

# The Inner Navigation in First Nine Hundred (Northern Italy): Editorial and Geographical Aspects

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## Abstract

A brief excursion on the theme of inland navigation in the early twentieth century, resumed mainly by editorial references present both in the writ and in the appendices. The bibliographic indications, along with text, consent to frame the different facets of the matter. The titles reported, whose purpose is to corroborate (remark) what affirmed in the text, are grouped in consideration of content and type of publication.

**Keywords:** Geography, Navigation, Publishing

## 1. Introduction

In the first part of the twentieth century, the technical and periodical press, as well as the book press, shows a lively interest in a segment, transport, in expansion in the period considered. A verification in this sense can be perceived through the analysis of journal indexes such as *Journal of civil engineering department* (1), *The technical monitor* (2), *Civil engineering and industrial arts* (3), to mention some of them. It is evident the attention with which contents of technical, geographical and economic nature are alternated returning an overall representation of the transformations taking place in mobility in its broadest (widest)sense.

The debate on inner navigation becomes consistent for the apparent gradual decrease, over time, of commercial traffic through the inland waterways and in general due to the low utilization of the hydrographic network formed by rivers and canals

The main reasons leading to what can be defined as underutilization of river itineraries are to search in the development of transport systems between nineteenth and twentieth century such as rail and road transport (motoring). And in the options related to the opportunity not to direct (allocate) resources for a sector not competitive in economic terms when compared to alternative mobility systems (“...in the eighties of last century the fluvial navigation was already losing in comparison with the railways”).(4)

## 2. Editorial and Geographical Analysis

### 2.1 Editorial Analysis

Throughout the first part of twentieth century and until the sixties (though with less relevance approaching the middle of the century) the question on the advisability to restore (revitalize) the waterway network is remarked through the reposition of various projects (appendix A) finalized to the redefinition of river itineraries evidently still (anyway) useful under the economic aspect.

Subsisted in fact the idea that, as had happened in northern Europe, also in Italy the river transport would have rendered extensive services to the development of agriculture and industry thanks to a reduction in transport costs of raw materials (5)

In the period considered here the editorial production on the argument is discreet, articles (appendix B) and monographs (appendix C) examine the relative problems and suggest solutions to bring to front also issues related to the territory and the infrastructures connected to navigable routes and potentially such.

The integrated analysis of navigation and relative hydrographic network through books and historical cartography presents different cultural solicitations First of all the comprehension of a system in transformation across technological innovation (6) and commercial policies affirming in the twentieth century. Not less attractive the geographic image strictly correlated to waterways itineraries, certainly a motive of interest to environmental and natural aspects.

The text *Lakes, rivers and navigable canals*, published in the early years of the twentieth century, photographs the situation of inland navigation in the peninsula. The context represented is very realistic and offers an overview (accompanied by tables containing technical and commercial data) on the navigable network describing characteristics and potentiality. As reported in the introduction (7) the book is published during a period of renewed interest on the matter by the institutions (appendix D). In effect the editorial initiative is promoted by the Ministry of public works with the collaboration of two engineers of the Civil engineering department. It is evident the attempt to recover a system destabilized by the lack of programming relative to investments and infrastructures that allows to glimpse the contrast existing between different realities (8).

Through the press of the epoch, the comparison with Europe denotes a lower capacity to use the waterway network also – in addition to the reasons already exposed – because of the inadequacy of rivers and canals in supporting boats with relevant loads.

## 2.2 Geographical Aspects

A careful examination of the graphic and cartographic material published in the early twentieth century, often enclosed to periodicals and monographs, allows the overall identification of the navigation system composed of Lakes, rivers and canals crossing the northern regions. Visible element in large-scale representations is the definition of a waterway network gradually denser in the final part of its route (Veneto-Emilia Romagna), continuation of the Lombardy part characterized by a different hydrographic and territorial organization. The graphic representation of the navigable ways of northern Italy depicted in figure 1 (published in 1905) describes the situation of practicable itineraries at the beginning of the century, classifying them in three classes defined by the degree of navigability of the watercourse (river-canal). A first consideration deriving from the analysis of the document regards the incidence degree of navigable watercourses, not very significant in relation to the general hydrographic network. A second visible element is the density of navigable network detectable in the different regions, more attenuated between Piedmont and Lombardy, more articulated after Mantova up to the Adriatic sea and therefore interesting \_Veneto and Emilia.

