

Geospatial: The Next Frontier

Hon. Maurice Williamson, Minister for Land Information, Parliament, New Zealand, discusses the value of GIS, the use of GIS in New Zealand, and New Zealand's geospatial strategy.

<http://video.esri.com/watch/59/geospatial-the-next-frontier>

Video Transcription

00:01 Thank you very much, and good morning to you ladies and gentlemen and thank you for allowing me to speak to you today.

00:05 It is a great privilege to be on the stage to follow both Roger Tomlinson and Jack Dangermond...

00:11 ...who are both, in my view, gods of this world on this stuff.

00:16 In fact, I now feel very much like Brittany Spears' new boyfriend.

00:20 I know what's expected of me, but how will I make this interesting for you...

00:26 ...after having had those two gentlemen speak to you?

00:29 Could I ask the man running the lights please to drop the lights on me and this down.

00:35 I really would like to if possible share with you as I'm speaking 'cause I'm pretty boring.

00:41 I'd like to share with you some lovely templates of photos from my home country of New Zealand.

00:47 And to show you that I have a little bit of a background in this area, I want to tell you that I did do a degree...

00:54 ...a master's degree in operations research.

00:57 I wrote, assembled a code for mainframe computers, moved to Fortran, COBOL, and PL/1.

01:03 None of this will mean anything to the new generation of people who...

01:07 ...don't know what working with program cards are, but I still dabble in writing.

01:12 I'm a very sick person.

01:13 I write in Visual Basic and C++ from time to time just to keep my hand in.

01:17 And I think it's fair to say because I'm on record in New Zealand saying...

01:21 ...well in advance of a whole lot of the technologies coming.

01:23 I remember telling the cabinet many, many years ago that the Internet was going to change everything about our lives.

01:31 And the prime minister at the time used to make fun of me and said...

01:34 ..."You reckon this thing called the Internet when it comes really going to be that big?"

01:38 Well, I've got a lovely photo. Jack showed you a photo from the old days.

01:41 Can we drop these lights even more? I really want to get that as clear as I can up there.

01:45 That's a photo of me with the first IBM PC in New Zealand.

01:49 I was still playing rugby, and we were still winning in those days.

01:54 And I got that in September of 1981 and you know the IBM PC was only released in August of 1981...

02:02 ...so we've got the first one in New Zealand at Air New Zealand.

02:05 So I programmed that damned little thing with [Visual] Basic and, boy, was that hard going.

02:09 You don't know how lucky you are to have some of the sophisticated machines you've got today.

02:14 But the point I wanted to talk to you all today about was just how appalling one element of information has been for us all.

02:24 We know what a win means.

02:26 A win can be a date, and every one of you will know what the 27th of July is.

02:32 When it's put on a spreadsheet or it's put on a graph or whatever, you'll know that and you'll know what...

02:37 ...if we've got a graph of wheat that has been growing and you'll know how much.

02:41 If I said it was 3.75 tons, you know what that means.

02:45 And you'll even know its value if it was \$4,720 of value.

02:51 You'll even know where it might have been sourced from or how it was produced.

02:55 But the where.

02:57 If I was to tell you it came from Kaikoura or Ngaruawahia, you wouldn't have a clue.

03:03 Actually some people in New Zealand don't even know where that is.

03:05 But you wouldn't have a clue.

03:07 And from my perspective, the real big gains that we can make now are turning that into information...

03:13 ...that is visible and that human beings can see.

03:16 What I have is a vision in New Zealand already of being able to take maps of our cities or our towns or even our rural areas...

03:24 ...and overlay on them things like demand for services, layers and layers of things like the police information...

03:33 ...our hospital services information, social service delivery, then draw lassos around specific suburbs within that town...

03:41 ...find out where the shortfall is, look at that carefully...

03:45 ...and decide whereabouts we need to provide more product and more services.

03:51 And so today, ladies and gentlemen, my speech is called Geospatial - The Next Frontier.

03:56 Because I'm absolutely convinced, I really...I'm referred to back in New Zealand as an e-vangelist...

04:02 ...and I'm so pleased that this is a Sunday morning and I'm up here on the pulpit as an e-vangelist...

04:08 ...because I do feel evangelical about this whole GIS revolution.

04:14 It is the next frontier.

04:16 I still think we're standing on the beach at Kitty Hawk watching a flimsy piece of balsa wood and material get flying.

04:23 But in the future, I actually have views that in my mathematics background, not only will you do all the knowledge creation...

04:29 ...and presentation that Jack Dangermond referred to...

04:32 ...but stunning mathematical applications that will go on and do...

04:35 ...solution spaces and give you the most optimal allocation of where your next hospital service...

04:42 ...or next routing network or water systems should be.

04:45 So I think there's a great chance of taking it even, even further.

