

PoWER PLUS



FORESIGHT QUESTIONNAIRE

PoWER PLUS is a project funded by the Interreg V-B Adriatic-Ionian Cooperation Programme (ADRION) which involves 8 partners located in 6 different countries.

It aims at performing a foresight process in order to detect the main issues which may be affecting Adriatic-Ionian ports in the short- to mid-term in the light of the Covid19 outbreak and related economic crisis. The results of these processes will be used to update and, therefore, enhance the main results produced by the former PoWER project, i.e. The PoWER Methodology for building innovation supply Chain, The PoWER Strategy for evolving ports into Innovation Hubs, and the ICT Platform "[PoWERports](#)".

This questionnaire is the first step of the aforementioned foresight process, dedicated to the collection of experts' views on possible future scenarios related to the port areas involved in the project (Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, and Serbia) also in consideration of the wider situation and trends in the Adriatic-Ionian area.

The questionnaire has been developed with reference Next Generation EU and Agenda 2030 goals - which apply both to sea and river ports - and is articulated in 62 questions divided in four sections:

1. Towards smart ports: digital transition of services and processes in the port system;
2. The port in the territory: valorisation of the waterfront and new opportunities for regenerating the physical spaces in the port - city interface;
3. Ports in the Adriatic-Ionian area;
4. The port environment after the Covid19 pandemic outbreak.

Your precious contribution will help the PoWER PLUS team to grasp the complexity and the specificity of the port areas located on the sea and the rivers of the Adriatic - Ionian Region.

Your participation in the survey is on voluntary basis. Your contribution and those of the other experts involved will be consulted and processed by the PoWER PLUS team in order to draft a project document called "Factsheets on local scenarios". The original questionnaire you filled in will be annexed to the abovementioned Factsheets and made available on the PoWERports platform upon your authorisation.

Thank you very much for your time and cooperation. Your feedback is very important to us!

Disclaimer

This document has been produced with the financial assistance of the European Union. Its content is the sole responsibility of the PoWER PLUS project partners and can under no circumstances be regarded as reflecting the position of the European Union and/or ADRION programme authorities.

By filling in and sending back this document to your contact person you authorise the PoWER Plus team to consult it and process it in order to draft the project deliverable T1.1.2 “Factsheets on local scenarios”. This document will open-access and will be delivered, for prior validation, to the funding Programme’s authorities.

Moreover, the PoWER Plus team would like to annex a copy of this document, in its original version, to the abovementioned Factsheets and to make it available on the PoWERports platform.

If you wish, the filled-in questionnaire can be published in anonymous form.

I give my permission to the PoWER PLUS project team to annex a copy of the questionnaire I filled into PoWER PLUS Project’s deliverable T1.1.2 “Factsheets on local scenarios”.

I give my permission to the PoWER PLUS project team to make available a copy of the questionnaire I filled on the PoWERports platform.

I wish my contribution is made available only in anonymous form.

Please, fill in the following table with your data. If you checked the box related to the anonymization of your contact data, they will be consulted only by the PoWER PLUS Project team and not diffused.

Name	
Surname	
Affiliation	
Role	Chief Engineer

1. TOWARDS SMART PORTS: DIGITAL TRANSITION OF SERVICES AND PROCESSES IN THE PORT SYSTEM

A tentative classification of port services in terms of Technological Readiness Level has been made considering 4 macro sectors characterised by a more advanced digital perspective:

- A) Vessel & Marine Navigation;
- B) e-Freight & (Intermodal) Logistics;
- C) Passenger Transport;
- D) Environmental sustainability.

This classification is showed in Tables 1, 2 and 3.

Table 1 Technological readiness - in standardisation

Technological readiness - in standardisation	
Service	Enabling functions
A.1 - Vessel Traffic Management	Accurate Vessel Positioning (terrestrial and satellite), Full information about cargo, Low-Rate Vessel-Port bi-directional communication
A.5 - Berth allocation and docking	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Low-Rate Vessel-Port bi-directional communication
B.1 - Freight Management and Control	(Containerized and General) cargo pervasive monitoring and control in port areas (docks, warehouses, stores).
B.3 - In-port Smart Navigation	Real-time communication Port-Terminals-Trucks

1. According to your experience and knowledge, do you think the table above (Table 1) should be updated? If so, please, propose your version in the table below.

