Progress through learning and maturity levels

The Maturity Model provides a set of orderly, progressive and methodical steps to move up in the learning curve.

- Basically, level 1 execution refers to the occasional use of foresight tools. Level 2 is related to a systematic use, but not necessarily linked to the decision processes, rather randomly, corresponding to specific exercises. Level 3 has to do with managed processes, daily and usually in the training centers, which systematically produce the states of the art, the readings of trends and factors of change, the identification of the gaps, the generation of strategic options and recommendations for the institutional training response[9]. This level, unlike level 2, implies that the management of the training centers periodically incorporates foresight exercises and applies them to specific decisions, be it territorial, technological, occupational or sectoral foresight, or by means of specific surveillance exercises.

- Meanwhile, level 4 carries the institutionalized practice of foresight, surveilling and organizational intelligence, that is, through working cycles with clear institutional support of the SENA as a whole, not by each center on its own. Level 4 articulates knowledge networks that exist in the SENA, relevant to large macroprocesses of the

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[9] Note that this work cycle corresponds to the products identified in the first phase of the System's development in 2010 (Medina et al., 2010). In this way, this cycle was resumed, being PREVIOS and the Maturity Model the way to anchor it in the institutional context of the SENA (Solarte, Sánchez, Gómez & Velasco, 2018).

institution. Finally, level 5 involves the entire operation of the institutional learning system, where not only each center and every regional branch learn, but it operates the circulation of institutional knowledge around the SENA. The key feature is that institutional decisions are learned to be made based on foresight and technological surveillance and organizational intelligence.

Now then, there's a recurring question: Can a Training Center jump and become into a foresight system outright? Indeed, it is very difficult because it must have all the resources, human talent and available knowledge in the five PREVIOS processes. Usually, a Center does not have all the supplies to implement all five processes. Generally, a Center progressively dominates the five processes and then, the progress of all the centers together builds the system as a whole.

If the dynamic is looked at from the methodological point of view, the initial focus of the process lies in the learning of foresight, surveillance and organizational intelligence methods; then, the focus is on combining the methods through different methodologies and applying them in specific contexts. Each methodology would be a sequence of methods used according to an adoption field, as the case may be: territorial foresight, sectorial foresight, occupational foresight, etcetera. It is key to understand that tools are used neither in exactly the same way, nor in the same order. On the contrary, depending on the situation, the tools are adapted to the particular needs of each context (Danheim, 2007). It is necessary to understand that in Colombia there are different levels of territorial and sectoral development. Therefore, the same methodology cannot be used as a single valid prescription in all contexts. For instance, one case is that of cities with a high population density level and metropolitan development such as Bogotá, Medellín, Cali, Barranquilla or Bucaramanga, where the epicenter of the country's economic development lies, and another very different case is that of regions such as the Pacific Coast, the Amazon and the Orinoquía, which have a lower population density level and completely different stages of development.

3.3 Key factors for learning of foresight

It is understandable that an institution as big as the SENA has very dissimilar Centers, with different histories and trajectories. It cannot be expected that all Centers advance

homogeneously in the learning curve, since it is a differential and heterogeneous progress. The first task to determine the level in the Maturity Model of the whole institution is to establish a baseline and determine at what level each training center is.

To establish the point of maturity of each Center, a model with a series of operationalized categories was developed. For this the Instituto de Prospectiva, Innovación y Gestión del Conocimiento of the Universidad del Valle made a careful survey and found that the most interesting experiences were in the cities of Cartagena, Bogotá, and Cali, where there were centers at level 2 that had advanced, unevenly, up to levels 3 and 4.

In the survey, it was found that the levels of maturity are not usually reached completely, but that the Training Centers learn in a differential way. For example, by then, the best performance was held by the Nautical, Fluvial and Port Center in Cartagena, with 100% of level 2 and a series of practices that pointed to 90% of level 3, 80% of level 4 and the 40% of level 5. While the Administrative Management Center of Bogotá had 100% of practices in level 2, 70% of level 3 and 60% of level 4. The Technical Assistance Center for Industry in Cali had 80 % of practices in level 2, 40% of them in level 3, and 60% in level 4. Lastly, the Transportation Technology Center in Bogotá had 80% of practices in level 2 and 90% of them in level 3.

The purpose is that, at the national level, each of the Training Centers reaches at least level 3. In order to achieve this, it is necessary to identify at what level the Center is located within the five levels, what factors influence in its level 2 and its transition to level 3, and design an action plan to move from one level to the next. On the other hand, efforts must be made to refine at, the central level, the institutional issues that facilitate access to levels 4 and 5, which are related to the degree of institutionalization of the Centers' experiences and the degree to which the SENA, as a whole, accompanies the evolution throughout the levels of each of the Centers.

