St Helena Digital Strategy

Background

A self-governing overseas territory of the United Kingdom, St. Helena is an Island of 47 square miles in the South Atlantic. With Cape Town in South Africa some 1,700 miles distant, the Islanders enjoy a unique lifestyle in truly beautifully unspoilt, friendly and peaceful surroundings.

These are exciting times for the Island as it moves to commercial air access which will bring further economic and social growth. Central to this will be developing a sustainable economy which meets the needs of the community and is attractive to investors.

St. Helena has developed a 10 Year Plan with the participation of the community and through this process **improved connectivity features across all of the National Goals**, which are;

- **Altogether wealthier** focusing on creating a vibrant economy and putting sustainable economic development at the heart of all our plans
- **Altogether better for children** and young people enabling children and young people to develop and achieve their aspirations, and to maximise their potential
- **Altogether healthier** improving health and wellbeing
- **Altogether safer** creating a safer and more cohesive community
- **Altogether greener** ensuring an attractive local environment and contributing to tackling global environmental challenges

This Digital Strategy aims to take the Island forward and move it in line with the outside world. It aims to improve the Island's health, education, economy and communications.

It aims to build on our unique location which is attractive to investors and tourists alike, as well as crucially helping to retain and attract St Helenians on and to the Island.

Connecting the world with St Helena and making economic and social progress for our community now and for future generations

Overview

Currently St Helena has some of the slowest and most expensive broadband in the world. Despite increased speed and reduced costs St Helena does not enjoy similar connectivity to other parts of the world. This is due in part to the technology used and the investment required to improve the service when considering the size of the population. To progress the Island we need to increase the speed and decrease the cost to consumers and businesses through accessing a marine fibre cable.

St Helena suffers from digital exclusion the newest form of inequality – there are four drivers of exclusion (highlighted in later sections), we must tackle each of them to deliver this strategy we therefore need to develop aspects and take advantage of unique opportunities:

1. Knowledge economy and information age, the new driver of world growth
2. Opportunities - unique geographic, political stability is attractive to investors which will enhance the economy on the Island
3. Satellite ground stations
4. Cloud back-up centres

Improved communications, beyond what is currently available will also enable health and education services to improve through telemedicine for example. St Helena's remoteness is a barrier and remote learning through the internet could revolutionise the delivery of services on the Island and increase opportunities exponentially.

The Digital Strategy is dependent on accessing a sub marine cable and once that connection is secured an updated Strategy will be produced covering a number of actions and improvements linked to the Islands 10 Year Plan.

The Digital Strategy will be reviewed and monitored on an annual basis and will form part of the SHG End of Year Report.

Context

The Knowledge Economy, and in particular digital services, is increasingly the driver of economic growth; this is especially the case when comparative advantage cannot be found in manufacturing or primary industry (mining, agriculture).

Both distance and economies of scale mean that providing some public services and communications are more costly in St Helena per unit than in the UK and moving to a system based on prevention and accessing technology will see more efficient and effective services delivered. The 2016 Census shows that the population is ageing and this will add to the pressure of service delivery. With 21% of the population over 65 years of age it is anticipated that access to specialist medical practices will increase and the introduction of telemedicine will become imperative.

Once commercial air services are established in 2017, St Helena's eco-tourism offer will increasingly rely on internet connectivity, both as part of the offer and also accessing local operators.

St Helena has already been approached by a number of potential partners as the global digital economy opens up with a view to having a presence on the Island.

Improved connectivity will also enable improved telecommunications across the Island with an expected increase in the use of mobile phones.

The demands on connectivity on the Island are going to increase and this demand must be met to enable the Island to progress further.

Current Broadband Position

St Helena has some of the most expensive internet in the world impacting on all aspects of life on the Island. This is in part due to the use of satellite capacity and a low customer base. This affects the St Helena tourism offer, reducing the effectiveness to carry out basic services such as travel bookings, internet funds transfer, and shops accepting card payments. The availability of fast broadband services would greatly help education, health, government services, and consumer sectors.

An exclusive telecommunications license agreement was signed in 2012 with the provider and this will expire in 2022 and SHG is working in partnership with SURE to explore improvements to the connectivity that is already provided. The license is regulated by the Electronic Communications Consultative Committee. This would be the authority that would regulate all forms of communication on the Island.

Around 60% of households on the Island have access to the internet and the intention of this strategy is to provide unlimited broadband at an affordable price for the whole community.

