Management of Identity Services and their Impact on the Digital Government of Perú

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Abstract

Currently, identification systems are the initial foundation of the rule of law for everyone. The issuance of a DNI identity card is the main characteristic of every person who identifies it and differentiates it from others. The technologies linked to this process are the strengths that allow the service to be available even in the most remote areas, converging at different times, with coverage of the service, managing to identify all people born in Peru in the order of 98%, which allows us to affirm that the State agencies through online consultations, online issuance of identity documents, identity verification processes, identity identification processes, digital signature, digital certificate, web portals, citizen portals, portal of the civil registrar, live birth registration system, death system, digitization line, microforms and other concepts are the daily routine of an organization called the National Registry of Identification and Civil Status - RENIEC, all of which is integrated into platforms via the web , integrated into computer security schemes, integrated into services made available to the entire country s and all the country's embassies in the world; Available 24 hours a day and 7 days a week. The processes of decentralization of the production of the DNI, digitization of the registration act, identity forms, as well as their attention in more than 2100 windows. This is a different and interoperable scenario where digital information is daily, where processes are always linked to technological platforms. The existing technological development produces robust, safe, and efficient tools for adequate service.

Keywords: strategic management, identification, biometrics, telecommunications, online services

1. Introduction

This research work is aimed at carrying out an analysis regarding the management of identity services and the impact it has on the digital Government of Peru. The study considers its scope in 2017 [1]. Identity services, identification of all Peruvians from

the moment of their birth are considered, in this case, also civil registries. In the process of the documentation cycle, the need of the entire society to be able to maintain a sustained relationship between the organization responsible for giving identity and each of the existing records in each public or private body can be identified. When the system uses technology to be more efficient, then it can be affirmed that the proper use of the available information can be massified, in this sense, availability allows all societies as a whole to benefit, if the records are updated in a sustained manner, and this is shared with the rest, so it can be understood that interoperable platforms are being talked about; therefore everyone can benefit. Identity and its availability to the whole of society [2], is of importance, thus, about digital Government, it fulfills a function that facilitates the essential services of the State to reach those who need it, the filtering processes for social programs, support in education, to health and support for older adults, and thus support for electoral processes. An identity management platform integrated through various interoperability modalities in a digital society linked to a service community allows for timely and better care of its citizens. The existence of this platform with the multiple online services available demands a technological convergence of tools and solutions. From the manual and automatic capture of the first identity records to the digitization processes, digit verification of forms, identity validations, uses of biometric technologies, whether fingerprint or facial recognition, as well as the graphical technical expertise of the livelihoods; which integrated to a management system allow the timely and adequate issuance of an electronic identity card (DNIe - electronic DNI) where certificates and digital signatures complement fulfilling security parameters and issuance of smart cards. Clearly understand the needs of society and adequately use the available technologies, as well as understand that its internal processes must be timely and available in compliance with standards of good practice and interoperability of all its operations with the rest, demand for a properly structured organization and organized. Maintaining a comprehensive service platform providing accurate and truthful information is essential when the financial system, civil society, security entities, notaries, and other state agencies are integrated through an identity platform. Social programs today go through a filtration process through a massive identity matching tool, health services, education, and other social programs are integrated through this platform. Biometric identification systems are robust tools that support all identification processes, RENIEC has one of the best tools that currently exist in the world where it can be identified from the age of seven using fingerprints or facial recognition, be it online dedicated Webservice or any other platform to be able to be attended at all times. The issuance of digital signature and certificates through the national electronic identity document, one of the tools, is one

of the most emerging and innovative documents in all of Latin America. In 2020, the country is digitally integrated through the implementation of the National Fiber Optic Backbone Network. With this telecommunications infrastructure, the integration of the entire country will be entered into, both in more remote departments, provinces, and districts, as well as populated centers and native communities. All municipalities and civil registry offices nationwide will be interconnected. In other words, a telecommunications platform, with technological infrastructure and sufficient Internet and transport bandwidth, allows us to state that it will be in a position to meet the needs of the country's next 10 years.

