Community leader perspectives on the utilization of seagrass ecosystem for marine tourism in Toli-toli, Central Sulawesi, Indonesia

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Abstract. Seagrass ecosystem and dugongs (Dugong dugon) are significant features of the northern coastal areas of Toli-toli and its adjacent small islands. Local communities are familiar with the dugongs for some reasons, including activities threatening its population. Therefore, Dugong and Seagrass Conservation Project-Indonesia initiated conservation of the seagrass ecosystem and the dugongs in Toli-toli. Local communities, with supports from local governments, are keen to develop tourism to gain economic benefit from the conservation. Accordingly, the project allowed some local leaders an opportunity to learn from the Seribu Islands, an extraordinary location of marine tourism. This paper describes their learning process and immediate responses expressing perspectives on how their tourism should be developed. After being introduced to some key features of Seribu Island, local concerns, problem solutions, and discussed a concept of sustainable tourism in a small workshop, they concluded the tourism objects in their home are much better. They also were confident with the importance of conservation and aware of some negative impacts of tourism. The outcomes of this visit should be carefully noted by anyone who wants to involve in the tourism development that uses Toli-toli's nature and culture as objects.

1. Introduction
Seagrass ecosystem and dugongs (Dugong dugon) are two of the significant features of the northern coastal areas of Toli-toli and its adjacent small islands (Figure 1). The seagrass beds of 1,769.06 ha extended down to 3 m below the water surface [1]. The seagrass beds were distributed in the coastal waters of Ogotua Village (31% or 540.55 ha, mainly around Lingayan island), Malala Village (6% or 105.23 ha), and Santigi Village (63% or 1,123.28 ha). They identified eight species of seagrass, i.e.,
Enhalus acoroides, Thalassia hemprichii, Cymodocea rotundata, Cymodocea serrulata, Halophila ovalis, Halodule uninervis, Halodule pinifolia, and Syringodium isoetifolium.

Local communities are familiar with dugongs for some reasons, e.g., they recognized the animals as a source of food, the tusks had a commercial value, and the animals are problems to fishers. Some activities are incidentally threatening its population. A declining trend in the dugong population was reported by a local hunter operated in the District of North Dampal [2]. They hunted the animals in their feeding or playing grounds using a hand-held wooden spear with a sharp metal head tied to a rope of about 100 m lengths. They hunted dugongs for the tusks and bones; the meat was usually handed over to local communities. It was reported no more dugong hunting in the area; local communities have considered dugongs should be free. The dugong is also listed as one of the protected animals in Indonesia (Government Regulation No. 7 1999) and one of 20 marine animals’ priorities to be conserved by the Ministry of Marine Affairs and Fisheries. However, dugongs are still threatened since they are susceptible to be accidentally caught by fishers who operate gillnets, sero, and pukat, and subjected to marine pollution. The commitment of local communities in protecting dugong is reflected in the establishment of a local surveillance group called Pokwemas [3]. They have been introduced to techniques for carefully handling any stranded dugong or any dugong accidentally caught by fishers [2].

Figure 1. Locations of Ogotua, Malala and Santigi Villages in Toli-toli Regency, Central Sulawesi Province (modified from DSCP Indonesia [3]).

Local communities, with supports from local governments, are keen to develop local tourism to gain economic benefit from the conservation of dugongs and seagrass. Their current sources of major income are agriculture, fisheries, and small groceries [4]. Potential tourism objects in Ogotua Village include beaches and coral reefs around Lingayan Island and Koko Island. While local communities in the mainland (Ogotua Village) provide some accommodation for visitors, the Government of Indonesia supported them by constructing a tourist resort in Lingayan Island. For Malala Village, the
objects are beaches and coral reefs around Naima Island; local communities provide tourism services. The infrastructures in Malala Village include gazebo (shelters for visitors), playing ground, self-photography spots, and snorkeling gear. People in Malala Village also provide accommodation for visitors. In contrast to the two former villages, the tourism business in Santigi Village can be considered undeveloped since there is no special infrastructure provided for tourism and accommodation for visitors is limited. They have not managed the beaches and coral reefs around Dolangan Island, Tanjung Taragusung, as tourism objects.