The Information Age

The *Information Age* is often described as a new epoch for society, akin to the agricultural age and industrial age. Many commentators identify the Information Age as one where technology and the manipulation of knowledge are at the forefront of driving the global economy; this is underpinned by the internet and improvements in broadband technology.

St Helena has a proud maritime history and was used as a vital stopping point for thousands of ships prior to the development of the Suez Canal. Ironically, it is this very same geographical position that was so attractive to sailors that is now so attractive to investors who see St Helena's location and stability as an ideal location for satellite ground stations.

Technology is evolving at lightning speed, opening up new opportunities and driving human progress. This isn't just a theory, it's happening right now - in primary school classrooms, children are writing code and using advanced technology to learn new skills. Industries that didn't exist just months ago are now thriving and performing global business at the click of a button.

Exciting new innovations, from the Internet of Things to Virtual Reality, are creating previously unimagined opportunities for government, businesses and society. To date, this revolution has largely passed St Helena by. Urgent investment is now required to bring the Island up to speed with the rest of the world to benefit the Island as a whole.

In terms of both size and remoteness there are few places in the world that can benefit as much from the digital revolution, from health care to education, communications to growth, the internet can enable St Helena in ways that currently can barely be envisaged.

Why Broadband and Digital?

Increased Broadband speeds would help deliver truly transformational change on St Helena on par and perhaps a bigger impact than air access. Research shows that doubling the broadband speed for an economy increases GDP by 0.3% in some cases.

Economists at the World Bank have calculated that in developing economies a 10% improvement in Internet access leads to an increase in economic growth of 1.3%. Research conducted by Ericsson, Arthur D. Little and Chalmers University of Technology confirms that increased broadband speed contributes significantly to economic growth.

Positive effects come from automated and simplified processes, increased productivity as well as better access to services such as education and health.

The Organisation for Economic Co-operation and Development (OECD) studies show after a country has introduced broadband, GDP per capita is 2.7 to 3.9 percent higher on average than before its introduction. In terms of subsequent diffusion, an increase in the broadband penetration rate by 10 percentage points raises annual growth in per-capita GDP by 0.9 to 1.5 percentage points.

Internet business solutions have enabled private companies in the U.S. to save $155 billion and have helped companies in France, Germany and the UK increase revenues $79 billion.[1]

UK Internet economy is currently worth £82 billion or 5.7% of GDP.[2]

Every £1 spent on Internet connectivity – mobile and fixed broadband networks – currently supports £5 in wider revenue for the UK ecosystem.[3]

So where will St Helena be in another ten years?

With the pace of change, this is a difficult question to answer – in the same way ten years ago we could not have imagined that the majority of people would be using smart phones on a daily basis, or that there would be an app 'for everything'. In 2015 SURE launched a 4G mobile

[1] Hal Varian and Robert E. Litan, "Net Impact of National Economic Benefits," 2006
[2] AT Kearney "The Internet Economy in the United Kingdom"
[3] AT Kearney "The Internet Economy in the United Kingdom

platform which allows majority of the Island to access smartphones, this demonstrates that with the right level of infrastructure the needs of the Island can be met.

However, what we can – and must – do is prepare to take advantage of the exciting, shifting technology landscape and to embrace future change.

If our government, our businesses and our people are 'digital', we will have the flexibility to do whatever is needed to thrive in the next era of the technology revolution along with air access and 100% renewable energy on the Island.

First and foremost, any investment in broadband infrastructure MUST improve connection speed, increase download capacity and decrease cost to the consumer on the Island through increased revenue streams such as satellite ground stations. In this way the initial benefits will be spread across the Island. Beyond that a better internet connection will:

- **Increase the performance of the local economy, encourage economic diversification and improve job opportunities for local people**
- **Provide a first class education service, supporting the development of skills, creativity and life-long learning**
- **Improve health delivery on the Island by harnessing more cost effective telemedicine options**
- **Mean improved, more productive, and sustainable public services**

Digital Economy

Digital technology can be the backbone of St Helena's economic activity, underpinning a thriving and competitive tourism sector and increasing opportunities. We will have also seen strong growth in the economy, diversifying St Helena's economy – and this will continue.

St Helena could be a jurisdiction for internet connectivity, providing future-proof fibre connections with minimum Gigabit speeds to the Island and maximising speeds to those accessing it.

Digital innovation will be a central part of our entrepreneurial private sector, giving St Helena an international reputation for a niche offer in information service, taking advantage of its unique geographic location, political stability and superb connectivity.

