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**Direction :**  
**Irène Bouhadana & William Gilles**

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**IMODEV**  
49 rue Brancion 75015 Paris – France  
[www.imodev.org](http://www.imodev.org)  
[ojs.imodev.org](http://ojs.imodev.org)

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**Irène Bouhadana**, docteur en droit, est maître de conférences en droit du numérique et droit des gouvernements ouverts à l'Université Paris 1 Panthéon-Sorbonne où elle dirige le master Droit des données, des administrations numériques et des gouvernements ouverts au sein de l'École de droit de la Sorbonne. Elle est membre de l'Institut de recherche juridique de la Sorbonne (IRJS). Elle est aussi fondatrice et Secrétaire générale de l'IMODEV. Enfin, elle est avocate au barreau de Paris, associée de BeRecht Avocats.

**William Gilles**, docteur en droit, est maître de conférences (HDR) en droit du numérique et en droit des gouvernements ouverts, habilité à diriger les recherches, à l'Université Paris 1 Panthéon-Sorbonne où il dirige le master Droit des données, des administrations numériques et des gouvernements ouverts. Il est membre de l'Institut de recherche juridique de la Sorbonne (IRJS). Il est aussi fondateur et Président de l'IMODEV. Fondateur et associé de BeRecht Avocats, il aussi avocat au barreau de Paris et médiateur professionnel agréé par le CNMA.

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## ABOUT US

The **International Journal of Digital and Data Law / Revue Internationale de droit des données et du numérique (RIDDN)** is an academic journal created and edited by Irène Bouhadana and William Gilles at IMODEV, the Institut du monde et du développement pour la bonne gouvernance publique.

**Irène Bouhadana**, PhD in Law, is an Associate professor in digital law and open government law at the University of Paris 1 Panthéon-Sorbonne, where she is the director of the master's degree in data law, digital administrations, and open governments at the Sorbonne Law School. She is a member of the Institut de recherche juridique de la Sorbonne (IRJS). She is also the founder and Secretary General of IMODEV. She is an attorney at law at the Paris Bar and a partner of BeRecht Avocats.

**William Gilles**, PhD in Law, is an Associate professor (HDR) in digital law and open government law at the University of Paris 1 Panthéon-Sorbonne, where he is the director of the master's degree in data law, digital administration and open government. He is a member of the Institut de recherche juridique de la Sorbonne (IRJS). He is also founder and President of IMODEV. Founder and partner at BeRecht Avocats, he is an attorney at law at the Paris Bar and a professional mediator accredited by the CNMA.

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## PROMETEA: ARTIFICIAL INTELLIGENCE TO TRANSFORM JUSTICE AND PUBLIC ORGANIZATIONS

by **Juan Gustavo CORVALÁN**. Co-Director of the Innovation and Artificial Intelligence Laboratory of the School of Law of the University of Buenos Aires and Deputy Attorney General on Contentious, Administrative and Tax Matters of the City of Buenos Aires. PhD on Juridical Sciences.

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The worldwide scale, diffusion and speed of the changes caused by emerging technologies such as Artificial Intelligence, is unprecedented. Given this context, public institutions are beginning to explore how these technologies make their work more efficient, have greater effectiveness and be able to respond to the changes that this new industrial revolution has introduced into society. Both businesses and citizens demand for governments to become increasingly intelligent. Public services must respond to specific personal requests and produce customized solutions. Thus, the use of Artificial Intelligence within various government contexts is growing rapidly.

An intelligent public sector presupposes the adoption of a new paradigm: from a digital model to one of hybrid intelligence, which combines human intelligence with AI. This implies a double challenge linked to a double transition for the State. While moving towards a digital government, we must rethink the strategies to link data and information patterns with AI systems, and those of these, with human intelligence. The key of this last transition into smart States is found in information and data governance<sup>1</sup>.

The Argentinean justice system, in order to have tools capable of helping overwhelmed judges be able to respond to the increasing number of cases in face of the scarcity of resources, has demonstrated its interest in testing solutions of artificial intelligence.