2. Theoretical framework

As [1] it specifies how the foundations of e-Government or digital Government are the facilitators for the development of the Sustainable Development Goals by 2030; goals that the United Nations has defined as a priority. Additionally, it emphasizes the need for citizens to maintain digital policies that they must consider when designing digital government models. It also underlines that governments are building digital platforms that bring citizens and Governments closer together, in such a way that their construction is considered according to the needs of citizens. Digital services that facilitate the proper use of available resources. [2] performs the analysis of experts from the Inter-American Development Bank - IDB about Electronic Government, a document that expresses an approach of the states or governments to citizens through appropriate and timely digital services. It sets goals such as increasing user satisfaction, improving population education, improving the efficiency of state services through digital means, improving the competitiveness of companies, as well as greater transparency and openness. Luján, Jonathan (2011). Analysis, design, and implementation of an information system that models the process of provincial civil registries. Pontifical Catholic University of Peru, Peru. The Civil Registry Offices present in the provincial municipalities of Peru have the function of registering, organizing, and maintaining the facts and acts related to the civil status of the citizens who live in their jurisdiction. These civil acts are defined as births, marriages, and deaths. [3] The National Electronic Government Office - ONGEI in 2012 proposed the National Electronic Government Strategy. This initiative allowed establishing the national strategy to be followed by the entire National Computer and Communications System belonging to the public sector. Nowadays, she has become a Digital Government Secretary, and she is considering new actions around the strategies proposed in due course. The reference framework is defined in the Objectives of the Peruvian Digital Agenda 2.0, the National Competitiveness Council,

the Bicentennial Plan, the Electronic Government Strategy 2006. It also establishes a set of state guidelines for the following: Transparency, E-Inclusion, E -Participation, E-Services, Technology and Innovation, Information Security, Infrastructure.

2.1 Electronic DNI - DNIe

The Electronic DNI issued by the National Registry of Identification and Civil Status - RENIEC, is an identity document, which allows digital identity to all Peruvians over 18 years of age. It is made up of a smart card, which contains a set of functionalities which are: Match On Card (MOC) - Biometric Fingerprint Comparison.

2.2 Digital signature

It is clear that being an identity document that facilitates the digital identity of the citizen, the uses that can be made are broad, among which are: Use for social programs, issuance of birth, marriage and death certificates, Electronic Voting, Authentication online of public services of the State, Genetic DNI, Clinical History, Accounts of the financial system. Considering that there are response systems to queries to validate the identity of people via web services, a dedicated line or by consulting directly on the organization's portals when the different platforms of the country are public or private, making biometric requests or requests for data, it can be considered then that the existing infrastructure is available to organize a higher-level infrastructure scheme. The National Registry of Identification and Civil Status has prepared a document with greater security, accredits the identity of its holder in person and not in person, allows the digital signature of electronic documents, and facilitates the exercise of electronic voting. It implements the national policy of electronic Government through the use of digital identity in secure electronic transactions using digital certificates and guaranteeing citizens efficient access at any time, to the services that public institutions will implement. As is evident, this smart card has a cryptographic chip, store your memory citizen data in ICAO format, digital certificates, and biometric data. The chip and the operating system have FIPS 140-2 level 3 certifications.

Figure 1: Electronic DNI. Source. RENIEC

2.3 Digital signature

Considering that there are response systems to queries to validate the identity of people via web services, a dedicated line or by consulting directly on the organization's portals when the different platforms of the country are public or private, making biometric requests or requests for data, it can be considered then that the existing infrastructure is available to organize a higher-level infrastructure scheme. The National Registry of Identification and Civil Status has prepared a document with greater security, accredits the identity of its holder in person and not in person, allows the digital signature of electronic documents, and facilitates the exercise of electronic voting. It implements the national policy of electronic Government through the use of digital identity in secure electronic transactions using digital certificates and guaranteeing citizens efficient access at any time, to the services that public institutions will implement. As is evident, this smart card has a cryptographic chip, stores your memory citizen data in ICAO format, digital certificates, and biometric data. The chip and the operating system have FIPS 140-2 level 3 certifications.

2.4 Conceptual framework

2.4.1 PKI

Public Key Infrastructure - PKI, Public Key Infrastructure. In the case of the Research Project, it corresponds to the responsibilities that RENIEC has as a digital registry entity. PKI refers to Hardware, Software, Policies, and Directives regarding computer security.