Now then, another critical point to accelerate the jump between levels of maturity lies in the strength and experience of the pilot teams. To develop a pilot team, the purpose is to combine different profiles and levels of training. According to Medina's (2018) proposal, there are six levels in the learning curve in foresight training, from the initial level

of beginner to the advanced level of *maestro*. These six levels are grouped into three categories, namely:

The basic category—junior—involves two levels, *beginner* and *advanced beginner*; the intermediate category, where progress is made towards being *competent* or *expert*; and finally, the highest category—senior—, which implies the levels of *virtuoso* and *maestro*[10]. At the intermediate level, there is a specialization role for the prospectivist, in which he can be trained as: head of foresight projects; teacher or educator in practices, methods and foresight models; researcher or responsible for the support and record of the exercises; surveillant, that is, the person who carries the technological surveillance and provides the qualified information for decision making; or as a member of a technical team, in any of the previous roles but playing an advisory role in the foresight team.

Finally, at the highest level, according to the French experience, a senior is a person who has, at least, 12 years of continuous foresight practice in different roles; that is, he has had a diversified experience as a surveillant, researcher, teacher, project manager or as a member of a technical team. The level of *virtuoso* is able to generate original contributions and improve existing instruments and practices, while the *maestro*, in addition to the above, provides advanced training and has the ability to coaching or mentoring the new generations.

At this point, professionalization in foresight is fundamental, this means managing international standards and best practices, with a high degree of updating. This is pivotal because, although the foresight has an invariant aspect as is the proficient use of the methods, the way in which these methods are used evolves rapidly with international practice. Attention should be paid so as not to get stuck in the application models of the

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[10] This learning curve is based on the work of Fernando Flórez (1994). Making good quality foresight is not limited to managing methods. It implies incorporating past traditions into current practices. It requires understanding foresight as a discipline, whose specialized knowledge comes from more than 70 years of progress. Like any discipline in the process of maturity, it is necessary to know in depth the different schools of thought, the theories, the points of reference, the best practices and the process of organizational development to handle situations of high complexity (Medina; Becerra & Castaño, 2014).

foresight of the 80s or 90s, and to learn how projects and foresight programs are carried out nowadays, which vary according to constant innovations.

Conclusions and main products from the PREVIOS system

The learning curve during the period 2008-2018 has taken three phases. In the first one (2008-2010), the foundations of the model were laid, focusing on the development of training programs as a fundamental need of the institution. In the second one (2015), the repertoire was diversified into five major processes. In the third one (2017), quality features and criteria were generated, which have facilitated the adaptation of foresight to the SENA's institutional formats and processes, as well as the testing of each process in each region of Colombia, minding its specific characteristics, which has led to the institutionalization of the PREVIOS.

At the end, five basic processes are delivered: the territorial foresight process, which has one sub-process for regions of high population density and another for regions of low population density; the process of technological foresight, which has a common thread for all the SENA Centers and another sub-process that is adapted to the more advanced Centers, with more sophisticated levels of development; the occupational foresight process, which has two sub-processes, one for updating and designing new programs—aim of the 2008-2010 period—and another for monitoring new occupations. The seventh process is the sectoral or socioeconomic foresight; and the eighth and last process, is oriented to the strategic decision-making of the Training Centers, based on daily, diverse, and punctual uses of technological surveillance and organizational intelligence applied to specific topics, such as, for example, infrastructure purchases, which involve high costs, high impacts, and irreversible effects for the institution.

The PREVIOS System is expressed in clear and direct products. First, in terms of training, a high-performance team was trained in 2015 through a diploma of 140 certified hours, with virtual assistance in theory and practice. People were trained in the methods and in the different types of foresight. As well, many institutional implementation issues were discussed. This high-performance team has been the basis for the validation process in different regional and sectoral contexts of the model during 2017.

Second, a Foresight and Organizational Intelligence Unit located in the SENA Planning Office at the central level is designed; it is constituted by a specialized group of people, able to lead the implementation of the model at the institutional level.

Third, there is the identification of the baseline of the experiences of using foresight in Training Centers. To this end, the radiography was made between 2010 and 2015 as well as the evaluation of the implementation of the technological plans of the SENA's technological centers and networks, initiated around 2008-2009, which laid out a road map for the centers. Finally, the characteristics of the implementation of the maturity model in the training centers were generated.

Fourth, there is the design document on how the new Foresight, Surveillance and Organizational Intelligence—PREVIOS—system should be. It contains the repertoire of foresight methods and processes for the SENA, as well as a comparative review of international foresight systems. It is worth highlighting the specific developments in each type of foresight: territorial, technological, sectorial, and occupational, as in strategic decisions.

Fifth, a document was produced with the analysis of the implementation challenges. Given that levels 4 and 5 of the Maturity Model depend on institutional capacity, it is fundamental to improve the harmonization and coordination of the institution processes, the models of governance and the relevant legal factors. Finally, a real test was carried out through pilot cases where foresight, surveillance and organizational intelligence were applied with a view to making the high-performance team implement the designed methodologies.

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