In case that no item above is included under Directive EC 2005/44, refer to the items given below.

Technological readiness - in standardisation	
Service	Enabling functions
River Information Services	Electronic preview/screen of navigation maps compliance to information system for inland waterway operations (Technical Specifications)
	Electronic recording of vessels (Technical Specifications)
	Information system for skippers (Technical Specifications)

2. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.

These services are not effectively implemented as the overall system. It has become mandatory under the framework of the Transport Community Treaty of the Western Balkans (development of TEN-T extending to the WB).

Table 2 Technological readiness - not yet in standardization, facing technological challenges

Technological readiness - not yet in standardization, facing technological challenges	
Service	Enabling functions
A.3 - Water Incident	Accurate Vessel Positioning (terrestrial and satellite), IoT- based distributed network
A.4 - Suspicious Vessel / Maneuver	Accurate Vessel Positioning (terrestrial and satellite), Vessel-Port bi-directional communication
B.2 - Gate Automation	Accounting for users, vehicles and goods
B.4 - Freight Routing	Port-to-Port, Port-to-Road, Port-to-Railways communications
B.5 - Incident at Landside	Distributed monitoring network
C.1 - Info mobility and journey monitor	Journey planner and manager (booking, payment), JIT information delivery
C.2 - Integration with Traffic Control Centres (TCC)	Port-to-road full-fledged data exchange
C.3 - In-port Smart and Autonomous Mobility (including safety)	Real-time communication Port-Vehicles-Pedestrians
D.1 - Pollution Level (including CO _x and noise)	Distributed monitoring network
D.2 - Road Traffic Level	Distributed monitoring network

3. According to your experience and knowledge, do you think the table above (Table 2) should be updated? If so, please, propose your version in the table below.

Technological readiness - not yet in standardization, facing technological challenges	
Service	Enabling functions
D.3 - Rail Traffic Level	Distributed monitoring network

4. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.

Traffic control centres are not integrated and moreover not set-up for Roads and Railways in order to enable efficient monitoring. This is a challenging requirement, which firstly requires setting of Road and Railway TCCs and then the interface for the Port along with the integration to the Port TCC.

Table 3 Technological readiness - beyond state of the art, not technologically consolidated

Technological readiness - beyond state of the art, not technologically consolidated	
Service	Enabling functions
A.2 - Vessel maneuvering in port waters	Accurate Vessel Positioning (terrestrial and satellite), Accurate Bathymetric Data, Real-Time meteo-marine monitoring, HD video sources on vessel & port.
D.3 - Dynamic pricing (all services) to Vessels, Terminals	Distributed monitoring network

5. According to your experience and knowledge, do you think the table above (Table 3) should be updated? If so, please, propose your version in the table below.

I have nothing specific to add to this.

Technological readiness - beyond state of the art, not technologically consolidated	
Service	Enabling functions

6. Please, provide a view on the current situation of the services listed in the table above according to your knowledge. You can address only the services you are familiar with.

The view is the same as under point 2.

7. In your opinion, which of the following sectors need innovation the most?
Please, put an “X” next to them; there is no limit to the number of sectors you can check.

ENERGY

- Efficiency of buildings
- Efficiency of industrial processes
- Production of renewable energy “X”
- Port Grid

INNOVATION AND NEW TECHNOLOGIES IN ALL TRANSPORT MODES

- Deployment of alternative fuels infrastructure - Directive 2014/94 /EU - 22 October 2014
- LNG Retrofit (Realization of a network of points of refuelling for LNG (Liquefied Natural Gas))
- Electrification of port docks
- Construction of LNG-powered ships “X”

SEA-RELATED SOURCES OF RENEWABLE ENERGY

- tidal and sea waves
- hydrogen “X”
- offshore wind power
- on-shore micro-wind power

