

**THE GOVERNMENT OF THE FUTURE IS INTELLIGENT:
CITIZEN IN CONTROL, GOVERNMENT IN CONTROL**

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John Riddle ICA Chair. Hold on to your seats, we are going to talk about the future, and we have asked Marcel Bullinga to come and address this issue. This gentleman is from Holland and by his own declaration, he is self-educated and a pioneer in the Internet. In 1993 he saw the potential and he climbed on the train and he has been on it ever since. He is going to talk to us about emerging technology, about democracy, about people, about citizens and he also had a choice to make, a very difficult choice, before coming to this conference. He was booked to go to another conference. He had to choose between coming to ICA or a conference on getting rid of public waste. He chose this conference: we are delighted that he did.

I asked him what would he love to do? What would he dearly love to do? He said, I would love to address the United Nations, and I told him that there were twenty six countries here, in the room, and it was a darn good start. So without any further ado, get on with it.

Marcel Bullinga. (MUSIC & VOICE-OVER ABOUT MANY POSSIBLE FUTURES)

Thank you very much, I am glad to be here. My presentation will be about two things, about intelligent world and about intelligent government. Prepare and get ready!

**Intelligent World
*Techno Trends***

As an intelligent audience, you will probably know a lot about Techno Trends, yet I want to show you some bits & pieces of the Intelligent World, since it is fun to do so. Intelligent World is about getting chips in everything. In appliances, in machines, in products, well you name it. Gillette this year, had a multi-million dollar test with intelligent razors. Here the purpose was real-time supply chain management and theft reduction. For every chip you put into something there is a different business case, a different purpose, of course.

This is a totally different case; I do not know if you see what is going on here? It is about assembling Ikea furniture. I do not know if you have ever done that, but it is a complete disaster, I have done it once in my life and never ever any more! Well, that may be changing thanks to the Swiss Federal Institute of Technology, who are chipping the darn thing so that when I put the wrong wood to the wrong metal the

chips says “Oh heaven, you are doing it wrong, try the other one!” Here we talk about increased customer satisfaction. Another example is the intelligent washing machine, here you see a prototype, it’s a talking washing machine released this year. Frankly, a talking washing machine is a nonsense product. The point is, an intelligent machine is updateable from a distance so it can be repaired from a distance -- to some extent. That is the business case here.

I don’t know if you recognise this? It’s a tree! Wonderful, ain’t it. Yet, it is not *just* a tree. First of all it is a Dutch tree, a tree from a small Dutch village called Bloemendaal, meaning “flower village”. Secondly, it is an intelligent tree. The municipality put a chip in this tree and all other trees, so that maintenance people can read out the maintenance status of the tree with their organizer, standing in front of the tree. Businesscase here: that the tree may live longer happily ever after.

As you can see these are stupid cows – you can tell because of the paper ear mark. Different business case here: it’s a European Commission directive for protecting food safety and animal health. It’s about preventing the spread of all kinds of diseases.

This chip is going to be implemented in this woman’s eye. She is nearly blind and putting the chip in will increase her eyesight so we are talking about quality of life here.

This chip is going to be embedded into your skin. It contains the medical data of the patient so in an emergency situation reliable realtime information will be available at low costs of 300 dollars – if proper standards have been implemented.

Knowledge is like Oxygen

The other trend is that knowledge is going to behave like oxygen. It’s like the air we breathe in. We need it. We can’t be without it.

The computer as an appliance that can do everything, is getting less important. This afternoon we discussed about closing the digital divide – well, the best way of closing that gap is getting rid of computers. There is a trend towards it; we get more intuitive interfaces. You look at a photo from your beloved and whenever he or she wants to contact you, the photo starts to flash so you know that you have to do something. This item will flash when the stock rates go up. It was invented two years ago... Nowadays it’s more like the item will flash when your stock goes down.

This is a prototype invented by the German Fraunhofer Institute, a really fascinating institute, you should have a look there sometime. It’s about the woman of the future, well, hey, you see what is wrong with this woman. It is all that cable stuff on her! It doesn’t look good at all but then this is a 2 year old prototype and what do we have now? We have made progress and stuff is getting wireless and getting sexy – and being sexy is very important for interfaces to be accepted.

This is about a screen built into the table so that you can see drawings and other data in the table, and you can even move them around with your hand.

This is a Dutch prototype released this year of a so called Teleportation Device. You have realtime broadband audiovisual contact with another person and it is just like he or she is sitting right there. The implications for reducing physical mobility are enormous.