04:50 What I'd like to talk now is about a few of the things, the satellite systems of the world that are going to change things.

04:57 By 2015, 200 earth observation satellites will be up there.

05:02 Thirty will be above the horizon at any one time.

05:05 Organizations like Skyhook are now using over 200,000 Wi-Fi transmitters in the world...

05:12 ...to position yourself by just triangulating on what your Wi-Fi signal is.

05:17 And now there are some of the smartphone devices, I don't know whether you've seen it...

05:20 ...but an iPhone 4, it's now got embedded inertial devices in it.

05:25 And so, therefore, when you lose signal from a satellite, like while we're in this building, we have no satellite signal to us.

05:33 But because the iPhone 4 has inertial in it...

05:35 ...it will mean you can now move around in a shopping mall or in an underground car park...

05:41 ...and still keep your exact geographic location because the inertial will pick up once you've lost satellite contact.

05:48 So imagine what that does when you are trying to present features to, say, the customer as a retailer.

05:54 You'll be able to wander through the shopping malls and as your iPhone tells you you are now in front of JCPenney...

06:01 ...and whatever the sort of specials for the day will be able to be brought up onto the screen.

06:06 So just quite staggering stuff.

06:09 I think the other thing that Jack referred to was the crowd source data information.

06:14 And my secretary asked me the other day, you know it's all very well to talk about this crowd sourced information...

06:20 ...but how can we be sure that it's got value?

06:23 And I think the most interesting research I've seen on this came from Michael Goodchild at the University of California...

06:30 ...who actually found that the levels of uncertainty in data sourced from very large crowds was no greater or lesser level...

06:38 ...of error than the traditional forms of information.

06:42 And so in New Zealand now we're using stuff from the cell sites from the cars to come back to the transport operators...

06:52 ...to tell us where there is congestion on our motorways because the cell sites recognize how fast you're moving between them...

07:00 ...and when you're on a particular motorway slowing down, that crowd source data becomes absolutely vital.

07:09 So as minister for land information in New Zealand and as minister for statistics, I have got the religion.

07:16 I fervently believe the opportunities that geospatial will present us, I believe they're enormous.

07:22 If we capture them right, they will make huge, huge gains to the nation into the future.

07:28 We commissioned a report, which was published in August of last year, called Spatial Information in the...

07:33 ...New Zealand Economy - Realizing Productivity Gains, and this document was a very good basis for us to proceed.

07:43 It suggested that already we were reaping about \$1.2 billion of productivity benefits and that's just productivity benefits alone...

07:53 ...from our geospatial world and that in fact there were huge gains to be made if we got all of the government departments...

08:01 ...and as many private sector operators as we could to expose their data publicly in a geospatial way.

08:09 Now there are some fantastic examples in New Zealand already of this happening.

08:13 A company called Ravensdown Fertilizer that goes out with the trucks as you see up there and spreads fertilizer onto the farms...

08:21 ...is using GIS, and actually GPS, onboard the trucks to guarantee that they are not recovering the same paddocks...

08:28 ...second and third time and have made huge efficiency gains in the way that works.

08:34 Another good example would be our New Zealand dairying industry.

08:38 Look at that. Isn't that a beautiful shot? Cool, eh.

08:41 The New Zealand dairy industry which is our big main supplier of overseas revenue, now the whole milk tankers...

08:48 ...that collect the milk are all on GIS and GPS and are scheduled by computers as to when the vats will be full of milk...

08:56 ...on a farm and when to go onto particular roads and start picking up and also the technology for...

09:02 ...supplying and transporting that milk back across the world.

09:07 And, isn't that lovely? That's Milford Sound.

09:08 That's a beautiful lake in the bottom of the South Island.

09:12 And our tourism industry with its 100 percent pure initiative is now making custom maps for tourists.

09:18 Whenever you arrive in New Zealand, you can go to their Web site, tell it whereabouts in the country you wish to travel...

09:24 ...and then you can produce your own custom-based maps.

09:28 And the geospatial solutions are also used by the sector big time to realize the flow of tourists...

09:33 ...where they're coming in at one part of the country, where they're going to, and then where they're departing from.

09:39 So we're using it lots and lots and lots.

09:47 We're already, I think, leaders in some areas.

09:50 We have a system in New Zealand for both survey and land titles registration called Land Online.

09:58 And I would have to say that I think it's an absolute benchmark for the world and, in fact, the World Bank thinks so.

10:06 When they published their doing business report this year...

10:09 ...we were ranked number two in the world overall for the least regulation.

10:15 In a local newspaper survey of all government departments, Land Information, the department that I minister for...

10:21 ...gave us a number one ranking for ease of doing business, budget performance, and quality of service...

10:26 ...and there we can see registering properties in New Zealand alone.

10:29 That is the titles, the actual definitions of the land title, and how you can register them online...

