

From the remnants of a crumbling communist state, there has grown a **clear understanding** of the value of ICT in creating the economic bedrock that will form the **foundations** of Macedonia's successful **knowledge economy** which has become **a national priority**

## Interview

It became clear soon after the formation of the Former Yugoslav Republic of Macedonia in 1991 that despite historical disputes with the young country's neighbours as well as the difficulties inherent in creating a successful democracy from the remnants of a crumbling communist state, there was a clear understanding of the value of ICT in creating the economic bedrock that would form the foundations of the country's successful future.

Following the lead of other former communist states like Estonia, the formation of a true knowledge economy was quickly seen as a priority and, as early as 2002, the country made a decisive e-Declaration to speed up the development of the information society and digital economy and made this a national priority.

"Those countries that fail in the articulation of resources needed for development by using modern Information Communication Technology will remain in stagnation, and fail to keep up with the modern world," warned the declaration.

### Momentum

Just five years on from this statement and with Prime Minister Nikola Gruevski and his team maintaining the momentum, Macedonia is moving ahead with these goals firmly in sight, with a dexterity that evades many larger, richer countries in the European Union. The structure has been clearly defined, while there is little legacy to untangle and the national policies and initiatives are being implemented without the need to battle with bureaucrats, Eurocrats and red tape – all with the understanding that public, private partnerships are essential for successful growth.

And the results are clear for all to see – from being known as one of the poorest nations in Europe, it is now one of the most technologically advanced. Using foreign aid, commercial sponsors and government funding, the country has installed a computer laboratory in each of its 430 schools and has a nationwide broadband network that wirelessly covers 95 per cent of the land. The network, which uses Motorola technology, uses WiFi hotspots to bring



## William Davis talks to Ivo Ivanovski, the Minister of Information Society in Macedonia about his young country's relentless drive towards the knowledge economy and eventual integration with the European Union

high-speed Internet access to remote rural areas, while mesh technology is used to blanket cover urban areas.

While the initial impetus for the school computer project and blanket internet access was provided by former president Boris Trajkovski, who died in 2003, it has been implemented by Gruevski and his team, and in particular the young and dynamic minister for the Information Society in Macedonia Ivo Ivanovski. The former director of an IT company was brought up and educated in America, but has been advising the Prime Minister on

technology since he was in opposition.

When Gruevski was elected Prime Minister, Ivanovski was immediately brought in to fill his first political role in the Macedonian Government, taking the prized position of Minister for the Information Society. When he arrived, however, although the vision for the knowledge economy was there, little was being implemented.

"When I arrived there were no projects having any impact on the government or the citizen in Macedonia," he said. "We inherited an

administration where there were paper documents and, while the strategies indicated where the government would like Macedonia to be in the next five or 10 years, nothing was being implemented."

Immediately, Ivanovski began changing this with a clear programme designed to fully utilise the country's connectivity but also invest in the future, for he was clearly thinking in the long term.

"We came in with a rich programme and strategy outlining exactly where Macedonia should be by 2012 – and we

used for the one PC for every child project with the government looking for the best value for both full and thin client capabilities. Ivanovski explains the process:

"In choosing the hardware and software we used and international tender and eventually went with the best deal for full client capabilities from Chinese company Haier, while the thin client came from US company NComputing. Under this deal there are now seven children to one computer – each with their own computer screen and using the same desktop.

"We are currently in the process of equipping all of our 365 primary schools, and by the end of this year all of them will have computers installed in five to 10 classrooms. We then aim to purchase a further 35,000 stations through tender and procedure by the end of the school year; this will mean that children from fourth grade to senior high-school will each have access to a computer."

### Globalised market

Of course, equipping the children with the hardware is only half the story and, again, Macedonia is looking far into the future with an ambitious plan for eLearning software that will utilise both local and English-speaking content, preparing the Macedonian scientists, technologists, researchers and business people of the future for the globalised market.