The Transparent World

Now to other trends. The Transparent (real-time) World is about sensors that measure basically everything that we want them to sensor, be it the quality of the air, the quality of the water, road movements, you just name it. It's about satellites tracking our movements. It's about video checking labour conditions in an American factory. It's about video cameras getting very tiny and extremely small for surveillance purposes. Talking about small and tiny -- do you have any idea who could have made these pictures? No? No idea whatsoever? Well you can find them on the Internet. On the website www.mobileasses.com. It's about your ordinary mobile phone that has turned into a camera, so we now have a new sport to take images of other people in the supermarket, preferably in embarrassing situations, and then show them on the Internet. It's also a form of transparency of course, but it is unwanted transparency.

Transparency is also about location-based services. Who is around the corner is the burning question -- is it my boss or is it my lover and do I want to see them or not...

Transparency is about this friendly bus driver, Patricia Davis, when you are waiting for her bus to come you can check her average speed, battery level, fuel efficiency and so on. Well basically fuel efficiency won't interest you much, it will be of more interest to you at what time she will arrive at your bus stop.

Transparency is also about realtime comparison of services and products, be it in a positive way or a negative way. If you live in Florida and you are looking for a doctor you probably wouldn't want to have this guy as a doctor, since he has already paid a total of 251,000 dollars for fines. You will probably look for another doctor. If you want to move, you probably wouldn't want to have David M Smith as a neighbour, since he is a registered sex offender. The sordid details are published in Arizona.

Transparency is about satellite tags who track criminals around the clock, but also about preventing children from getting lost or abducted with a chip embedded in their clothing. When the child is in distress or just lost her way, she presses a button and sends out a signal to her parents who can then track and trace her.

I was really lying to you when I talked about "transparent world" as such. We don't want a fully transparent world! Technology as such heads for total transparency and it is our duty to make society *conditionally transparent*.

Intelligent Government ***Socio Trends***

So far I have shown you some Techno Trends but what really matters of course are the social trends. What is government about? It is about the origin of things....
(MUSIC STARTS. VOICE OVER ABOUT SAFETY, SHELTER, HEALTH AND HAPPINESS)

Successful technology always relates somehow to human domains and human needs. Perhaps it's an open door to you but I have a lot of audiences to whom it is not an open door at all. Technology is basically not the issue. Although it is fascinating and very nice to show I must say that only a combination of smart control and smart technology will do the job, will solve major current problems. I stress the word "*smart* technology", since lots of the technology that we have now is garbage in terms of exchangeability and usefulness.

Yet, it is not about technology, it's about human needs, or, in Government terms: about better care, less waiting, better rules, better public services, less mobility, less criminality. I think there is quite a difference between all these twenty-five countries and cultures present here. But I guess this sort of sums up what we probably *all* want to achieve. It is all about innovation and about human scale.

To my surprise I found the solution to this problem today in my hotel room on the hotel phone. There is a button over here, can you see it? "one touch service" and another one that says "100% guest satisfaction guaranteed". Wow! Basically that is why ICA invited me in the first place: for all my wonderful and yet simple solutions to world problems. It's absolutely for free and open source: just take this button and put it on to all your Government computers. The phone is not intelligent by the way, it didn't say, 'Stop! I am being abducted' when I took it from my hotel room.

For that button to work, we need a smart knowledge infrastructure, if we ever want to achieve a paperless world with less mistakes, less flaws, real time ID checks. On this slide you see parts of this smart knowledge infrastructure -- basically a shopping basket; you pick out the things that you like. It's about web-services, not web sites but web services, re-using data, ask once use many; well, all the stuff that you know, I am not going to go any deeper into it. This is the boring part of my presentation, I don't want you to look too long at it because you are tired, you want to go to dinner and I still want to say something more.

There are two things that may be interesting for the future: intelligent rules and laws, and the self-service smartcard.

Before I do that some basics. I don't know if you have ever heard of Tim Berners-Lee, I guess so, the inventor of the World Wide Web. A highly valued man. He has divided the current web into three parts; we have the Knowledge Web with "current contents" as we know it like HTML. Trust Web means adding trust to this current contents; then we talk of smart cards, public key cryptography etc. The third part is Semantic Web: machines understanding data. No longer we as people have to understand data, but machines have to understand data and their context.

