

Majuro Broadband Internet Connection

By Jim McLean, Secretary, Marshall Islands Chamber of Commerce

The purpose of this letter is to express my own view and not that of any organization with which I am affiliated. I feel that an opportunity to connect the Marshall Islands with the Internet via an underwater fiber optic cable to deliver broadband access should be exploited for its maximum possible benefit. I don't think that it's reasonable given its cost to expect that NTA should have to "go it alone" on this. Rather, it's my belief that public funds now spent for other things can and should be partially diverted to subsidize the cost.

Under the Amended Compact, we can expect that the United States will continue to fund appropriate infrastructure development here focused on health, education, and private sector development. Local broadband access would positively impact all three of these areas of interest. I think it's therefore reasonable that future budgets for health, education, and private sector development be slightly trimmed in order to provide an annual subsidy to NTA to fund the oceanic cable. If done properly, reductions in cost especially in health and education would offset the reduced funding. With private sector development, additional businesses would create more jobs and thereby generate more tax revenue.

Infrastructure should be more broadly defined to include all those things that enable other things. Brick and mortar, like roads, are just two types of infrastructure. Telephony today including broadband represents as important an aspect of infrastructure as any investment made in the Marshall Islands to date.

The RMI needs to invest more in human capital development even to the extent of educating a workforce that migrates off island to find work in the short term. Every dollar invested in future parents today will multiply many times in the children of such parents.

The justification for doing this can be presented using either a human or a business rationale. Both apply equally well. Human factors such as the enlightenment, dignity, good health, happiness and success that accompany effective education for people who have access to accurate, timely, and important information cannot be measured but are substantial. But, perhaps like faith based issues, these things cannot be quantified. A business rationale, however, can be quantified. I'll speak to that even though I personally value the human benefits as much as the business ones.

There are measurable costs associated with less than adequate performance in the health arena. Sick people have to be treated with expensive staff, facilities, equipment, and medication. Seriously ill people have to be referred for even more expensive off island treatment. Employed people who become ill often miss work or under perform while on the job if not well. This represents a direct cost to business some of which is passed on to consumers. But not all of this cost is offset with price increases. There is a direct relationship between slow or no business growth and under performing employees. Therefore, anything that improves the general health of employees contributes directly to

business growth and consumer price containment. Business growth encourages competition that further restrains prices.

Public health can deliver more treatment effectively with access to broadband. Generally trained and therefore less expensive local healthcare professionals can transmit test results electronically and receive accurate diagnoses from professional off island diagnosticians. Broadband supports the necessary volume of medical data that needs to be transmitted to accomplish a marked improvement in diagnostic health care. Broadband allows for the frequent use of remote diagnostics to be able to migrate toward preventative healthcare and away from remedial efforts. I believe that it has been adequately documented how preventative healthcare saves significant medical dollars.

Diagnostics and medicine, no matter how efficient, will not in and of themselves result in a generally healthier population. That requires effective adult education. Properly educate one mother about hygiene, nutrition, and accident prevention, and you positively impact an entire family's health. The efficiencies accompanying local healthcare professional use of broadband would allow those same professionals to be able to spend more time educating adults to be healthier.

How much does disease now cost the RMI economy? What is the cost of diabetes? How many people in the Marshall Islands read about the Canadian breakthrough in actually curing diabetes this week? If we know about what is developing elsewhere that has a material impact on us today, will that help us to better allocate our scarce resources to the maximum benefit of all citizens?

When it comes to AIDS awareness, everyone mentions the need to better educate the populace in the prevention of AIDS while vaccines and cures are being researched. In the culture here, wouldn't it be easier for adults and adolescents to sidestep the cultural barriers of speaking of such subjects openly by allowing them to privately and anonymously consult Internet resources on the subject for their edification?

The Ministry of Health is already using electronic means to connect with medical specialists elsewhere. Do they have the ability to transmit sets of x-rays and receive answers in the same week now? With broadband they would have the ability to send the data and receive the answer in the same hour - perhaps while a patient was being prepped for emergency surgery. How many lives would this save? How many medical referral dollars would this save to be able to diagnose significantly more problems by using off-island broadband connected specialists reviewing test results in *real-time*? And this could be done with general practitioners hired locally instead of foreign specialists.

Women's health issues are a concern in the Marshall Islands. This encompasses hygiene, nutrition, timely medical examinations, family planning topics, budgeting, proper care of infants and children, substance abuse, and a variety of mental health practices. It is difficult to discuss the quantity and quality of this type of information freely available on the Internet - there is just so much of it, perhaps, more than for any other human focus. There could not possibly be a better or more efficient way to improve

the lives of Marshallese women than to make broadband access available to them for their personal information needs. If just one killer of young and middle aged women were prevented with broadband access - cervical cancer that is preventable with proper information, for example - the cost of the entire cable could be justified.