"Our strategy for the next five years is that we are to develop the digital content for the children to use. The operating system we are using is Edge Ubuntu – which is open source and comes with a collection of tools for basic subjects. We are also, however, downloading many tools from the internet and we are currently working out how we can incorporate them into our curriculum in our primary, secondary and high-schools.

"The software used on the computers is international," he continued. "The only exception to this will be with Macedonian literature, Macedonian history and Macedonian geography – all of which will be developed in house. We are, however, localising and translating into Macedonian the international software and are undergoing teacher training, equipping them with the knowledge and skills

to utilise the software. This teacher training is widespread throughout the country.”

With the computer network and infrastructure in place, the software being developed and the education process for the educators well underway, it naturally follows that the rest of Macedonia’s ICT development is proceeding according to plan as well – and it’s a lively market full of opportunities as Ivanovski revealed:

“Our incumbent telecom operator Deutsche Telecom has a very advanced network and when we released the tender we received a lot of offers on it – some wireless, some wired – and the current network is supporting speeds of up to two Mb for each school. There is, however, widespread competition in the Macedonian communication technology field, with three mobile operators, 30 cable operators and three fixed line operators.

“To encourage this competition we have implemented every single EU directive in order to liberate the market,” he continued. “This makes it easier for other companies to come into the field. We have also 20 WiMax operators – two national and 18 regional. They have the license and the national ones cover the territories but because it is still very expensive technology not many people use it.”

### Increasing usage

And here, it seems, is the heart of the matter for the continued progress for Macedonia as it speeds towards the knowledge economy – increasing penetration and usage amongst its citizens. Again, there are some ambitious programmes in place.

“We see technology and ICT on a national level,” explained Ivanovski. They are enablers for growth in the economy. We have many projects where we are providing free education for the citizens of Macedonia where anyone can sign up for training in basic ICT knowledge. Indeed, last year 17,000 people took part in these projects, while this year that figure rose to 22,000.

“In addition, we provide 12,000 vouchers to senior college students to buy a laptop or computer. We are trying to introduce ICT so it can make the citizens of Macedonia more aware of what you can do by using it, how it can help you in your life and how

you can be more productive and more organised.”

It is clear, then, that Macedonia is investing heavily in ICT to facilitate the growth of the economy. Ivanovski admits to a long-term vision of 10 years in which he anticipates the widespread uptake of ICT technologies amongst the wider population that will see real progress towards these aims.

But there is more to the programmes than a simple move towards the knowledge economy and the realisation that real wealth lies therein. The plans

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are also motivated by the ideals of providing useful and valuable services for the Macedonian citizen, something that has been underdeveloped for many years.

“On a more specific level than the growth of the economy, we see our investment in ICT improving our provision of e-Government service,” said Ivanovski.

While many of these services are familiar to many European countries, they are revolutionary in Macedonia. “We hope that we can supply services that will significantly help individual aspects of their lives, such as paying bills or getting birth, death and marriage certificates,” continued Ivanovski. “We are trying to get these services electronically delivered through the internet. We are not trying to reinvent the wheel, we are just trying to look at the best practices in Europe and then copy and build on them to fit Macedonia’s needs.”

So far the Macedonian citizens have been very receptive to these services, enjoying the change and there is a real willingness to try anything new. To date, there have been few issues to do with the privacy of information and breaches of that privacy, issues that have plagued many other European nations. Ivanovski admits that the government is “being very careful, though”.

“The first services we are offering the citizens are the ones dealing with public information,” he continued.

“There is no secretive information. We do see however, that some countries have a problem with Internet-based services and we will have to see how citizens react over the next few years as more and more services are provided.”

There is little secret in the fact that Macedonia sees full membership of the EC as a primary aim. Indeed, much of the motivation behind the development of ICT is to smooth this passage, although, as Ivanovski freely admits, this process has little to do with ICT and more to do with the political

problems with Greece and Bulgaria, reforms to the judicial system and the implementation of EC laws.

But he is confident and fully supportive of the plans to become a member state as soon as possible. “I believe we have a good relationship with the EC,” he claimed. “We have room for improvement, of course, but so far it has been OK and we are looking forward to the date when we can start negotiating our entry.”

