

Resilience as an imperative in Public Transport: What role for Transport Authorities?

[0'00" – Sabine AVRIL] I'm sure you had a very nice sleep after an excellent dinner. Thanks again to our host. Really, it was a nice place, a very nice food and it was really friendly and interesting. Today we have our workshop session and we will start with the first round table. The subject is, more or less, for us, a new one, something a little more specific and... quite new.

The subject is: resilience. We'll turn to Ruud, from Stadsregio Amsterdam. He's the moderator of the round table. He will call the speakers and make the introduction to the subjects. So I wish you a very fruitful workshop.

1) Introduction – Ruud VAN DER PLOEG of Stadsregio Amsterdam – Moderator

[0'54" – Ruud VAN DER PLOEG] Thank you very much, Sabine. Good morning, Ladies and Gentlemen. I hope you had a good night's rest, after a very enjoyable first day and splendid evening yesterday. Assuming last night's dinner and drinks have not kept you out of a good night's rest, we could wonder: What events could keep you of your sleep, as a responsible officer in urban transport?

This morning we will enter into the way transport authorities and operators should act on sudden impacts of events taking place affecting the running of the urban transport system. It could be anything. It could be power failure. It could be shutdown of your digital data system or any hazard, a strike of tube workers in the maintenance... It could even be lost luggage on an unsuspected place like a platform of the tube. There are many things, even – not to mention worst things – like terrorist attacks you can't foresee...

[2'00" – RvdP] Our keynote speakers will reflect each from a very different angle on the concept of resilience. What is it? What is it, in fact? What impact could a disturbance have on the continuity of your transport system? Where does your responsibility as a transport authority come into play? And what coordination efforts could be an imperative to control the impact of any event that threatens the running of the system? And how could a transport company fit into a coordination effort to handle incidents? How would you take up resilience into your management strategies, for example? Well, there are many questions that need to be addressed.

[(2) 2'47" – RvdP] And this morning we will listen to three distinguished speakers. They will shed some light on this wide-ranged subject. The first speaker is Dr Jan Willem PROPER. Jan Willem PROPER is a lecturer at the Academy for Urban Planning, Logistics and Mobility in the Netherlands, in the city of Breda. He will present to you, from a primarily scientific point of view, what resilience stands for and why awareness of resilience is essential for business continuity in urban transport organisations. And you will learn why it is necessary to develop a number of capabilities that could help you to identify and master vulnerabilities that make an organization susceptible to disruptions. He will also argue why a structural approach on resilience is quite necessary to be adaptive, to counteract vulnerabilities and to overcome them. He will explain how transport organizations can create a level of awareness on

resilience and create a framework encompassing all processes, relationships and resources that offer capabilities to overcome such vulnerabilities... So you will strike on the *essence* of vulnerability, you could say, on the short and long term... for survival of your organization.

[4'00" – RvdP] And then our second speaker is from Transport for London, Mr Nigel FURLONG. Nigel is Head of Resilience Planning. And they're all in the back, there, very modest people. But I will come over when it's their turn. And he will address the challenges that the Mayor of London has – or will have – to face to prepare for adequate transport for visitors, participants and other people surrounding the Olympics in London next July and in August. Whereas capacity already now is lacking sometimes in overcrowded hubs in the tube, in London, during peak hours, it makes it even more necessary for TfL to prepare for any conceivable event or incident that could threaten public safety during the games. It is a formidable wide spanned coordination effort on Olympic Resilience Planning, which of course also touches upon the London public transport system.

[4'57" – RvdP] And our third but not least speaker is Jean-Christophe MONNET. Jean-Christophe is the manager of customer and institutional relations at Stif. Am I correct? And he will take a different angle – *quite* a different angle, we could say – on this topic by linking the role of the transport authority on adapting for resilience to the institutional setting in the Region of Ile-de-France. In 2010, a project at a mind-blowing scale of investment was launched aiming to plan and develop a totally new major transport infrastructure, comprising a network of around 130 km of new metro, linking airports – including Paris Charles de Gaulle, Orly and Le Bourget – with one another, via the business area of La Defense. It creates it's own challenges. And if you wonder where resilience comes into play, Jean-Christophe will take you through a captivating process where the roles of state and region seem to coincide.

[6'00" – RvdP] And finally we will have some time for questions, to the panellists, of course. They have to decide if the question can be put just *after* their introduction or, maybe, at the end. And, finally, we will bring you some positions and views and invite you to a debate.

Maybe it's first best to give the word to the academic amongst us, Mr PROPER, for his introduction on imperative resilience as an imperative for public transport. Jan Willem [...]

2) Presentation by Dr Jan Willem PROPER of Breda University of Applied Sciences

[6'43" – Jan Willem PROPER] So, Ladies and Gentlemen, there is always a problem if you are introduced as *academic*. Because then it might be then that people expect that you are going to be very... to tell very difficult stories. I am trying not to do that. We thank you very much for the introduction. It is a pleasure to be with this organisation. It was actually rather new to me. So I googled a little bit what you are doing. It is very interesting. And I hope, with my introduction, that I can support to some way in the work you are doing.

[7'15" – JWP, slide 1] The title is called "Resilience as an Imperative". Imperative means actually – it is a pretty strong word... So I'm trying to prove to you that it is really important. And public transport, I mentioned, and I actually have... if I talk about transport I talk about as well the public transport operator as the public transport authority.

[7'40" – JWP, slide 2] If I talk about resilience, people very often have these pictures or these activities in their mind. 9/11 was a disaster from many perspectives. And one is... And that is not only... I'd say part of the disaster reflects to public transport that came to a complete halt in New York at that time. The second word I cannot pronounce [*Eyjafjallajökull*], but it is about the island volcano. I don't know if anybody is able to pronounce that word, it is a very difficult word. But it's not the volcano itself. It also brought the... many airports in the Northern part of Europe to a halt and had big effects, large effects on transport, public transport in the surrounding areas. And the last one is about Fukushima which almost came to consideration that in Tokyo – and let's not forget Tokyo is the largest city in the world, with something like almost 40 million people – that's larger than Belgium and Netherlands together... They had a discussion in the board if they should close down the Tokyo underground. So imagine that suddenly 40 million people are out of that system!

[9'17" – JWP, slide 3] Now, getting a little closer to what you find in the newspapers, we have of course the situation in Europe with Portugal... and Greece. And, suddenly, there are situations with repeated strikes, there are situations where companies need to discuss mergers or that the whole operation will go in a kind of subcontracting. And if we go closer to where we are hosted today – and I just googled this from a couple of years ago... But it seems to be an issue in Prague, which suddenly gave rise to maybe a troubled financial situation and, as a result, strikes. So, these are things that directly go to public transport.

[10'12" – JWP, slide 4] Now, I actually could... I could *not* discuss this sheet, because this is a little bit a kind of open door to you. But what I believe in general, in public transport: we are very modest. We are *too* modest. We talk about public transport as an activity, but it has a very *wide* impact. In Europe, 60% of the people are living in cities. And that can be a working city, as we all commute to our work, it can be a leisure city, or a sports city – and I'm not going to talk to much about the Olympic Games, but that's an example – or it can be a cultural city... So we are supporting that kind of cities. We are supporting sustainable flows and networks. We are supporting globalization – maybe not in the urban transport itself, but in transport in general. We support social relationships. And you can go on and on...

And we'd like to do that more and more on a customer-focused basis. And what you actually expect then is that we talk about safe and secure transport, or safe and secure *public* transport. And it also means there is a disturbance, as I have shown you in the previous 2 slides, is that it doesn't only affect the users. So if there is no public transport, people cannot go to the work. And if they cannot go to the work, the employers have a problem. So sometimes... We have the port of Rotterdam. If there is a strike related to that port, it's not only in public transport, it is affecting the employers. So it is a very wide impact.

[11'55" – JWP, slide 5] My story will actually have three kinds of focuses. One is that I talk about more or less public transport organizations, so not the PTA,¹ but the PTO². And I see them as normal businesses. They are open systems. And they have to make decisions with external and internal issues. The scope of my research – I did a PhD on this the last years – is that I talk about public transport more or less in the European context – so for our Canadian friends, maybe a different story. And it's about land-based transport organizations

¹ Public Transport Authority

² Public Transport Operator

in the, let's say, urban environment, the agglomeration level. And I will come to point number 3, that I believe there needs to be a systematic organizational approach to resilience.