ENERGY EFFICIENCY IN PORTS’ ACTIVITIES

- more efficient processes
- more efficient behaviours “X”
- more efficient buildings
- more efficient infrastructures (e.g.: lighting)

ROBOTICS AND AUTOMATION FOR

- increasing efficiency
- increasing safety “X”
- increasing comfortability
- monitoring and improving the flows of goods
- savings in time “X”
- savings in fuel “X”
- savings in personnel

AUTONOMOUS VEHICLES (LAND, AIR, WATER)

- driverless trucks and vans for logistics “X”
- drone planes
- for cargo transport
- for parcel delivery services
- drone ships “X”

INTERNET OF THINGS AND BIG DATA

SIMULATION AND VIRTUAL REALITY

CYBERSECURITY

8. If other, please, specify

This is sufficient.

9. With reference to the sectors you indicated in question(s) 7 and 8, is their innovation hindered from a lack of infrastructure? Please, substantiate your answer.

Mostly yes, these innovations are hindered by lack of the proper infrastructure, but also by the lack of educated staff and partially by improvements needed in the “education infrastructure” (schools, faculties, training centres).

10. With reference to the sectors you indicated in question(s) 7 and 8, which are the main developments and improvements you consider relevant? Please, substantiate your answer.

The most relevant improvements are needed in the education on all three levels primarily, elementary school, high school and universities/faculties. The second and third level should be complemented by adequate training centres. The proper tax policy/instruments must be in place for financing of these improvements.

11. With reference to the sectors indicated in question(s) 7 and 8, which are the Key Enabling Technologies (KET)¹ scientific research should focus on? Which KET could bring the most disruptive innovation? Please, substantiate your answer.

The focus should be on nanotechnology, photonics and robotics. The most disruptive KET could be the industrial biotechnology.

12. Which are the innovative interventions you consider most urgent and relevant according to you? Which results you expect they would have?

I consider production of the renewable energy. I expect its domination over other energies with 75% of total share in energy production by 2050.

13. A digital twin (DT) is a realistic digital model simulating or “twinning” the life of a physical asset; each digital twin is linked to its physical twin allowing to establish a bijective relationship between the DT and its physical twin; a DT follows the lifecycle of its physical twin to monitor, control, and optimize its processes and functions and to predict future statuses. How can the digital twin and other technologies be useful for making ports smart?

¹ The Commission defines KETs as “knowledge intensive and associated with high R&D intensity, rapid innovation cycles, high capital expenditure and highly skilled employment. They enable process, goods and service innovation throughout the economy and are of systemic relevance. They are multidisciplinary, cutting across many technology areas with a trend towards convergence and integration. KETs can assist technology leaders in other fields to capitalise on their research efforts”
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0341:FIN:EN:PDF>

The DT can be useful for all the movements and manoeuvring of the vessels, including transshipment operations. It can be also useful in relation to the automatic (driverless) technologies for land manoeuvring and cargo operations (handling of containers, packages, etc.).

14. If you have additional comments, please write them here.

Max 1500 characters, spaces included

15. If your previous contributions are referred to a specific port or area, please, let us know.

I was primarily referring to Port of Brcko in BiH.

16. Briefly describe a FUTURE SCENARIO (25-30 years) related to ports as Innovation Hubs, also in the light of the topics addressed in the previous questions.

With “scenario” we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

The complete system of monitoring, control and data exchange is established between the vessels and ports. It includes both, cargo and passenger traffic. All operations in port are carried out with the limited number of staff, which are mainly responsible and competent for the overall system monitoring and provision of corrective instructions to the operation facilities. Cargo handling operations are carried out by 90% of the automation and directly linked to the further distributions by roads and/or by railways.

Similar process of monitoring and provision of instructions are related to the passenger traffic. The main fear here is the “human error” or “machine error” in processing the passengers, as well as the handling with various types of RID cargo (radioactive, infective and dangerous cargo).

This can be applicable to any port of Adriatic-Ionian Region.

17. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?

Adequate education system is the main force for achieving the aforesaid scenario. Main actors to be involved are the education staff, competent ministries (education, finance, economy), chambers of commerce/economy and transport specialists/experts.

18. What are the main obstacles and risks to the scenario you described? (within 1500 characters, spaces included)

Non-timely response from the main actors on the expected developments in the future. Also, the lack of proper strategy papers and Action plans. Necessary adjustment of tax policy/instruments must also be in place as the part of the strategy and Action plans.

2. THE PORT IN THE TERRITORY: VALORISATION OF THE WATERFRONT AND NEW OPPORTUNITIES FOR REGENERATING THE PHYSICAL SPACES IN THE PORT-CITY INTERFACE

- 1. Which is your opinion on the relationship between a city and its port?
If you are referring to a specific city/port, please let us know.**

A city should be interested in efficient and environmentally friendly operations of any port for both cargo and passenger traffic. This is my general view for any port-city relationship.

- 2. Which is your opinion on waterfront enhancement as an opportunity to reconnect cities with their ports?**

It sounds as a good idea but requires substantial analysis and research in order to come-up with the feasible solutions. Solutions must meet five elements of the feasibility: technical/operational, legal, environmental (natural and social environment), economical (for the users) and financial (for the managers/legal entities).

- 3. Is a territorial waterfront with an integrated transport system consisting of the three-track coastal light rail (tramway), cycling and pedestrian roads, and coastal navigation a good solution for transport and mobility along the territorial waterfront? Please, substantiate your answer.**

Yes, if a port operates with passenger traffic only. The integrated mass transit systems are always the efficient way of transport servicing, but careful approach is needed given by the operational volumes.

- 4. In case you are involved in a port development process, please, describe your experience in relation to Blue Economy development.**

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- 5. A renewed development of port economy, that considers the city with the port in the same system, would be able to drive overall competitive economic development in the current global economic challenge. What is your opinion?**

Similar as 2. above.

- 6. Did you experience Integrated Logistics Areas (ILA) or Special Economic Zones (SEZ)? Do you think that ILA and SEZ can be considered as complementary to the port systems? Please, substantiate your answer.**

Yes, limited experience with the SEZ. And yes, a SEZ can be always considered as complementary element to the port system. There are numerous successful cases worldwide and, in the region (Koper Slovenia, etc.).

7. Do you believe that the Special Economic Zones ("SEZ") can represent an opportunity for the development of the territories of the less developed regions? Please, substantiate your answer.

Yes, it surely can. It usually serves as the "agglomeration" (focus point) for variety of local economies including the possibility to create the new ones, surely with the proper financing and "know-how" transfers. But this requires a profound strategy and Action plan for the macroeconomic development of the country and/or the region.

8. Do you think that the Special Economic Zones ("SEZ") could be rethought in an ecological key? Please, substantiate your answer.

Not necessarily, because if we create a Zone with the green LC (energy production, waste management, etc.) and introduce green technologies for production and processing, it's the huge benefit for the economy and the environment. Especially for vulnerable ones (here in the region).

9. Which subjects should primarily participate in the decarbonisation effort of the Port-City System? Please, substantiate your answer.

I do not understand this question well. All economic subjects and authorities.

10. What and how much is currently being done for the depollution and decontamination of the Port areas?

I do not have some empiric data about it, so hardly to assess.

11. Is the economic and social development of traditional relations with neighbouring countries via the Adriatic-Ionian ports feasible? Please, substantiate your answer.

They are feasible under the key assumption that their trade exchange is directed over the Ports and on the substantial volumes and types of cargo (especially containerised cargo).

12. Do you think that the seas and rivers of the Adriatic-Ionian area could be main players in the Mediterranean geopolitics? Please, substantiate your answer.

Yes, they could. Especially in case of flows trough Suez and from Far East.

13. In your opinion, which of the following sectors need innovation the most? Please, put an "X" next to them; there is no limit to the number of sectors you can check.