Local communities recognized the objects for tourism is limited to beaches, coral reefs, and fish. They were not aware if local culture, history, local activities, and local uniqueness are also potential tourism objects. The people in the three villages are multi-ethnic groups. They consist of people from the ethnic of Bugis, Bajo, Dondo, Mandar, Buol, Toli-toli, Kaili, Jawa, Lauje, Minang Padang, China, and Sanger. Their productive activities in growing, maintaining, and harvesting coconut palms, cloves, cacao, and paddy fields are examples to be promoted to visitors. Some community members do fish in Malala Bay, Jaya Bay, and around Lingayan Island, Simatang Island, and Dolangan Island. Their catch includes anchovies (*Stolephorus*), sardines (*Sardinella*), reef fishes (e.g., *Lutjanidae*, *Serranidae*, and *Labridae*), tendero (*Tylusuridae*) and pelagic species (*Scombridae*), such skipjack tuna, and tunas. Types of fishing gear they used include paning (hook and lines), pukat (gillnets), *jala* (cast net), *bagan perahu* (boat lift net) and *sero*. A special study conducted by [3] concluded main potential uses of the existing coastal ecosystems in the areas: seagrass protection and conservation (four sites in Ogotua, three sites in Malala), marine tourism (four sites in Malala, two sites in Santigi) and seaweed farming (one site in Santigi).

Accordingly, the SDCP Indonesia provided some local leaders an opportunity to learn from the Seribu Islands, one of the extraordinary locations of marine tourism in Indonesia, on a field trip from February 8th-10th, 2019, and a one-day mini-workshop in Bogor on February 11th, 2019. Seribu Islands have been exposed to mass marine tourism, and then re-labeled with the ecotourism [5]. Now, some efforts have been in place to minimize the negative impacts of tourism [5, 6]. From these activities, they were expected to compare the features of tourism objects between Seribu Islands and Toli-toli, to identify activities that can promote development of local tourism in their villages, and to build awareness on the negative consequences of tourism to their environment, socio-culture, economic, etc., and to build some knowledge in anticipating such consequences. The participants consisted of three representatives from three local government agencies; each from agency which is responsible for issues on fisheries, tourism, and community empowerment), three representatives from Malala Village (Chief of Village, Chairman of Community Group for Surveillance and Chairwoman for Business Affairs), three representatives from Ogotua Village (Chairman of Community Group for Surveillance and two members of Tourism Group), three representatives from Santigi Village (Chairman and secretary of Community Group for Surveillance and senior community member). This paper describes their learning process and immediate responses expressing perspectives on how their tourism should be developed. This article is expected useful for those who are interested or get involved in development of sustainable tourism in Indonesia in terms of promoting sustainability of local environmental services (e.g., beaches, coral reefs, seagrasses, and mangroves), priority marine animals (dugongs, marine turtles, reef fishes), marine features (e.g., cave), local cultures while help promoting better local economy and resource governance.

2. Methods
The authors documented learning approaches and processes applied by the Project Team. Both learning approaches and processes were described in two separate sections, i.e., a field trip to Seribu Islands and mini-workshop in Bogor. Description of the learning approach includes items that reflect strategies to expose the participants to know the reality by direct participation to gain some experience that highlights the reality, discussion materials, and outputs. Description of learning process covered items that reflect sequential and connection among learning activities, i.e., steps, by which learning approaches were applied.
2.1. Field trip to Seribu Islands
The field trip was designed to directly expose the participants to tourism infrastructures and facilities since the beginning of the trip, from the Marina Ancol, where they departed, staying period in the islands, and returned to Marina Ancol. A brief introduction to the Seribu Islands was conducted, but they were encouraged to observe everything by themselves when traveling. They were suggested to make notes to be discussed with other participants or facilitators. For example, participants experienced different modes of transportation. They took a speedboat from Marina Ancol (Jakarta) to Pramuka Island; the speedboat is operated by a company that provides service regularly with published schedules and fees. They stayed in a homestay operated by a local family in Pramuka Island with shared rooms and bathrooms. They took local a taxi boat from the island to a snorkeling spot and from Pramuka Island to Harapan Island. In both Pramuka and Harapan islands, they had an opportunity to talk to locals, observed visitors and people at the islands.