[12'52" – JWP, slide 6] Now, public transport – transport in general – is big business. And, of course, you can look at that from the perspective of the revenues and employees. I will take you a little bit in a different angle, and that has to do with the focal... focus and the goal. Many of the year reports, if you analyse the year reports, the goal is a kind of operational excellence. Now let's keep that in mind for a second. The second one is that the focus is, you see there, "IFRS". I'll come back to that, but the focus is actually that all the transport organisations, public transport organisations, **are following the rules of international financial reporting system. And that's interesting.**

[13'44" – JWP, slide 7] Now, *resilience*. I've used the word a couple of times. Resilience is actually shown in this picture. It is the capacity of an organization to survive, adapt and grow in face of turbulent change. So we talk about *turbulent change*. Is it something completely new or strange? No. It actually should be a common part of social business of corporate governance. So in that way, all companies more or less focus on that, so it should be part of that area. What makes it *more* complicated, actually, in this time than probably 15 or 20 years ago, is that we have different organisations. In many European countries, the infrastructure is not in the same hands as the transport operator. So if there is a disturbance in the infrastructure, it is related to a different organisation. We had in the Netherlands a problem with the Dutch railways and the Dutch infrastructure maintenance group, and they were actually shouting more or less to each other, who was doing things wrong. So we have an interdependency between organizations.

[14'50" – JWP] To give you a couple of examples of turbulent change – and this list is just a small example:

- I mentioned already the nature related ones
- But also market situations can change. So we have mergers, like Veolia and Transdev, which have big impacts on the number of public transport organisations in the Netherlands. We have the link between Deutsche Bahn and Arriva, which is very interesting, because I think it's... I think it was the *most* interesting combination, because, I would actually say, DB, Deutsch Bahn, is a very good organised, strict organised organisation, and Arriva is an organisation that is very well in being creative. So we have a creative organisation merging with a very solid organisation.
- Geopolitical... If you think about what's happening in Egypt, in the Bahrain and Damascus, we all discuss the political issues. But just think about the public transport in those cities. What is happening to public transport in those cities?
- If you can tell me what's the oil price at the end of the year, please tell me. Hmm? It goes up, it goes down... It has big effects on the cost situation.
- We have, of course, deliberate attacks, as the London, 2005, or the Minsk, 2011.
- And, of course, we have something, which is new and interesting: we have IT problems. So a hacker was able to close down public transport in Codz in 2008. And it's very easy to completely close down public transport, I have heard from IT guys. It

is an easy target. You can close down public transport, if you have a hacker around you. So that is really dangerous.

[16'43" – JWP, slide 8] Now, what I did is I first started to look at public transport organizations. And I meant already the **IFRS standards**, so there are international accounting standards. And most of the public transport organisations are aligned to those standards. And those standards can also be found, in a way, in the Directive of the European Union and, if you are more in the American area, in the Sarbanes-Oxley Act. And they tell you that if you are a public or a private company, but certainly if you are a private company, that you *need* to report on potential disruptions. Now, reading many of the year reports, I was **actually surprised that many public transport organisations are not doing it** – or have no clue what's happening. So, from a legal perspective, I'm not a legal guy, but from a legal perspective, it's interesting that if there are directives and if there are rules, that we are wondering whether why are they not really applied.

[17'56" – JWP] I did some research in the Dutch and Belgian public transport organisations, as well in the transport organisations in the logistics area. And what I found is that there is hardly a specific reference to the concept of resilience. The... There is a kind of acknowledgement of possible events and disturbances, but it seems to me that there is no real structure behind that. The accountability is very diffuse. I didn't find anything about comprehensive research.

[18'29" – JWP, slide 9] So that came to the conclusion: there is no current framework and there are no... set of definitions. And that brought me to my objective of my research. It's that, well, let's *design* a framework to embed resilience in public transport organisations.

[18'44" – JWP, slide 10] And I will go with you about in a four step through that story. And the step one is actually giving some information about the background: "How do we start?" The second is: I will show you briefly how I came to a structure, a model. In that model, there are a couple of elements that need to be discussed a little bit more in depth: that's in the third objective. And in the fourth objective, it is that we have to see that public transport companies are able to *work* with this. So my whole research was actually, in a way academic, but in a way, every step I did, I went to public transport organisations and to public transport authorities and said: "Do you understand what I'm doing here? Is this in a way something that reflects to your work?" Because, as an academic, you can build crazy wonderful things completely without thinking about reality of daily business. And, actually, my background is more in the business side.

[19'46" – JWP, slide 11] So, going to step 1, I already introduced to you that, if you look at the strategy statements, that there is a very low acknowledgement of the property of resilience. Very, very low. But I also found out that many public transport organisations – I'm not quite sure if the same is accounting for public transport authorities – have very much... **difficulties to understand their environment**. There is no... It looks like there is no structured approach to that.

[20'19" – JWP, slide 12] What I used is the QUESTA scenario project, which is a European project, which helps actually public transport organisations, as well as public transport authorities, to structure their environment. What you see here is actually a model – and I brought a little bit to the public transports organisations... [*Now, let's see if this works...*] So in this... [*Let me see... If you are resilient, you always have the back up, you know.*]

But that's too far away.] If you see in the middle of that figure, you see “Transport supply”. So I distinguish the world of public transport in three markets:

- It's the travel market: “Why are we going from A to B?”
- If we know that, there's the transport market.
- And if we know that, there's the infrastructure or traffic market.

It doesn't matter where you start.

- If you look in the middle of those three markets, the low and then the under part, we have “Public transport”. And I think what organisations should do is analyse and define *transport supply* conditions and identify events that might occur. That's step one.
- If you go in the middle, in the transport market as a whole, you could analyse and define *transport market* conditions and identify events that might occur in that market.
- If you take the whole picture, so the three markets, you analyse and define system conditions – I call it a system – and identify events that might occur.
- And the fourth one is: you can use the basic standard strategy formula of deeper structure, you analyse and define conditions and identify events that might occur in the *wider* environment.

So what I'm trying to say with this picture, is: You need to start with a structured analysis of your environment.

[22'30" – JWP, slide 13] So that's, of the two pictures, the left one. I'm going now a couple of steps, a little bit quick, just to give you an overview. But I think, if you want to start with the contextual resilience – which actually means: “Do you understand what we're talking about?” – that you need to understand the role of public transport in society. So that goes back to my slide about: “Why the hell are we in business?” We are not in business to transport. We are in business for much higher goals, like the working city, the leisure city, social and cultural relations... We need to understand our environment, so we need to have a clear environmental focus. We need to have clear and consistent statements, so what do we want to achieve? And, next to that, we need to have clear responsibilities and reliable information.

So my first question, when I came to a public transport organisation, is: “I would like to speak to the head of the risk management or the head of resilience.” And it took me very, very long time to find that person. So who is responsible, if there is a big disruption? So just going back to the big examples. Suppose you have a 9/11 situation in your town. Who is number one responsible? And don't tell me it's the CEO. Of course, the CEO is always responsible in the end, but I mean that is a different situation. So it means that I think there is some work to be done here in understanding. And I think there is also an activity relevant to the PTAs to understand, if something happens, *who is responsible?*

[24'10" – JWP, slide 14] So, having said this as step 1, we move to step two. And that is: “OK, let's create a structure.” And of course, I mean, you don't have to start from scratch. So there is quite a lot of information in the risk literature. There are, already, resilience approaches. So I try to work on them and then come to a kind of model.

[24'34" – JWP, slide 15] Now, this is a lot of text. We are not going through all of them. Just, I want to understand... for you to understand, that if you start building a structure, you need to have a kind of guiding principles. So, going over an extensive literature search, you need to have a disciplined base, which means a step-by-step approach. It needs to be model-based, which means not only on quantitative information, it's also on qualitative information. It's not only about events inside the company. It's also about outside the company. So a lot of disruptions are caused by internal situations.