SOCIAL SCIENCES

- Social innovation

- Social inclusion and discrimination
- Gender studies
- Inclusive or participation processes
- Facilitation for innovation “X”
- On field research
- Surveys and data analytics “X”

PUBLIC ADMINISTRATION

- Economic development strategies
- Public procurement: works
- Public procurement: services

ENTREPRENEURIAL INNOVATION

- Start-ups
- Internationalization “X”
- Digitalization (e.g., additive manufacturing) “X”
- Industrial design
- Service design “X”
- Internal organization “X”

BUSINESS

- Investing and trading
- Commerce
- Crafts
- Small and Medium industries
- Large industries “X”
- Services (logistics, software, consultancies, etc.)
- Restoration
- Tourism and Leisure “X”

EMPLOYMENT DECREASE

NEW SUITES OF SKILLS

SEA-RELATED SOURCES OF RENEWABLE ENERGY

- tidal and sea waves
- hydrogen “X”
- offshore wind power
- on-shore micro-wind power

BLUE GROWTH

- Fishery and aquaculture
- Green shipping “X”
- Exploitation of marine resources
- Innovation in tourism “X”
- New solutions for environmental resilience “X”

DE-CARBONIZATION OF PRODUCTS AND PROCESSES

SCIENTIFIC RESEARCH

- Theoretic or base research
- Applied research “X”
- Private R&D investments

CULTURAL PRODUCTION

- Digital sector
- Traditional sectors (e.g. theatre or cinema)
- Heritage preservation
- Design professions
- Journalism, books and essay writers

SUSTAINABILITY

- Circular economy “X”
- Innovative products “X”
- Waste management and recycling
- Intelligent mobility “X”
- Disposal of ballast water sediments in the port area - art. 5 of the Ballast Water convention, in progress ratification)

14. If other, please, specify

15. With reference to the sectors indicated in questions 13 and 14, which are the main obstacles to their development?

Lack of proper economic strategies and follow-up financing instruments on the sufficient levels.

16. With reference to the sectors indicated in questions 13 and 14, which are the Key Enabling Technologies (KET) scientific research should focus on? Which KET could bring the most disruptive innovation? Please, substantiate your answer.

The focus should be on nanotechnology, photonics and robotics. The most disruptive KET could be the industrial biotechnology.

17. With reference to the sectors indicated in questions 13 and 14, which results would the adoption of the disruptive technologies described in the question above (n. 16) lead to?

Human health problems and other natural species.

18. Briefly describe a FUTURE SCENARIO (25-30 years) related to ports and their cities/ territories, also in the light of the topics addressed in the previous questions.

With “scenario” we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

More than 50% of Sea and River Ports are having the waterfront with the cities. They are all included in integrated transport systems for both, cargo and passengers. Each port has its own SEZ with environmentally friendly set of local economies and production of renewable energy.

19. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?

Adequate education system is the main force for achieving the aforesaid scenario. Main actors to be involved are the education staff, competent ministries, chambers of commerce/economy and tourist.

20. What are the main obstacles and risks preventing the realisation of the scenario described?

Lack of proper strategies and Action plans for the expected developments in the future. Necessary adjustment of tax policy/instruments must also be in place as the part of the strategy and Action plans.

21. If you have additional comments, please write them here.

3. PORTS IN THE ADRIATIC-IONIAN AREA

1. In your opinion, what is the untapped potential for enhancing energy efficiency in Adriatic-Ionian ports?

There is a potential for enhancement in port traffic operations, lighting and buildings.

2. Which are the main drivers towards that enhancement increasing energy efficiency? Which the main obstacles?

The main drivers are Port Authorities. The main obstacles are related to the lack of proper strategy/Action plans, funds and somewhat unclear legislation for stimulating the enhancement.

3. With reference to the two previous answers, which are, in your opinion, the main challenges ports, free zones and the global shipping industry will have to face? What should be done to mitigate their negative impacts?

The main challenge would be the time required for the shift to the enhanced energy efficiency. Transparency of the regulations and available funds are needed along with the streamlining of the activities for the efficient achievements.