In Pramuka Island, they visited Seribu Island National Park Office where they received information on the role of the National Park, some conservation-related activities (such as mangrove and seagrass rehabilitation areas, integrated sea-farming system for sea cucumbers-abalone-seagrass, turtle research facility, etc.), special facility to promote edu-tourism, i.e., the newly built bridge to accommodate visitors in observing the mangrove-seagrass rehabilitation. They also visited a community center in Pramuka Island (called Rumah Hijau, Ms. Maharia), where local community initiatives on reuse-recycle household waste, conservation activities for mangrove replantation, conservation education, and household empowerment are implemented to promote local conservation, sustainability, and community resilience. They had opportunities to observe and practice to reuse plastic waste for shopping bags, furniture materials, recycle domestic waste for producing organic fertilizers, local contemporary arts. The Rumah Hijau provides many examples of how the community can participate in the conservation program and tapping the economic benefit from visitors. They discussed the ideas behind the establishment of the center, outreaching strategy to involve households (mainly housewives), making working examples, gaining external supports, creating business opportunities from tourism, participating in conservation agenda, strengthening household capacity, etc..

In Harapan Island, they met and talked to a local person (Mr. Ilham) who was aware of business opportunities when visitors started coming to the Seribu Islands, but he was concerned with the low capacity of local communities to take part in the tourism. He did not want locals to compete with each other. He proposed a coordination mechanism to build division of roles among service providers to ensure fair access to business opportunity and responsibility that promote sustainability of the business and the objects and balancing fairness between the quality of service providers and expectations of visitors. He believed from the beginning that the existing natural resources and environmental services could support the local community in gaining a better source of livelihood if managed properly. In the evening, they discussed their findings, exchanging ideas and thinking of what can be brought home.

2.2. Mini-workshop in Bogor
In the workshop in Bogor, they have introduced a concept of sustainable tourism from the World Conservation Union. A presentation was made by a facilitator describing the concept of sustainable tourism, comparison between sustainable tourism and "conventional" mass tourism, significance of sustainable tourism, importance to manage negative impacts of tourism (e.g., by controlling visitors, and careful infrastructure development, and knowing the limit of acceptable change of the area), and how sustainable tourism can promote conservation. The sustainable tourism defined by World Conservation Union was introduced: "Environmentally responsible travel to natural areas to enjoy and appreciate nature (and accompanying cultural features, both past, and present) that promotes conservation, have a low visitor impact and provide beneficially active socio-economical involvement for local people." The definition was then interpreted by comparing sustainable tourism with conventional mass tourism in terms of objectives, planning, orientation, controls, and focus of
experience, conservation perspective, local community, and economic benefit. The consequences of mass tourism that they were explained to give them sufficient knowledge.

Right after the introduction, the participants were then requested to identify lessons learned from the field trip to Seribu Islands, i.e., both good practices and things that needed to be improved, good things to be adopted at their home, and action plans in developing sustainable tourism at in their home. Their lessons were expected covering some issues on tourism objects or destination, tourism infrastructure and facilities, community welfare, community participation, and synergy between tourism and economic development.

3. Results

3.1. Perspectives

The participants were impressed with the effort made by local communities (Rumah Hijau) to empower local households, especially housewives, by engaging them in re-cycling domestic waste and re-using plastic-made materials that are used in informal educational promoting conservation. At the same time, the Rumah Hijau itself becomes one of the tourist attractions of the Seribu Islands, especially visitors to the Pramuka Islands. The Rumah Hijau takes advantage of easy access to the Balai Taman Nasional Kepulauan Seribu and Regency Government and the visitors. Pramuka Island can be considered the main hub of local activities because of the marine transportation system. Some participants were also impressed with local hospitality. They found locals exchange greetings with them. They found this social interaction was different compared to the community in their homeland.

The participants identified some good things as well as things to be improved by the Seribu Island communities. The re-use of plastic packaging materials for new types of use was considered good practice. They did not realize the consequences of plastic-based wastes on the environment: its durability will make their environment polluted by plastic materials. They became aware of the amount of plastic trash from their activities that will threaten the environment and then degrade the value of local potential tourism objects. In the Seribu Islands, they found an example of alternative re-use of plastic materials. The effort to decompose organic materials from household wastes received well attention. One of the participants was familiar with the process from his previous job. The explanation from the host at Rumah Hijau reminded him of the local potency in producing organic fertilizers. Other good things were the presence of homestays, the boardwalk in mangrove area for visitors, mangrove seedlings and replantation program, art class and souvenir production, marine transportation and jetties, local hospitality, monitoring and surveillance on mangrove, seagrass and turtles, tourism promotion. The good things were considered best practices to be applied in their homes.

