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Strategic priority of foresight



Gendarmerie and territories

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THE GENDARMERIE NATIONALE, AN INNOVATIVE ADMINISTRATION

In January 2020, as part of its GEND 20.24 plan, the Gendarmerie nationale created a transformation department, whose mission includes driving innovation¹ within the Institution. The gendarmerie is thus one of the first central government departments to devote a service² to change management. The symbolism is powerful: the transformation department reports directly to the Director General, just like, for example, the operations and employment department, which defines the gendarmerie's intervention doctrines, or the military personnel department, which performs human resources functions. Far from signaling a new interest in innovation, the creation of this department enshrines a culture of innovation that has long been present in the gendarmerie.

The gendarmerie's capacity for innovation – i.e. its ability to develop and deploy technical and organizational solutions that improve the quality of public security services – is not the result of chance, but of a major effort to industrialize innovation. The gendarmerie has implemented specific methods and organizational structures aimed at driving and controlling innovation. In other words, making this 'windfall' endogenous³.

Innovation is fundamental to the gendarmerie, as it enables the institution to adapt to a constantly evolving technological environment and thus continue to effectively carry out the missions entrusted to it (I). To overcome the obstacles to public innovation identified by management research (II), the gendarmerie has implemented organizational structures (III) and specific innovation methods (IV) that enable it to streamline change management. Finally, the gendarmerie's human resources policy has evolved to encourage the recruitment of scientific profiles while maintaining careers with a strong operational component, which is essential for fostering the emergence of innovations that can be deployed in the field (V).

I) Innovating to better protect tomorrow

Created in 1791, and as such one of the oldest public institutions, the Gendarmerie nationale has continuously modernized to adapt to technological changes and continue to effectively fulfill its many missions. In fact, the gendarmerie is characterized by its versatility and the wide variety of missions entrusted to it, some of which are highly technical, such as forensic sciences, the fight against cybercrime, criminal intelligence and nuclear weapons control. To carry out these complex missions, the gendarmerie must not only maintain its technical expertise but also anticipate technological developments to adapt to them sooner than criminals, who are themselves rapid to mobilize the latest technologies to modernize their methods, particularly in the field of cybercrime.

- ¹ In its Oslo Manual (2005), the Organization for Economic Cooperation and Development (OECD) defines innovation as “the implementation of a new or significantly improved product (goods or services), process, marketing method, or organizational method”.
- ² Services constitute the second highest level of the French administrative structure, below central administration directors and above sub-directorates, which are themselves subdivided into offices.
- ³ SOLOW, R.M. « A Contribution to a Theory of economic growth ». *The Quarterly Journal of Economics*, vol. 70, n° 1, février 1956, p. 65-94 : in this article, economist Robert Solow argues that innovation is an exogenous—that is, uncontrolled and sporadic—source of economic growth.

From the development of the first automated judicial comparison systems in the late 1960s (the PROSAM system, which could process more than 120 microfiches per minute) to the commissioning of the first mobile DNA analysis laboratory in 2016 by the National Gendarmerie Criminal Research Institute (IRCGN), and the creation of the National Gendarmerie Intervention Group (GIGN), one of the world's first anti-terrorist intervention units, in 1974, the gendarmerie has been at the forefront of countless innovations in the field of internal security and criminal investigation. Lately, the gendarmerie has successfully invested in new technologies, with, for example, the ALICE project launched in 2016 by the Centre for Combating Digital Crime (C3N), which aims to automate the search and filtering of criminal images (child pornography, drugs, etc.) and the design, in 2022, of a low-power connected device for non-consensual tracking of individuals ('non-cooperative geolocation solution based entirely on Internet of Things technology' – SGATI).

The gendarmerie's innovations sometimes spread beyond the institution and are extended to other public services, such as the Gendloc geolocation system⁴ whose use has been extended to the National Police and Civil Security. They may even be marketed by private companies in partnership with the gendarmerie, as is the case with the French company TRACIP, responsible for industrializing the IRCGN's DNA analysis laboratory. These successes make the gendarmerie a modern internal security force and a pioneer in its areas of expertise.

II) Is public service a barrier to innovation?

As an internal security force, the gendarmerie innovates in a specific context: public service. Unlike the private sector, where innovation is mainly aimed at creating advantages to gain a competitive edge, public innovation is an obligation arising from the constitutional principles governing public service. Indeed, the principle of continuity of public service, which requires the uninterrupted operation of public services necessary 'for the essential needs of the country'⁵, has as its corollary that of mutability. The latter requires public services to evolve – and therefore to innovate – to adapt to changes, particularly technological ones⁶, and therefor maintain the quality and efficiency of the service provided.

However, several barriers to innovation in the public sector have been identified in academic literature. The non-commercial nature of public services and limited budgetary resources – notably due to the lack of dedicated funding for innovation, such as *venture capital*⁷ – would create 'asymmetric incentives' that would punish failures more than they would reward successes in innovation⁸ and result in discouraging spending on experimentation⁹. Furthermore, according to William Niskanen, the monopolistic – i.e. non-competitive – nature of public services limits the incentive to innovate in government services¹⁰. Finally, the organization of public services is governed by laws and regulations that make the substitutability of production factors and the reallocation of resources complex and cumbersome¹¹ and the modification of the nature of the service provided¹², which would hinder innovation.