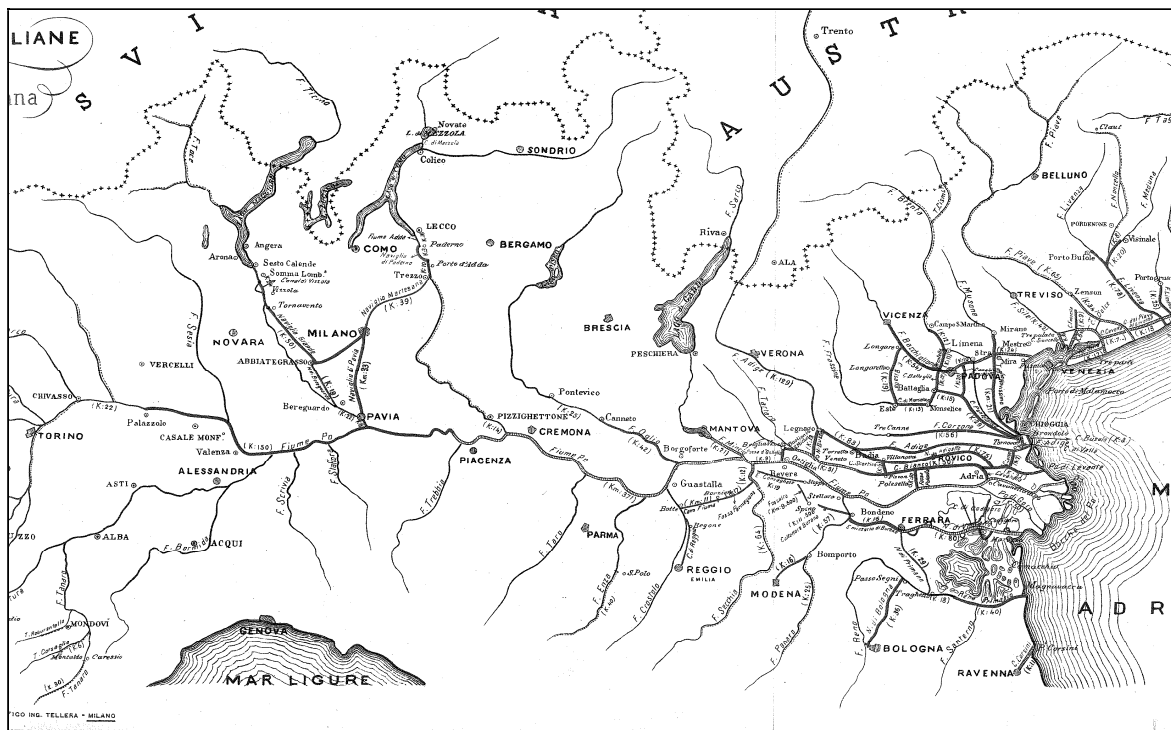


Figure 1. Waterways of northern Italy (1905)

Effectively, the different natural and artificial waterways formed by rivers and canals describe a framework geographically complex (at least in northern Italy), therefore considered, in the first half of the twentieth century, a valid navigation system between cities and regions. The manifold projects presented over time as connection hypothesis between river routes characterized by low or good transit potentiality, have found space in the technical press without however, in most cases, be realized. The emerging image reveals a discrete sensitivity towards some geographic segments evidently perceived as pivotal itineraries. One of these is formed - from west to east in the triangle Sesto calende/Lecco/Pavia – almost completely by natural and artificial canals integrated by short sections (stretches) of the rivers Ticino and Adda. The Po river becomes the main axis (9) intended as primary connection within the itineraries integrated by its tributaries along the route to the adriatic sea. Therefore considered essential (the Po river) in a global project of revitalization of the inland waterway network.

### 3. Final Considerations

The short review presented here highlights some aspects – relative to the exploitation of the hydrographic network used for navigation – resumed by publishing in the first half of the twentieth century, following the debate that took place in those years. The analysis, in its partial and limited structure, proposes a concrete theme regarding a sector, transports, invested by a significant evolution in the period considered.