Their opinion on things to be improved indicated their awareness of how things should be present for accommodating visitor needs. They experienced a mechanical problem with the boat, which took them to visit a snorkel site and the trip back from Harapan Island to Pramuka Island. They consider such transportation must be well maintained and be ready when being used by visitors.

3.2. Action plans

After discussing some lessons learned from the field trip in the workshop, representatives from each village developed a simple action plan to develop local tourism (Table 1). They defined the target groups consisted of three general categories, i.e., students, domestic visitors, and foreign visitors; they did not identify any specific types of visitors. The potential objects to be promoted for tourism include the dugongs, reef fish and other local fish, coral reefs and mangrove areas; they did not specify if local cultures and productive activities can be promoted too. The objects were not limited to marine objects but also terrestrial objects, stone cave, and beaches.
Table 1. Actions plans developed by village representatives at the one-day workshop in Bogor, February 11th, 2019.

| Villages     | Objects         | Locations                          | Target Groups                                  | Year of implementation |
|--------------|-----------------|------------------------------------|------------------------------------------------|------------------------|
| Ogotua       | Dugong          | Lingayan Island, Tanjung Jalejeh, Ogotua | Students, domestic visitors, foreign visitors | 2019                   |
|              |                  | Lingayan Island, Pasir Tengah, Koko Island, Ogotua | Students, domestic visitors, foreign visitors | 2020                   |
| Malala       | Ratu Ampat Island Coral reefs | Malala Village | Students, domestic visitors, foreign visitors | 2019-2023              |
|              | Recreational Fishing Line fishing Liftnet fishing | Malala Bay, Malala | Domestic and foreign visitors | 2019-2023              |
| Santigi      | Coral reefs     | Sandy beaches around islands, Batu Bab Rantasan | Students and publics | 2021                   |
|              | Mangrove        | Rantasan                           | Students, domestic visitors, foreign visitors | 2022                   |
|              | Stone tunnel to Dolangan Island | Students and nature lovers | 2020 |

Representatives of each village listed types of equipment or infrastructures needed for tourism. The representative from Ogotua Village proposed equipment and infrastructures for dugong tourism: motorized boats, life buoys, lights, shower rooms, eatery areas for local food and an information center in Lingayan Island. For coral reef tourism, the representatives from Malala Village proposed snorkel equipment, SCUBA equipment, shade/shelter for visitors (gazebo) and jetty. For recreational fishing, the Malala representatives proposed fishing boats, life buoys, mooring buoys, and fishing gear. Santigi representatives proposed tourism for 3 objects. For coral reefs tourism, the proposed motorized boats, SCUBA equipment, and mooring buoy; for mangroves tourism, they proposed tourist tracks and boardwalks, and for cave tourism the proposed information board and caving equipment.

The representatives of local government proposed ideas to integrate village tourism objects or destinations in several tour packages. The packages will be developed by considering types of visitors, optimum route, entry and exit points, type of activities, types of equipment or infrastructure needed, and length of stay, etc. They also encourage the village government to make a proposal of tourism development that may be considered for budget allocation in Toli-toli development. To have built a comprehensive perspective of tourism, the government representatives were considering another field trip to other extraordinary tourism destination in Indonesia. The representative expressed the need for synergy and better coordination among different agencies within the Regency Government and between Regency and Provincial-Central Government.

4. Discussion

4.1. Perspectives reflecting awareness and confidence
The perspectives expressed by the participants indicated their awareness of some important issues that may determine the success of tourism development. Witnessing that locals respected them by exchanging greetings was a surprising example to those who rarely practice such social gestures in
their homes. Experiencing such surprise was probably one of the important lessons, i.e., tourism development needs commitments of entire communities, not only the service providers but also neighborhoods of the people who are not engaged directly with the tourism business. This factor was items of experience that will enhance the quality of tourism and hence the value of the money they spent. Interaction with locals will signify the tourist destination with their satisfaction.

