

## Tourism Potential Mapping In Kenderan Tourism Village Through Geographic Information System

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### Abstract

*Tourist village is one of the tourist destinations that are currently being discussed, especially the government has issued policies and decrees related to Tourism Villages, one of which is Kenderan Tourism Village, but in its implementation Kenderan Village has not been able to realize the program of the policy. Kenderan Tourism Village does not have a theme that is in accordance with the condition of the village so that Kenderan Village still lacks optimizing the potential it has, the solution that can be given to anticipate the above problems is that it is necessary to identify the potentials possessed by Kenderan Tourism Village, these potentials need weighting to find out which objects are most interesting to visit by tourists and which are not so dominant to attract tourists to visit. This research aims to identify tourist village products using the Geographic Information System (GIS) approach and find out the perception of tourists towards the potential of tourists. Data collection techniques in this study are observation, interviews, documentation, and GPS. The ArcGis application will be used as a tool to analyze data and processing data from the results of field observations (primary and secondary surveys) will be tabulated and then given a score (scoring) based on their suitability for the elements of the destination (tourist attractions, tourism facilities, supporting facilities and tourism activities). The distribution of the potential level of tourism objects in the Kenderan Tourism Village is divided into three categories, namely: high, medium and low. In the high category, there are original tourist objects from the Kenderan Tourism Village in the form of natural tourism. The medium category is in the cultural tourism object where this tourism object was born because it was developed by the people of the Kenderan Tourism Village. In the low category, there are artificial tourism objects in the Kenderan Tourism Village.*

*Keywords: Identification of Tourism Products, Geographic Information Systems, Kenderan Tourism Village*

### INTRODUCTION

Kenderan Tourism Village is one of the tourist villages located in Bali. The Kenderan Tourism Village is designated as a tourist village through the Decree of the Gianyar Regent Number 429/E-02/HK/2017 concerning the Designation of a Tourism Village in Gianyar Regency along with other villages, namely Singapadu Tengah Village, Singapadu Kaler Village, Taro Village, Kerta Village, Batubulan Village, Kemenuh Village, Mas Village, and Kedisan Village. Kenderan Tourism Village, located in Tegallalang District, is one of the exotic destinations in Gianyar Regency. This village can be said as a tourist village that offers cultural tourism and spiritual tourism. Kenderan Tourism Village has very beautiful natural scenery with rice terraces, art studios, and traditional art markets even though on a small scale. Kenderan Village was declared a tourist village in October 2010, but the Decree of the Gianyar Regent that determined Kenderan as a Tourism Village was published in 2017. This potential is a very valuable asset to attract the attention of foreign tourists to visit and enjoy the charms of the Kenderan Tourism Village. However, the quality of existing tourist objects must be improved by increasing awareness and concern from the government and also the local community to maintain existing tourist objects. Assistance from the information presentation media will also be more helpful in introducing tourism in the Kenderan Tourism Village.

However, until now Kenderan Tourism Village has not been able to compete with other tourist villages. Kenderan Tourism Village cannot be said to be a developing tourist village even though it has been designated as a tourist village based on a decree in 2010. The number of tourist visits has not increased as seen from the data on tourist visits from Gianyar Regency. There has been no development in the Kendaran Tourism Village because the Kendaran Tourism Village itself does not yet have a master plan or desired direction of tourism development. In addition, there is no clear information on mapping tourist attractions digitally, so good guidance is needed. Technological advances of computers that are very fast have encouraged the development of information, one of which is geographic information in the tourism world. Presenting tourism information in the Kenderan Tourism Village at this time still requires an increase in tourism promotion activities that have not been coordinated and the presentation of information that has not been efficient, for example in providing information about locations or places and several tourist facilities in the Kenderan Tourism Village which include nature tourism, cultural tourism and artificial tourism that requires technological assistance.

A geographic Information System is one of the models of information systems used to make various decisions, planning, and analysis. Sangupta (2007) explains that GIS is a system that can support spatial decision-making and can integrate location descriptions with the characteristics of phenomena found at that location. Therefore, a visual study for tourism in the Kenderan Tourism Village that utilizes remote sensing and GIS is important to do. The application of GIS (Geographic Information System) is the right step to be able to find out the location and tourism information in the Kenderan Tourism Village because GIS has been recognized to have very broad capabilities, both in the mapping and analysis process so that the technology is often used in the spatial planning process.