### References

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**Notes**

Note 1. Journal of civil engineering department (Giornale del Genio civile), 1863-1923, Roma

Note 2. The technical monitor (Il Monitore tecnico), 1894-1955, Milano

Note 3. Civil engineering and industrial arts (L'ingegneria civile e le arti industriali), 1875-1906, Torino

Note 4. Stocchi, S. (1991) p.81

Note 5. Palena, R. (1999) p.51

Note 6. Abruzzese, M (1897) *An experiment of inland steam navigation between Venice and Milan* (Un esperimento di navigazione interna a vapore fra Venezia e Milano), Roma: Voghera

Bernardis, C (1911) *The first reversible internal combustion engines for navigation use built in Italy* (I primi motori a combustione interna reversibili per uso di navigazione costruiti in Italia), Roma: Italian polygraphic workshop

Canavesio, S (1893) *On the activation of inland steam navigation in northern Italy* (Sulla attivazione della navigazione interna a vapore nell'alta Italia), Torino: Bona

Note 7 “.....In today's awakening that fortunately alludes to occur and in the government and in the public opinion around the importance of inland navigation.....” (...Nell'odierno risveglio che fortunatamente accenna a verificarsi e nel governo e nell'opinione pubblica intorno all'importanza della navigazione interna...)

Note 8. Within the paragraph (p.11) Modes used for the exercise of navigation emerges the coexistence between realities anchored to the past “.....*The exercise of navigation..... is generally and in almost all cases carried out by means of boats with animal propulsion....*” and more advanced situations “.....*in various canals it is also extending, for some years, the towing of boats with steam or petrol ferries.....*”

Note 9. At the beginning of the century, of 3000 total km of navigable lines, 2200 are calculated in the Po network connection

## Appendix A

### Bibliography related to proposals and projects

Anonymous society for the foothill canal (Società anonima per il canale pedemontano) (1926)	<i>The foothill canal of great navigation and the problem of inland navigation in northern Italy</i> (Il canale pedemontano di grande navigazione e il problema della navigazione interna nell'Italia settentrionale)	Bergamo: Italian institute of graphic arts
Arimondi, C (Turin Committee for inland navigation) (1907)	<i>Studies for a navigable canal from Mediterranean sea to the Po valley: Report</i> (Studi per un canale navigabile dal Mar Mediterraneo alla valle padana : Relazione)	Torino: Gili
Beretta, M (1921)	<i>About an organic regulatory plan of the waterways of great navigation in northern Italy</i> (Di un organico piano regolatore delle vie d'acqua di grande navigazione nell'Italia settentrionale)	Milano: Piccioni
Bonini, C.F (1920)	<i>The inland navigation in Italy: considerations and proposals</i> (La navigazione interna in Italia: considerazioni e proposte)	Torino: Lattes
Buizza, A (1911)	<i>The navigable canal from Lake Iseo to Brescia to Canneto sull'Oglio: contribution to the study of inland navigation in the province of Brescia</i> (Il canale navigabile dal lago d'Iseo a Brescia, a Canneto sull'Oglio : contributo allo studio della navigazione interna nella provincia di Brescia)	Brescia: Apollonio
Caldara, E (1918)	<i>The great inland navigation and the navigable line Milan-Venice</i> (La grande navigazione interna e la linea navigabile Milano-Venezia)	Bergamo: Italian institute of graphic arts
Candiani, L (1907)	<i>Inland navigation: criteria and proposals for its implementation</i>	Milano: The commercial press
Capuccio, G (1905)	<i>Turin sea port: project for an inland navigation line between the Adriatic and the Mediterranean</i> (Torino porto di mare : progetto di una linea di navigazione interna tra l'Adriatico ed il Mediterraneo)	Torino: Roux and Viarengo
Commission for inland navigation (1910)	<i>Report by the Commissioner, Engineer Piola, on the project for a line of inland navigation Lake Maggiore-Milan-Adriatic Sea with branch from Mantova to Garda lake</i> (Relazione del Commissario Ing. Piola sul progetto per una linea di navigazione interna Lago Maggiore-Milano-Mare Adriatico con diramazione da Mantova al Lago di Garda)	Roma: Manuzio
Commission of Italian railway engineers (1909)	<i>Considerations around the studies and the means to develop inland navigation in Italy in relation to railways - Congress of Italian railway engineers, Bologna 1909</i> (Considerazioni intorno agli studi ed ai mezzi per sviluppare la navigazione interna in Italia in relazione all'esercizio delle ferrovie - Congresso degli ingegneri ferroviari italiani, Bologna 1909)	Roma: Publishing cooperative of Italian engineers
Mongini, U (1900)	<i>Inland navigation project between the Po and the Volano</i> (Progetto di navigazione interna tra il Po ed il Volano)	Ferrara: Taddei
Raddi, A (1917)	<i>Navigation of Arno and related projects and proposals</i> (La navigazione dell'Arno ed i relativi progetti e proposte)	Milano: Book publishing company
Venice Committee for inland navigation (1909)	<i>Preliminary project for the arrangement of the navigable line between Venice and Porto Nogaro: Report</i>	Venezia: Veneto institute of Graphic Arts