III) An organization conducive to innovation

These barriers to innovation identified in academic literature have been overcome by the gendarmerie, which has set up a specific structure to promote innovation, with a unit responsible for centralized management of innovation within the gendarmerie (the transformation department) and exploration units specializing in specific areas.

The transformation department, consisting of a team dedicated to identifying innovations and supporting innovators within the gendarmerie, as well as an internal and external network necessary for the protection and promotion of innovations, acts as a true internal *venture capitalist*. This department has implemented an active policy of promoting innovators within the gendarmerie, notably through annual innovation workshops that reward gendarmes who have designed a new service or object that improves the operational efficiency of the force.

4 This system allows a lost person to be geolocated by emergency services by simply clicking on a hyperlink they receive on their smartphone when they call 17 or 112.

5 Conseil constitutionnel, 25 juillet 1979, Décision n° 79-105 DC relative au droit de grève à la radio et à la télévision.

6 Conseil d'État, 1902, Compagnie nouvelle du gaz de Déville-lès-Rouen.

7 *Venture capital* involves investing in young companies that are considered innovative and have high potential.

8 BORINS, S. « Encouraging innovation in the Public Sector ». *Journal of Intellectual Capital*, 2, 3, septembre 2001, p. 310-319.

9 POTTS, J. « The innovation deficit in public services: The curious problem of too much efficiency and not enough waste and failure ». *Innovation : management, policy & practice*, vol. 11, n° 1, 2009.

10 NISKANEN, William A. *Bureaucracy and Representative Government*, 1971.

11 KNOX LOVELL, C.A. « Performance Assessment in the Public Sector ». In : FOX, K.J. (ed.), « *Efficiency in the Public Sector* », Kluwer Academic Publishers, 2002, p. 11-35.

12 FOX, K.J. « Efficiency at Different Levels of Aggregation : Public vs Private Sector Firms ». *Economic Letters*, 65 (2), 1999, p. 17-176.

The gendarmerie has also set up exploration units¹³, clearly distinct from the operational units (an organizational structure known as “structural ambidexterity”¹⁴), designed to identify opportunities for disruptive innovation¹⁵. These units carry out forward planning and design work in specific areas undergoing rapid and significant technological change: for example, the Central Observatory for Intelligent Transport Systems (OCSTI) in the field of mobility, or the Cyber Threat Collection and Analysis Center in the field of cybercrime. The gendarmerie's exploration entities—such as the OCSTI in the examples below—enable the force to:

- adapt to technological changes to ensure the continuity of its mission: for example, the OCSTI works with manufacturers to ensure that future autonomous vehicles will recognize gendarmes and their gestures during police checks.
- anticipate new forms of crime to better prevent them: OCSTI seeks to identify how criminals could use intelligent transport systems, such as the delivery of narcotics via mobility applications or autonomous vehicles.
- Identify technical opportunities that could be used to enhance the gendarmerie's effectiveness in carrying out its missions: OCSTI is leading the Gendiag project, which allows gendarmes to connect to OBD ports to automatically detect stolen vehicles.

Through these examples and many more projects, the exploration entities enable the gendarmerie to seize opportunities and identify threats related to technological developments in its environment. They are a means of positioning the gendarmerie at the earliest stage of innovation¹⁶: exploration. Finally, they make it possible to avoid the pitfall of focusing exclusively on development activities¹⁷, useful for incremental innovation but seldom generating disruptive innovations.

IV) Methods for systematizing innovation

In an administration, as in a large company, the challenge is to industrialize innovation to control its flow and eradicate its sporadic nature (in other words, to increase the probability of innovations emerging continuously over time¹⁸). In the administrative environment, which has specific constraints and provides less incentive to innovate than in a private, competitive environment, it is essential to implement methods to encourage and support innovation. The gendarmerie has therefore implemented three complementary innovation methods, each of which promotes the emergence of a certain type of innovation.

Directed innovation occurs when the central administration identifies an operational need and implements the means to provide a solution. The directed innovation model, in that it focuses on structural issues for the gendarmerie, is a source of disruptive innovations, such as in the field of combating cybercrime, with significant innovations, both organizational (such as the creation of the C3N in 1998 and the gendarmerie cyberspace command in 2021) and technical (e.g., the ARTIST tool, which automatically presents investigators with all the digital data of entities represented on a web page, such as URLs, digital identities, and metadata).

Participatory innovation, which refers to all solutions emerging from the field, allows individual gendarmes to propose new solutions to improve the efficiency of operational units. These innovations are generally more incremental in that they improve an existing service. For example, Republican Guards have developed a lightweight bulletproof vest that can be reinforced in a matter of moments with heavy ballistic plates thanks to a textile assembly. The mechanisms for identifying and selecting these solutions from the field, particularly through innovation workshops, the hotline, and innovation project proposal forms, enable the gendarmerie to reproduce internally a competitive and diverse environment conducive to innovation.