10:35 ...we came in at number three in the world.

10:38 :It's pretty cool really.

10:40 But can I tell you that in my view there are huge, huge areas of our lives still requiring a lot, a lot of work in the GIS space.

10:48 In agriculture, we're looking to do things like yield monitoring, pest and disease management, mining and resources.

10:54 New Zealand has under its surface huge resources of mineral wealth but we need to get into some predictive exploration...

11:02 ...to make sure we don't go and damage highly important conservation of state land...

11:07 ...if we don't know exactly what value we're extracting from it.

11:11 Through to the construction and forestry and fisheries and property and service industries, transport and storage and utilities.

11:17 And I'm sorry that I'm just repeating a whole lot of what both Roger and Jack said.

11:21 But frankly, it's great to know that sitting at the sort of wrong side of world and down the bottom, we think the same as you do up here.

11:33 Okay.

11:34 I just wanted to show you some dolphins swimming just for the sake of it.

11:38 So there is a role in my view for the government to invest in the national data infrastructure, spatial data infrastructure.

11:45 As our economy becomes more knowledge driven and, believe me...

11:49 ...I actually want to take it the next step on from knowledge to wisdom...

11:52 ...because I think knowledge is great but getting to wisdom level is even better.

11:56 And if you want a really good definition of knowledge is knowing that tomato is a fruit and wisdom is not using it in a fruit salad.

12:07 So, as our economy becomes more knowledge driven...

12:11 ...infrastructure is underpinning that and the maintenance and use of that is critical.

12:16 So there's a real balance we're trying to get in New Zealand.

12:18 The government's got a role to provide what I think is sort of open platform...

12:23 ...exposing all of the datasets we've got so they can be publicly used.

12:27 But as Roger said, I'm from the right of politics and I really like the private sector to flourish...

12:33 ...and we want them to be able to participate really, really well if they can.

12:37 Boy, imagine to be able to drink all the wine from that.

12:40 So the knowledge infrastructure goes way beyond the infrastructure in the traditional sense of roads and buildings.

12:45 It's how we've always thought in New Zealand under the old industrial age mindset of roads and buildings.

12:52 But frankly now it's in my view getting to sort of create, share, and use knowledge.

12:57 And that is to me where we're going to be really cooking with gas when we can get that and get it working.

13:02 So as part of the government and as a minister of a number of portfolios, we're putting in place policies, standards...

13:09 ...regulatory and technology frameworks that will assist with sector capability building.

13:14 And believe me, that's very short on the ground at present.

13:18 It'll accelerate the adoption of this technology across the entire economy.

13:22 You are really, really shortsighted if you think this only applies to very, very few individual areas of the economy.

13:31 And we're trying to stimulate innovation by improving access to existing government-held data.

13:36 That's hugely important as far as I'm concerned.

13:38 The government holds a phenomenal repository of data but it's not yet been made available.

13:45 Now the investment in the digital infrastructure for spatial information is, in my view, a high-impact, cross-cutting intervention.

13:53 There's been quite a lot of those studies that I've talked about before showing that...

13:57 ...the productivity improvements were 5 to 1 and ranging up as far as 50 to 1.

14:03 And there were, as I said, pure productivity benefits. There were lots of other benefits you could quantify as well.

14:10 And the government, because we're focused on trying to grow our GDP and get us back to being a wealthy nation...

14:15 ...we think that the whole spatial data infrastructure is a priority for not just the land information portfolio but right across all portfolios.

14:26 We've got a New Zealand geospatial strategy.

14:29 It's focused on developing that whole national spatial data infrastructure.

14:34 And Lands officials are working with all departments across the state sector to make sure that we're focused on delivering those key goals...

14:41 ...governance, data, access, and interoperability that Jack Dangermond spoke so well about before I did.

14:48 We've also done something else which is a bit unusual.

14:50 I have written to all ministers including the prime minister and asked them to take control of every one of their departments...

14:57 ...and give them a good stern telling off if they don't understand.

15:02 It was interesting.

15:03 I had somebody from our corrections department.

15:05 That's the people who run the prisons, saying, Oh, that was a great presentation, but, you know, GIS doesn't mean much to us.

15:13 And I got so angry because I said if you realized just how much efficiency you could gain out of running...

15:18 ...the correction service with good quality GIS, you would be staggered.

15:25 That's a photo of the hole where we throw officials who don't, who don't sign up to GIS.

15:33 They go right down there. That's where they go.

15:36 There's a whole group of them over here on the side waiting to go next.

15:41 They've got it I think now.

15:43 And so I have to say, and I don't expect you to be able to even begin to read these...

15:47 ...but we've got a ministerial committee for data reuse and exposing it.

15:51 We're proof of concepting a Web site called data.gov.nz which is about making sure all of government data is made available.