PROMETEA<sup>2</sup> is an Artificial Intelligence<sup>3</sup> system created in Argentina, within the spheres of the Innovation and Artificial

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<sup>1</sup> Planet Algorithm, *Artificial Intelligence for a Predictive and Inclusive form of Integration in Latin America*, IADB, July 2018, [<https://publications.iadb.org/en/integration-and-trade-journal-volume-22-no-44-july-2018-planet-algorithm-artificial-intelligence>].

<sup>2</sup> Prometea is a software distribution model in which both the software and the data handled are centralized and hosted on a single server external to the organization. As for the design, it is a process of co-creation between specialists in artificial intelligence and the technical team of the organization that wants to implement it.

<sup>3</sup> The term « artificial intelligence » is often used to briefly designate the increase in independence, speed and magnitude related to computerized and automated decision-making. Artificial intelligence is not a single thing, but rather a « constellation of processes and technologies that allow computers to complement or replace specific tasks that would otherwise be performed by human beings, such as making decisions and solving problems. » « Artificial intelligence » can be a problematic term, because it suggests that machines can operate according to the same concepts and rules as human intelligence. It's not like that. Artificial intelligence generally optimizes the execution of

Intelligence Laboratory of the School of Law of the University of Buenos Aires and the Public Prosecutor's Office of the Autonomous City of Buenos Aires. The system, at first, was devised and implemented in order to optimize the Justice service and exponentially expedite judicial processes for the benefit of the citizen. Afterwards, it was recognized that greater advantage of its benefits could be taken by any public organization.

Through the different layers of innovation, its development constitutes a highly disruptive technological advance, whose implementation is based on the need for the State itself to be the one that provides the effective and innovative means which can generate an impact on society as a whole.

To this date, Prometea was officially presented and has collaborated with multiple internationally recognized organizations, including: United Nations, Organization of American States, the University of Oxford, University Paris 1 Panthéon-Sorbonne, University of Milan, the Inter-American Court of Human Rights, the Constitutional Court of Colombia, the Administrative Court of Lombardy, among many others.

## §1– PROMETEA IN NUMBERS

This innovation has brought immense benefits in its applications and in the development of various proofs of concept within Justice and Public Administration. Let's see:

- Predict the solution to a court case (Cases related to the rights to housing, education, work) in less than 20 seconds, with a 96% success rate. It allows for the creation of 1000 Legal Opinions related to housing right cases to be prepared in 45 days; which before would traditionally take up to 174 days to be accomplished.
- In contraventional matters, it allows for the creation of 1000 trial suspension resolutions for driving under the influence which would manually take up to 110 days to accomplish.
- In tax execution files, with the current management system that works by batches, 255 trances and auction sentences can be created in just one month. With Prometea, 1,440 can be done in the same time period.
- In the Constitutional Court of Colombia, where 2700 guardianship actions arrive per day – and therefore thousands of cases per day –, the time devoted to the selection of urgent cases was reduced from 96 days to just 2 minutes, through machine learning techniques. Here, Prometea reads, analyzes, detects and suggests in a few seconds the priority health cases. All

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computerized tasks, assigned by human beings, through repetition and iterative attempts. United Nations General Assembly, Resolution N° 73/348, *Promotion and protection of the right to freedom of opinion and expression* A/73/348, 29 August 2018, recital 3 [<http://undocs.org/en/A/73/348>].



accomplished under human supervision. Furthermore, the tool is designed to create multiple documents in an automated way. This way, 14 documents can be created in 16 minutes, something which today takes a person 2 hours 40 minutes of their work day to accomplish. The efficiency in this case is increased by 937%.

– In the Inter-American Court of Human Rights, it functions as a virtual assistant for the creation of notifications. It generates more than 100 notifications in less than 2 minutes, addressed to ambassadors and officials of different States in the four official languages of the Court. It also automates the process of resolution creation, which allows each one to be made in four minutes, when before it took no less than 1 hour to be executed manually. Lastly, it includes a search tool that conducts a complete investigation based on the previous judgments of the Court in less than 2 minutes.