It is important to show to the local stake-holders the socio-economic implication of having conservation programs or activities. As prescribed in many conservation initiatives, one of the main challenges in sustaining conservation initiative, the stakeholder must be shown if the socio-economic benefits are possible to achieve, e.g. [7, 8].

The mechanism must be described clearly to local stakeholders showing a process of synergizing tourism plans and other development plans. The tourism should be directed to address economic benefit by maintaining local resources, environmental services, and socio-cultural values, which are promoted as tourist attractions. The calculation must be provided to estimate the number of job opportunities, requirements, and qualifications required for every type of job and salary or benefit for job seekers. More importantly, when describing the employment issue, the types of services and specifications of the service provider must be sufficiently detailed. Such a description will invite potential business person, hopefully from local communities. Therefore, if there are gaps between the current capacity and the expected capacity, capacity development of the human aspect for the local community can be designed more accurately.

In developing sustainable tourism, both local communities and the visitors must be the target groups of outreach activities. On one side, the outreach program should be designed to ensure the behavior of visitors is within the limit of tolerated impact. Here, detailed information should be provided to the visitors before their departure to the tourism destination, when they just arrive and when they are on the trips or inside the destination area. This information should be provided when they plan their trips, visible to the visitors, service providers, and local communities. On the other side, the outreach program for service providers must be designed to ensure they can accommodate the expectation of their visitors with a minimum threat be the safety of all people involved in tourism activities and promote the quality of the tourism objects. The outreach program must be combined with capacity building program for individuals (such as training for guides, accommodation managers/owners, restaurant managers/owners, transportation operators, area supervisors) and for institutional development (such as in planning, promotion, plan implementation, monitoring, and evaluation), e.g. [7, 9, 10].

At the moment, the scope of tourism listed in table 1 expressed the intention to utilize the available resources and environmental services. In a short future, the scope can be extended by involving visitors in ecosystem rehabilitation, such as mangrove replantation, or perhaps the restoration of damaged reefs [11].

4.2. Assistance in planning
The items listed in table 1 were made by participants with limited knowledge or perspectives in a limited time. They may be knowledgeable about their location, but it is not necessarily comprehensive because of their perception and life orientation. They need some advice to make an inventory or collection of potential tourism objects or destination. From such inventory, local communities with the help of facilitators must decide priority objects or destination.

To some extent, the economic benefit from tourism utilizing natural resources and services must be planned rigorously to avoid the phenomenon of the tragedy of the commons. If every tourism service provider competes with each other, it is possible the economic gain from such tourism is not optimum (i.e., maximum). In such a competition, the quality of hospitality services may be higher because of the lower prices due to extra supply. However, the quality of tourist destinations may decrease due to over-crowdedness, carrying capacity is exceeded, negative impact more than its tolerated level, and lack of maintenance and management of the objects. Here, tourism should be managed by a legitimate strong governing body. The villagers in Toli-toli Regency should work hard if they want tourism to
produce maximum outcomes. It can be predicted that the villagers from where the participants originated need some technical assistance from external parties.

The economic value of tourism depends strongly on the appreciation or satisfaction of visitors. Such appreciation can be measured in the maximum cost that visitors are prepared to pay, i.e., willingness to pay (WTP). The values of WTP depend on various factors, such as quality of services, quality of objects or destination, predictability of the tour program, management effectiveness of the industry (service providers, tourism objects or destination, and visitors) and off course visitor's characteristics of background, such as education, level of income, conservation orientation, etc. [12-14].

Uncontrolled use of objects or destinations, including access to them, will reduce the economic value of the tourism potency. If this happens, then the promotion may mislead the visitors, except those who are curious about such publication. This may still keep the objects or destinations categorized favorite destinations, but it likely will receive less recommendation because previous visitors to the area may be victims of wrong publication. For example, if local communities failed to maintain the dugong population, the trips made by visitors who want to see them may be unsatisfactory.