As far as ICT and joining the EC is concerned, Ivanovski pledges to keep spending but has a clear eye on the funding into research and development that will become available when the day comes. “We will be investing more and more and we are putting aside a larger and larger budget for implementation and R&D each year,” he said. “R&D is not really a priority at the moment, however, as we are more concerned with setting up the base infrastructure and providing services to citizens. When this base infrastructure is set-up then we will focus on R&D. We have already applied for R&D funding from the EU and that is scheduled to arrive in 2009 to 2010.

“By the end of 2009 we aim to be in the top 15 countries of Europe who provide e-Services such as e-Government. In fact, right now we have 20 services which each year are graded by the EC and we are hoping they will be all taken to level five of the grading system and take us into the top 15.”

To do this, Macedonia is looking and

learning from those who have trodden the path of ICT development before them. That is sensible.

“The greatest lesson we have learned is to not copy the mistakes of other countries,” admits Ivanovski, happy as well to admit that they will gladly copy the successes, as they can often do it faster and better.

“If a country implemented a project and it took them two years then it can take us one year,” he continued. “Further, we have a built an excellent bilateral relationship with most of the European countries and regularly exchange ideas – this helps us be more selective in what projects or strategy we implement. It allows us to focus on the projects that will provide the services most needed by citizens and the government.

“It also allows us to minimise administration and make that administration more effective; that is why our second largest project being implemented is an electronic document record management system. More than 10,000 users and every government institution will be connected to this system and it will help create a paperless environment where every document that comes in will be scanned and then electronically delivered and signed.”

Again, there are opportunities here. The tendering procedure for this is already in place and should be fully operational by the end of 2009.

Although freely admitting to borrowing ideas from the rest of Europe, copying best practice and learning from the mistakes of others, Ivanovski is no shrinking violet when it comes to looking further into the future, confidently predicting that it will be the rest of Europe looking to Macedonia for ideas in only a few years to come.

“We expect Europe to be able to learn from the work done in Macedonia by 2010,” he predicted – and why not?

“Our message is that if you want your economy to grow – especially if you are a new country – then you have to invest in ICT. That was the case with Ireland, Estonia and Malta. They heavily invested in ICT and that’s why they have strong economies right now. Indeed, that was the case in the United States in the 1990s.”

These are bold aims, and sensible

aims. It seems Ivanovski and his team have a clear understanding of the benefits ICT will bring the citizen and the political will to implement ambitious projects to create a national broadband strategy that introduce to the citizens, notably those in rural areas, to the benefits of ICT. In many of the mountainous areas at the moment citizens have to travel long time to get to any state office – he is working hard to ensure that soon the state office will come to them via broadband. But that’s the short-term aim; what of the long-term goals for the country?

“I can see Macedonia being the next software outsourcing destination,” he confidently predicts. “We are very focused on software development and developing highly-skilled young students. We are setting up a new University next year – the Macedonian University of IT – which is focused purely on ICT.

### Attracting students

“It is going to be one of a kind in the Balkans with 50 per cent of the professors coming from abroad and English-speaking countries. We will attract students from all over the Balkans where they will be English taught in seven faculties over two institutes of technology tailored in the most advanced curriculum. So, by 2012 we will have plenty of young software engineers who can drive our own economy as well as help global companies with their own needs.”

As delegates gathered for the ICT 2008 event in Lyon this year, Ivanovski reflected on what he might say to the many ministers and key public and private sector decision makers as they meet at Europe’s flagship exposition of cutting edge ICT development – and his message was simple.

“Historically, ICT has been an enabler for growth,” he said. “Looking to the future it is something we cannot live without if would like an efficient and productive lifestyle. For companies, therefore, it is very important to invest in ICT even though it is hard to see the immediate return on the investment – that return will come in three to four years and with great margins.

“By investing in ICT you are investing in your citizens and investing in your country – and that is just what we will continue to do.” 