– In the Civil Registry of Status and Capacity of the People of the Autonomous City of Buenos Aires, the 6000 administrative rectifications items that approximately enter in a year, with Prometea they are all made in 2 months. Previously, this same task took 8 months.

– In the scope of public procurement, it allows to create a specifications sheet of terms and conditions and in a few seconds and it also incorporates a tool for controlling public and private prices on the goods to be procured. The result obtained with the use of Prometea, it is that it is possible to make a sheet in just 1 minute, while manually writing the document took 2 hours.

– In relation to all implementations, it was concluded that Prometea reduces the amount of typing errors by 99%; and allows an exhaustive control of formal aspects of the documents involved

## **§ 2 – CHARACTERISTICS AND FUNCTIONALITIES OF PROMETEA**

Prometea is characterized by three main aspects: i) It has an intuitive and friendly interface that allows you to « talk » to the system or chat from a natural language recognizer; ii) It operates as an expert system with multiple functions, which allows data and documents to be automated and intelligent assistance; iii) It uses supervised machine learning and clustering techniques, based on manual and machine labeling with training datasets.

Prometea's functionalities can be described in four large groups: i) Smart Assistance; ii) Automation; iii) Smart classification and detection; iv) Prediction without black boxes.

### **A) Smart Assistance**

Assistance through Artificial Intelligence includes the transmission of knowledge and processes for the development of

algorithms that simplify them, make them faster and reduce their errors.

As virtual assistant, Prometea intelligently guides users in obtaining a specific result. Only through voice commands or through a chat, the user can « ask » actions of Prometea, and the system will execute them in a few seconds.

The number of functions will depend on the task that has been selected to work on, of the organization in question and of the applied programming. Furthermore, the interaction will have a better result as long as the necessary trial and error instances have been passed.

Among other things, Prometea's smart assistant can do the following: a) apply a certain model; b) bring a particular law; c) search for precedents on specific cases; d) create reports; e) develop comparative graphs; f) provide guidance in the search for solutions; g) measure times and calculate terms; h) alert a user about incorrect data entry; i) send notifications; j) control the amount of writings that are required in a procedure; and k) consult internet sites without opening multiple tabs.

## **B) Automation**

The concept of automation has different nuances depending on multiple variables. Mainly, there are two large groups:

- Full automation: Algorithms connect data and information with documents automatically. The document is generated without any human intervention

- Automation with reduced human intervention: In many cases, for different reasons, it is necessary for people to interact with an automated system, in order to complete or add value to the creation of a document.

Prometea is capable of operating with both types of automation, depending on the task that has been selected to automate and the interoperability presented by the data associated with that task.

## **C) Smart Detection and Classification**

The intelligent classification and detection of documents is a more complex task, since it has been achieved with supervised machine learning techniques.

The detection starts from the reading and analysis of a large volume of information, in which Prometea can identify documents based on the multiple combinations of criteria with which it has been trained, even when they are documents that do not have a homogeneous language.

Prometea segments information based on shared patterns presented by documents. A pattern – also called a keyword – is a behavior that the system detects its systematically repeated.

In terms of programming, it is a single character or a group of characters on which Prometea relies to intelligently detect the



results for which it was humanly trained to do. In the case of judicial files, for example, a made segmentation could be either the claims granted by one side and those rejected by the other. The more precise the keywords that Prometea identifies, the greater the amount of documents that can be covered with a certain criterion. This intelligent construction is achieved through the fluid interaction between Prometea and the human beings who know the documentation, in a process called « keyword refinement », which will be explained in depth further on.

#### **D) Prediction Without Black Boxes**

Prediction is the most sophisticated function that Prometea presents. The basic concept is as follows: one or several algorithms reveal a lot of data in order to establish patterns that translate into predictions, based on some statistical criteria. This is a training based on patterns identified in previous cases.

When entering data (for example a case number), that data will be identified and compared with similar ones analyzing the answers that were given for each case. As a result, a prediction will be based on historical responses.

Unlike the intelligent detection explained in the previous section, the prediction functionality entails reading the document that is currently being worked on and comparing it with documents prepared in the past. When it manages to « match » the current document with previous documents, it tracks what the solution that was propitiated on that previous occasion, and proposes the same solution by understanding that they have analogous factual circumstances.