It needs to be proactive – this is very important. It needs to be objective and competence based. And it's a continuous process based situation. It's a little bit like quality management. You can *start* with quality management, only once in your life. You can *start* with resilience management, only once in your life. And then it's the plan – do – check – act – plan – do – check – act – plan – do – check – act... Then it's a kind of system that needs to... to roll on.

[25'44" – JWP, slide 16] Now, if you think about risk, there are any definitions about risk. So it can be an unwanted event, like a strike. Or it can be probability of that: How often this can happen? What I think is also important is that we are looking sometimes to events in organisations, in which we have things that happen – but how do we combine all these things for the whole organisation? So then you don't look at the event level, but you look more at an organisational level. And sometimes you want to know what's the cause of the unwanted event.

[26'22" – JWP, slide 17] Traditionally, you see a model that looks like this, where we have the likelihood of an event and the impact, and you can qualify your potential risks. But there are some boundaries to that:

- First, we have unknown probabilities. So, could you tell me when the next Fukushima will hit? We have no data or statistics on that.
- There are unforeseen dangers. We never heard about SARS [severe acute respiratory syndrome] before SARS came into our lives.
- We have unknown reactions – which is very important. Because a reaction that goes in the wrong direction can actually accelerate the situation you're in.
- We have an unknown total overview in the organization,
- And there are unintended consequences.

[27'10" – JWP, slide 18] Now, this picture I use in the rest of my presentation not as *risk*, but I use it as the word *disruption*. And it probably comes in with the story of Nigel a little bit later. It's that if you have a disruption, you have a triggering event, whatever it is, and you have to find out what is the situation. That is that previous slide.

But what also is relevant is how susceptible are you to that disruption? So with the Olympic Games coming in London, London is suddenly more sensible for disruptions. In the winter, you are more sensible for a typical kind of disruptions, as in the summer. So, disturbance by snow, I wouldn't really care about that, today, in Prague. Hmm? So risk is also... has to do with time and place.

[28'02" – JWP, slide 19] Now, using this, I look at the engineering. I look at the resilience approaches that you can find in engineering, in organisational literature, in logistics... And, again, it's all about those changes that come abruptly, unexpected, and still you want to create an adaptive process.

And again, in modern times, organisations are not competing to each other anymore. Sometimes they have the impression that somebody thinks that organisations are competing. That's history! *Networks* are competing. So it's all the suppliers and all the people involved in the business... So you need to understand the network relations.

[28'52" – JWP, slide 20] From that literature, two interesting concepts came to life. One is called *vulnerability* and one is called *capability*. Now, vulnerability is actually a fundamental factor that makes an organisation sensitive to disruptions. So what we are trying to do is find main factors, fundamental factors, and not see every disruption as a detail disruption that you have to solve. Capabilities are things that the organisation – it can be the PTA or the PTO or a partnership between the two – that are required for performance or accomplishment.

[29'34" – JWP, slide 21] And having said all of this, I developed a model that looks like this. On the left side, you have the environmental situation, so the context... the focus on the strategic elements: the environment, the responsibilities and information, as I showed you earlier... That creates awareness. And from that awareness, you can go... If you go UP, you can do disruption analysis and you can try to find the fundamental factors, which I called the vulnerabilities. If you go from awareness BELOW, you can check your internal control systems and see what capabilities there are.

Now, you can approach this from two sides. What I... What I very often see is that people say: "Oh God. Do we have a disruption? Which capability do we have?"

I think another solution is: "OK. What are our capabilities? And if we have that capability, in which way can we already react to potential vulnerabilities?" So it is a process you can reach from both sides.

The balance between the vulnerability and the capability is called *resilience*. And I believe that it's only sensible if you have a balance that reflects to improved performance. So you need to have this improved performance.

[31'03" – JWP, slide 22] Now, what I did is I took this to public transport organisations in Europe. I visited about **fifteen**. And actually I had a very simple discussion: Do you understand what I'm talking about? Is this something that your organisation can work with? Not building something high academic story, but it this something that could fit in your organisation?

[31'30" – JWP, slide 23] And from that, I will show you two results. So one, actually, is that organisations were able to understand and to mention advantages and complications with the end production of the resilience approach. And one of the advantages – which is pretty logical, of course – is the structured improvement of monitoring events, the shorter time of learning and reacting... But at the same time – and I think this is interesting for the discussion later on – the question of "What is the priority on the strategic level?"... And always difficult with quality, risk and resilience... What is the cost and benefit analysis? That's always... That's always a big issue. So it shows... it showed me that, first of all, public transport organisations and public transport authorities can find reasons to implement and to... and maybe not to implement.

[32'25" – JWP, slide 24] Secondly, I showed them the model... This is the same model as I showed you earlier. And I found out that public transport organisations are telling me that

they are able to work with the model. They say: “OK. I understand completely what you are doing. We might not do it. But if we were... If we were asked by our CEO to introduce this, this would really be a model that would help us.”

It is also a model that is... is... I kind I used on quality management. You can start *once* and then it keeps on going and going and going... So it is not something you do once in your life. Whenever you start with risk management or with quality management, you have to be aware that it is a process... it is a process related activity, so you have to find continuity in the organisation. [*I need only five more minutes.*]

[33'20" – JWP, slide 25] So we have vulnerabilities and capabilities. So the next step is: OK, well, let's identify them. Now, I first – academics – went through a lot of literature. But the result I will show you is actually...

[33'36" – JWP, slides 26-27] ... THIS: So there are, on the left side, vulnerability factors. I gave a description and I mentioned a number of sub-factors. That means we are not going, in an organisation, to react on the sub-factors. We bring them all together in fundamental factors. So organisations should analyse if they are sensible to these vulnerabilities.

[34'00" – JWP, slides 28-29] The same I did with the capabilities. And we found about 14 capabilities. That's quite a lot, actually.

[34'11" – JWP, slide 30] So, what we have now is: we have a definition, we have a structure, and we have the content of capabilities and vulnerabilities. Also this I discussed with public transport organisations and PTAs, and saying: OK, does this makes sense? I mean, or did I forget something? Is something not in your language? Is something strange to you? And they came more or less with the finding that they understood the model, they understood the lists and they were... They were convincing me that they... they could use those lists.

[34'50" – JWP, slide 31] What's also relevant is that they could understand what is the outcome, what's the performance indicators. And I used the World Forum “5i” model, which is a pretty easy model to use. So it improves insight, information, incentives, investment and institutions.

[35'05" – JWP, slides 32-33] So, with that we have... As a result we have those 7... these 6 factors. And the presentation will be presented to you, so I don't want to go in all the details of the factors. As well as we have 14 capability factors that have been recognised by public transport organisations as being relevant.

[35'27" – JWP, slide 34] Having said that, we come... I'll just... I want to make one remark. That in Europe, I think there is one organisation that is on resilience a hat And that is Transport for London. That is the only organisation that in a way is approaching it, not in my way – my way is not the best way, every organisation has to find its own way... But that's an organisation we could learn from.

[35'50" – JWP, slide 35] Finally... Of course, if you have those balances... If you have those capabilities and those vulnerabilities, the question is: you have to *balance* them. You can put one fence around your company; you can put ten fences around your company... If you overdo in building capabilities, you... you erode your profitability. On the other had, if you do too less, you are exposed to disruptions.

[36'20" – JWP, slides 36-37] So I discussed this with... [*Let me go over this quickly, to get to an end...*] ... with the CEOs of almost all public transport organisations in the Netherlands. So we had a very interesting high-level meeting. And the most important part is, for me, the last sentence: **It's relevant, but it's not seen, in a way, as urgent – by public transport organisations.** And I think now, there is a role for you, to make it urgent to public transport authorities.

[36'49" – JWP, slide 38] So, conceptual is considered as relevant and to be understood. Cognitive... Cognitive, that means that the model is understood. Behavioural, that means the tool list is understood. And public transport organisations themselves are convinced that they can work to a balanced resilience approach.

[31'10" – JWP, slide 39] So, who takes the initiative? I hope that we will not get in a situation that risk becomes a competitive element in tendering processes... That you have to say: This company is better in risk management or resilience management than the other one. I think – from a social point of view – that would be a disaster. So maybe that's there is some kind of enforcement from the outside. That can be from a political level, but it can be also from a... from the transport authorities.