Finally, open innovation is the result of collaboration between the gendarmerie and external players, which the institution brings together in a coherent and functional network, based on the model of clusters (or competitiveness clusters). The goal is to circulate knowledge and skills—the “assets of innovation.”¹⁹ – between the various stakeholders. For example, the Pôle

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- 13 MARCH, J.G. « Exploration and exploitation in organizational learning ». *Organization Science*, vol. 2, n° 1, 1991, p. 71-87 : Exploration entities, as defined by March, do not simply improve existing technologies but aim to identify new needs, new uses, and new techniques in order to foster disruptive innovations.
- 14 BENNER, M.J., TUSHMAN, M.L. « Exploitation, Exploration and Process Management: The productivity dilemma revisited ». *The Academy of Management Review*, vol. 28, n° 2, p. 238- 256, 2003.
- 15 The value of establishing exploration entities separate from the rest of the company and dedicated to managing the most uncertain exploration projects with a view to generating disruptive innovations has been established, on the case of IBM, by David Garvin and Lynne Levesque : GARVIN, D., LEVESQUE, L. « Emerging Business Opportunities at IBM ». *Harvard Business School Case 304-075*, 2004, p. 4 et p. 8-9.
- 16 The four phases of innovation are: upstream exploration, contextualization, development, and deployment, according to CHARUE-DUBOC, F., MIDLER, C., MANIAK, R. « Le management de l'innovation », *Le management*, 2008, p. 260-269.
- 17 Risque identifié par Rémi Maniak : MANIAK, R. *Pilotage de l'innovation : pour ceux qui ont raté les (r)évolutions des 10 dernières années*, 2015.
- 18 Joseph Schumpeter, one of the first theorists of innovation, considers that innovation is sporadic, emerging in “clusters” and exhibiting a non-uniform temporal distribution: « We must recognize that evolution is lopsided, discontinuous, disharmonious by nature – that the disharmony is inherent in the very modus operandi of the factors of progress. ». In : SCHUMPETER, J. A. *Business Cycles*, 1939.
- 19 MARTIN, K. *Understanding Silicon Valley : the Anatomy of an Entrepreneurial Region*. Bibliovault OAI Repository, the University of Chicago Press, 2000.

Judiciaire de la Gendarmerie Nationale (PJGN)²⁰, in Pontoise, has established fruitful cooperation with the University of Cergy-Pontoise and many other companies. Open innovation promotes scientific and technical innovations, particularly in the field of forensics.

V) A pragmatic human resources policy

The gendarmerie implements a pragmatic human resources policy to attract rare skills. It was the first military force to regularly recruit commissioned officers. These are contract military personnel recruited at a specific rank “to perform specific scientific, technical, or educational duties.”²¹ Recruitment at a rank corresponding to the candidate's skill level (rather than at the first rank of officer or non-commissioned officer, as is generally the case) makes it possible to adjust remuneration and enhance the institution's attractiveness. The PJGN has thus recruited many commissioned officers to fill high-level scientific positions, particularly in data science, such as at the data science center, and in cybercrime, at the C3N. In 2020, the gendarmerie also set up a scientific recruitment pathway to attract more engineers to the career gendarmerie officer corps.

In addition, the career management of officers encourages movement between field units and headquarters services. The field knowledge of scientific officers in central administration ensures the relevance and operational nature of innovations with a view to their possible deployment to field units. This alternation between the field and headquarters also helps to avoid the NIH syndrome (*Not Invented Here*) syndrome²², according to which innovations developed outside the organization are neglected in favor of internal innovations, even if the latter are less effective. Every gendarme knows that all innovations, even those resulting from a directed approach (see above), have been designed by military personnel who are familiar with the specific constraints of the field. Ultimately, the military status of gendarmes, far from constituting a constraint in recruitment and career management, is a catalyst for innovation.



The organization and methods employed within the gendarmerie remove the barriers to public innovation identified in academic literature. As such, the gendarmerie is a source of “tried and approved” examples for public innovation in general, with three key success factors:

- the coexistence of a transformation service and exploration entities to protect innovation.
- the implementation of three different but complementary innovation methods to create synergies between the central administration, the field, and external actors.
- a flexible and pragmatic human resources policy that guarantees a large pool of recruits in scientific fields.

The example of the gendarmerie shows that the public nature of an organization is not an obstacle to innovation, provided that certain organizational measures are taken to neutralize the risk aversion and rigidities that can emerge in administrative structures.

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²⁰ The PJGN is the gendarmerie's center of expertise in criminal intelligence and forensic science. It brings together the Service central de renseignement criminel (SCRC) and the Institut de recherche criminelle de la gendarmerie nationale (IRCGN).

²¹ Article L 4132-10 du Code de la défense.

²² KATZ, R., THOMAS, J. « Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R & D Project Groups ». *R&D Management*, 12, 1, 1982, p. 7-19.