If just one disease such as diabetes could be contained through the access and application of the latest information using broadband Internet access, the entire cost of the cable could be justified.

Broadband access has measurable benefits in educating children. In that children today become tomorrow's adults and employees, the more effectively that children are educated the more future healthcare costs go down and business productivity improves. As expensive as it is for business to have under performing employees due to poor health, it is even more expensive to have employees who are limited in what they can do and how much they can learn due to a poor educational experience. English literacy and math proficiency are of paramount importance to business processes and relate directly to the "bottom line." The ability to think as a result of the effective study of literature, history, geography, philosophy, and science bears directly on business innovation. If more than one adult has to be hired to do one person's job due to inferior education, business costs are higher than they should be. This has the same dampening affect on growth and upward price pressure as is experienced with unhealthy employees. A more educated local workforce also naturally limits expensive imported labor.

Textbooks are a problem. They cost too much. They deteriorate quickly. They are always outdated. Why not do an end run around the entire subject of textbooks by using up to date Internet educational content?

Testing and assessment is a problem. It takes too long, and there are never enough trained specialists to handle the results professionally. Look at what CMI is doing with automated testing using open source software. There is automatic grading and assessment allowing the instructors to spend more time reviewing and acting on the results to positively affect student learning. It would take an on island broadband connection among all the schools and the Ministry of Education to deploy fully automated testing.

The Ministry of Education has identified the need to raise the educational level of many teachers in the Marshall Islands. How is this actually going to be accomplished? What percentage of them will have to be temporarily replaced at extra cost and for how long and at what direct travel, per diem, housing, and tuition cost? If only 1/10 of all the teachers needing to improve their educational level leave and attend formal education at a time and it takes 2 to 4 years for them to do it, it would then take 20 - 40 years to accomplish this will all teachers. Why not bring effective formal teacher education to the Marshall Islands without displacing the teachers by using broadband distance learning? With such an approach it would be possible to either raise the level of all teachers to a sufficient degree or replace those that will not cooperate in less than 10 years without having to pay any replacement costs during those ten years.

If anyone wants to see what teaching world geography should be like for primary school children s/he should download Google Earth and then be prepared for a pleasant shock. Imagine if that content were delivered at broadband speed? Could there be any question that a curious child might ask about world geography that wouldn't be immediately, visually, and easily answered?

Local students lag behind other countries in English literacy and *numeracy*. Most of the content on the Internet is written in English. Students regularly accessing the Internet to satisfy their curiosity about any subject and for the purpose of completing specially designed homework assignments would effectively learn how to read English. Anyone interested in seeing just how all aspects of Math should be presented to children and young adult students should spend a day viewing all of the introductory mathematical material available for all grade levels on the Internet. It is presented so well that even older adults who missed this during their school years can learn it. It is outstanding! Regular programmed access to this kind of material by all school age children would result in adequate *numeracy*.

It could actually be more beneficial for grade school children to sit under a tree when it doesn't rain and use wireless notebook computers to access an island broadband connection to the Internet than to sit in a brand new but empty 25 million dollar building. Rationalize the construction of just one expensive school building, and this would fund the entire cost of the cable.

If just one generation of Marshallese primary school children could be sufficiently educated in English and Math then going on to be successful workers and parents here and elsewhere, the entire cost of the cable could be justified.

Significant private sector development will occur as the present challenges in healthcare and education are incrementally overcome. But businesses need expanding access of the Internet to offset increasing costs and to provide the basis of new development as it may occur. Computer technology is an integral part of business today. Software drives computer hardware and is expanding rapidly needing to be constantly upgraded online. Copy protection schemes increasingly require that each time that a computer is powered on it must, like "ET", "phone home" to verify that a licensed copy is being activated. In the seeable future, without broadband connectivity, local business will not be able to deploy and take advantage of the latest computer software.

Business development today is gravitating toward what is termed collaboration and away from monolithic structures. Collaboration is enabled with broadband connectivity. Outsourcing without regard to geographic limits is a viable way to increase service without correspondingly increasing cost. In some cases, it is the only way to even offer a new service.

Public and private entities have the need for specialists who do not exist in the Marshall Islands and most likely will never exist in sufficient numbers. This has given rise to the need for expensive imported workers. This includes accounting, medicine, law,

and computer technology. With broadband, many of these needs can be outsourced to reasonably priced professionals in China, India, and South America. For example, most American accounting firms no longer hire people to prepare ordinary citizen tax returns. This has been outsourced to India for years.

If all public and private employers were able to import 50% fewer foreign professionals by teaching their existing and new hire local employees how to utilize a broadband connection to the Internet then the entire cost of the cable could be justified due to a retention of local capital.

RMI government statistics already predict that there won't be enough specialty trained local labor ten years from now to replace today's retiring workers. We need to jumpstart local training. Broadband is the answer.