[37'42" – JWP, slide 40] So with society demanding that the role of public transport shall be sustainable, with transport facing new disruptions and with an approach we have now discussed to embed and manage resilience... I think resilience is an imperative in public transport organisations... but not caused, not mentioned as urgent. And that is where you come in. Thank you. [*Applause.*] We do questions afterwards?

[38'15" – RvdP] Are there any questions?

[38'27" – Mr Hans-Werner Franz -I think this is very interesting. And it's one of the most important questions in the contracting. One thing I miss and that is: We have a lot of laws – the law of the European Union and the laws for contracting in the States. And our problem to bring more resilience in the contracts with the public transport operator... Always we have problems with the law. What can you say to this theme?

[39'08" – JWP] I know exactly what you... where you're referring to. I think many, many PTAs and many PTOs are very much on compliance to legal issues. My question is, as an organisation, **if that's enough.** Because the legal procedures are always a little bit behind. Because, before there is a legal procedure, you are going through a very heavy process. And what's the responsibility of a PTA or a PTO if a disruption happens? You cannot fall back on legal aspects. So I understand, with all the budget issues around it, that it's not priority number one, I understand that.

But my idea is that we should make a discussion about it. Because it needs to have a higher priority, because suppose there is some kind of 9/11 situation happening – let's pray it's not happening... But, it doesn't have to be a 9/11... But suppose we have a closedown of public transport for a longer time for whatever reason. The consequences are enormous and they go beyond the contracting in the tender processes. I mean, if you close down the port of Hamburg or Rotterdam for 2 weeks, I mean, that's a lot of money, it's a lot, a lot of money.

So my idea is, we should not only bring this as only a public transport issue. It's a societal issue. You cannot close down cities. You cannot close down the Olympic Games. You

cannot close down ports. And that way, I think we are starting a discussion to understand that. This brings back a little bit a feeling that I have with transport in general. And my activity in the university are in the public transport area as well as in the logistics area. The logistics area is *very* good organised in having the political arena understanding what their value is. And with that approach, they reach much more than the public transport PTA and PTO organisations are doing. So it is... I think there is a big chance to see that we... We start by having society understanding what's our role in society.

[41'34" – RvdP] Thank you. Are there any more questions? If no... Thank you, Jan Willem. You laid out a bridge to the next presentator, talking about TfL, talking about resilience in transport planning, institutionalised by the public transport authority. Mr Nigel FURLONG, head of resilience planning of TfL, will talk to you about the upcoming challenge for the London city.

3) Presentation of Nigel FURLONG of Transport for London (TfL)

[42'07" – Nigel FURLONG, slide 2] Thank you Ruud. And thank you for our host for inviting me. I would like to talk about our challenges that Transport for London is facing. I'll give you a quick overview of what Transport for London is, some of the resilience risks that we're considering – and if you spot any that I've not noticed, please tell me – and then I'll talk in depth about the Olympic Games.

[42'35" – NF, slide 3] So this is Transport for London. The main thing for this, for me, is to try and get across to you that our business is quite varied. It's a mix of buses, underground trains, overground trains, trams, river services, street management, traffic control systems... We do everything but fly aeroplanes in London. And it's quite varied. Some of it is contracted out, some of it is operated in-house and most of it doesn't talk to each other. Because it's actually technically different to each other, so they have no relationships.

[43'11" – NF, slide 4] We are a regional transport authority. We're part of the Greater London Authority and we're known as a functional body. We are a transport company. We are a category 2 responder.

In the United Kingdom, we have a piece of legislation called the Civil Contingencies Act, which is a civil defence legislation, where you have category 1 responders, who are the emergency services: police, fire and rescue, ambulance, medical and local government. Category 2 are utility companies and transport. And under category 2, we are required to share information and cooperate with category 1 responders. We are not, though, a public safety organisation and we are not an emergency service. We cause their work, rather than respond to their problems.

[44'01" – NF, slide 5] The type of risks we have in London: We have heat wave. And London is based on clay, so we actually have ground shrinkage in the summer, if we have a hot summer. The underground network can get to 30 degrees ambient inner temperature at times, depending on certain lines. This also causes rail lines to expand and we have some interesting challenges. With drought, we have a water shortage, currently, in Southeast England. And in London, if we have another dry winter, we may actually have a water shortage for drinking water. And gale is high winds. It's become a problem in the last few years.

Flooding. Pluvial is flush flooding, because of our open environment. We've actually concreted over most of London, so the water doesn't go anywhere, but all over the place. Fluvial is when the rivers overtop. And tidal is when the Thames barrier doesn't work and London fills with water. There's some good science fiction movies and novels about it.

[45'10" – NF, slide 6] Our societal risks, things we have to look at for the Games and for business as usual.

- Transport infrastructure failing. That's road tunnels, rail tunnels, bridges, all portuary infrastructure and other people's infrastructure, where it integrates with us.
- Utility failures. This is where our water industry provides new fountains on our roadways, when the water networks fails...
- We have industrial sites under the Seveso II legislation, where they have some scary chemicals. And ever so often they do impressive sites like [...]
- We've currently had a fuel shortage in the United Kingdom, where the fuel distribution drivers were threatening strike action, which would have reduced our fuel and then our ability to serve the public and the communities.
- Terrorism is a very real threat for the United Kingdom. As you all know, we had bombing in 2005 on the London underground and on the London bus. We continue to have a threat from Irish nationalist terrorism, Islamist terrorism and anything from animal rights and other single-issue terrorists. It's still very real and we're still quite paranoid about it.
- Pandemic flue is not gone off the agenda. The World Health organisation are still warning that there may be an avian flue pandemic within the next 5 to 6 years. So it's still on our agenda. And we're still thinking about it for the Olympics. And we will have a *huge* amount of people coming to London from different countries, different communities. There's a chance for communicating diseases to impact us.
- We have major events: We have demonstrations. Last year, we had riots in London, which put the fear of God in everyone. But we never saw it coming and it was quite a surprise to us to deal with it.
- The Notting Hill Carnival this year, sitting between the Olympic Games and the Paralympic Games. And a number of Caribbean countries are celebrating their independence from the British Empire and are pumping money into this event. So it's actually the biggest party in London and it's going to be fuelled by a lot of money. So it's actually going to be a massive logistic exercise. We get a million people over 2 days coming to Notting Hill Carnival. And that's not a normal year. We're now in an Olympic year. There's lots of people looking to party. And it's going to be interesting. It always is.
- We have the Diamond Jubilee. Our Queen is celebrating 60 years of... power, I guess. Yes, our celebrations have started. And this is for us a massive logistics exercise for transport. On the Monday... Next Monday, on the 4th or 5th of June, we have a thousand boats going down the Thames in one hour, as a pageant marking

the Queen's birthday. No one in their right mind would do it. We visited Rotterdam and asked them for their advice. And when we suggested we'd go to Amsterdam, they said: "Don't. They're crazy."

- And then, the main thing for the Olympics: We also have 1,400 extra events going on during the Olympic Games. Anyone who has a field is now renting it out as a campsite. Anyone who can throw a party or get a rock band in a park are doing it. Everyone is trying to cash in on the Olympics, whether it's local government or private business. Everyone is there... And we are going to be challenged.

[48'50" – NF, slide 7] Just, actually, this is probably a slide for Jan. Everything is linked to everything. And this is really just a quick slide, probably for review later. But it very much is about that when something goes wrong, it impacts across the business. Customers lose their view of using the metro networks. We lose revenue. Staff moral goes through the floor. And things just get... become a mess until we can recover. So that's something for you to look at another day, I think.

[49'25" – NF, slide 8] This is the approach we look at, for resilience in Transport for London. And this is very much on some best practice in models. And, to be honest, this is very much what we aspire to, than what we actually do. This is what we're aspiring and trying to do. But we work on it, very much.

