European Broadband Award 2017 - Application form

Please answer questions in ALL categories. This will be assessed.

By submitting the application form for the awards you agree to listing the project in the Broadband Europe good practice database at https://ec.europa.eu/digital-single-market/en/broadband-europe

General information		Guidelines and explanations
Project name	Optic fiber to all houses on Gotland	Add the full name of the project or acronym.
Country	Sweden	Specify country where the project is implemented.
Project submitted by	Anne Mousa Ståhl Region Gotland Executive Office Co-ordinator Broadband and implementation of The Regional Digital Agenda +46722273333 anne.stahl-mousa@gotland.se	Provide main contact person for the project including name, organisation, title or function, tel., e-mail for further contact.
Website	www.bredbandgotland.se and www.digitalagotland.se	Specify the link to the project website or website with more info about the project.
Category	Innovative models of financing, business and investment	Choose the category where you think your project excels.
Category	Gotland have manage to complete a fiber roll out to the whole region by adopting a, positive creative, strategy for keeping costs down and penetration levels up - in turn bring competition to the local region along with even more know-how and improved service.	Explain your choice of category.
Start of the implementation	January 2010	Specify the date when the project activities started or project was approved.
End of the implementation	July 2017	Specify the date when the project activities closed or are planned to be closed.
Duration of the project	90 months	Specify the actual or planned total duration of the project in months.
Total costs (EUR)	The total costs are approximately 54 million €. Public spending (8 %) amount to 4.3 million €. Privat households invested (69 %) approximately 37.1 million € and the additional (23 %) 12.6 million € of regional investments was made by the three competing telecom actors.	Provide estimated total project costs in EUR. List main funding sources, public funds (EU, National, regional/local) and private funds.
Was the project supported by EU funding?	Out of the public spending above, 2 million € derives from EU funds	Specify if the project received the EU funding: including the amounts and percentage (of total cost) of cofinancing of EU funds (ERDF, EAFRD), or contribution of other EU funds (CEF, EFSI) and the name of the relevant operational programme or rural development programme.
Was the project supported by national, regional, or local funds, or received any other form of public aid?	Yes. The Region of Gotland invested 23 million € taken from the local fund for regional development.	Specify if the project received any national, regional or local funding, mentioning the amounts, the percentage (of total cost) and the national/regional funding sources. Specify also if the project received any other form of public aid (in-kind, financial guarantees, special conditions for loans, access to publicly funded infrastructure, etc).
Has the project been assessed under the EU state aid rules?	No	Specify which EU state aid decision the project was assessed under or state aid regime it it is under ((GBER, MEIP, SGEI, de-minimis, etc).
Infrastructure, technologies and architecture	The infrastructure is 100 % optic fiber to the home. All deployed in underground trenches according to Swedish best practice. The regional network is built with the aim to ensure a robust and resilient infrastructure. Each parish (92 in total) have a local node from which usually a star-net spread to all houses. The parish networks are pre-designed to be built together with all their neighbours in the future - distances being typically between 300 - 1000 meter. Today there are larger robust loops and an automatic cross-switch between the telecom actors network on the island and towards the mainland. Nodes are furnished with 4 + 4 hours UPS and a majority of households have a 4 hour UPS support. The network could be scaled up any number of times in case population would skyrocket. Today the standard is a fiber pair/house with one fiber lit up.	Provide information about the scalability, resilience, robustness and maintenance of the infrastructure selected, the type of technologies used (e.g. DSL, VDSL, FTTP, WiMAX, Standard Cable, Docsis 3 cable, HSPA, LTE, Satellite) and architecture adopted.