**Appendix B****Articles in technical journals**

(1895) Construction operation and administration of navigable rivers and canals at international inland navigation conferences held from 1885 to 1894 (Costruzione esercizio ed amministrazione dei fiumi navigabili e canali nei congressi internazionali di navigazione interna tenutisi dal 1885 al 1894) <i>Civil engineering and industrial arts (L'Ingegneria civile e le arti industriali)</i> 21, p 158
(1892) Electric navigation (Navigazione elettrica) <i>Journal of civil engineering department (Giornale del Genio civile)</i> 21, p 374
(1917) For a canal Savona-Torino-Lake Maggiore (Per un canale Savona-Torino-Lago maggiore) <i>Railway engineering (Ingegneria ferroviaria)</i> XIV/11, p 128
(1907) For a navigable canal between Chioggia and the Po (Per un canale navigabile fra Chioggia e il Po) <i>The technical monitor (Il Monitore tecnico)</i> 13, p 550
(1917) For the construction of the fluvial port of Milan (Per la costruzione del porto fluviale di Milano) <i>Railway engineering (Ingegneria ferroviaria)</i> XIV/13, p 156
(1913) For the navigable line from Milan to Venice (Per la Linea navigabile da Milano a Venezia) <i>The technical monitor (Il Monitore tecnico)</i> 19
(1917) <i>Funds, works, provisions for inland navigation</i> (Fondi lavori provvedimenti per la navigazione interna) in <i>Railway engineering (Ingegneria ferroviaria)</i> XIV/10, p 116
(1913) For the improvement of the navigable line Lake Maggiore-Milan (Per il miglioramento della Linea navigabile Lago Maggiore-Milano) <i>The technical monitor (Il Monitore tecnico)</i> 19
(1895) hydrographic map of Italy (Carta idrografica d'Italia) <i>Civil engineering and industrial arts (L'Ingegneria civile e le arti industriali)</i> 21, p 79
(1906) Inland navigation and railways (Navigazione interna e ferrovie) <i>The technical monitor (Il Monitore tecnico)</i> 12, p 248
(1905) Project of navigable canal lateral at Po river from Torino to Casale monferrato (Progetto di canale navigabile laterale al Po da Torino a Casale monferrato) <i>The technical monitor (Il Monitore tecnico)</i> 11, p 413
(1913) On the navigation line Milan-Venice (Sulla Linea di navigazione Milano-Venezia) <i>The technical monitor (Il Monitore tecnico)</i> 19, p 119
(1905) Proposal of an experiment of electric traction on canals in Italy (Proposta di un esperimento di trazione elettrica su canali in Italia) <i>The technical monitor (Il Monitore tecnico)</i> 11, p.252
(1905) Removable propeller for boats (Propulsore amovibile per battelli) <i>The technical monitor (Il Monitore tecnico)</i> 11, p.660
(1892) The Po and its hydrographic transformations in the province of Pavia (Il Po e le sue trasformazioni idrografiche nella provincia di Pavia) <i>Journal of civil engineering department</i> 20, p 433
(1905) The report of Commission of inland navigation in the Italy Kingdom on the problem of navigation in the Po Valley (La relazione della Commissione per gli studi della navigazione interna del regno sul problema della navigazione nella valle del Po) <i>The technical monitor (Il Monitore tecnico)</i> 11, p.531
(1928) The modern trends in the field of works for inland navigation in central Europe (Le moderne tendenze nel campo delle opere per la navigazione interna nell'europa centrale) <i>Annals of public works (Annali dei lavori pubblici)</i> 1928, p 463
(1906) The report of the commission appointed by the Board of Commerce for the study of improvements to the port dock of Ticinese district (Milan) (La relazione della commissione nominata dalla Camera di commercio per lo studio dei miglioramenti alla darsena di porta ticinese) <i>The technical monitor (Il Monitore tecnico)</i> 12, p 89
(1905) The consortium for inland navigation in the Padana valley (Il consorzio per la navigazione interna nella valle padana) <i>The technical monitor (Il Monitore tecnico)</i> 11, p.374
(1927) The protection of the embankments in the Pisa-Livorno navigation channel (La protezione delle sponde nel canale di grande navigazione Pisa-Livorno) <i>Annals of public works (Annali dei lavori pubblici)</i> 1927, p 1020
(1908) The financial question of inland navigation The Italian legislation and the Gianturco project (La questione finanziaria della navigazione interna La legislazione italiana ed il progetto Gianturco) <i>The technical monitor (Il Monitore tecnico)</i> 14
(1910) The effective action of the new ministry in theme of public works. The inland navigation in Italy (L'azione fattiva del nuovo ministero in materia di opere pubbliche. La navigazione interna in Italia) <i>The technical monitor (Il Monitore tecnico)</i> 16