16:00 Statistics Department, that is one of mine, is working with land information to remove barriers to reuse.

16:07 I won't bore you with actually trying to read that.

16:09 I'd rather show you a lovely photo of a mountain scene which will make you feel calm again.

16:14 And but we are doing some particularly staggering stuff simply because we truly believe the value of this stuff...

16:23 ...and the merits that are flowing to our economy from doing so.

16:27 And it is not just central government.

16:29 There are some really good examples of local government.

16:32 For example, the Northland Regional Council, which is a council for a big chunk of the top of the North Island...

16:39 ...has granted access under a creative commons license to approximately 90 percent of all the data they hold in their GIS database.

16:48 They've done overflyings with magnificent high-definition film and photos and then they've actually taken all of their services...

16:56 ...from water and wastewater and electricity cables and gas and made all of the data of that publicly available...

17:03 ...through a creative commons license so that a lot of work can be done on it.

17:08 It is, in my view, quite stunning.

17:13 The report I told you before also found one of the big barriers we have to this area is a lack of skills and knowledge...

17:20 ...relating to modern spatial information technology.

17:23 Just like there was a gap as new information technology systems...

17:27 ...through the IBM PC created a lack of quality people in the marketplace.

17:33 The GIS is actually showing up that we do not have enough well-trained people.

17:39 And so in New Zealand we've embarked on a number of projects to do so.

17:42 I want to congratulate Eagle Technology, a company that's here today, for having helped in terms of getting a learning portal...

17:50 ...to make GIS software widely accessible to all our schools and start creating a level of enthusiasm...

17:56 ...a level of excitement that will really get people going.

18:01 It creates a, it brings together educational institutions, private and government sector people...

18:07 ...and professional industry bodies to make things happen.

18:10 Industry and the government are really desperately trying to lift the capability across New Zealand.

18:16 And one other area where I think we're making a big change is we've got four of our major universities...

18:21 ...Auckland, Canterbury, Otago, and Victoria who are working on and actually have got developed a collaboratively...

18:28 ...a master's of GIS program which they aim to start taking students into at the beginning of next year.

18:35 It's a phenomenally exciting looking program which I think will really do some wonders to...

18:42 ...whenever you don't want to go kayaking that is, to do some studying.

18:46 Okay.

18:48 Now I want to just give a little bit of a compliment to one of our New Zealand government departments...

18:51 ...and that is the Ministry for the Environment who will be getting an award here at this conference on Wednesday I think it is.

18:58 They have developed a thing in New Zealand called the Land Use and Carbon Analysis System.

19:03 It's known as LUCAS.

19:05 It's a project of work to measure and monitor the carbon stocks of New Zealand's forests and soils.

19:12 It's reporting that's required under our obligations under the Kyoto Protocol...

19:16 ...and the United Nations' framework convention on climate change.

19:20 LUCAS will indeed be a phenomenally valuable tool for future international climate change negotiations.

19:26 We're struggling like every other country in the world to meet our obligations but not to impose huge costs onto our nation.

19:34 And so I think that's making a big difference.

19:37 So that's it for me in a summary.

19:38 Can I just say I believe spatial information contributes widely to productivity in our country already.

19:46 And we are looking to take that even further.

19:49 Spatial information and technology will play a major and a much greater role in the future...

19:55 ...and that is going to just ramp up a doubling of a doubling of a doubling.

19:58 Although Jack, there has to have an end to it, 'cause I understand if you fold an A4 sheet of paper over...

20:04 ...and doubling it 64 times, it reaches past the moon.

20:08 So you can't get more customers than that.

20:11 Spatial data infrastructure is a priority area and not just in the land information portfolio but right across a whole of government.

20:19 If you don't get a whole of government approach to this, you'll end up with little "Towers of Babel" that won't be able to...

20:25 ...talk to each other and therefore you won't be able to reap the benefits of that.

20:29 We've got some frameworks in place already.

20:32 The New Zealand geospatial strategy which is in place, and we're developing another one which is the...

20:37 ...New Zealand Goal framework about sharing and collective licensing of such.

20:44 So everyone in the geospatial community has a role to play.

20:48 We all have to do that. We need to keep working together.

20:51 Thank you very much for your attention.

20:53 It's hard to be a politician and come along and talk to people from the technology sector because...

20:58 ...most of you think that politicians are like diapers.

21:03 They should be changed regularly and for the same reason.

21:18 But I'm not going to finish yet. But wait.

21:20 Just like you get at JCPenney's, wait there's more.

21:23 I want to give you one little ad for New Zealand in 2011.

21:28 I'm wearing the badge because in New Zealand in 2011, Jack, it won't be Holland against

Spain.

21:33 The New Zealand rugby world cup will be hosted.

21:35 Thank you very much.

© Esri 2013 <http://www.esri.com>