To have a dimension about how this has been achieved, initially it began with a training set of more than 2,400 judgements, 1,400 of the Public Prosecutor's Office previous Legal Opinions, and an initial mapping that grouped those decisions by topic and subtopic. Then, the system was trained to recognize patterns according to case groups, so that it can do so with new upcoming cases.

The dynamics of the predictive function are as follows: after identifying a case number, Prometea tracks the sentences of the previous legal instances, among more than 300,000 documents residing within digital portals, and then compares them with its own data base. Later it elaborates the prediction and creates the document linked to that prediction. This, in short, is linked to associating a new case with a judicial response that has been previously issued in cases of these characteristics. The result of this process is the obtained solution of a judicial case in less than 20 seconds, with a 96% success rate, which is then controlled humanly.

It should be noted that the higher the number of previous cases for comparison, the more effective the prediction will be. In addition, the technique can also use metadata (e.g., the price of

the dollar, the evolution of inflation, etc.), so that the prediction is based on multiple aspects and thus is more efficient.

*Avoiding Black Boxes.* When the use of artificial intelligence systems in the field of health, freedom, security, or other fundamental rights is intended, the design, development and use of artificial intelligence must ensure that « black boxes » are not configured, or that architectural failures are verified, against damages or injuries that they can cause. This means that artificial intelligence must be transparent in its decisions, which means that an « understandable explanation » about the criteria on which it is based to arrive at a certain conclusion, suggestion or result can be inferred or deduced.

In this sense, all the algorithms that Prometea uses are traceable, avoiding the configuration of « black boxes. » In no case, Prometea works with algorithms in which there is no technical way to determine step by step (traceability) about how they arrive at the result, decision or prediction.

### § 3 – PRACTICAL APPLICATIONS OF PROMETEA: TRAFFIC ACCIDENT PREDICTION.

One of the most relevant sectors in which civil courts intervene is made up of traffic accident trials. Argentina has one of the highest mortality rates in traffic accidents. About 20 people die every day; there are 7,274 deaths per year (2018), and approximately 120,000 result injured of varying magnitudes and thousands of disabled. The economic losses of traffic accidents exceed 10 billion dollars annually<sup>4</sup>.

The Buenos Aires Province is the largest jurisdiction with the largest number of inhabitants in Argentina. It is also the Province in which the greatest number of traffic accidents occur. According to official data, there were a total of 1,369 fatalities and 41,332 people who suffered some type of injury due to road incidents<sup>5</sup>.

During the last decade, the Province increased its road accident rate by 50%, a percentage that represents 34% of the total country<sup>6</sup>.

Given this scenario, it was decided to put Prometea into operation, in order to assist in the bureaucratic processing of civil proceedings surrounding traffic accidents, or reduce the corresponding judicial response times.

After a training period, in August 2019, Prometea began operating in the Civil Justice of one of the jurisdictions of the

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<sup>4</sup> Let's Fight for Life, 8 October 2019 [<http://www.luchemos.org.ar/es/accidentes-argentina>].

<sup>5</sup> Buenos Aires Province. *Road Incident Statistics with deceased or injured*, 2017, p. 32 [<http://www.gob.gba.gov.ar/UF/Informe.pdf>].

<sup>6</sup> Ministry of Justice and Human Rights, Presidency of the Nation, *Study program on road accidents, Autonomous City of Buenos Aires*, SAIJ Editions, 2018, p. 162 [[https://www.argentina.gob.ar/sites/default/files/programa\\_de\\_estudios\\_sobre\\_siniestros\\_viales.pdf](https://www.argentina.gob.ar/sites/default/files/programa_de_estudios_sobre_siniestros_viales.pdf)].

Buenos Aires Province, with the objective of evaluating the efficiency of the system in relation to the prediction of judgments of the « traffic accident » nature.

### **A) Acceptance or Rejection Detection of Lawsuits in Traffic Accident Trials**

A large number of traffic accident trials are affected by the determination of the causal link (or chain of causation).