## Appendix C Monographs

Beretta M, Majocchi M (1914)	<i>On the arrangement of inland navigation ports with regard to their importance and to rail or tram connections</i> (Sulla sistemazione degli scali e porti di navigazione interna avuto riguardo alla loro importanza ed ai collegamenti ferroviari o tramviari)	Milano: National Association of Navigation Congresses
Berni, A (1914)	<i>The Inland navigation in Padana plain and the international traffics of central Europe</i> (La navigazione interna nella Pianura Padana ed i traffici internazionali della Europa centrale)	Milano: National Association of Navigation Congresses
Candiani, L (1906)	<i>The inland navigation in agricultural reports: communication 3 - Fifth National Congress of Economic Societies</i> (La navigazione interna nei rapporti dell'agricoltura : comunicazione 3 Quinto congresso nazionale delle società economiche)	Milano: Abbiati
Candiani, L (1909)	<i>Inland navigation and forest issue: conclusions</i>	Bologna: Emiliano
Ferro, G (1927)	<i>Inland navigation</i> (Navigazione interna)	Padova: Cedam
Fazio, A (1904)	<i>The inland navigation and the railways of northern Italy</i> (La navigazione interna e le ferrovie del Nord dell'Italia)	Roma: Polygraphic publishing cooperative
Ministry of Public Works (1924)	<i>Commission for the study of issues relating to navigation of the Po for boats of at least 600 tons- Report and annexes</i> (Commissione per lo studio delle questioni attinenti alla navigazione del PO per natanti di almeno 600 tonnellate-Relazione ed Allegati)	Parma: Donati
Migliorini, E (1934)	<i>Notes on inland navigation and traffic in Italian rivers and canals</i> (Appunti sulla navigazione interna e sul traffico nei fiumi e canali italiani)	Roma: Royal Italian geographical society
Ministry of Public Works (1931)	<i>Statistics of inland navigation on the waterways and lakes of Italy Kingdom</i> (Statistica della navigazione interna sulle vie navigabili e laghi del Regno d'Italia)	Roma: General Board of State
Mongini, G (1925)	<i>Inner navigation, derivation and irrigation in the province of Ferrara</i> (Navigazione interna, derivazione ed irrigazione nella provincia di Ferrara)	Ferrara: Grossi
Papi, G.U (1922)	<i>The continental waterways in economic and administrative terms</i>	Milano: Hoepli
Provincial Committee of Pavia (1914)	<i>Direct communication between the Port of Genoa and the Po Valley</i>	Novara: De Agostini
Royal railways commission (1904)	<i>Inland navigation: connection between railways and waterways</i> (Navigazione interna : raccordamento tra le strade ferrate e le vie navigabili)	Roma: Ripamonti e Colombo
Ruggiero, C (1927)	<i>Modern trends and directives in river arrangements for inland navigation</i> (Moderne tendenze e direttive nelle sistemazioni fluviali per navigazione interna)	Padova: Typographic Cooperative Society
Sighieri, E (1927)	<i>Rivers, inland navigation, reclamations, ports</i> (Fiumi, navigazione interna, bonifiche, porti)	Pisa: Mariotti e Pacini
Supino, C (1902)	<i>The inland navigation in relation to other means of transport</i> (La navigazione interna in relazione agli altri mezzi di trasporto)	Roma: Cecchini
Valentini, C (1911)	<i>Inland navigation in Italy and abroad</i> (La navigazione interna in Italia e all'estero)	Bologna: Zanichelli
Vianello, C.A (1919)	<i>Economic analysis of inland navigation</i> (Analisi economica della navigazione interna)	Roma: Poligrafica