I think Semantic Web is going to be realised in the next 10 or 20 years. Basically that is what you are creating right now. I want to go one step further though. Suppose we succeed in embedding our moral values, our laws and rules into appliances, into cars, into doors? Then we might get something that I call **Control Web or Protection Web**. I use both words because technology provides for both parts and it's up to you to choose what part you want.

When I talk about “intelligent government” there are two lines. On the one hand technology provides tools for the citizen to be in control. On the other hand it provides Government and society at large with tools for a safer society -- tools for Government in control.

Government in Control

First of all I want to talk about *automatic law enforcement*. It's about rules and laws being embedded in the physical world. Making rules and maintaining them is an important Government task. Right now they are all written down and implemented on paper. I think in future all rules and laws will be moulded into expert systems and into chips. The chips will be moulded into cars, doors and buildings, that is, our physical environment.

If I had to give an example it would look like this. This elevator stops working if the Government licence that is embedded in the elevator has expired. If it has not expired and if the elevator meets all Government demands, then OK, it just keeps working. This is a cigarette machine. You can only purchase cigarettes if you are of legal age. For a machine, there is no way to see that fact except if you put the fact onto a smart card that enters the machine. The smart card shows that you are of legal age and then you will get what you want. In this case cigarettes. If not of legal age you do not get any illegal product or service.

The most interesting machine that I can think of in terms of automatic law enforcement is the **intelligent car**, which by the way doesn't exist yet. When you start it, the intelligent car is like a rocket launch. It performs a lot of network checks. Are you the rightful owner? If not, then the car doesn't start. Have you paid your road tax? If not, then the car doesn't start. Are you in some kind of police record? If yes, then the car doesn't start. Are the safety belts on? If not, then the car doesn't start. When the car and you have met all these demands, all these network checks in milliseconds, then the car *does* start, which is a nice thing for the car to do. Of course, the car is self-searching and self-steering and it is impossible to exceed speed limit. That is not fiction, it has been tested already with satellite-steered cars. When you are driving, the motor continuously checks if it still meets environmental laws. If not – well, I don't exactly know what happens then, but you can think of some interesting punishment! Of course it is impossible to drive into a silence area. Stupid cars still drive into silence areas because there is no sanction. An intelligent car says ‘Oooh sorry, I'm not allowed here’. Of course, you pay road taxes by the mile.

Your locational privacy is being guaranteed, by the way. One of the fun things in digital technology is that it is able to cloak information. To cloak personal information and get only aggregated statistical information. So, I mean, yes, you **are** monitored. But you still have your privacy, because no one knows it's you who is driving there, unless of course you make an accident happen and you drive on without taking care of the victim – hit & run. Then your identity will be released in real time. So, if you stick to the rules your privacy is guaranteed. If you don't, if you commit criminal acts, you lose it. In other words, privacy must be **earned**.

In future, government will not supply paper laws anymore but will supply open standards software and send this software, in real time, to all these intelligent, cars,

buildings and machines. It can be done because these machines will be updatable. Intelligent appliances, machines and products mean that these appliances become sort of self-aware. They have an ability to take some sort of decision to some extent of course, and they are self-enforcing. Of course, not *all* laws can be translated into automatic law enforcement. It is about environmental laws, traffic laws, safety laws, bookkeeping rules, social security that involves some kind of identity.

In future, when asking reports and statistics from companies, government will use existing company's software to extract and upload the reports automatically and on the other hand download the licences in realtime.

In the same line of thinking, we could have automatic taxing. I don't know if you have heard about it, but the European Central Bank is trying to create intelligent money. Well, it is not *that* intelligent because they try to put a chip into regular paper money. What I don't understand is why they don't get rid of all the paper and just stick to the chip! If the value of these digits is guaranteed, and the context and the ownership of this data is guaranteed and somehow packaged in the same data, then we could get something like – an intelligent beer tap... Any idea what an intelligent beer tap does? Use your imagination! I will tell you. It's about tapping beer, I recommend Belgian beer, but now there is a link between the tap and the paying machine. So there is no way of making fraught statements about how many beers you have tapped this year... This is not a prototype; it's a existing commercial product. If we can make a connection from the beer tap to the paying machine, we can also make a link to the tax service department and transfer the VAT in real-time. We are using our mobile already for many more purposes than just phoning. We pay by mobile the waiters' bill, the parking ticket, train ticket, voting machine, all existing experiments. What we could get here is tax paying in real-time and getting back bonus points for whatever reasons government may think worthwhile.