Performance of the technology	Before the project started there were differences between the regionals capital town Visby and between the various parishes. In many parts of Visby it was possible to have an VDSL access with downloads of up to 24 Mbps and uploads of up to 10 Mbps. In some parishes you could only have a first generation ADSL of 2/0.5 Mbps and in 8 out of 92 of parishes you could have nothing at all - this included a none working mobile access. Today anyone at any part of the island could have as much capacity as the wishes. During the start of the project in 2010 the popular choice was 100/10 Mbps with no overloading in the net. During the past two years most households tend to choose a 250/100 Mbps capacity with some already upgrading to GB capacities. No matter what capacity you have originally signed up for all telecoms actors could offer you basically an instant up-grade (levels from 1 Gb may take a bit longer). Capacity could also be asymmetric or symmetric.	Specify upload and download rates (Mbps), other relevant quality criteria such as jitter, latency and contention rate. State the broadband speeds in Mbps before and after the project implementation, e.g. ≥2 Mbps, ≥ 30 Mbps, ≥ 100 Mbps or ≥Giga.
Summary description of the project	The rural island region of Gotland have achieved a complete roll-out of optic fiber to all houses in its mainly rural region and the island main city Visby. The network offer a robust and resilient infrastructure ready to support present and future demands for high capacity (GB levels if demanded) to households, businesses and for developing 5G, and higher, mobile networks and facilitate the implementation of digital services to all and deployment of internet-of-things. Penetration rates is approximately 85 % and the total costs have been kept as low as 10 €/meter for infrastructure, in the ground thanks to the model of parish projects with lots of unpaid hours and by establishing an interesting local market that have attracted the main telecom actors of to compete for parish projects.	Please provide a brief summary description of the project, that can be used for website news when introducing the project. Briefly explain who did what, why, and what are the benefits. In 3-4 sentences.
Aims and objectives	The aim of the project was to offer all businesses and residential houses on Gotland a possibility to connect to a robust and resilient optic fiber network. A target was set at trying to have at least 80 % of the permanent houses connected. No discrepancies should be made between permanent- and "summer" houses (typically being an ordinary house/farm in the countryside) as there are a lot of houses constantly being at times housing a permanent resident and at others being a summer houses with often elderly people living in it for several weeks/months of the year. The objective was to ensure that the island of Gotland would remain or better still increase its attraction on people and businesses. By being the first rural region in Sweden to have made a complete roll-out of a state-of-the-art fiber network to ALL of the region we would have a good competitive chance of attracting businesses, keeping and attracting young people, developing our local businesses and help us achieve a positive population growth.	Specify main aims and objectives addressed by the project.
Problems addressed	We were among the very first large scale regional optic fiber projects in Sweden starting out before there was any real subsidies system established or supportive standards and organisations available for regional fiber roll-out. This we turned into an advantage sporting the development of low cost models for roll-out, and having only the old and established telecom actor for partner and advisor. We have also been kindly supported whenever asking by the Swedish Post- and Telecom Agency.	Specify main socio-economic, demographic, geographic problems, challenges and issues addressed by the project.
Actors involved	The broadband strategy, adopted in 2010, was developed with the regions broadband coordinator in a constant dialog with actors within the region (that region also being the island only municipality and also responsible for healthcare on the island) such as; local politicians and the county council, the local farmers association (key group as the have provided land for free), the two local excavation contractors and two fiber entrepreneurs (whom designed the networks according to central instructions), the mayor telecom operators (Providing know-how , standards and access and services from the parish local node), other interested parties and private individuals (who wanted to help out in the various parish projects) and for general know-how regarding technology, design, robustness and legislation in close contact with Swedens Post- and Telecom Association and the department within the government administration that at this time was working with broadband issues. The broadband strategy was then adopted by Region Gotland and Gotlands County Council. The Region and the County Council have each a broadband coordinator responsible for running the project from a-z.	Specify who were the main actors (organisations, departments, institutions, groups) involved and what was their role at the different stages of the project. Explain the cooperation approach as well as the role of the investors, public authorities, business and household users, local communities etc.
