

MARK ROBERTI: OK, thank you, ladies and gentlemen. My name is Mark Roberti. I'm going to be moderating this session. I'm from *RFID Journal*.

You've already met all of our panelists. We have Simon Langford from Walmart, Claus Garbisch from DHL, Dick Cantwell from Gillette / P&G and Mike Rose from J&J. So the purpose of this panel is to try to crystallize some of the ideas that have been discussed over the past two days, and try to help you to begin thinking about how we can facilitate collaboration between the companies that are using RFID and the researchers who are investigating various aspects of deploying RFID. So I'll throw it out to any of our panelists.

What's the primary role that you see the academic-- would like to see the academic community playing in terms of helping you and your sector, your industry at large, achieve the level of adoption that you're hoping to achieve?

DICK CANTWELL: I think one thing that occurred to me in the morning session was not only the ability to do the research, but the ability to share that research across a broader community. I find in the conferences that I attend people are very interested in what I have to say, what others have to say, which says to me that there's a great need for coordinating that research, synergizing that research. And I think it's great that this community is coming together to try to do that.

MICHAEL ROSE: I think the other area, too, that-- this is a great two-day session. I think we're were caught up in responding to the needs of our customers, the regulators, wherever we might be. And I think that the important role that the research team plays is what's coming next.

So we're working on today's problem in my organization. What we need to be looking at is where the future might take us. And that's where I think it's invaluable to have the academic help and support.

SIMON LANGFORD: I would add also I think it's important that the academic world actually is in step with the end users. And by that, what I mean is that they are learning alongside us as we pilot, as we learn, as we grow our deployments. And so the business issues we're trying to solve they're fully versed in those, and we're not creating isolated companies.

CLAUS GARBISCH: And from my point of view, when we are doing the test, we are always having some challenges, and that the academic community is taking up these challenges. Like we were mentioning, these metal and fluid problems, or what is the right technology for item tagging? Is this HF, is this UHF? So there, to get the right answers, that we go forward with our testing with our customers that we do there the right steps.

MARK ROBERTI: There's some talk earlier about incremental change Bill brought up versus radical change. Do you see the academic community focusing on the incremental change, or should they be more focused on what's potentially transformative in your businesses-- a combination of the two.

DICK CANTWELL: I think they have to look at a combination of the two. I mean, we're still at the very, very beginning of implementing this technology, and we have some very basic fundamental questions to solve. Shaving a couple cents off of a tag price is very meaningful in getting us to the next incremental step versus having it.

MICHAEL ROSE: I think what's also interesting, if you equate it to the web, if you go back where it all started--

MARK ROBERTI: Sorry, are these mics working?

MICHAEL ROSE: I don't know if they're working. Yeah. OK, if you put it to the web, I think what we're missing here with RFID yet is the killer application. And we have to create some consumer draw on this right now is all very supply chain-focused. It's very interesting.

But the reality is, when you look at the internet, you look at the world wide web, it really didn't get interesting until the consumer got engaged in it. So I see RFID the same way. That's why I was particularly excited about some of the work that's going on in Korea.

You start seeing some, where maybe in the future you go aha, that makes some sense. Then you can start taking that back to our brand teams and building that into future design of products. So I support the academic-- Dick's statement of working on both. But I'm really looking for transformational ideas. And that's our view within the RFID effort within Johnson & Johnson is trying to look through it and how it may transform our business.

MARK ROBERTI: Is there a danger, though, that academics will go off and explore pie in the sky, potential applications that really don't have any relevance, or wind up not being practical?

SIMON LANGFORD: I think that's where Dick was saying about a little bit of both. That at least at the feet on the ground that you can understand our current processes and how we're trying to evolve, and really when is the tipping point when we can take those transformational changes without disrupting the workflow and pattern of the associates on the ground?

MARK ROBERTI: All right. Simon, I know you've worked closely with Bill at the University of Arkansas. Any thoughts on that collaboration and the benefits that your company has received from that work?