2.4.2 TUPA

Single Text of Administrative Procedures - TUPA, every state organization has a TUPA; it details the set of administrative procedures that the organization has, defines its managers, terms of attention, as well as the cost of the service or product.

2.4.3 Biometrics

It is a science that is responsible for measuring the characteristics of the human being. In the case of the research project, it is focused on fingerprint identification systems.

2.4.4 Biometric Verification

It is a process to validate the identity of a person; for this, an identifier of the person is necessary. In the case of RENIEC, the ID number is required.

2.4.5 Biometric Identification

The process that allows validating the identity of one person among many. In this case, only the fingerprint of the person to be identified is necessary to find who corresponds in a universe.

2.4.6 Biometric Reader

An electronic device with a sensor that allows capturing the fingerprint image.

2.4.7 Electronic File

Set of digital documents that an organization has structured according to the needs of the organization, these are identified by index or by content; To guarantee their content, they are digitally signed.

2.4.8 Web services

It is a set of standards and protocols that allows any digital platform to operate. Under this scheme, all the systems of different organizations can interoperate.

3. Methodology

The type of research is explanatory; the level of analysis is quantitative; the design used in the study is objective. Being a descriptive and analytical investigation, it follows a post-test design of 02 variables, which we outline as follows:

VI - Independent Variable: Management of Identity Services

VD - Dependent Variable: Digital Government in Peru

3.1 Method

The methods applied to this research project are: Descriptive and Analytical. The research describes and analyzes the characteristics of Identity Services Management and its Impact on the Digital Government of Peru.

3.2 Population and sample

3.2.1 Population:

The universe considered in this study corresponds to the report of the Office of Electronic and Computer Government, with a population of 716 computer units. In this sense, they are responsible for the digital platforms with the most significant national presence. The respective formula is applied to determine the representative sample, with a result obtained from 159 surveys.

3.3 Data collection techniques and instruments

3.3.1 Techniques

The survey: It is a study that allows data to be collected through a questionnaire that has been previously designed.

3.3.2 Instruments

Questionnaire: A questionnaire is understood to be the document or technical tool whose content includes a series of closed or open questions to obtain information from the sample of people to be surveyed.

Interview: It consists of a face-to-face information gathering, in which the researcher proceeds to interview in person the people who will be part of this research, asking them a series of strategically pre-elaborated questions.

3.4 Development of the instrument

The instrument will be applied to computer units by the report provided by ONGEI. The present device has twenty-eight (28) items; the first fourteen (14) for the Identity Services Management variable and fourteen (14) for the Digital Government of Peru variable.

3.5 Instrument validity

The items presented passed the validity test at the criteria of the judges who established 5 categories:

Table 1 Rating scale

Appreciation	Value

Deficient	[00 – 20%]
Regular	[21 -40%]
Good	[41 -60%]
Very good	[61 -80%]
Excellent	[81 -100%]

Table 2 coefficient calculated for the variable "Identity Services Management"

Variable / dimension evaluated	No. of items	Coef. Cronbach's Alpha
Variable 1	14	0,955
Identity Services Management	5	0,905
Indicator 01	6	0,925
Digital certificates	3	0,933

The previous table shows us a value of the coefficient calculated for the variable "Identity Services Management" (0.955), indicator 1 (0.905), indicator 2 (0.925), and indicator 3 (0.933); consequently, the instrument created for variable 1 was accepted.

Table 3 Cronbach's Alpha Coefficient items

Variable/dimensión evaluada	Núm. ítems	Coeficiente Alfa de Cronbach
Variable 2 Gobierno Digital del Perú	26	0,915
Indicador1 :Índice de Gobierno Digital	8	0,923
Indicador2 :Políticas Nacionales de Gobierno Digital	11	0,935
Indicador3:Estrategias de Masificación DNI Electrónico	7	0,903

The previous table shows us a value of the coefficient calculated for the variable "Digital government of Peru" (0.915), indicator 1 (0.923), indicator 2 (0.935), and indicator 3 (0.903); consequently, the instrument created for variable 2 was accepted.