Results & impact	Some what to our surprise we have achieved all what we set out to do and more. The public interest came already with the initial pilot projects having a penetration rate of +85 % (even despite having a comparatively lower income level and a large portion of elderly people) brought an early attention to Gotland. It suddenly stood clear to more than the initial telecoms actor that being part of the fiber-rally meant good business. With Swedens three major telecom actors competing to cooperate in the various parish projects the process was speeded up. New methods were developed, new customer packages was created in dialog with the the projects the latter definitely having a huge impact on the trend of having the majority of summer residents to join. In the end we can see that we have had new business growing out of the fiber projects, population is growing, summer residents are staying much longer. As people have been more or less involved in the various parish projects there is a very high level of knowledge and positive attitude towards fiber and digitalisation as such. Finally due to the fact that our main resources for the parish projects have been people who were retired there is a comparatively high percentage of the elderly population who have fiber and this facilitate our present Regional Digital Agendas objectives of providing services and health care for elderly via digital supported technology.	Briefly describe the main results and major impact of the project: extended coverage and quality of service, penetration among households and SMEs, better access to on-line public services, improved territorial cohesion, more affordable services, impact on employment, business creation, retaining population or stemming population outflows, etc.
Unique character and success factors	We always considered this as an information project, not a technical project. It is our belief that by doing so we made it more inviting for each and every one to join and this in turn have boosted penetration levels whilst lowering the costs.	Briefly describe what gives your projects its unique character and what were the main success factors.
Type of areas	Gotland (57500 inhabitants and approximately 10000 summer residents with own houses in the countryside). Gotland, Sweden, is the largest island in the Baltic Sea, and does still retain a very rural infrastructure with 60 % of the population still living in the countryside in houses or farmsteads spread out over large areas. 40 % live in Visby, the only town with more than 3000 inhabitants and a medieval world heritage walled city with a lot of residential houses.	Specify the type of areas addressed by the project activities. Are these mostly rural, mostly urban or mixed areas.

Coordinates of investments	longitude 57.30 N latitude 18.33 E	**If possible, add the (centre) coordinates of the place of the major project investment(s). e.g. Brussels: Latitude: °50 '91 N | Longitude: °4 '46E.**
Coverage	All houses, businesses and private houses, including summer residents, have been offered to have a fiber connection at the average prise of 1800 €.	**Specify the share of the households, businesses, public entities covered/served by project activities. Provide % or numbers.**
Penetration	Varying between the 92 parishes between 85-99 % of permanent residents and 55-99 % of the summer houses have connected to the optic fiber network.	**Specify household coverage and penetration of services both in terms of e.g. 1 Nov 2014: 100.000 households (49%); 1 June 2016: 200.000 households (99%).**
Consultations	The project, all through the 7.5 years, have been moving forward in a constant and close dialogue between the broadband coordinators, the 49 project groups representing constellations of one-or-more parishes, the market actors and Swedens Post- and Telecommunication Agency. The island factor is maybe most visible in this - people are used to work together and we all know one another.	**Describe, if performed, the public consultations with market actors and involved users.**
1: Innovative models of financing, business and investment		**Category 1**
Investment and Business models adopted	When the project started in 2010 there wasn't really any public money available for fiber projects. With the help of the local farmers association an virtual fiber revolution swept over the island from parish to parish forming new projects as it went. Money came from the individual house owners who invested on average 1800 € (69 %) and added a free 3 days of manual labour. The competing telecom actors were convinced that they should pay, up front, the parish fiber association a rent for providing services from the parish local node to the houses “the last mile”. The parish negotiate various contracting periods ranging between 6 and 10 years (with really good services set at low fixed rate for 3-play over the whole contracting period - they are still the best prices in the land). The telecom operators have also invested further in a more robust infrastructures. In total the telecom operators have financed 23 % out of their own funds. Finally public spending is 8 % of which the Region of Gotland invested, at a fixated ratio of 200 € / house / parish outside the only larger town of Visby, in total 2.3 million € and 2 million came from public EU funding via the Swedish Jordbruksverkets regional funding. The total investments for the fiber network covering all of Gotland is approximately 54 million €.	**Explain what models of financing were selected (e.g. public DBO, concession model, community broadband model, private DBO) and why. Specify the role of public and private actors involved, explain role of public entities involved (National Regulatory Authorities, Ministries, mapping agencies, regional/local entities, etc.) and local stakeholders (user groups, business associations, other interest groups, etc.), utilities etc. For more information, see the "Guide to high speed broadband investments" https://ec.europa.eu/digital-single-market/en/guide-high-speed-broadband-investment.**