Mapping the Kenderan Tourism Village in a graphic information system is needed to identify the potential and uniqueness of the tourist village. Budiyanto, (2010) identified a Geographic Information System (GIS) as a computer system that can retrieve, store, analyze and display information with geographic references. In this study, the Geographic Information System is expected to be able to analyze the space in the Kenderan Tourism Village so that the tourism potentials in this village can be optimally developed into a better and quality tourist attraction that can attract tourist visits, both domestic and foreign tourists.

## LITERATURE STUDY

### Previous Research

Some research related to the potential development of the Kenderan Tourism Village has been carried out by other researchers including Lestari et al (2020) who found Kendran Village as a tourist village, as well as its readiness for development were quite potential. The main policies that need to be prioritized include increasing the capacity of rural communities, strengthening village tourism institutions, packaging attractions / attractions for creating branding, and expanding and maintaining markets. Sudarmini et al (2019) revealed that the superior products in the Kenderaan Tourism Village are holy water, the second is waterfalls, the third is wood crafts, the four temples, and finally the palace. The results of this ranking become a reference recommendation for marketers for special interest tourists. There is also research conducted by Arismayanti et al (2019) which reveals that internally the Kenderaan tourism village has the potential for natural tourism (rice field landscapes), cultural tourism potential (social-cultural community life,

traditional Balinese architecture, historical relics of ancient findings, and wisdom). local religious communities), and the creativity of the local people (tremendous potential in terms of sculptures made of both wood and concrete). Of the three studies, there has been no research that has comprehensively mapped the location of tourist attractions to make it easier for policy makers and tourists to access locations with maps.

### **Mapping Geographic Information in Tourism**

Nationally, the tourism sector is considered a potential sector in the future. According to the analysis of the World Travel and Tourism Council (WTTC) (2016) and the World Bank (2016), the tourism industry in Indonesia has contributed 10% of Indonesia's current gross domestic product (GDP) and the Estimated Product growth (GDP) is above average. sector average. The fourth foreign exchange contributor, amounting to 9.3%. The highest growth in foreign exchange earnings, namely 13%. Marketing fees are only expected to be 2% of in foreign currency. It contributed 9.8 million jobs, or 8.4%. Employment grew 30% in 5 years. The cheapest job creator US\$ 5,000/one job. Based on this analysis, it is reasonable that the tourism industry in Indonesia is considered the mainstay sector that contributes to the country's largest foreign exchange in the non-oil and gas sector.

When the Indonesian government launched the regional autonomy program, the tourism industry became an alternative that could be used as a source of regional income. What needs to be considered is that the development of the regional tourism industry must be able to make a substantial contribution in increasing regional original income and encouraging regional development programs (Suwena et al., 2010) (Estikowati et al., 2022).

Mapping geographic information using the ArcGIS application in tourism activities can be applied in mapping tourist attractions in an area, making it easier for both stakeholders (Government, Village Apparatus, Tourism Awareness Groups/Pokdarwis, Tourism Attraction Managers concerned) and tourists who want to visit.

### **RESEARCH METHODS**

The research site is located in Kenderan Village. Kenderan Village is located in Kenderan Village, Tegallalang District, Gianyar Regency, Bali Province. Kenderan Village is located at 115.28955 East Longitude/-8.455958 South Latitude which has an area of about 7.18 km<sup>2</sup> and is located at an altitude of approximately 600 meters above sea level. Kenderan Village has a relatively flat land surface/landscape. The village was chosen as the research location because it has various attractions that can attract tourists to visit but have not been mapped according to the type of attraction, therefore the researchers chose the Kenderan Tourism Village as the research site. The technique of data collecting is by observation, interview, documentation, and GPS. Data analysis techniques are carried out using the ArcGIS application and data processing from the results of field observations (primary and secondary surveys) will be tabulated and then given a score based on their suitability for the elements of the destination (tourist attractions, tourism facilities, supporting facilities and tourism activities). As stated by Strauss & Corbin (2003) doing analysis is making interpretations.

**RESULTS AND DISCUSSION**

Geographically, Kenderan Tourism Village is included in the area in Tegallalang District, Gianyar Regency, Bali Province. Kenderan Village has a comparative advantage compared to other villages in Ubud District.