3.6 Techniques for information processing

The information obtained will be processed with: Data ordering, Application of statistical hypothesis testing techniques, Interpretation, and discussion of charts and graphs, Systematization of results, Ethical aspects. The research was carried out on a real scenario of the ICT sector in Peru, so all the information collected for its treatment corresponds to the officials of the sector in ICT.

4. Results

4.1 Identity Services Management

Table 4: Frequencies for the "Management of Identity Services"

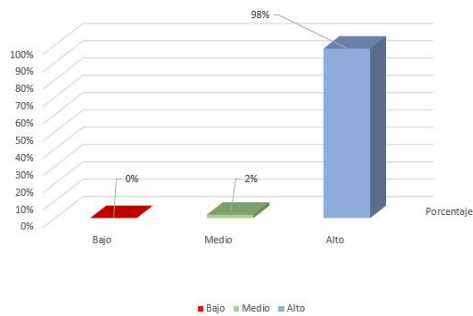| Level	Frequency	%	Valid %	Accumulated %
Bajo	0	0%	0%	0%
Medio	1	2%	2%	2%
Alto	49	98%	98%	100%
Total	50	100%	100%	

Figure 2: Bar graph for the variable" Identity Services Management

Table 4 shows that the total number of people surveyed is fifty (50), whose frequency exposes a value of 1 for the Medium level located in the range [26 - 50] and a frequency of 49 for the High level located in the range [52-75]. Regarding these values, we can analyze that 98% of the respondents stated that Identity Services Management is high, and 2% stated that it is average, which is seen in figure 1.

4.2 Variable: Digital Government of Peru

Table 5: Frequency table for the Digital Government of Peru.

Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	7	14%	14%	14%
High	23	86%	86%	86%
Total	30	100%	100%	
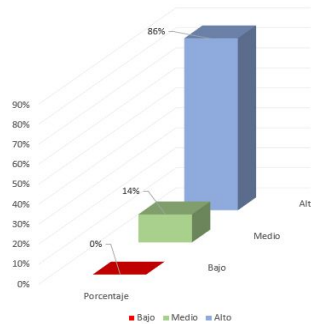
Figure 3: Bar graph for the variable Digital Government of Peru

Table 5 shows that the total number of people surveyed is thirty (30), whose frequency exposes a value of 7 for the Medium level located in the range [7-23] and a frequency of 23 for the High level located in the range [52 - 75]. Regarding these values, we can analyze that 86% of the respondents state that Digital Government in Peru is high, and 14% state that it is average, which can be seen in figure 2.

4.3 Indicator: Digital Certificates

Table 6: Table of frequencies for the indicator "Digital Certificates".

Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	7	12%	12%	12%
High	23	88%	88%	100%

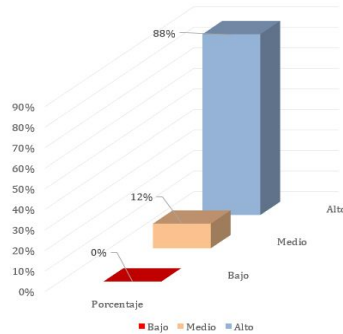| Total	30	100%	100%	

Figure 4: The "Digital Certificates" indicator

Table 6 shows that the total number of people surveyed is thirty (30), whose frequency exposes an absolute value of 6 for the average level located in the range [8 - 17] and a value of 23 located in the range of [18 - 25]. Regarding these values, it is stated that 12% of the executed budget is medium, and 88% is high, which can be seen in figure 3.

4.4 Indicator: Electronic DNI

Table 7 Table of frequencies for the indicator "Electronic DNI".

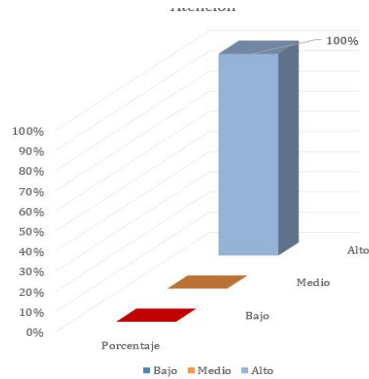| Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	1	2%	2%	2%
High	23	98%	98%	100%
Total	30	100%	100%	

Figure 5: The Electronic DNI indicator

Table 7 shows that the total number of people surveyed is fifty (50), whose frequency exposes an absolute value of 1 for the average level located in the range [8 - 17] and a value of 49 located in the range of [18 - 25]. Regarding these values, it is stated that 2 '% of Electronic DNI is medium, and 98% is high, which is reflected in figure 4.