If 100 unemployed adults could find gainful employment locally in the Marshall Islands due to an increase in jobs as a result of local business capitalizing on broadband Internet access, then the entire cost of the cable could be justified especially when you consider that each of those hundred feeds, clothes, and supports the education of as many as ten other people.

If public employees were able to reduce their travel by 50% by accessing timely, up to date, and relevant information that they need to do their jobs using broadband Internet access including teleconferencing, the entire cost of the cable could be justified.

Some of the benefits of providing Broadband for businesses are:

- Instant, permanent, fast access to the Internet.
- Substantial speed and costs savings over standard modem connection or faster ISDN.
- Receive orders or inquiries for products and services 24 hours a day 7 days a week.
- Faster interaction with business partners, employees, customers and suppliers via email, web sites, web telephony, and instant messaging.
- Faster access to information on the web.
- Faster file transfers.
- Building secure connections (VPNs) between multiple sites without the costs of a private network.
- Linking internal systems with partners to improve supply chain efficiency (Extranets).
- Outsourcing of applications, file backup and other services to Application Service Providers (ASPs).
- Enabling key staff to work from home: extending their effective work time for critical projects, saving on travel costs and reducing office space.
- Video conferencing with substantial time and cost savings.
- Web Cams can increase security by viewing property anywhere in the world - 24 hours every day.

What is one of the obstacles in obtaining broadband access on Majuro? It's a problem of conceptualization. We've been taught to examine historical usage patterns, costs, and revenue and then extend this experience forward to evaluate something new. When we extend the past forward, we do it in a linear fashion as though there won't be any new variables that didn't exist in the past. Using this method, it appears doubtful that broadband connectivity will pay for itself. In this sense, classic accounting principles are doing us a disservice. Since World War II, technology growth has been geometric and not arithmetic.

We can prove this with local experience within recent memory. In the early 1990's a new NTA building, switch, and fiber optic cable connecting a new airport and Laura switch were constructed. That cost more than the proposed fiber optic cable. At that time, such an investment was not justified using conventional accounting projections. But no one could have foreseen the population growth in Ajeltake and Long Island. No one could have predicted the number of automobiles that are on the road today. No one could have predicted the popularity of cell phones. And no one in the world predicted that the Internet would become as instrumental in changing the human experience as the Industrial Revolution. Compare public and private sector use of telephony then and now. Compare local business with then and now. Compare local business use of technology with then and now. The differences are astounding.

It wasn't accounting concepts that delivered that NTA development, it was vision and leadership. And the reason that it turned out to be a sound investment is the very nature of technology itself. It progresses exponentially and not linearly. Just as no one could have predicted the developments that followed that investment, no one today can with certainty predict the new things that will follow an investment in broadband.

Another obstacle is the suspicion that an underwater fiber optic cable is too expensive, will not last long enough to justify itself, and that it would be better to wait for a more reasonably priced technology to solve the problem. The difficulty with this obstacle is that it presumes something that may not be true – that there is sufficient time to wait.

There is no other technology available now or scheduled to be available to deliver broadband to remote island locations. Even if such a technology becomes available in ten years or so, the lack of access to broadband in that intervening time while waiting for an as yet unidentified technology would in essence sacrifice an entire generation of children and potential business startups. Can the Marshall Islands afford that kind of a loss with so relatively few years remaining on the Amended Compact? I believe that there are sufficient economic analyses available as prepared by experts that tell us that the RMI needs to actually arrive at some level of economic self-sufficiency in less than 20 years from now if there is to be any future at all. If we're to utilize broadband to help achieve that self-sufficiency, it could well be that this is the only opportunity to do so. Forgoing this one might represent a decision to never have broadband.

It might well be that it isn't only the Marshall Islands that will run out of time if we delay needed and necessary technology. There are an increasing number of experts who are predicting some astounding changes for the world in the seeable future.

The Law of Accelerating Returns - Ray Kurzweil

An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense "intuitive linear" view. So we won't experience 100 years of progress in the 21st century -- it will be more like 20,000 years of progress (at today's rate). The "returns," such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth. Within a few decades, machine intelligence will surpass human intelligence, leading to The Singularity -- technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and nonbiological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light.

The choice is ours now. We may choose to find a way to subsidize broadband connectivity or we may choose to let this opportunity pass us by. In the immediate future and presuming that we choose to ignore this opportunity, nothing will appear to change. All will be as it appears to be now. Whatever is broken will stay broken. Whatever works to some degree will continue to work. Those who favor dismissing this opportunity might take comfort in that. However, those who will notice a significant difference will be those who come after us – children and grandchildren. Our decision today will be their inheritance. The wisdom of our choice today will benefit or bedevil them, not us. Will they praise us or curse us?

Some people feel that broadband access is one possible future among many others. I feel that it represents the only possibility of a future.

Jim McLean