- We try to identify our risks and our vulnerabilities. Then we try to identify who owns those risks.
- And then we try work out how we are going to stop them and minimize them.
- And then we have to meet the accountants, to try to get them give us some money to try and do it. Cause we can actually shape the business through this process.
- Once we've got the money and we've started doing it, we actually invest in the resources, develop and implement the capabilities. And this can be from writing policies and processes to training staff, to creating and building facilities and buying equipment. We then need – and this is what... an incredible thing for me... We must test, rehearse and maintain these capabilities. If you don't test and rehearse and train, then you lose them. They're very toiling-bound.
- And then we need an assurance process. We need to audit. When was the last time we did training for a major disaster? When did you do a fire evacuation for a station? We want to benchmark with other organisations and this is an invitation to yourselves. If you would like to come and sit down with me at some point and we would go through how you do with terrorism, how we do with terrorism. Or how we do with fires or flooding or just natural disasters or how to deal with the countants ... I live to learn. And the more information that we can share with each other, the better we'll all be. We exercise and test. And we have business scorecards, so we measure what we're doing. We understand. If we say we're going to do four exercises, we will measure and ensure that we do four exercises.
- We do lessons identification. A Royal Air Force officer after the Iraq war – he was quite senior – actually commented that. We actually learn our lesson... Well, we

identify lessons, but we don't learn from them. And one of the things I try and do in my organisation is that we actually identify the lessons. And if they are cost effective and will improve the business, then we implement them. And that can be a struggle. Part of Transport for London, London underground, is 150 years old. They will know how to run a railway and they will *not* allow someone to tell them how to do it differently. So I need a lot of good justification. So we investigate incidents, whether there are industrial accidents, natural hazards or terrorism. We look at the root cause analysis. We do structure debriefing of all staff who were involved. And we build action plans.

- And then we go back and look at our risk profile. And it continues...

[52'24" – NF, slides 9-10] But I'm going to talk about my biggest challenge and the thing that stops me sleeping at night. And this is our challenge.

It's a twin challenge, really. It is to deliver a fantastic Games. We are looking for the Secretary General of the Olympic Committee to tell us that we've done the best Games ever – which he does every four years – and to keep London moving – which is probably for me the biggest challenge. We're expecting an extra MILLION journeys PER DAY, for SIXTY-FOUR DAYS. Now, if you're an engineer, you're probably cringing – because I am.

[53'01" – NF, slide 11] So, from the resilience perspective, I pose three questions to the business:

- Can we deliver our normal business operations during the Olympic Games? And can we actually do with the peak activity? We have extra rush hours. We have a rush hour at midnight during the Olympic Games, when the Olympic park empties out at night and the staff go home. We actually have a rush hour at night time. We don't actually have that capability, normally, to do that, so it's actually enhancing our business operation.
- Do we have the contingency responses for short-term disruptions? It is as if we have a signals failure or traffic light failure. Or we have... a bus breaks down: What will that do to our business? If we have a burst water pipe on a roadway: What will that do to the Olympic Games? What will that do to our operations?
- And the next question is, if we have a 9/11 or another London bombing or something similar to the Madrid bombings: What would be different during the Olympic Games? How will we do it differently? And that is the big question that keeps me awake at night.

Our major incident command centre for London is actually next door to Earl's Court, which is an Olympic venue. So we actually have had to move our command centre. So it actually creates new problems and new challenges.

[54'30" – NF, slide 12] One of the things we are doing is we're testing concepts on resilience. We are looking at it. We are war-gaming. Well, as on the side, we had a number of IT companies offer us fantastic simulation programs, which cost hundreds of thousands of euros. And a map scientist colleague of mine went across the department store, across the street from our office, and bought some tourist toys, painted them black and photocopied

some maps. And with some coloured plastic we started working out what our transport profile would look like. The colouring blue is just to show transport hubs. Green shows we're not impacted. Red shows we're over capacity. So that gives you a feel for the impact of the Olympic Games in central London.

We participated in other people's training exercises: the emergency services, security, police, fire, ambulance, local government. These exercises will look at our natural hazards: What do we do if we have a month of rain during the Olympics? And the Olympic park is now half a meter deep in mud? What would that mean to us, as a transport organisation? And the look and feel of our transport network? We consider acts of terrorism: Whether it be hoax telephone calls, explosives, chemical weapons... We are looking at all of this. We're looking at our own service failures: If parts of our network fail or fall over... And we're testing our command and control and management decision-makings during incidents... and just disruptions.

[56'07" – NF, slide 13] You'll hear me say that this represents an enormous challenge. And it is. It's massive. I appreciate that some colleagues here probably have done major events as well. But to give you a feel of the scale: We've got 8 million people coming to the Olympic Games. 2 million for the Paralympics. There are 300,000 people in the Olympic Games Family alone: athletes, government officials, games officials and everyone else that comes to it. We are looking at 3 million extra trips on top of 12 million per today.

It's also in the middle of a city, which has a medieval footprint. It's alongside businesses, tourist attractions and it's where people live. And it's going to be different every single day. And the duration: it's sixty-four days for the games. And it will just get bigger and bigger.

[57'05" – NF, slides 14-15] We've invested huge amounts on our infrastructure. We're planning ahead, as a legacy. We've spent 6.5 billion pounds on infrastructure for the games, which will be our legacy for the future. We've increased capacity, reliability, and the East End of London has got transport infrastructure it's never had. And it will be somewhere for the future. We're also building the gateway port, which will make a difference to freight way operations as well.

Across London, the Jubilee Line has 33% more capacity. The Docklands Light Railway has got 50% increase in capacity. And we've extended our overground rail network. In fact, our East London line has 100% more capacity. We've rebuilt Saint Pancras and King's Cross rail station. Tube stations across London have been rebuilt. It will be a great legacy.

And I do recommend, if you want to improve your infrastructure, get the Olympic Games. It's a real door opener for funding! However, there are some challenges.

[58'15" – NF, slide 16] Some of the challenges we have: We have getting our staff to work. We also have staff who actually want to *watch* the Olympic Games as well, which is a challenge. We've got volunteers, who've been actually put on it by the Mayor. London has invited ambassadors, which are about 6,000 volunteers who will come and help support the travelling public. We're improving river services. We actually have Javelin, which are Hitachi high speed trains coming in, which are 8 to 10 per hour, a capacity of about 400 people. We are extending our operational hours and reducing our engineering time.

[59'00" – NF, slide 17] We have a few myths, though. People do believe that we are going to be blocking off roadways and allowing Olympic Family only. And that's *not* going to happen.

The challenge is to get the Olympic Family across. We actually had to sign a contract guaranteeing that anyone from the Olympic Family had to get to wherever they wanted to be within 30 minutes. That's an Olympic contractual agreement that we had to sign. We are aware of what happened in the US at Atlanta and we have no ambition of being called "*Don't forget London!*" in the future.

[59'37" – NF, slides 18-21] Olympic Route Network is a lesson we picked up from the Greeks. And it worked well. And we'll pull some traffic through. We're testing it now. It is relatively small, and just to give you a feel of the road network for London: We've got just under 10,000 miles of road. Of that, major *A Roads*, as we call them, or *red routes*: that's just under 700. That's the Olympic Route Network in London: it actually is a national network as well. And these are the actually controlled lanes, just 30 miles of them. And this is all through traffic control and through GPS and GSM systems.

[1h00'25" – NF, slide 22] Sorry. I have too many statistics to remember – particularly after last night. Despite all of the activity moving our regular travellers around London, the Games Family and spectators, most of London actually is going to be left alone. It is a big city, after all. 70% of the road traffic is going to be normal. And 65% of the tube and the Docklands Light Railway will be normal.

However, there's going to be certain times of day where we will be at capacity or over capacity in certain parts of the network. It is very much a hydraulic system. If we are overloaded at one end, then there will be pressure at the other. And if TfL is responsible, well, TfL's responsibility is to make public aware of this. And we have a massive media campaign pushing the members of the public away from *hotspots*, as we're calling them.

[1h01'18" – NF, slide 23] This gives you a feel of what Day 1 of the Olympics will look like... And *red* says it all, really. That's what transport are... well, transport disruption, quite frankly, is going to be. It's going to be difficult in Southwest London to move, even if you're walking. Quite frankly, it's going to be busy.