Table 2. Examples of regulation for village governments to develop local decision or regulation.

| No | Titles of regulation                                | Regency Regulations                                                                 |
|----|-----------------------------------------------------|-------------------------------------------------------------------------------------|
| 1  | Management of environment                           | Regulation of Toli-toli Regency No.18 Year 2008 on Management of environment         |
| 2  | Land-use zoning plan                                | Regulation of Toli-toli Regency No. 16 the Year 2012 on Landuse zoning plan of Toli-toli Regency 2012 – 2032 |
| 3  | Inter-Village cooperation                          | Regulation of Toli-toli Regency No. 19 the Year 2013 on Inter-Village cooperation    |
| 4  | Developing village regulation                       | Regulation of Toli-toli Regency No. 18 the Year 2015 on Village regulation           |
| 5  | Green public area                                   | Regulation of Toli-toli Regency No. 21 the Year 2015 on Green public area            |
| 6  | Regency partnerships                                | Regulation of Toli-toli Regency No. 23 the Year 2015 on Regency cooperative agreement |
| 7  | Election of village leaders                         | Regulation of Toli-toli Regency No. 9 the Year 2017 on Guideline of election, assignment, inauguration, and dismissal of village leaders |
| 8  | Mid-term development master plan of Toli-toli Regency 2016-2021 | Regulation of Toli-toli Regency No. 1 the Year 2019 on Correction of Regency Regulation No. 2 the Year 2016 on Mid-term development plan of Toli-toli Regency year 2016–2021 |
| 9  | Village council                                     | Regulation of Toli-toli Regency No. 2 the Year 2019 on Village assembly             |
| 10 | Village re-arrangement                              | Regulation of Toli-toli Regency No. 3 the Year 2019 on Institutional Re-arrangement of villages |
| 11 | Protection of farmers                               | Regulation of Toli-toli Regency No. 6 the Year 2019 on Protection and empowerment of farmers |

Environmental education verified proof of effective conservation, and visitor experience with nature should be the main characteristic of tourism industries that sell the beauty of nature in responsible manners. Local governance needs to be established from the beginning; e.g., the village governments put an agenda of tourism development emphasizing sustainable tourism. The village governments must provide some principles applicable to the people and participants of tourism
industries (including visitors) observing the principles of sustainable tourism. A mechanism should be available for granting mechanism to any tourism service providers, controlling access of visitors and service providers to the objects or destinations, control system (monitoring, controlling, and surveillance). This mechanism should reflect the principles of good governance (transparency, accountability, democracy). The current regulations in Toli-toli enable village governments to perform these principles (Table 2).

To build the governance, the Government of Toli-toli Regency has provided legal foundations for the mechanism to produce village regulation. These legal foundations are Master Plan of Tourism Development (RIPDA) and Mid-Term Development Plan 2016-202. The implementation of such policies requires intensive interaction between the Government of Toli-toli, village governments, tourism business players and communities in the tourism development area [15, 16].

The village government can start planning sustainable tourism using the action plan developed in the workshop. The outcomes and outputs of this field trip are expected to be materialized by utilizing existing nation-wide funding schemes for village development. The scheme, called Dana Desa, provides financial resources for the village government 2015. In the first several years, many villages were busy focusing on infrastructure development, such as local roads, electricity, potable waters, education, and health infrastructure. In the next short future, the grants should be allocated more to develop sustainable productive activities, such as tourism and other activities supporting the tourism development (e.g., human capacity development for tourism and inventory of tourism objects or destination). Perhaps, academia should also help village governments develop local-based tourism development. Academia can help the heads of the villages in analyzing existing village regulation, determining and developing new or additional village regulations or policies to promote sustainable tourism [17].

Among tourism service providers, business owners are very important target groups, assuming their roles include directing their staffs to certain standards or code of conduct. Since the scale of business run by local communities may not big, the owners may also the workers, i.e., directly involved in providing the services to the visitors. These groups of people must be invited to participate actively in the process of local tourism development.

5. Concluding remarks
We expected the community representatives from participating villages in DSCP grasped the basic foundation to utilize some outcomes of conservation effort through the development of local sustainable marine tourism, i.e., tourism program that helps to generate local income and to promote the effectiveness of local marine conservation. We believed they still need some technical assistance for starting a tourism development program, the decision-making process, providing development options, and outreaching external resources, dealing with tourism business networks, monitoring visitor's impacts, etc. Any project, as its terms, has a limited scope, resources, and duration. Post project is always challenging. Perhaps, local government should play an important role in facilitating the post-project. Strategies may include the use of a village development grant (dana desa) for local tourism development. However, they may not be familiar with the budget allocated to other than infrastructure development. The Government of the Toli-toli Regency should have started it because it helps the local community with various options of livelihood.

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