**Table 1. Tourist Attractions are divided into two categories**

Nature Tourism Attraction	Cultural Tourism attractions	
	Tangible cultural tourist attraction	Intangible cultural tourist attraction
<ol style="list-style-type: none"> <li>1. Fauna that is monkeys live freely in the area of the Hutan Kera Hyang Bukit Forest</li> <li>2. Manuaba waterfall</li> <li>3. Rice fields</li> </ol>	<ol style="list-style-type: none"> <li>1. Traditional irrigation system (<i>Subak</i>)</li> <li>2. <i>Puri Agung</i> Kenderan (<i>Puri</i> is one of the traditional Balinese architecture, which is a palace)</li> <li>3. <i>Puri Agung</i> Manuaba</li> <li>4. <i>Puri Agung Delod Blungbang</i> became the residence of the king and his family</li> <li>5. <i>Petirtaan</i> Telaga Waja (<i>Petirtaan</i> is a sacred bathing place that is often used by the royal court).</li> <li>6. Sarcophagus</li> <li>7. <i>Nekara</i> molding stone is located at <i>Puseh Manuaba</i> Temple.</li> <li>8. Manuaba carving art</li> <li>9. Griya Sakti Manuaba Temple</li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Mepeed Tirta Ening</i> ceremony at Griya Sakti Manuaba Temple which is done once every 210 days.</li> <li>2. <i>HolyWaterFestival</i></li> </ol>

Source : Researcher, 2022

**Potential Tourism Attraction of Kenderan Village**

Kenderan Tourism Village has natural potential which is the main attraction so that it becomes the main destination in the development of tourist villages and becomes the main destination for tourists to visit. At this time the tourist attraction in Kenderan Tourism Village is not only based on nature but also culture. The Kenderan Tourism Village is divided into 2 categories of tourist attractions, namely: natural tourist attractions, and cultural tourist attractions. The following is a potential tourist attraction in the Kenderan Tourism Village based on Figure 1.

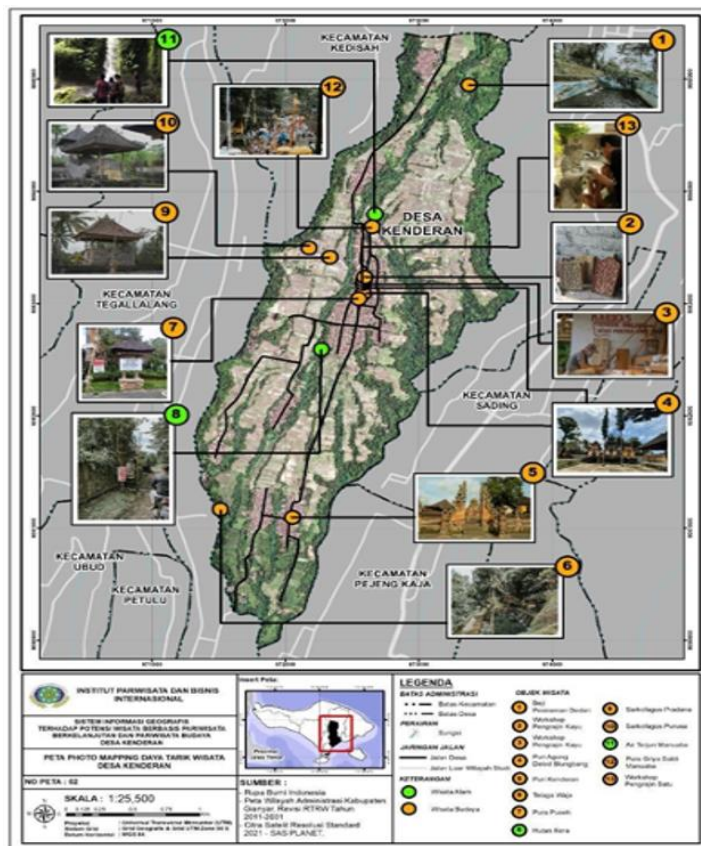


Figure 1. Potential Tourism Attraction of Kenderan Village

## 1. Beji Pesiraman Dedari

Beji Pesiraman Dedari is one of the water sources owned by Kenderan Village, a holly water festival is also held on every Beji in Kenderan Village. The Holy Water Festival aims to mark the Kenderan Tourism Village because from this festival an introduction session with water and rituals will be held. The festival will begin with a presentation on 11 holly water points in the village of Kenderan, after which guests will be invited to visit 3 points of holy water sources, they are Pesiraman Dedari adat delod belumbang, pesiraman darma keliling Manuaba traditional village, dan Telaga Waja temple. This event is held so that guests get to know the entire village of Kenderan better. Dedari's watering is believed to make people stay young.