[1h01'36" – NF, slide 24] However, if you look at Day 3, it's central London and the Olympic Park, which is on the East. So it... Every day and every time is quite different. And it's going to be a very varied and very volatile and dynamic environment for us to operate in. And we're investing a lot of time in IT, communications and command-and-control systems to manage a very macro-level real-time operations.

[1h02'02" – NF, slide 25] We're giving the public mapping, in hard copy, on the internet... And we're doing it by on-demand email as well. You can sign up to get email alerts. And this is just a quick description of... If you're in the South... East of London, in Tower Hamlets, what the road network is going to look like and how it's going to be so much fun to drive in London.

[1h02'27" – NF, slide 26] We're publishing maps out on every specific sports venue, to give people a feel for what it will look like. If you're coming to the Olympics of London in July or August, don't go near Greenwich – unless you like walking. Because it's going to be a

challenging environment. Everything is going on there... A lot of our parallel events are happening there. It's also two Olympic venues. So it's going to be a challenging environment.

[1h02'54" – NF, slide 27] We're pushing out information as far as we can, to everyone. And we are trying to give them very simple advice. Literally, as it's written up there: Don't drive through hotspots, because you'll just join the traffic and listen to sports on the radio. And try and travel outside of peak hours.

The financial sector in London, which is predominantly based in the Docklands area of East London, are actually... Last week, they just trialled having all their staff go home and dial them in from their internet connections at home and see if they could operate. The challenge for these people, though, is during the summer when all the school children are on holiday. So they'll all be on Facebook and other social media, playing games. So internet traffic is going to be quite heavy. And we're not too... We're not convinced, personally, that working from home is a solution.

[1h03'48" – NF, slide 28] The one thing though is: London is used to big events. We've had some major events. And back to, you know... Back to public transport, yes, we do this every day. In fact, next weekend, we've got lots of people coming around and we're treating it as a test event for the Olympic Games. It is very resilient. It is interconnected. Though you wouldn't believe it at times, at some of the meetings on that, we do talk to each other. But we are interconnected. And we are experienced in moving large volumes of people. But the Games is bigger.

[1h04'25" – NF, slide 29] The one thing we... I want to push is that in the UK media, a lot of people are pushing out the stories that we're going to have 3 hour queues to get onto a rail station. London doesn't work like that, quite frankly. It's so interconnected you can just walk a couple of blocks down and get on a different rail line, or use a bus, or even walk. It is quite a dense city. And it is in the summer holidays, so a lot of the kids will be on holiday. And an awful lot of people will be taking time off during the Olympics, whether to support their host country or actually just avoid travelling in London.

[1h05'03" – NF, slide 30] We're providing huge amounts of information to businesses. And this is an example of some of the profile information we're doing. We're actually providing businesses with each individual station, what the travelling public looks like... I guess the colours say it all, really. Red means: "It's incredibly busy". Orange is: "It's very busy". And yellow is: "It's busy".

[1h05'28" – NF, slides 31-32] So we're pushing to try and get people to change their travel behaviour. And this is Canary Wharf, which is in the financial district of London. And that's what it looks like when there's no change in behaviour.

If we get a change in behaviour – and we've already been talking to businesses and we've been told there's something in the region of 20% change in travel behaviour. The financial services are taking this very, very seriously. They are looking at their bottom line. And this is where business really does get into this...

[1h06'00" – NF, slides 33-34] And we're asking people to re-think, re-time and re-route. So we're looking to people to walk or take a bus. Enjoy the nightlife, rather than rush home after work. We're giving travel advice and we have a specific department now for *business only*.

[1h06'00" – NF, slides 35-36] We have a PR campaign and posters are everywhere in London. We're getting the message across. People are aware of it.

[1h06'35" – NF, slides 37-38] We have a web site now, which is actually live, so you can go to it now – *you'll see the address in a moment* – which shows you by day, by time, what London will look like on all modes of transport – whether it's road or rail.

[1h06'49" – NF, slide 39] So in summary: We've got a feel for our risks. We are working with our partners to try and reduce these risks. We can't do it on our own. We have to work with everyone. London will be busy, quite frankly. And we're actively trying to manage these games to get people to and from the games, whether it's work or holiday, and do it safely and securely.

[1h07'09" – NF, slide 40] And these are my contact details. If you've got anything you want to write to me in the future, ask me how my summer was, please feel free to contact me. [Applause.]

[1h07'20" – RvdP] Thank you, Nigel, for this captivating presentation about the enormous challenge you are facing in London. You... To the time, we are already behind almost 15 minutes. Are there any *urgent* questions for Nigel? Or can we keep them till after the presentation of Jean-Christophe?

[Thank you. Can you sit next to me? Because... Sorry... Can you sit here? Because after the presentation of Jean-Christophe, I invite the speakers to the table, Jan Willem too.]

Jean-Christophe MONNET, head of customers and relation affairs at Stif, in Paris, will talk to you about the organisational aspects of what an authority can encounter in transport, in relation to resilience. Jean-Christophe:

4) Presentation of Jean-Christophe MONNET of Stif Paris Ile-de-France

[1h08'13" – Jean-Christophe MONNET] Thank you, Ruud. It is a pleasure to be with you today. I will try to... So I will try to present you another form of description and explain how Stif has faced institutional changes and has developed his own resilience.

[1h08'38" – JCM, slide 3] So, some key figures about the Ile-de-France region: We have 11.5 million inhabitants, 6 million jobs... But it's the regional administrative global: We have the Regional Council, which is competent for all the region. We have 8 *départements* (counties), including the City of Paris (which is a *département*). We have 110 inter-municipalities and, well, a great number of municipalities. This is important for the story.

[1h09'08" – JCM, slide 4] So, at the beginning, in 2005, Stif, which had been managed by the French State since its creation in 1959, was decentralised. It was a revolution for the Stif. It was the first big bang. Because it was a long year, but local representatives elected waited for this change. So the Stif is managed by local authorities in the Ile-de-France region. We are talking about the Regional Council, the City of Paris and the 7 *départements*. The authority of the Stif is reinforced by the law.

The Stif is a veritable integrated organising authority, competent for contracting with operators, for studies – we have elaborated Urban Mobility Plan – and for managing major

investments. In 2006, the Stif launched an ambitious policy: because the local politicians wanted to show that it was a new... it is a new development of public transport in Ile-de-France. So we have created a new service offering. We have created a new supply for 500 million Euros – it was a very, very ambitious project. We modernised rolling stock, so we have developed a new suburban train, called the Francilien, out and we have improved service quality across the networks – the sea was quiet... the sunshine... This was the Golden Age.

[1h11'00" – JCM, slide 5] But in 2007, the French State launched the Greater Paris. President Sarkozy presented, in his famous speech at the Charles de Gaulle Airport, his project for Ile-de-France. He has a very big ambition for Ile-de-France. Yes, this is an ambitious project to promote economic development in Ile-de-France and boost its international influence. So it was wonderful. It was a good idea, at the beginning. But ... it was more complicated after.

Because the Ile-de-France master plan for planning and transport were disputed by the State, which considered it was not ambitious enough. The State wanted created 1 million jobs in Ile-de-France and have a very ambitious project to create a new economic area... a scientific cluster, an economic cluster. It was the beginning of an institutional storm. A Ministry for Greater Paris was created in May 2008. It was a local... Local politicians were shocked by this decision. Because it was... After... 2 years after the decentralisation, it was a form of re-centralisation. It was like a negation against the local authority on the Stif.

One precision: The Minister was Christian BLANC, and he was the former CEO of RATP. So he had a lot of projects, of public transport projects. So it was... We have been challenged quickly. Some ministers of State planned a new transport network: a major automatic metro deserving some of the major economic centres. But Stif had also his own project: it was the Arc Express project, a metro circular line all around Paris in the inner suburbs – I will show with a map, after. So, the choices of local authority were disputed and the role of the Stif as organising authority was brought into question. What is the legitimacy of the Stif? Yes, it was a very wrong moment, for us.

[1h13'35" – JCM, slide 6] In June 2010, the Greater Paris Company was created by law. It is composed of the State (the State as a majority), but also with Ile-de-France Regional Council and the City of Paris and the *départements*. So it was a way to associate the local authorities. But it is the State which directed this entity, this body. It is competent for creating the Greater Paris network. So we have... Two projects were put head-to-head:

- we have the State project, supported by the Greater Paris Company, and
- we have the "Mobilisation Plan", supported by the Region, by local authorities and the Stif, with Arc Express metro.