Financing options	The main bulk of financing derives from privat house owners in the form of money and 3 days worth of manual labour. Our focus was keeping costs down without compromising high quality. Some of our main focus was at: 1) We initially fought and won a battle with the Swedish tax authorities regarding VAT and argued that a parish fiber organisation should be coincided a business and thus allowed to deduct the 25% VAT of all costs for building the network. 2) To ensure the parish networks utility easement another long negotiation was made with Swedens Lantmäterit. In the end we had our way and saved 100s of €s on each pice of land. 3) To local contractors were helped finding efficient ways of digging. Costs could be kept at the same level all through the projects 90 months. Average cost digger 1 meter was 5.5 €. 4) Landowners also provided land for free for fiber deployment. Landowners have also walked and set out the optimal land for deploying the fiber. 5) The still local banks were approached and we found a way of lending money even to elderly people still living on at their farm but with a low pension and usually not liable to be given a bank loan. This model was taken to all banks represented on the island. 6) The competition between three of Swedens leading telecom actors have kept costs at bay meanwhile improving services and quality. 7) Gotland have been prepared to pilot for new technology and in particular the introduction of micro-trenching made it possible to deploy optic fiber within Visby at the same low cost as on the rest of the island. 8) Low costs and local engagements on parish level have been the key success factor behind the high level of penetration and this in turn have made even more houses to connect. 9) The value of each house investment in three days of manual labour by 2 thirds of the houses (only outside of Visby) have not been calculated in money as such but a ruff estimation, using a factor 75 € /day wold bring an extra input of the local population by 22.5 milj €.	**Explain how has the project been financed? Have you used grants, loans, guarantees or other financial instruments? Which EU, national or regional financial institutions and funds were involved and how? Have profits been reused for further network development to expand the broadband coverage? Was any demand aggregation measure put in place? if so, please specify.**
2: Cost reduction and co-investment in a future proof infrastructure		**Category 2**
Reuse of existing infrastructures and co-investment and coordination of civil works	Originally, our ambition was to reuse- and co-construct the work with other infrastructures e.g. VA (water & sewer), electricity and, if possible available empty canalisation. Put to a test it turned out that: Optic fiber, if laid together with VA need to be added on a ”shelf” above and to the side of the VA canalisation. The reson is that the authority can´t have them directly above (nor below - we tried that too) in case of a leak. Adding a shelf to an existing trench turned out to cost far to much and also jeopardized or demand for robustness. To add optic fiber canalisation together with electric cables does work - however only on a transport-line as they are lying much deeper than our fiber need to be. At least locally on Gotland it turned out that the electric company, GEAB, charge almost twice as much / meter as it cost us to deploy the fiber separately. What we did try, with success, as mentioned above, was to introduce micro trenching on a larger scale for adding fiber in the streets of our major town Visby. Despite the fact that it cost almost three times as much as digging in the countryside the time saved of not having to block traffic is worth it in those circumstances. — Our three major market actors have invested 12.6 million € in addition to what has been demanded to build the network. The investment has gone to modernize existing station, adding extra canalization for future development and pre preparing for further work on a robust infrastructure.	**Specify how the synergies with new or existing civil engineering works of other infrastructures (energy, transport, water, sewer) were secured and whether innovative construction methods have been used. Describe and explain co-investments in the infrastructure development.**
Exapanding very future proof infrastructure to the community/business hubs	The network could, as mentioned earlier, deliver as much capacity as could be asked for to anyone on the island. There are several major trunks, lot of overcapacity in the nods and possibility to add more users or equipment. As the various parish networks ar fairly small and close to one another it will be possible to build circles out of them all. An estimate have been made that forecast an investment on the scale of 1-3 million € to connect each parish labour to each of their laboring networks.	**Provide details about the future proof elements (resilience, robustness, flexibility, low maintenance, etc.) of the infrastructure. Is the architecture sufficiently flexible to be able deliver on the EU gigabit ambition target for 2025? Give examples of how this very high quality infrastructure expanded from the main hubs of social and economic life (schools, hospitals, libraries, business centres, etc.) to the community at large.**