4. How does the development of ports affect the local community? Please, refer both to the city- and the wider region-level.

Every port can present the “hub” for local economies development but often for the macroeconomic development, again depending on the volumes and size of the economy and the port. At the same time, it influences to the city development as well based on the local economies located in it, regardless the direct and/or indirect economic link to the Port.

5. Do you think that in the Adriatic-Ionian area water transport is underdeveloped as compared to other types of transport? What if compared to other geographical areas?

Inland waterways transport is underdeveloped, it counts maximally around 2% only of total transport volumes operated in the region. And mostly cargo.

6. Climate change is requiring a quick and resolute transformation in all sectors (e.g. industry, society, organization, urbanization, etc.). How could Adriatic-Ionian ports and their cities contribute?

They can contribute by introduction of efficient energy production and consumption, technology changes/improvements in transshipments, etc.

7. If you have additional comments, please write them here.

8. Briefly describe a FUTURE SCENARIO (25-30 years) related to Adriatic-Ionian port areas, also in the light of the topics addressed in the previous questions.

With “scenario” we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

Around 65% of Sea and River Ports are having the waterfront with the cities by 2050. They are all included in integrated transport systems for both, cargo and passengers. Each port has its own SEZ with environmentally friendly set of local economies and production of renewable energy.

The complete system of monitoring, control and data exchange is established between the vessels and ports. It includes both, cargo and passenger traffic. All operations in port are carried out with the limited number of staff, which are mainly responsible and competent for the overall system monitoring and provision of corrective instructions to the operation facilities. Cargo handling operations are carried out by 90% of the automation and directly linked to the further distributions by roads and/or by railways. Similar is operated with passenger traffic.

Main fear is the lack of proper visions and strategies to reach this scenario.

9. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?

Adequate education system is the main force for achieving the aforesaid scenario. Main actors to be involved are the education staff, competent ministries (education, finance, economy, energy), chambers of commerce/economy, transport specialists/experts and energy efficiency specialists/experts.

10. What are the main obstacles and risks preventing the realisation of the scenario described?

Lack of proper strategies and Action plans for the expected developments in the future. Necessary adjustment of tax policy/instruments must also be in place as the part of the strategy and Action plans.

11. If you have additional comments, please write them here.

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4. THE PORT ENVIRONMENT AFTER THE COVID19 PANDEMIC OUTBREAK

1. According to your knowledge, which are the main challenges that affected ports and port cities after the Covid19 pandemic outbreak?

The main challenge is to restore the regular traffic volumes in size and origin-destination.

2. What impact had/have lockdown actions on vessel traffic??

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3. What role can port authorities play in managing the emergency? Has their role changed only temporarily or will it be changed for good? Please, substantiate your answer.

Their role should be organisation of the managing with the state of emergency of any kind. And to work together with the competent emergency services on formulation the preventive and response strategies on periodic basis.

4. How are the relations between port and city changing?

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5. How the port-urban landscape is changing?

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6. What are the previously existing problems, limitations or needs which the pandemic has emphasized?

Problems in organisation and management of pandemic emergency cases, and on a long run. Obeying the rules, discipline.

7. How could the Covid19-related emergency become an opportunity to grow for port areas?

-

8. Is the ecological footprint of port cities going to decrease? Please, substantiate your answer.

Not necessarily, it depends primarily on changes in local economies development and its reference to

the ecology.

9. Briefly describe a FUTURE SCENARIO (25-30 years) related to port areas' post-pandemic situation, also in the light of the topics addressed in the previous questions.

With "scenario" we mean a narrative story describing how the situation should be in the future also including your hopes and fears.

You can either refer to a specific port area or, more in general, to Adriatic-Ionian Ports.

The same as under section 3.

10. Which are the main forces that could drive to the scenario you described? Which would be the main actors involved? Which actions should be taken to realize the future scenario you described?

The same as under section 3.

11. What are the main obstacles and risks preventing the realisation of the scenario described?

The same as under section 3.

12. If you have additional comments, please write them here.

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