The last part of this Government in Control thing is that I guess we might go back to **medieval cities**. It's about borders. Do you know anything about these beautiful medieval cities? I just love to read about them in historic novels. They were the centres of creativity and there were lots of people who were trading and adding value to the nation. That is, we had not really nations at that time. It was more like cities gathering together with other cities and sharing power. And they guarded the city very well. There were walls and gates. At the gates you could come in, but you were checked and if you didn't fit in the town for some reason, you just got kicked out.

We left all this behind us, we created nations and in the last century we opened up our borders. I think we will see a revival, because of illegal immigration, because of real-time spread of diseases; specialists are saying that we will encounter things much worse than SARS. I guess we will have to go back to the old "city scale of things". I guess we will have national borders replaced by physical city borders and by virtual administrative borders. You can see it in Rome and London and Singapore now already. What is Rome famous for, besides being a wonderful city? They have this whole video tracking system installed for the purpose of reducing congestion. People in the police force argue that now that we have this system, we should not only use it for tracking cars in order to get payment, but also for tracking people: checking who wants to get in and prevent them from doing that if they are illegal or criminal.

Citizen in Control

The other side is Citizen in Control; technology cares for both sides... It's a really weird thing. I think that citizen in control thing will happen along a few lines. First of all we have this **self-service dashboard**. Here you have this person with screen glasses on. Basically what he has is a dashboard of his profession, everything that he needs to do in his profession every day. On the screen glasses, he does not only see the physical machinery over here, but he also sees the virtual content. For example, he also knows how to repair it and with what kind of equipment.

Basically, dashboards are being created for every day's life and every profession. The hardware, an organiser or a mobile phone, is not just a gadget. An organiser or phone, if properly organised with realtime knowledge, is the centre of the supply chain and the life cycle of any profession, be it the fire inspector or the sports school. It is not only about professional applications, it is also about our own real life. For example when we are in sports school, you also have a realtime dashboard in front of your nose. This picture does not show a mobile phone, it is a sport machine! I use these intelligent machines often and they track my sports records. They track what I do and they encourage me to do it better than yesterday and when I move to another sports school, my records move along with me. My sports behaviour has changed by the existence of realtime sports information.

If we think any further, we will be getting many transactional dashboards, with which we as citizens, customers, employees, civil servants, will do business with the digital heart of company and government. Of course, this is a long term trend already, but somehow I think it is now coming into acceleration, where we need no staff or personnel from the government organisation or the company any more for initiating or ending any kind of service.

If you think along that line, then the client or the citizen himself becomes the real centre of things. I mean, he will be able to maintain his profile in all business and government databases and he will be able to trace the use of his data anywhere in the world. Albeit in the physical environment or be it in a virtual environment, he can control the use of his data anytime and anyhow by the embedded rules of his personal terms of use. Don't get me wrong, this doesn't exist yet, but when I talk to technical people they say, well it is technologically possible to have "smart knowledge". Smart knowledge is knowledge that knows his owner and his or her wishes. Of course, we will also need a validated identity attached to this self-service dashboard. So I guess we will head towards a **self-service card**.

If you look at smart cards right now you can see that usually they are local and mono-functional. It's incredible how many passes we have already. A shopping pass, housing pass, a city pass, an environmental pass; a defence pass, a bicycle pass, an addict pass, even a disco pass! Because they are so local, we don't feel smart cards are really important -- they only cover a very tiny small part of our daily life. But, as we have seen before in today's impressive presentations of Estonia and Canada, future passes will be national or international and will definitely have a big impact on daily life. In 2006 the Dutch will have a public transport pass; in 2005 Malaysia will have a smart card citizen ID; etc.etc.etc. Basically, when it is too late, citizens will start to worry and think, oh Heavens, are my needs being met on these future cards?

Because 50 or 100 passes are no longer manageable for the individual citizen, we will see a trend of reduction of all these different passes. That will take 10 or even 20 years. My guess is that in the end, all local and national mono-functional passes maybe reduced into one multifunctional self-service card in three variations: 1 for citizens, 1 for civil servants and 1 for company staff -- because these three categories have different roles and responsibilities. Hopefully after 20 years we will look back to the implementation and introduction of all these passes and we as citizens will say, "Oh Heavens, yes, our needs *have* been met". Our needs for privacy, for partial identities, for getting only that small piece of relevant information that the other party needs. Again, the real power of digital technology is to cloak information and to make that information valid and trusted. We have to make sure that on future smart cards now being issued we will have these "partial identities". Only then you will be able to submit your zipcode, or the mere fact that you are male or female, or your income group, or whatever partial piece of information... Of course, security will be a very, very big issue.