The State aimed to impose his project. The Stif position was very complicated. It had to define his strategy and it was a very sensitive issue at this period, so... But the Stif asserted the quality of its studies and of its project with Arc Express metro.

[1h14'45" – JCM, slide 7] So, this is the project of Greater Paris in 2009-2010. And you have a very... very ambitious... a new metro line. The line was 150 km and the aims, the goals was to deserve a major economical area in the North (around Charles de Gaulle Airport) and

the South (Orly Airport). This is good project, we had the same project at the original level. But the project was not for deserving the population and for... for the fight against pollution, against the congestion, It was not a good solution in fact

[1h15'35" – JCM, slide 8] So we have another project. This is a project of the local authority of the Regional Council of the City of Paris, of the *département*. This is a project of Stif. This is a plan... the Mobilisation Plan, and with Arc Express metro. Arc Express metro is a circular line all around Paris, in the inner suburbs. But also, we will take to extend metro existing line. We want to create BRT.³ We want to create new bus... new tramlines. Very important: we want to modernize the existing network.

[1h16'20" – JCM, slide 9] So, this is the Arc Metro, Arc Express, Arc Express Metro, in the inner suburbs. So we have deep surveys. And we have... we have made a... big work on the interconnection with the existing network. It is very important. And with this project, the interval between two stations was 1.5 km-2 km... But with the project of Great Paris, the interval between two stations was 4, 5... 6 km. This was not the same... the same project.

[1h17'00" – JCM, slide 10] So, what has happened? A major public debate with elected representatives and inhabitants of Ile-de-France was organised between October 2010 and January 2011. The project supported by the Regional Council and the Stif received favourable reviews. But at the beginning, the State didn't want to organise a public debate, so... The debate were passionate. But in France, we like debate, yes...

It enables the existing network to be modernised. It was a very good point for the project, for the Stif. The Arc Express Automatic Metro project appeared better suited to the needs of travelling passengers. This is the most important, when you want to develop public transport. The quality of the Stif work and its competency led the State to take into account the Mobilisation Plan on the Arc Express project. So finally, there was an agreement, which was signed between the State and the Ile-de-France Regional Council for a common project across the Grand Paris Express and the Mobilisation Plan. This agreement represents an investment of 32 billion euros between now and 2025. Yes, we have to find money, now.

[1h18'30" – JCM, slide 11] That is the map of the agreement between the State and the Ile-de-France Region. And you have the project with... We have to take it into account to modernise the existing network and realign metro line, to extend the metro line, to develop new tramlines, to create BRT, called "TZEN" in Ile-de-France... It's very ambitious.

[1h19'08" – JCM, slide 12] This is the map of the "Greater Paris Express". This is the new metro line, automatic line. You can see that it's like the Arc Express project, yes. Because the Greater Paris Company... We have given... We have obligation to give all our surveys, all our studies to the Greater Paris company. It was a bad moment for the team in Stif.

[1h19'38" – JCM, slide 13] But finally the Stif capacity for resilience. The Stif had to face a critical situation in which it was strongly challenged. It was criticised and accused of not making fast enough progress with projects. But it was unfair. It was more complicated. Because in France, we have a lot of process. When we have a project, between the beginning of the project when you begin to build... to build the line, you have a minimum 4-5 years. So, but... It's the law, it's the French law, so...

³ Bus Rapid Transit

In fact, it was the decentralisation of public transport in Ile-de-France that was in question. It needed to adapt to political and institutional change. But it was very sensitive issue. It was not easy for the team of the Stif, for the members of the board, for the elective representatives... local representative electives... yes. So the Stif needed to show reactivity with its Arc Express project proposal. But with *all* the investment proposal. So the Stif had to accelerate the execution of current projects to prove its efficiency. It was fundamental, yes, for the credibility. And the Stif needed to prove its competency and confirm... and confirm its role as organising authority.

[1h21'08" – JCM, slide 14] Now, Stif is the stronger organising authority. Today, the Stif must enforce its intermodal instructions to the Greater Paris Company, which is building the Grand Paris Express. But... Some precisions... The Greater Paris Company build the major part... the main part of the Grand Paris Express. But the Stif is in charge to build the *orange line* of the West of the area. It is very important, because Great Paris Express, at the beginning, didn't take the connection with existing networks into account. It was a problem, with Stif. The inter-modality is very important, it's an evidence... But you have a debate... a very important debate, with the Great Paris Project. The Stif must affirm its legitimacy via its competency and efficiency to the Greater Paris Company. It was essential, because the Greater Paris Company is a State company. And State, in France, is a very big and powerful, so... We have to prove that the Stif is very competent. Stif is an expert on public transport. Every day, we have to prove it...

So in the face of adverse events, the Stif has had to re-evaluate and strengthen its organisation. It is a positive evolution for... for the Stif. So enhancing its capacity for managing studies and projects, by recruiting new employees and improving its internal organisation. We have optimised our skills to better manage costs... It's very important with the operators, but for also the constructor, for building new lines. And we have to be more demanding with operators. So it's not easy with RATP and SNCF major public companies...

We have developed a better communication with decision-makers, with travellers and the general... and with the general public to explain our role. We have to convince and justify our role, what is the role of the Stif.

[1h23'28" – JCM, slide 15-16] So, the main lessons of the story, of these events:

- Now, the Stif is recognised as being the most efficient by all public transport stakeholders in Ile-de-France. Yes, but we have to prove it every day.
- Its expertise is respected and it appears more.
- More legitimate in its role as organising authority.
- The Stif is now stronger and better able to face change and pressure thanks to the resilience it has developed with these events.

But we must remain constantly vigilant in order to:

- Meet the expectations of travellers and local authorities
- Monitor operators

- Propel investment projects forward
- We have to prepare for the future by developing a comprehensive approach to mobility
- And we have to adapt to new goals and future changes

With the institutional change, Stif is stronger, simply – and better, I think. Thank you for your attention. [*Applause.*]

[1h24'45" – RvdP] Thank you, Jean-Christophe, for this very interesting angle on resilience. It makes you stronger when you have to face threats that are imminent... and you didn't expect it. So in the process, you should come out stronger as a public transport authority, perhaps. I would like to invite you to ask some questions to Jean-Christophe. Anyone? A question about the struggle for survival in Stif?

I think there is a parallel with the story that I told you yesterday... and the struggle for survival in the Amsterdam region, the metropolitan region. It is always a struggle. If it's the State or it's a provincial authority or any intermediate government, institution... that tries to take back the competencies that they have devolved. So you get a split-up situation here. It's very ambivalent and a very turbulent environment to do the core business you are supposed to do.

5) Conclusion of the round table, by Ruud van der PLOEG

[1h25'45" – RvdP] If there are no questions, maybe we should have a little debate. And for this debate, I thought of two positions. And I may ask our Director to put on these positions. First position... [*Maybe Filip has to check... No... It's the other presentation... Yes...*]

The first position could be... could be in the face of the role of public transport authorities, the position:

1. This resilience planning should be an integrated part in the program of requirements in every public tender for urban public transport or metropolitan public transport.

And I would like to invite you to reflect on that or to react on that. I didn't bring any green and red leaflets to raise hands... But who disagrees with this position? Who agrees with this position? Can I see some hands or comments, please? Undisputed? [... *No, it doesn't work like that, Laura.*] OK. Well, if you want, we can have the position two. Because we concur on this one, I guess. That's the good news. The second one is:

2. Working on resilience as a PTA will raise awareness of the added value of the own organisation and the need to adapt to unforeseen changes.

I think we can derive that from the discussions we have. So there is no dispute about this? So we can validate it? Thank you.

[1h27'45" – RvdP] Maybe we can finish up with some lessons learned, then, like a shopping list for public transport authorities on the subject. We tried to put together, during breakfast, some things together with the other speakers. Could you please pose these... lessons learned, you could say, from the introductions?