The causal link is a cause-effect relationship that allows establishing the facts that could be considered determinants of the generated damage and which of them caused the tangible damage. This causal relationship is essential to claim the damages caused from the author or responsible party and to configure one of the unavoidable suppositions that must exist for civil liability to be configured. To determine this, the existence of a relationship between the damage-producing event – action or omission – and the harmful consequences (cause-effect relationship) must be corroborated. The causal link between the action or omission and the damage, can only be interrupted for the reasons expressly established by the law, that is, made by the victim, made by a third party for which it should not respond and fortuitous event or force majeure. If one of the cases of rupture of the nexus actually concurs, the civil liability will not be configured.

Determining whether or not the trial is affected by a causal link requires a lot of time from the justice system, which results in delays in case resolution.

According to the survey carried out by our research team on a total of 400 files from different jurisdictions within Argentina, there was a causal link in 84.8% and in 15.2% of the cases the rupture of such link was determined. If we carry out the same analysis in the Province of Buenos Aires, the results show that there was a causal link in 70.9% of the case files while the rupture of the link occurred in 29.1% of the cases.

However, to identify the rupture or not of the links and decide whether or not to proceed with a demand for damages due to traffic accidents, there are two instances or levels, both of which comprise a number of tasks that require many hours. In a first instance, a judge and his/her team must read the case and draft a document (sentence) to solve it. This task includes the background check, checking of the data and also exploration of the different hypotheses that are presented in the claims. In addition, you should control the history of the cases, to analyze whether the one that is being examined is similar to one already resolved.

In this case, Prometea works as a predictive assistant that allows to analyze the documents draft in a few seconds. This means that the AI performs the task of controlling and contrasting the

information with the story within seconds, which allows the judge to increase the knowledge base to make a better decision.

In a Second Instance, there are other judges who review what the judges of the First resolve. Here the task is to analyze the judgment of the judge of the first level, and all other issues related to facts, rights and other previous cases. In this way, Prometea helps the Second Instance judge more efficiently. Only the sentence signed by the judge of the first instance is introduced, and in a few seconds the system says whether that sentence conforms or not, to what the judges say in other similar cases of the second instance. All this makes it possible to substantially improve the principle of equality and efficiency to solve these types of cases.

### **B) Functioning and Prediction Utility**

Prometea was applied on 18 real cases that were in a condition to be resolved. Indeed, first instance sentences that were chosen randomly were used. The evaluation began at 8.14 hours and lasted only 4 minutes. Note that these court cases have hundreds of pages each.

***Figure 1: Predictive Efficiency Cases***

<b>File</b>	<b>Prediction</b>	<b>Result</b>
Aquino	No casual link fracture	Correct
Badillo	Casual Link	Incorrect
Brito	No casual link fracture	Correct
Facio	No casual link fracture	Correct
Frias	No casual link fracture	Correct
Gadea	No casual link fracture	Correct
Giovanucci	No casual link fracture	Correct
Gonzalez	No casual link fracture	Correct
Hartfield	No casual link fracture	Correct
Molina	No casual link fracture	Correct
Rey	No casual link fracture	Correct
Rodriguez	No casual link fracture	Correct
Salto	Human control (it was not a traffic accident case)	Correct
Sanjuan	No casual link fracture	Correct
Sosa	No casual link fracture	Correct
Tiesi	No casual link fracture	Correct
Varela	Human control (it was not a traffic accident case)	Correct
Zelaya	No casual link fracture	Correct

After Prometea's work was completed, the human control was exercised by reading files. Even in cases of damages in which the

claim was not based on a traffic accident, the system suggested that human control be executed<sup>7</sup>.

The result achieved by the intelligent system was 17 correct predictions on a total of 18 cases in just 4 minutes, which shows a 94.4% success rate. The predictive functionality was able to detect whether or not there had been a fracture of the causal link between the event and the damage occurred in the traffic accident.

The rupture of the causal link can cause the affected party to lose the right to compensation. Therefore, it would be important for the judge to determine whether the break occurred or not, to determine the correct allocation.