3: Territorial cohesion in rural and remote areas		**Category 3**
Sustainable territorial development and competitiveness	There are clear evidence that our fiber project have helped Gotland to achieve the goals we set out to reach in our broadband strategy, and more to it. According to a study on changed travel patterns mad by Swedens Aviation Agency, already in 2015, showed that people from Stockholm with houses on Gotland flew a lot more back and for the and changed from weekend stays to a Thursday - Monday on Gotland pattern. When asked the majority claimed the change was because they hade a better connectivity from their summerhouse and thus, could combine nice living with efficient workhorse over the net. Also, the population have stated to grow. There is a very strong interest in Gotland, investments are suddenly coming our way and the last study(this	**Please explain how the project contributed to promoting smart, sustainable and inclusive growth, taking into account geographic and demographic feature of the area and made a contribution to EU territorial cohesion objectives. Specify whether the project is the result of bottom-up/user based initiatives involving an intense cooperation among local actors (e.g.: Community-Led Local Development (CLLD)) or adopted an Integrated Territorial Investment approach securing long-term socio-economic benefits both for the local population and businesses.**
Better connected territories. Innovative technological mix to high quality broadband internet	We build our communication on optic fiber to all houses. Thanks to this fiber roll-out all over the island (and, apart from the town of Visby, we are scarily populated and rural area a hole), mobile actors start to add mor masts for mobile networks. In Visby we have already prepared the infrastructure for 5G. Our strategy was to start out with the countryside and the very areas with the none-at-all broadband connections and ending with Visby that back in 2009 had VDSL and VDSL2+, to be the last area to focus on. The strategy have worked wonders for boosting the interest in joining and we feel certain that we would never have reached connection rates of 85 -99 % (varies between the parishes) without addressing the section of the market were the interest was the strongest. Following the fact that most people are connected to the fiber, or could be so if they want to, the present Regional Digital Agenda is very activity based, with 74 actions to be in operation before 2020. Out of these about a third is already in place and people could access these services and are also, and importantly, very interested in	**Point out the key element of a strategy and measures enabling people living in rural and remote areas to close the gap with urban areas to allow them to have the same level of access to on-line public services, and to a high quality and affordable broadband internet also in rural and remote areas, specifying the impact on population inflows (or stemming outflows) from less developed rural/remote areas. Please specify the technological mix used to overcome the territorial cohesion challenges and measures to improve accessibility to an affordable infrastructure and the penetration of on-line services among the target population.**
4: Socio-economic impact and affordability		**Category 4**
Use and impact on local economy	As mentioned above we have come a third of the way to implement our 74 actions in our Regional Digital Agenda. However, if taking this seriously, it is one thing to implement say night cameras in homes of elderly, in place of visiting (and waking them) several times a night - and really say you save money. We are convinced that in the end we WILL save money, but technical implementation and customer usage is far more ”quick and easy” than making the organizational changes needed to accommodate the new methods and thus save money. Also, over a time period - both digital- and manual services have to run in parallell before we can finally say goodby to the analogue world.	**Provide examples of typical use and impact on local economy. Specify impact on efficiency and effectiveness of public services (e.g. lower cost to deliver public services, more citizens and SMEs served, better reach and quality of public services, etc.), improved access to infrastructure and services for households, businesses and public administrations, amelioration of the conditions for jobs creation and business environment. Provide evidence for the claimed impact (videos, interviews, press articles, reports, studies, relevant indicators, etc.).**