Digital will be the default format of all economic activity on the Island, giving Islanders the power to pay for products and services through online platforms. As a testbed Island, we will have welcomed cutting-edge technologies, supporting some of the big names of the future to develop in St Helena.

St Helena is also committed to moving to 100% renewable energy by 2022 and this will make the Island further attractive to investors and improve life for all sections of the community.

Digital Society

Islanders will be given the skills and confidence to benefit from new technologies. Our schools, library and charities will capitalise on strong digital infrastructure to use the latest technology to teach digital skills to Islanders of all ages, giving them the education they need to prosper in the job market of the future. Through MedTech development, Islanders will be more empowered to manage their own health and lifestyle.

The Digital Divide and Digital Exclusion

The digital divide in its most simplified form is defined as a 'social issue referring to the differing amount of information between those who have access to the internet (especially broadband access) and those who do not have access' (Internet World Stats, 2015).

According to a review of the literature[4] there are many factors that cause the digital divide, however they can be encapsulated into four main groupings;

- Lack of physical access - Some people lack access to the internet because there is geographically little or poor connectivity infrastructure
- Lack of economic access -Some people and households can find that the hardware required and connectivity to the internet is unaffordable
- Lack of skills - Some people lack the necessary skills and the knowledge to use the new technology; this can include language skills and basic digital skills
- Attitude -Some people, particularly people from older age groups don't see the point of information and communications technology (ICTs) or don't want to use the new technologies

The concept of the digital divide has often focused on accessibility to the internet, in terms of the technological ability and financial cost of doing so or in other words the physical/economic ability to access the internet[5] . This version of digital exclusion is still the case in many developing nations, and reinforces the global north south divide.

[4] Loader, 1998; Helbig et al, 2008; Heeks, 2010; Loader and Keeble, 2004; BDUK, 2014;Go On UK 2015
[5] Loader, 1998

The irony is that many remote countries and Islands, who would benefit most from the information age through better services and good connectivity are often the ones left behind. St Helena is one of the remotest Islands in the world, yet also suffers from some of the slowest and most expensive internet connection.

The Island currently has a connection which is slower than most UK households to serve the needs of over 4,500 people. For this reason, campaigns such as Connect the Blue Continent (Connect the Blue Continent, 2015) and Connect Saint Helena (Connect Saint Helena, 2013) who call good internet connectivity 'a basic human right' have been established to lobby for better access across the world's most remote locations. In developing nations, costs to access the internet in terms of connections and of the hardware needed are also considerably higher than in more developed nations, this is compounded by lower income levels making it proportionately even more expensive.[6]

In a broader sense, the digital divide is a concept that tries to encapsulate the inequalities caused by the rise of ICTs in recent years and in particular people's and communities' access to the internet through broadband connectivity. It can be caused by both social and economic issues and it can be experienced within nations or across international boundaries, not just across the usual global north south divide as with most development issues.

Issues can include physical access to services as well as the skills needed to access services.

This broader definition allows the strategy to focus more on the issues within national boundaries. Originally the digital divide was focussed on the differing levels of technological diffusion and the rise in inequality that this can cause. However, increasingly and especially within nations in the global north, physical access to ICT and broadband has become less of an issue. For instance, the UK government has pledged that 95% of Britain has access to superfast broadband by 2017 and that every household will have at least a basic access within the same timeframe[7]. This will also include access in rural properties and many of the issues of access will therefore become less of an issue for the UK. The debate around the digital divide has therefore shifted to one about the skills required to access the full range of opportunities that the digital age offers.

This requirement of the skills needed to access the internet and wider ICTs has been recognised as being in need of addressing, as certain groups, particularly older people lack the skills required to access the internet, despite now having the potential of physical access to connections. The *Go On* UK campaign was established for these specific reasons. It is estimated that '23% of UK adults still don't possess the Basic Digital Skills necessary to take advantage' of new technologies as the campaign itself defines.

This often hits people on benefits hardest and the poorest in society who then can't access government services and more competitive markets that the internet can provide, effectively meaning that their costs of living are higher than those who are better off and not digitally excluded.