### **C) How to Train AI to Increase Human Intelligence**

The Prometea training process was based on 400 First Instance sentences from different courts in the country, mainly from a jurisdiction of the Province of Buenos Aires and the City of Buenos Aires. This universe of sentences was used at different times of the process and for different purposes. The training process had three stages:

In its first stage, a first sample of judgements were used to give Prometea the initial inputs and, from this, to design a first draft of the programming model. Specifically, a legal analysis was carried out to extract common patterns, which allowed to identify the existence or interruption of the causal link in each particular case within the case file. Then, this group of judgements was segmented into clusters,<sup>8</sup> according to the different factual hypotheses. These clusters were associated with a certain legal solution: the possibility of attributing – or not – the responsibility for the damages to the defendant.

The second stage involved transforming everything analyzed into a programming language. If you work with the « prediction » functionality, you have to understand that Prometea does not understand law or other science or discipline. Therefore, it is necessary that it reason as human beings but reads as a robot. This means that the legal specialist must know the techniques of artificial intelligence and analyze judicial cases accordingly. A simple example of this is knowing that many words that are used to connect phrases (« and », « or », « that », among many others) are irrelevant to the machine. Once the programming design was completed, the first predictive test on the total universe of

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<sup>7</sup> United Nations General Assembly, Resolution N° 73/348, *Promotion and protection of the right to freedom of opinion and expression* A/73/348, 29 August 2018, [<http://undocs.or/en/A/73/348>]

<sup>8</sup> “Clustering or grouping is a type of unsupervised learning technique that when initiates, creates groups automatically. The items which possesses similar characteristics are put in the same cluster”. Dey, A. *Machine Learning Algorithms: A Review*, *International Journal of Computer Science and Information Technologies*, Vol. 7 (3), 2016, p. 1176 [<http://ijcsit.com/docs/Volume%207/vol7issue3/ijcsit2016070332.pdf>].

sentences was performed. The success rate reached was 81.4%, which forced us to humanly analyze another set of judgements, to try to improve that rate.

In this way, the third and final stage began: refinement of legal and technical information patterns that improve predictive performance. Here a larger sample was taken than the first. This stage is a kind of « ping-pong » in which Prometea makes suggestions of keywords and the expert human being can validate them, try to improve them, or simply discard them. It is a joint work between specialized legal operators and artificial intelligence experts, in order to achieve synergy between legal content and machine power. The improvement was impressive, the success rate reached 96.5% (83 hits on a total of 86 cases).

#### **D) How Prediction Works with the Smart Assistant**

As just explained, algorithm-based AI has the potential to radically transform the way of predicting the solution to a case in the justice system.

One of the main features of Prometea is the simple and intuitive format with which the system is designed. This is mainly due to the « integrated screen model » and the smart assistant, which offers the user a menu of options to start working and guides him/her intelligently in obtaining a result.

The first step is to write the Prometea link in the browser (<https://agentes-conversacionales.com.ar/>) and enter a username and password. Next, the chatbot is displayed with two options: i) know how Prometea was trained, and ii) predict the interruption or existence of the causal link.

In the case of choosing the predict option, the statement that the operator wishes to analyze must be entered. The system will respond if it has been able to detect the existence or interruption of the causal link, and will observe which were the main legal information patterns on which it based its response. For example, that the causal link was interrupted because there is the victim's fault. In addition, it will offer the possibility of predicting in many documents together. You can analyze thousands in just a few minutes.

#### **E) Efficiency of the Predictive System**

Machine learning techniques have been successfully applied in numerous domains, such as pattern recognition, image recognition, medical diagnosis, commodity trading, computer games, and various control applications that demonstrate their efficiency and reliable ability to function as predictive systems.

In this particular case, the predictive model used by Prometea recognizes patterns in the historical data of the justice system (judgements) and develops a solution that can be of great help to judges and courts. In particular, Prometea uses topic-model



classification, a statistical model to discover the abstract « themes » that occur in a set of documents.