[1h28'12" – RvdP] Or do we have another position? Who is responsible for this one? I didn't agree on this. Oh," if you dare to put your capacity for resilience to the test in the response of PTA, it would help the organisation to stay on top of your game!"

The first question is: Do you understand what this statement brings to you? I think it's about what Jean-Christophe just demonstrated: You should always be prepared to demonstrate your added value. And you should always be prepared for, you could say, exogenous threats... Not only within your own organisation, but also outside, as Jan Willem tried to demonstrate.

We should have a framework, a structure, but also be active on that. So not only a theoretical concept or scenario, but try to put it to the test. Like Nigel said: When was the last time that you had an evacuation drill on your metro hub, a metro station... for example? Maybe you would like to comment on this position, Nigel?

[1h29'22" – NF] Yes, I think it's a matter of: Do you think you could actually deal with a major event. And how would you know? And the one thing that Transport for London does is that we will actually test our systems. When we have engineering works of our rail network, we will actually test an evacuation of a rail station. Or we will actually take managers out. When we evacuate a building for a fire alarm drill, we will take a group of managers and put them in a meeting room and say: "You've just evacuated a building with a 1,000 staff. You cannot go back. What would you now do?" And we have the test of saying: How many of them have got mobile phones? Have they got keys to go home? Can they afford to go home? Do they have any money? And when I say, now, that's how yourselves are individually. Now, look at the 1,000 staff out the window. How are they going to go home? How will you continue to operate your business? What are your business continuity plans? Have you tested them? Have you exercised them? Do you know where the book is? Do you know where your actual plan is? Is it on your mobile phone? Is it on your Blackberry? Is it a ring binder with paper? And we go through this. And we test. And we do it regularly.

Now British legislation requires us to do fire evacuation drills in every office building once a year – at least. And we combine that with business continuity exercising and testing of our plans. And it raises our game. It makes us a more efficient business. When something goes wrong, we can turn around our business far quicker, than if we try to invent a way to return to normality. And...

[1h31'00" – RvdP] This is what you were talking about. Is it not only in *built* facilities, like in tube stations, but also outside, on the public roads? We have also to be prepared for that. Do you have, in London, a certain concentration of... like... say, control centres? Or ambulances? Or are they just spread up and they use their own system for identifying problems and fighting them?

[1h31'25" – NF] We're now actually co-locating our control rooms. As an example, in our Palestra building in London, our street traffic control centre is now co-located with our bus and river operations control centre. And that's actually co-located with the metropolitan police traffic management command centre.

[1h31'45" – RvdP] Thank you. Is there... Could you say that if there is no urgency to go into resilience, you... there is no reason to develop a scenario or even to stimulate awareness amongst management or staff for resilience, because... Well, we in the Netherlands are contemplating that the Olympic Games, for example, in 2028... Nobody in the Amsterdam region wants it, really. Because they say it's a lot of hanky panky and a lot of hassle... We are threatened by not so much quarantine as it could be in receiving visitors in England, because you have a quarantine history, for foreign disease... But they are just not into it. They say what is the social relevance of such an event? And after the event, there are lot of examples that you have the problems with overcapacity in your system. Even if you are a category 2 institution, like in your National Act. Why should we engage, when there is no reason, no urgency?

[1h32'40" – NF] The... It's a number of reasons for Transport for London. The one thing for us is: We have had 20 years of terrorism from the Irish Republican Army. And it's very, sort of, splinter groups. So we've... We have a culture of trying to prevent acts of terrorism on our network. We've had buses blown up, we've had trains... over the last 20 years....

[1h33'05" – RvdP] So you can say you've to have been confronted with these incidents first, before raising the awareness on this?

[1h33'10" – NF] It's... In many reasons... We have... In our rail network, we have very little combustible materials in our trains and infrastructure now, because of the fire at King's Cross. So it's lessons we've learned from disasters, that have forced us into this position. And that is our normal operating way now.

[1h33'30" – RvdP] OK, thank you. Talking about lessons learned, I would like to add... Unless Jan Willem wants to add something to this topic? I would like to add some lessons, but maybe you want to add something to Nigel's...?

[1h33'40" – JWP] It more or less is a question back to you. I mean, if you are in tender processes, how often are... In those tender processes, there is a rule for demand that the public transport operator is testing whatever you think is relevant that it's tested. We have had... We also have a queen, and we have Queen's Day on the 30th of April. And we had, about, I think, 7 years ago in Amsterdam, suddenly a weather change. And everybody ran to the railway station and it came to a completely chaotic situation, and...

[1h34'13" – RvdP] I try to push it away, out of my memory, but I was there, in Amsterdam, too, in the middle.

[JWP] Now, I mean, you can call it an incident. The idea is, of course, that suddenly things can change and then, who is responsible? And then the question comes: What is the role of the PTA and what is the role of the PTO? And I think, as a PTA, you cannot say: "Well, this is something that only belongs to responsibility of the public transport organisation". I think, as a PTA, you have to convince the PTO exactly what is in position 3: to test their systems and to see, if something really complicated happens, who takes responsibility and who informs the public and things like that. So in that way I agree. It's very responsible, it's very relevant that you *test* your responsibilities.

[1h35'00" – RvdP] Thank you very much. If any of you would like to comment on this? No? So we go to lessons learned, to finish up this first round table. The last sheets, please. The three of us – the four of us, you could say – put up a shopping list for resilience for you to take home. [*Maybe the first sheet, please? Grab it... There it comes. Just focus on this, please.*]

1. You could take a holistic approach in managing your operations by going into resilience.

Is it something, which adds to the presentation from the academic point of view of Jan Willem? Holistic in the sense that you look at a more... broader perspective, with a cerebral approach, you could say, to the importance and significance of your own operator and responsibility you have, as a public transport authority to the operator, to make him aware of this significance in society and in economics.

[1h36'21" – RvdP] Do you concur with this? Can you do something with it? Maybe? Maybe not? We go to the second lesson. We called it being:

2. Being Self conscious and aware of your social and economic significance, that is an imperative... to go into resilience. I see a nodding Jean-Christophe. Do you agree with that? It is important. Any of you think differently?

[JCM] It is very important to take awareness of one's strengths and weaknesses to be able to face an unexpected risk disruption, yes.

[1h37'10" – RvdP] Like Jan Willem said, looking for the balance between – I think he mentioned – vulnerabilities and capabilities. It is the essence of being ready for resilience. I see people nodding, I see people with a big question in their eyes... OK. Next, please. The third, the:

3. Ability to react to unforeseen situations demands an adaptive PTA organisation

Anybody who doesn't... who's not familiar with the word adaptive? You should be, after the presentation of Jan Willem!. If I understood it correctly, it's about reactivity, flexibility and ability to respond to unforeseen and unexpected incidents, you could say, which can threaten your system. Jan Willem:

[1h37'58" – JWP] Yes, there's a parallel. I mean, you have a public transport authority, but you also have port authorities. And it's interesting... but I mean, Rotterdam has a port authority, Antwerp has a port authority, Hamburg has a port authority... It's interesting to see that *those* authorities actually have taken this topic of resilience to a higher level. And they demand of all the companies in that area that they have a risk and resilience plan. And they take part of negotiations... Insurance, just think about insurance. Insurance, I mean, if something goes wrong, who is responsible? So in that way it might be interesting to have a parallel description one day with the port authorities.

[1h38'40" – RvdP] Or a transport authority, like we had in... looking like we were having in the Amsterdam region, as an executive body. Thank you. Fourth lesson:

4. Hands on attitude helps to deliver proof of your capacity to resolve disruptions

Hands on? OK. You agree with that? Well, thank you.

I want to round up and thank you for your participation and your patient listening to these presentations. And now we go hands on to the coffee break! Thank you very much. [Applause.] I presume there is a coffee break now, unless my host... Thierry? Yes, thank you. See you at the coffee.

Lessons learnt for PTAs to embrace resilience

- 1. You could take a holistic approach in managing your operations by going into resilience.***
- 2. Being Self conscious and aware of your social and economic significance, that is an imperative... to go into resilience.***
- 3 Ability to react to unforeseen situations demands an adaptive PTA organisation***
- 4 Hands on attitude helps to deliver proof of your capacity to resolve disruptions***