[6] Internet World Stats, 2015

[7] BDUK, 2014

Answering the Digital Divide

Objectives

1. Every Islander should be confident when using technology. Whether that means taking advantage of online government services, such as completing your annual tax returns online, using next generation medical technology to monitor your own health, or engaging with social media.
2. Ensure all Islanders have the ability to excel with digital technology. Digital St Helena, St Helena Library and St Helena Community College will continue to upskill the community in digital skills, with exciting opportunities, including coding programmes, one-to-one entry level IT training sessions and European Computer Driving Licence training and testing.
3. Work with schools and businesses to develop a pipeline of future digital leaders: Creating an education system that works closely with the private sector, teaches advanced digital skills and inspires the digital leaders of tomorrow is essential. A new computing curriculum is in place in St Helena's schools up to Key Stage 3, with coding being taught from primary school. In addition to this, the creative use of cutting edge technology is becoming increasingly integrated into daily school life, and high quality professional development is increasingly available for teachers. Government will continue to work with schools and the private sector to ensure our education system provides the skills necessary for a diverse digital economy.
4. Improved medical services and to enable assistive technology to support people with additional needs.
5. Upskill St Helena's workforce with digital skills and qualifications - St Helena's economy is built around finance and professional services – all of which already require a good baseline in workplace digital literacy. Yet as business processes become increasingly digitised, a good understanding of IT is becoming essential in almost every job. The Education Department will work with Digital St Helena to ensure our workforce has the skills needed for the digital age. Government will also continue to work with the local private sector to ensure Corporate Social Responsibility projects focussing on digital skills development play a role in delivering this objective.
6. Attract and retain off-Island digital talent to meet short-term skills demand - In the long term, government's ambition is to meet the skills demands of the digital sector on St Helena through a sufficient supply of skilled local people. However, to attract and grow digital businesses, St Helena needs access to highly skilled digital workers and digital leaders now. In the short term, government will work with Digital St Helena to ensure businesses are empowered to identify and attract the best and brightest digital professionals to the Island to boost St Helena's jobs, wealth and future digital potential.

Possible Projects

International private sector consortia have previously contacted the St Helena Government (SHG) direct, seeking co-investment in their new optical fibre trans-Atlantic submarine cables which, through the provision of an additional spur to St Helena, would offer fast reliable broadband services to the Island.

There are a number of cable systems which are focussed on developing in the South Atlantic Ocean which could create viable connections to St Helena which the Island has had formal offers from to provide a broadband service.

The typical approach of cable consortia seeking to lay cables across the Atlantic is to raise the capital required through equity investments, from international banks, and from participating Governments and internet companies tapping into the route. In the case of St. Helena, a spur will be required from the main optical fibre cables directly linking say USA and South Africa, or Brazil and West Africa.

In St Helena's case, the spur could be relatively short if it runs close by, but SHG will be expected to share costs, in proportion to the extra miles of cable required. If St Helena and/or Ascension are unable to participate, the cable consortia will continue to proceed with their direct cross-Atlantic routes without making provision for any spurs to these Islands. This would be an opportunity missed.

Low/Medium Orbiting Satellite Solutions

Until recently, the vast majority of service providers utilised geo-stationary satellites for general voice and data communications.

These geosynchronous satellites orbit the earth at an approximate distance of 35,000KM. This high altitude has a direct bearing on the time it takes for a data packet to be transmitted and received by satellite ground stations. This generally results in a much slower internet user experience.

With the recent advancement of new satellite technology, many service providers are switching to the use of low orbiting satellites which operate at a lower altitude of 8,000 KM. This lower orbit greatly reduces the distance a data packet needs to travel; in some cases to almost half or less, resulting in faster response times and enhanced internet user experience when used in conjunction with IP acceleration technology.

At present, a number of Pacific Islands including Norfolk Islands, Tuvalu, The Cooks Islands[8] and Palau, as well as countries within Central Continental Africa including Chad, Congo, Cameroon and Angola have made the decision to take advantage of these solutions. Low orbiting satellite solutions are offering these countries growth and opportunity with low cost, high speed internet, where other solutions do not prove to be as economical or suited to the geographic location and/or terrain.

Whereas SHG are exploring all options in terms of improved connectivity, at this stage the focus is on securing a marine cable while not discounting low orbiting satellite solutions.

[8] Cook Islands are moving towards Marine Cable by 2019 http://cookislandsnews.com/national/local/item/64810-submarine-cable-ready-by-2019

Inward Investment Opportunities

Whilst the advent of the cable would be revolutionary for the Island in terms of access to the internet, particularly with regard to health and education the business case would still be largely difficult to justify from a Cost Benefit Ratio for 4,500 people without further benefits. There are however possibilities to further economic growth through inward investment. Various options, including low orbiting satellites, have been raised and all will be investigated further however the most viable mentioned by external experts are ground satellite stations, cloud backup stations, call centres and a mid ocean marine cable hub. Of these the most advanced is the idea of ground satellite stations.