## 2 & 3. Woodworking Workshop

Manuaba's carvings are very well known in and outside Bali. The results of the work are in demand outside the area for the manufacture of Balinese Style Houses. Along the Manuaba roadway, there are many wood carving craftsmen. When people walk through Manuaba waterfall, it can be seen in the parking area of the Bale Kulkul building at the Griya Sakti Manuaba Temple, one of the works of local artists.

## 4. Puri Agung Delod Blungbang

The palaces of the kings in Bali are known as *puri*, the Balinese believe that the king is a god while the *sekala* is the representative of God on earth, so in terms of style and architecture, this *Puri Agung* takes the *Kosala Kosali* concept which is applied to this day. The things that can be done at Puri Agung Dlod Blungbang are walking around the *Puri* area, taking selfies, banqueting in the style of a *Puri*, and wedding packages in the style of a *Puri*.

## 5. Puri Kenderan

Puri Kenderan is a castle that has excellence with the uniqueness of traditional Balinese buildings, with the concept of the Asta Kosala Kosali building layout. Puri itself was the palace of the King in Bali in ancient times. Therefore, tourists who visit can go around Puri to see the layout of the building and take selfies in the Puri area.

## 6. Pura Telaga Waja

Telaga Waja Temple is a temple that is estimated to be around 1,000 years old and is believed to be a hermitage for monks in its time. There are two large areas, the first is the upper area which consists of a pool and holy shower and there is a relief and the second is the lower area which also has a shower and a pool which is used as a place for visitors for *melukat* (ritual to clean the body and soul). Telaga Waja is the main and very sacred *melukat* ritual place in Kenderan Village (it has a special rule: anyone who wants to do *melukat* ritual at Telaga Waja is not allowed to wear a single piece of clothing). To get to the Telaga Waja temple, tourists or the public must go down the 1.000 stairs, but the natural atmosphere around Telaga Waja will make the journey less tiring.

## 7. Pura Puseh

The name of Pura Puseh itself is Pura Puseh-Desa Negari which is divided into three parts, they are the *Tri Mandala* area which is also called the innermost area, the *Madya Mandala* area which is the middle area and the last area is the *Nista Mandala* area which is an area commonly used to service offerings. Between the main area and Madya Mandala there is a building called Kori Agung which is the tallest building of the temple (about 26 meters). Kori Agung is the entrance to the temple at the time of the *piodalan* (a celebration to commemorate the inauguration day of a temple). Pura Puseh-Desa Negari has a historical affinity with the long journey of Rsi Markendya. This can be seen from the relationship between this temple and the Griya Sakti Temple in Manuaba, Kenderan, Tegalalang which is believed to be a place to honor the role of Mpu Markandya. In addition, there is a relic in the form of a sacred object called *Sapta Patala* which is now buried in one corner inside the temple. This shows the influence of a figure who among the citizens of Negari village is known as "*Ida Ratu Kaja*". At the Pura Puseh-Desa Negari, tourists not only enjoy the magnificent temple buildings with classical ornaments but also learn the richness of the socio-cultural mosaics of the local community that have been embedded in the memories of generation after generation of Negari village.

## 8. Monkey Forest

Kenderan Tourism Village also has several historical relics, one of which is the monkey forest. The condition of this ape forest is natural without human intervention so this monkey forest is still protected and maintained its authenticity. There are several types of monkeys, which until now are not known how many species there are, but tourists who want to visit the Kenderan tourism village can see directly accompanied by the tourist village manager.

## 9 & 10. Sarcophagus of Pradana and Sarcophagus of Purusa

There are two sarcophagi owned by Kenderan Village, which according to the people of Kenderan Village are believed to be Sarcophagus *Purusa* (for male) and Sarcophagus *Pradana* (for female). The sarcophagus in Kenderan Village used to be a place or coffin to put the bodies of kings or village elders, but now they are only preserved as relics of prehistoric times.