4.5 Indicator: Attention Time

Table 8: Table of frequencies for the indicator "Time of Attention".

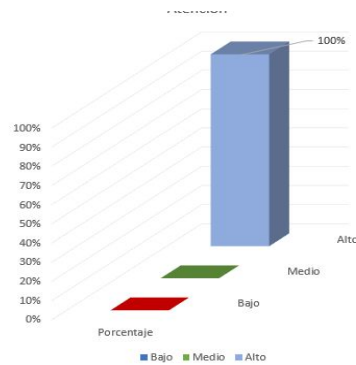| Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	0	0%	0%	0%
High	30	100%	100%	100%
Total	30	100%	100%	

Figure 6: The "Attention Time" indicator

Table N ° 8 shows that the total number of people surveyed is thirty (30), whose frequency exposes an absolute value of 100 for the high level, located in the range of [18 - 25]. On these values, it is exposed that 100% of the Attention Time is high, which is reflected in fig.6.

4.6 Indicator: Digital Government Index

Table N ° 9: Table of frequencies for the indicator "Digital Government Index".

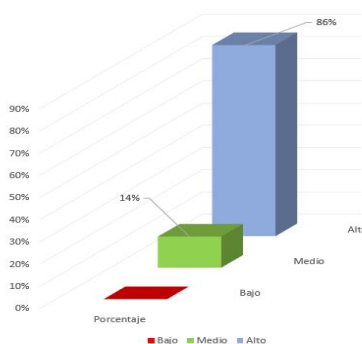| Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	7	14%	14%	14%
High	23	86%	86%	100%
Total	30	100%	100%	

Figure 7: The "Digital Government Index" indicator

Tabla 9 se observa que la totalidad de personas encuestadas es de cincuenta (30), cuya frecuencia expone un valor absoluto de 7 para el nivel medio ubicado en el rango [8 - 17] y 23 para el rango de [18 - 25]. Sobre estés valores, se expone que el 86% señala que el Gobierno Digital en el Perú cuyo valor es alto, lo cual se refleja claramente en el gráfico N° 6.

4.7 Indicador: Políticas Nacionales de Gobierno Digital

Table 10: Tabla de frecuencias para el indicador "Políticas Nacionales de Gobierno Digital"

Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%

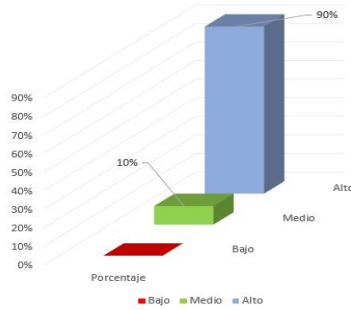| Medium	5	10%	10%	10%
High	25	90%	90%	100%
Total	30	100%	100%	

Figure 8: Frequencies for the indicator "National Policies of Digital Government

Table 10 shows that the total number of people surveyed is fifty (30), whose frequency exposes an absolute value of 7 for the average level located in the range [8 - 17] and 23 for the range of [18 - 25]. On these values, it is exposed that 86% indicate that Digital Government in Peru whose value is high, which is reflected in graph N ° 6.

4.8 Indicator: National Digital Government Policies

Table 11: Table of frequencies for the indicator "National Policies of Digital Government."

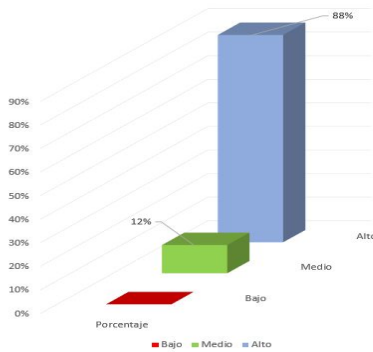| Level	Frequency	%	Valid %	Accumulated %
Low	0	0%	0%	0%
Medium	6	12%	12%	12%
High	24	88%	88%	100%
Total	30	100%	100%	