Without any formal marketing, or even a concrete proposal for a cable there has been significant interest in basing ground satellite stations on the Island. This has resulted in expressions of interest from firms, two of which have also met representatives from the Island and have shown a high level of interest as well as a willingness to pay an annual licence fee. As the space available for ground stations is limited on the Island it is imperative that economic, social and environmental impacts are considered when awarding any licence.

The benefits of basing satellite stations on a small Island has been realised by Svalbard, a Norwegian Island and would contribute to the business case in a number of ways, including: paying a licence fee; small levels of employment; land purchase and investment; purchase of large amounts of bandwidth and the purchase of large amounts of power (both of which could be used to cross subsidise costs to other users on the Island). Discussions with these companies and other possible opportunities will continue as part of the ongoing project.

Tourism

Improved telecommunications connectivity is vital to take advantage of new tourism opportunities enabled by air access. St Helena has featured in well-respected publications and it is expected that the Island will develop as a destination for eco-tourism.

Tourists expectations for internet access are high, ‘the global tourism industry is driven by Internet use‘ (Dr Chris Foster, Oxford University) and currently St Helena is not equipped to appropriately provide such services.

St Helena’s needs are diverse from very basic needs like enabling the ability for shops to move away from cash transactions to marketing and promoting the Island as well as businesses and activities that are available.

Service industries both for the Island and international Call Centres

The satellite industry has considerable interest in St Helena as a satellite ground station base; with no positioning or marketing so far.

They are attracted by the unique geographical location and stable government the Island has and they are dependent on air access and broadband with fast, low latency, upload speed with sufficient capacity. They generally require an area the size of a football pitch with good views of horizons and different satellites will have different requirements.

Such developments will not only support financing the cable but will lead to further inward investment; employment and secondary spend in the economy.

Government Services

SHG currently spends in excess of £600k p/a on broadband, however the poor access impacts on all service provision and efficiency levels.

This is the same for businesses across the Island and is a barrier to growth and investment. Local authorities in the UK have implemented significant savings exercises based on new ways of working, underpinned by digital technology and such developments on the Island would see more efficient and effective services.

New technology allows access to new services, such as accessing UK safeguarding databases/systems, improving our own protection services for the community.

Health

Due to remoteness and economies of scale, the Island has high unit costs for health provision and as stated previously has an aged and ageing population. The Island does have significant issues around diabetes, obesity and vascular disease and health costs are around £4m per year with many patients beings referred overseas at great expense.

Specialist doctors are needed permanently as well as visiting specialists and telemedicine could not only significantly reduce costs but also improve service provision and reduce the need for overseas referrals.

That would require a significant increase in connection to hospital.

Having access to professionals via a secure link would also enable services such as counselling and victim support to be conducted remotely which is vital for any small community.

Improved connectivity will also enable us to access specialist equipment for people with disabilities to improve their quality of life and involvement with the community.

Education

The future of St Helena is predicated on the Education System, which is currently well below UK averages. Currently the Island's secondary school has a connection of 4.5mbps.

Education is increasingly moving towards digital learning. Informal free learning is a growing area that could have significant impacts on the Island's skills levels. Distance learning can transform the provision of formal education from GCSEs through to post graduate degrees.

The Island will be in a stronger positon to develop its human capital to meet the needs of the community, commerce and potential investors. Being able to access education affordably online will transform many lives, families and outcomes.

The stark reality is that Children and Young People have to complete their education during sponsored free internet access between midnight and six am.

In 2017 this shows the need to be connected, to meet this basic right.

Conclusion

Since St Helena was discovered in 1502 it has been one of the remotest and least connected Islands in the world. Such remoteness is central to the Island's rich history and culture. From Napoleon being exiled in 1815, to the preservation of the Island's unique endemic species, remoteness and a lack of connectivity have been both a positive and a negative.

2017 is the year that lack of connectivity will stop physically.

The introduction of regular air access will see a journey time reduced from days to hours. This will increase the number of visitors to St Helena, enable St Helenians to travel to see friends and family on a regular basis as well as making healthcare and service delivery more efficient and effective.

Accessing a marine cable will require significant investment as well as annual costs and is reliant on generating additional income through satellite ground stations for example.

However, 2017 is the year when St Helena will embark on digital connectivity. Moving from the slowest and most expensive internet which disables the Island to a position where connectivity improves the lives of every member of the community.

This will only be achieved by securing access to a marine cable that will allow the Island affordable, reliable and quicker Broadband.