## Appendix D

## Publications related to political and institutional initiatives

Broggi, C (1909)	<i>The Bertolini draft law on inland navigation</i>	Genova: Marsano
Congress (House) of deputies (1903)	<i>Inland navigation: about the motion presented by the deputy Pantano and other colleagues ... / (La navigazione interna : a proposito della mozione presentata dal deputato Pantano e da altri colleghi .../)</i>	Roma: Typography of deputies congress
Congress (House) of deputies (1909)	<i>Discussion on inland navigation made to the Congress of Deputies in the sessions on November 23,24,25,26 and 27, 1909</i> (Discussione sulla navigazione interna fatta alla camera dei deputati nelle tornate del 23, 24, 25, 26 e 27 novembre 1909)	Roma: Typography of deputies congress
Congress (House) of deputies (1915)	<i>Draft law presented by the Public works minister (Ciuffelli) in concert with the Treasury minister (Carcano) with the Finance minister (Daneo) with the Navy minister (Viale) and with the Agriculture and Commerce minister (Cavasola): execution of inland navigation works and extension of deadlines ... session of February 18, 1915 - (Disegno di legge presentato dal ministro dei Lavori Pubblici (Ciuffelli) di concerto col ministro del Tesoro (Carcano) col ministro delle Finanze (Daneo) col ministro della Marina (Viale) e col ministro di Agricoltura Industria e Commercio (Cavasola) : esecuzione di opere di navigazione interna e proroga dei termini ... seduta del 18 febbraio 1915)</i>	Roma: Typography of deputies congress
Frizzoni, G (1905)	<i>For inland navigation in the Po valley, according to the studies and projects of the government commission and in relation to the advantages it may bring to the province of Bergamo</i>	Bergamo: Italian institute of graphic arts
Italy Kingdom Senate (1910)	<i>Discussion on inland navigation made to the Senate of Kingdom in the session of December 21, 1909</i> (Discussione sulla navigazione interna fatta al Senato del Regno nella tornata del 21 Dicembre 1909)	Roma: Forzani & C
Senate of the Kingdom of Italy (1914)	<i>On inland navigation: interpellation of Senator Arnaboldi made in the session of June 15, 1914</i>	Roma: Typography of senate
Ministry of Public Works (1903)	<i>Acts of Commission for the study of inland navigation in Po valley</i> (Atti della Commissione per lo studio della navigazione interna nella Valle del Po)	Roma: Typography of deputies congress
Ministry of public works (1904)	<i>Commission for inland navigation</i> (Commissione per la navigazione interna)	Roma: Ripamonti e Colombo
Ministry of public works (1931)	<i>The inland navigation of northern Italy, 15th International Navigation Congress, Venice, September 1931</i> (La navigazione interna dell'Alta Italia, 15 Congresso internazionale di navigazione, Venezia, settembre 1931)	Roma: General Board of State (Provveditorato generale dello Stato)
Moschini, A, Paratore, G (1907)	<i>The draft law on inland navigation November 27, 1906 n. 542: Observations and proposals</i> (Il disegno di Legge sulla navigazione interna, 27 novembre 1906, n 542 : Osservazioni e proposte)	Padova: Typographic Cooperative Society
Niccolini, P (1909)	<i>On inland navigation: discourse of deputy Pietro Niccolini pronounced at the congress of deputies in the session of november 24, 1909</i> (Sulla navigazione interna : discorso dell'onorevole Pietro Niccolini pronunziato alla Camera dei deputati nella tornata del 24 novembre 1909)	Roma: Typography of deputies congress



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