Demand side and take-up actions	We have focused a lot on the demand side with the idea that many with a positive attitude is the best way to get a lot of fiber users who will also be interested to use their new technology for other things than surfing, mailing, calling or watching TV in the future. In fact, our main argument as we started out (and most of the people we met locally were indeed elderly) was that in the future we would be delivering community services and healthcare via fiber all the way out to their homes in the countryside (this was back in 2010). As the number of people are few and the meetings have been frequent, there have been a significant lift of knowledge among the inhabitants. In fact the three market actors have, individually, noted to us that the average fiber customer from Gotland calling support have usually already taken all the standard actions that are advised and does also have an above average knowledge about the equipment (even elderly ladies). As from this year, with the help of computers sponsored by one of the market actors, we have engaged the libraries, evening schools and allike and the local redress to help groups and parishes (and any other groups interested like newly arrived refugees) to have study groups to enhance the use and understanding of computers, digital services and digitalization. - In presenting the idea of ”us” building our network towards a station connected to a fiber cable by one or the other major network actors, a drew a parallell to our grandfathers who built the electric network in our countryside about 100 years ago. They didn't know what electricity could be used for except a simple lamp in the stable - and now we use it for everything. The same, I argued, apply for optic fiber. There is no way that we could imagine all it will be used for in the next 100 year to come. —- They really connected to this in our contryside.	**Specify the measures implemented to stimulate the demand side and to increase the take-up of services including training of users and advisory services to SMEs and households; support demand measures or models that substantially improve affordability and the quality over price ratio (by specifying the average retail price for internet service or bundle services expressed in terms of % of average income taking into account purchase power parity).**
5: Openness and competition		**Category 5**
Operators providing wholesale and retail services	Gotland, though small, have a very clear competitive fiber market. Swedens three major network operator have completed, and won a number of parishes each. That is, the network operator delivers the signal to a node in the local network (parish network). The network operators vary when it comes to if or not they also provide their own and/or other service operators products - we could have almost all of the major service there are in Sweden from one or the other of the network providers. The important thing to understand that the parishes have had a full insight in what each party could offer and at what price and over what period. The decision to choose either this or that has been made by the individuals in the parish (50 - 450 individuals in a few places there are up to 1200 individuals).	**Specify types, number and role of operators providing wholesale and retail services and the degree of independence from each other. Describe the type, size and structured of procurement calls used for the building of the infrastructure, operate and maintain the network and provide wholesale services, and describe the level of independence of the different network layers (infrastructure, wholesale services and retail services to final users).**

Access to the passive infrastructure, active equipment and wholesale active products	There is no difference approach here than is on the main land market or between major network providers, service providers or other businesses. In fact, we find it important that our local market should be a standard market with standard price in order keep a healthy competition. As mentioned above, we did try to find synergies with other kinds of infrastructures but failed, the reason being that we managed to keep our costs for trenching at an average of 5.5 euro / meter and this was far below what others could offer when we joined. - There wasn't either that much of unused canalization on the island as we started, but if at hand we have been using it.	**Specify the access regime and prices to access the passive infrastructure, active equipment and wholesale passive and active products; highlight whether civil engineering work has been carried out in synergy with other infrastructures (energy, water, sewer, transport networks) and the roles played by the funding entity(ies), network operators, ISPs and utilities.**
Further info		**Further info**
Reports, studies & press articles	There are a number of newspapers articles, radio- and internet interviews, but mostly in Swedish and not really collected by anyone. Still, the best reference we could give is that you ask for instance Swedens Post- and Telecom Agency (PTS) and they will testify to our success. (In fact they asked us to apply for this award).	**Any other relevant information including links to the relevant reports, studies and press articles about the project, user satisfaction, and its impact.**
Videos/Media	We have one video - and that is our "Fiber song". As the file https://www.dropbox.com/sh/ugn4ruqljyetr46/AAD0khzTJV5n8-D5S4hrSZZQa?dl=0	**Provide links to the relevant videos and interviews with stakeholders concerning the project activities, impact, services provided etc. Specify who has the copyright for the videos. The videos will be used by DG Connect to present the finalists and winners at the "B-DAY" in November 2017.**

1:	Innovative models of financing, business and investment
2:	Cost reduction and co-investment in a future proof infrastructure
3:	Territorial cohesion in rural and remote areas
4:	Socio-economic impact and affordability
5:	Openness and competition