## 11. Manuaba Waterfall

Manuaba Waterfall has a calm and peaceful natural atmosphere because it is far from the crowds. The Manuaba Waterfall is also not widely known by many people, so visitors can enjoy tranquility and privacy. Enjoying the natural beauty of the Manuaba waterfall will certainly be a privilege for lovers of anti-mainstream nature tourism. Visitors who like trekking can also enjoy it because access to the Manuaba waterfall requires energy to descend steep stairs and pass through unspoiled rainforests.

## 12. Griya Sakti Manuaba temple

The Griya Sakti Manuaba Temple is located right before the entrance to the Manuaba waterfall. This temple is one of the most respected temples and a very important place of worship by the people of the village of Kenderan so that the Griya Sakti Manuaba Temple cannot be entered by tourists arbitrarily. Tourists can see the beauty of the Griya Sakti Manuaba Temple from the outside. Activities that can be done or witnessed by tourists while visiting the Griya Sakti Manuaba Temple are participating in religious ceremonies that are only carried out once every 210 days, named *Mepeed* and *Ngaturang Tirtha Ening*.

## 13. Stone Craftsman Workshop

One of the activities of the Kenderan tourism village community is as a stone craftsman where this activity is also an alternative for small businesses for the local community. This activity can also be displayed to tourists when visiting and it would be even better if it was packaged into a cultural tourism package that showcases natural life in the village.

## Potential Tourism Village Accessibility

Tourism accessibility is a means that makes it easy to reach tourist destinations. One of the requirements for a good tourist attraction is that it is easy to reach, the facilities needed by tourists are easy to find, for example, transportation to their destination, the road to be passed is safe or comfortable. According to Cooper in Febrina (2015) it can be interpreted that accessibility is the ease of achieving a goal, which involves comfort, safety, and travel time. This is important to note because the higher the accessibility, the easier it is to reach and the higher the level of comfort for tourists to come to visit. The Kenderan tourism village has two accesses, the first is pedestrian access and the second is motor vehicles. Pedestrian access utilizes pedestrian lands or small alleys which are approximately two meters apart in connecting one attraction to another. Meanwhile, motor vehicle access connects tourists visiting the Kenderan Tourism Village. There are two entrances to the Kenderan tourism village, the entrance from the south and the entrance from the west. The parking area in the Kenderan tourist village is still limited and still uses local residential areas. There is a broad enough parking area available in front of the Kenderan Village Office and the Griya Sakti Manuaba Temple area.

Based on the accessibility potential of Kenderan Village, the flow model for tourists to move in Kenderan Village can be started from the south entrance to the parking lot in front of the Village Office. Tourists will start their tour by visiting Puri Delod Blungbang, then Pura Puseh and the last is Sarcophagus place. Meanwhile, tourists who park in the Griya Sakti Manuaba temple area can directly visit the natural tourist attraction, Manuaba waterfall. From the Manuaba waterfall, tourists can visit Telaga Waja.

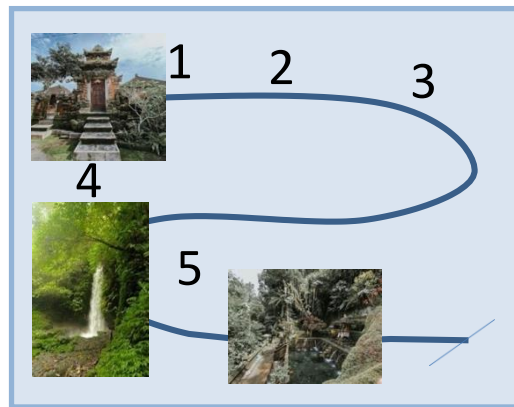


Figure 2. The Best Model of Tourist Flow  
(1. Puri Delod Blungbang, 2. Pura Puseh, 3. Sarcophagus, 4. Manuaba Waterfall, 5. Telaga Waja)