The results for the « traffic accidents » theme are very positive. Of the 86 cases analyzed, Prometea managed to predict correctly in 96.5% of the cases. From this unprecedented achievement, we decided to use the predictive model for traffic accident cases in the jurisdiction of the City of Buenos Aires (Province of Buenos Aires and City of Buenos Aires are different jurisdictions despite having similar denominations).

Thus, a first test was carried out with 258 sentences of the respective jurisdiction. The success rate was 73.3%. Although it is a rate that must be improved, we consider it very positive, because Prometea was not trained with sentences from the jurisdiction of the City of Buenos Aires. We are convinced that after going through the three stages described above, the success rate will exceed the threshold of 90%.

According to the causality analysis described in point 3, in the City of Buenos Aires there was a causal link in 90.7% of all traffic accident cases, and the rupture of the link occurred in 9.3% of the cases.

Automation puts people working in the justice system in an advantageous position, reducing time, errors and exponentially increasing the data and information available to make a decision. But it is not the system that makes this decision autonomously and independently. At least, this cannot be the rule since artificial intelligence systems cannot replace the jurisdiction of institutions.

In fact, Prometea's efficiency can be used for similar cases in other contexts. Its adaptability is mainly based on the ability to be trained with specific patterns, which allow the system to generate predictions efficiently.

## § 5– CONCLUSIONS

Technologies that incorporate artificial intelligence and/or machine learning will multiply in the justice system and public administrations in the near future. These tools can improve the public sector by making public services more efficient and effective, and contribute to a fairer capacity of the State to respond to the growing demands of citizens and businesses. In the justice sector, automation will be able, in the near future, to help lawsuits be resolved in a shorter period of time, making justice more efficient and effective.

The implementation of Prometea in the jurisdiction of the City of Buenos Aires is the first known example of the use of an analytical and predictive tool based on artificial intelligence that was able to respond with a 94.4% success rate. Fracture of the causal link is, without a doubt, one of the simplest ways to reduce the workload of jurisdictions. However, Prometea offers a credible solution to facilitate the work of judges and courts in many other contexts.

Prometea allows to substantially improve the work because it reduces errors, offers the possibility of deciding more predictably and, consequently, accelerates the time of judicial response.

By reducing the work time required for the solution of simpler judicial cases, judges have more time to devote to those of greater complexity, which require more dedication and demand greater cognitive skills.

In this way, a « cobotization » has been achieved in the work offices, that is, a convergence between AI and human work where they work in a kind of coworking. This combination between workforce and intelligent systems, under an inclusive approach, generates an automation that humanizes human labor, since by reducing routine and mechanical work, workers redirect their cognitive abilities to more sophisticated and complex tasks, and even tasks that have been postponed by not having enough time to address them<sup>9</sup>. Certain agencies have recognized in this regard that employment growth is faster in jobs that make use of emerging technologies and that job automation can free people from monotonous manual tasks and allow them that are dedicated to other more creative and meaningful. Work does not disappear but it transforms and demands new skills<sup>10</sup>. Artificial Intelligence has the potential to transform the way of life and ways of working by increasing levels of efficiency, savings and security and improving the quality of services<sup>11</sup>.

In conclusion, one of the great advantages of the Prometea, the artificial intelligence system, is the ease and versatility to produce results in existing processes. This is key, since it does not require a great job of reengineering compared to other AI systems. Prometea's spirit and interaction with multiple and diverse organizations allows capitalizing on learning costs, as well as guiding initial efforts to obtain concrete and rapid results, and facilitating simple tasks in complex labor systems, with very little investment in human capital.

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<sup>9</sup> L. CEVASCO, J. CORVALÁN, E. LE FEVRE, *Artificial Intelligence and Work – Building a New Employment Paradigm.*, IMODEV, Astrea, DPI Cuántico, 2019 [<http://ojs.imodev.org/index.php/RIGO/article/view/309>].

<sup>10</sup> European Parliament Resolution of 16 February 2017, with Recommendations for the Commission on civil law standards on robotics (2015/2103 INL), point J [<http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2017-0051+0+DOC+XML+V0//EN>].

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<sup>11</sup> *Ibidem*, point E

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