Figure 9: Indicator "Electronic DNI Massification Strategies"

Table. 11 shows the total number of people surveyed in is thirty (30), whose frequency exposes an absolute value of 6 for the average level located in the range [8-17] and a value of 24 located in the range of [18 - 25]. On these values, it is exposed that 12% of the DNIe Massification Strategies is medium, and 88% is high, which is reflected in graph N ° 8. Because the variables under study were of a normal type, we opted to perform the Pearson Correlation test, with the following guidelines:

4.9 Significance assessment

It was used to determine the existence of correlation, taking into account the following criteria, according to the following table:

Table 12: Criteria for evaluation of significance

Significance values	Interpretation
Less than 0.05	Correlation exists. Testing continues
Greater than or equal to 0.05	There is no correlation. The hypothesis is rejected.

Margin of error is 5%. It was used to determine the strength and type of correlation, taking into account the following criteria:

Table 13: Criteria for evaluating the correlation coefficient

Values	Meaning
[-1.00]	Perfect negative correlation
<-1.00 — -0.90]	Very high negative correlation
<-0.90 — -0.70]	High negative correlation

<-0.70 — -0.40]	Moderate negative correlation
<-0.40 — -0.20]	Low negative correlation
<-0.20 — - 0.00>	Correlación negativa muy baja
[0.00]	Correlación nula
<0.00 — 0.20>	Correlación positiva muy baja
[0.20 — 0.40>	Correlación positiva baja
[0.40 — 0.70>	Correlación positiva moderada
[0.70— 0.90>	Correlación positiva alta
[0.90— 1.0>	Correlación positiva muy alta
[1.00]	Correlación positiva perfecta

Desired correlations: high positive, very high, or perfect.

Table 14: Result of the correlation test between the variable "Identity Services Management and Digital Government in Peru, 2017.

		Dimension 01 Digital Government
Variable 1 Identity Services Management	Correlation coefficient	0.870
	Significance	0.000

Given the condition:
If the significance is> 0.05, the H1 condition is accepted.
If the significance is <0.05, the Ho condition is accepted.

According to table 14, the value of significance between the variables "Management of identity services" and "Digital Government of Peru" (0.00) has been lower than that stated (0.05). Therefore, it was accepted H1. Similarly, the calculated correlation coefficient (0.870) verifies that the correlation is positive and high. Thus, the formulated hypothesis is allowed: the management of identity services is related to the Digital Government of Peru, the year 2017. This correlation is Positive and high.

5. Discussion

The results obtained allow us to establish that there is a relationship between the variables "Management of identity services" and "Digital Government of Peru". Similarly, the calculated correlation coefficient (0.870) verifies that the correlation is positive and high. Therefore, the hypothesis formulated is accepted: the management of identity services is related to the Digital Government of Peru, the year 2017. Identity services are embodied in different ways, guaranteeing the correct issuance of the DNI, correct preparation of the electoral roll, timely registration of civil acts, and the corresponding attention regarding certificates and digital signatures. Hospital care, the issuance of a driver's license, or manage a passport, or identify yourself in a bank, financial institution, or public registry, or perhaps in a notary, require the digital presence of RENIEC so that these aspects are fulfilled within of the established deadlines. For this reason, we understand that identity authentication services are the fundamental basis for any system that works or operates in the country to perform properly. Identity services consolidate a digital government and become the foundation to develop new models of development and social growth. A duly identified company, a service present throughout the country, with timely attention, allows RENIEC to consolidate a technological platform of interoperability between the different State services.

6 Conclusion

Identity services directly influence Peru's digital Government by allowing RENIEC's identification platform to interact with all the country's systems to authenticate and provide information to all citizens. The issuance of digital certificates and service coverage nationwide is growing, making it easier for citizens to have a digital identity. Digital identity is related to the electronic government index. The national identity document -DNIe is the carrier of the digital identity; it is the fundamental basis for sustained growth of electronic Government in the country. There is a relationship between the DNIe and the electronic Government. There is a direct relationship between the issuance time of the DNIe and its massification at the national level. Delivering a DNI on time means that we can be giving better service coverage. There is a relationship between installed digital certificates and national e-government policies. There is no electronic government without a digital identity.

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