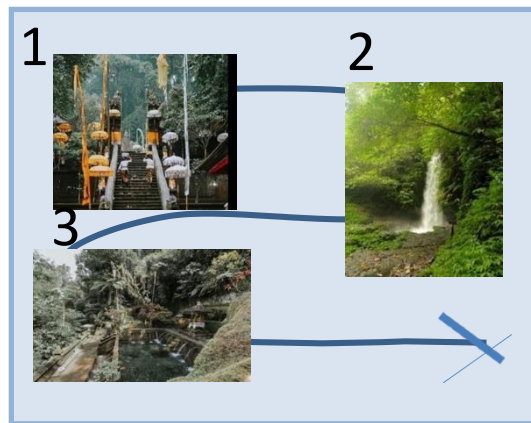


Figure 3. The Best Model of Tourist Flow  
(1. Griya Sakti Manuaba Temple, 2. Manuaba Waterfall, 3. Telaga.)

**Potential Tourism Village Amenity**

There are three types of tourist accommodation in the Kenderan tourist village, they are villas, hotels, and homestays and supported by several other facilities such as restaurants, stalls, Public Health Center, and other facilities. This can be seen from the following table.

**Table 1. Amenities of tourism village**

No.	Amenities	Quantity
1	Villa	12
2	Hotel	2
3	Homestay	29
4	Public Health Center	1
5	ATM Center (BRI)	1
6	Craft Industry	30
7	Restaurant	9
8	stall	127

Source: Researcher, 2022



Based on the Tri Hita Karana concept which is the concept of a development trilogy in Bali that guides environmental harmony with a godly way of life, maintains environmental sustainability, and is tolerant in society (Pendit, 1996), most accommodation facilities in tourist villages must be in the *Pawongan* zone (Dalem, 2011; Marjaya, 2010; Suteja, 2012). However, the reality is that tourist accommodation in Kenderan Village is built in the *Palemahan* zone which is built on several productive village lands. Even though most of the potential of the village is a cultural tourist attraction and to enjoy this tourist attraction, of course, it is necessary to have accommodation support. Accommodation must be close to people's lives. Accommodations that have these criteria are homestays. According to Prihartini (2017) a homestay is a residence where part of the house is rented out to guests for a certain period to learn about local culture or a certain routine. The construction of facilities should be more dominant using community houses as tourist accommodation without damaging the environment and converting productive land.

Because the supporting facilities for tourist villages are built in the *Palemahan* zone and mostly in the form of villas and hotels, the advantages of this facility are put to good use. Tourist accommodations are built close to natural tourist attractions, like rice fields; of course, this has a very high selling value which will be able to attract tourists to travel to the Kenderan Tourism Village. This potential can be utilized to develop the Kenderan Tourism Village into a superior or independent tourism village. One model that can be developed is to offer overnight tour packages and village tours to tourist accommodation visitors. In addition to staying in villas and hotels, visitors can travel by enjoying the tourist attractions of the Kenderan Tourism Village. One of the tour packages that can be offered to visitors to villas and hotels are Balinese Dance Lesson, Puppet Show every full moon and new moon, historical tours, statue carving lessons, farm lessons, Rice Tracking Kenderan Village, Cycling Tour, Panorama of the countryside, Holy Water Festival or it can also be called the *Tirta* Festival, Waterfall with *Purusa* waterfalls upstream and *Pradana* waterfall downstream, and the last one is a tourist attraction made by traditional houses, sewing lessons, cooking lessons, yoga and meditation programs, traditional game programs, and painting lessons.

## CONCLUSION

Based on the potential of the Kenderan Tourism Village which has been described in the results and discussion, it can be concluded that: the potential for tourist attraction in the Kenderan Tourism Village based on the Geographic Information System is mostly the potential for cultural tourism spread in the *Pawongan* zone. However, based on the interest or interest of visiting tourists, the most desirable are natural tourist attractions. Based on the distance between one tourist attraction and another, the optimized accessibility is pedestrian access, while motor vehicle access is developed to connect tourists to tourist villages. For tourist accommodation in Kenderan Tourism Village, there are various accommodation variants, such as homestays, villas, and hotels that are built in the *Palemahan* zone. The accommodation has the advantage that it is far from settlements and close to natural tourist attractions. To develop the Kenderan Tourism Village into an advanced and independent tourist village, it is necessary to develop tour packages in the form of 1) Wellness Tourism, 2) Special Interest Tourism, and 3) Cultural Tourism.

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