Rightly, we have the European Commission's Directive on Biometrics in passports; fingerprints or eye scans. In 10 or 15 years or so, we will have not one biometrical solution but multi-biometrical solutions in one pass to make sure that the transactions we make are safe and valid.

This ugly picture is an advertisement for Renault cars and they advertise this because they think people will buy a Renault earlier when they know they can start the car with our hands, with our bodies. So our body will be functioning as a key. This may well be the next national passport-ID. National ID's may indeed take stranger forms then you can now imagine! I didn't see the "body part" in the previous presentations on smart cards and PKI, so I would suggest the makers to think about it!

I don't know if you have seen the movie Lord of the Rings. It's wonderful. The movie is about a ring. It's a ring of disaster, it combines multiple other rings of power, it can do good things and it can also do bad things. In the movie, the ring is meant for the big leader. What I think is that we can use the same concept, this one ring that binds all of our activities, to help strengthen **citizen control**. Through the self-service dashboard that I previously mentioned, we can have **self-service privacy** or self-control privacy, where you decide in which databases you figure and under what conditions other may use your data. Only to a certain extent of course, only in the case of voluntarily relationships. If I am a criminal and I want to get myself out of the police records, well, that is not going to happen. Yet, there are many many voluntary relationships between citizen and government, and citizen and companies who may be subject to this kind of citizen or client control.

Probably smart cards are going to be inserted into our mobiles and then this mobile may have a function that is far beyond what we have now. It may function as a personal communication control centre, as an everyday's decision instrument. It is about location based services, it is about paying bills and getting bonus points, it is about an identity appliance to prove your (partial) identity.

We as citizens can do interesting things with this combination of smart card, self-service dashboard and **self-service mobile**. Basically, we can perform all kinds of everyday checks. So if you want to have a taxi, you can check if the taxi driver has a government licence that has not expired. You can also check if he has cheated with the meter, because these meters can be validated as well. And when driving, you can also check by GPS if he does take the shortest route. You can also check the air in real-time if it polluted or not, and then take some action according to it. It's all about transparent information. With transparent information, you can make new choices. It is about checking buildings. If you enter a pub you check in real-time whether the government's licence for fire and safety are met and have not expired. If yes, you enter, if no, well then you have a new choice: not to enter (or call the municipality). You can also check identity: does this doctor really have all his or her diplomas, or is he a fraud. Basically, we can check anything we want in the future.

Summary: the 3 human faces of future government

I've shown you a few seeds of the future. I have not shown you *The Future*, because *the future* does not exist. I talked about technology making possible two different things: citizen in control and government in control. What you want to choose completely depends on your local norms and values, how your culture is built, what you think is important in life. Whether citizen control will win or government control will win, is up to you...

I want to end with three faces of government. Three human faces, since I have talked so far about techno-trends, about organisation and about innovation. But in the end, it all boils down to the humans using all that technology.

Here is my first face of future government. It's a soldier. There is a Pentagon programme to create by 2008 a completely independently operating soldier who knows in real time who is friend or foe and who knows in real-time how to cooperate with the friends. The real-time aspect of this innovation will slowly be adopted by civil society. Adaptation and smart copying is the essence of innovation.

Here is my second face of future government: a picture of one of the many future houses of the telco companies worldwide. I believe this is the Cisco one. What is so particular about this house? Well, that is just a house. No technology visible! It is about living and being comfortable and having a nice time and relaxing and resting. The technology is embedded. That's the best technology there is: invisible technology.

And here you have my third face of future government. It's Mick! Mick is a six year old, he is the loveliest boy in the world, and when he has grown up, he is going to profit from the future government that YOU are creating right now. Thank you very much. (MUSIC)

John Riddle, ICA Chair. Wow! We asked for a future check, we got a future check. Marcel, what is particularly useful is the way you divided your presentation, and the examples you used. The fact that you want to see both Government in Control, and Citizen in Control. Under the Government in Control, there were consequences that

were both positive, and some of them were a bit worrisome. On the Citizen in Control, the fact that you made reference to a 'digital heart' to a group of public servants was so important, the very fact that we have a heart, we as public servants, digital or otherwise. Last year, people asked for a future check, people asked for a little bit more on trends. We hope that with some of these fascinating examples and this little expose, these provocations, that need has been met. I will ask you to join me in thanking Marcel Bullinga.