SIMON LANGFORD: Lots of benefits. In terms of that working relationship, it's been very much a two-way street. And not just giving a prospectus or a piece of work or research for building his team to go and look at, but also to get those ideas coming back to us and those challenges and those questions of why do you do it this way.

Why not this way currently with systems you already have in place? But that two-way dialogue and regular updates-- and I think Bill would agree, both him and his team have benefited from on-the-ground, working the process in our stores, in our distribution centers, understanding our current situation, and where we want to move to, whether that be pie in the sky or blue sky stuff. But those are iterative steps to get us to.

MARK ROBERTI: Do any of the other panelists have any experience with the academic community? I know, Dick, you worked closely with the Auto-ID Center in the early days. Any thoughts on this collaboration, how important it is and where it should go?

DICK CANTWELL: Well, we've worked very closely really from the early days of the Auto-ID Center with MIT. Part of it is our proximity across the river. Not only is there the ability to stretch the mind and bring real creative academic thinking, but there's a point of independence. I mean, we deal with many, many technology vendors, all of whom are trying to sell us stuff. And that's valuable partnerships. But having an independent third party who's academically grounded, who can look at a business problem, a supply chain issue, engineer a solution, and come back to you with data, it adds a certain amount of credibility to help us with our management, and also, I think make industry comfortable with the conclusions.

MARK ROBERTI:OK, you've heard some of the papers that have been presented today. I wonder if the panel could give some general thoughts about the research that you heard about. Is it practical? Is it productive? Are the things you would like to see being done that aren't being done?

MICHAEL ROSE:What I heard over the last days, I it was very worthwhile. I thought the research seems to be very, very practical, very well-oriented to the issues that we have within our industry of trying to figure out the right approach for tagging of our products, the effect of various material types and on RFID. I think it's very well directed research. I think it was an interesting point-- I think maybe, Simon, you may have raised in your presentation, around can we ever get to replacing EAS tags with RFID? It'd be great to get an answer on that. So, I mean, just some basic stuff like that, and I think that's very, very basic applied research that's needed.

MARK ROBERTI:Right, OK, any other thoughts? OK, Mike, you mentioned during your presentation that there's a need, particularly in the pharmaceutical industry, for the whole industry to move forward. That you can't have track and trace if the distributors don't do it, but the retailers and the manufacturers do. Is there any opportunity for industries to come together to support larger-scale projects, such as the Promise Project that Dmitri presented? It seems to me there's a lot of research to be done, and it would be helpful if there was some way of funding that and organizing that.

MICHAEL ROSE:Yeah, I think what we all struggle with is, when you bring in a new technology, how do you adopt it within the industry. So I think somewhere, we need help from academia in how best to adopt RFID in the industry. So yeah, I think some of those larger efforts are very important to be funded, absolutely.

MARK ROBERTI:Are there industry organizations that could potentially drum up some funding from members that could go into that kind of thing?

MICHAEL ROSE:Well, if I'm speaking specifically around health care, and specifically for pharmaceutical, health care is very complicated. There's various segments even within health care. But just talking pharmaceutical right now-- and I see Ted nodding up there, we're each members of various industry associations.

So the manufacturers are represented by pharma, bio, wholesalers by HDMA, you have the chain drugstores MECDS and CHPA, I think. So there's a wide variety of associations out there. That's another avenue certainly to reach out for funding, because right now, as we look at trying to adopt RFID within the pharmaceutical supply chain, it's an area that as we talk within our associations, we recognize that we need other help. And it's not just the associations. So academia plays a role in that, absolutely.

MARK ROBERTI:Right. Is there a-- I think the problem that I see is, if you want to develop, say, a good item-level tag, and you want to fund that research, you put a lot of money into that. You work with a research department, and then your entire industry, your competitors, all get the benefits of that. So how do we overcome that problem? And my example is pharma, but I think it applies to logistics or retail or other areas as well.

MICHAEL ROSE:Well, I'll take the discussion away from pharma. I think what we're looking at here, regardless of the industry, is the adoption of RFID. The only power in it is if you have a large network that can adopt it.

So there's a huge network effect towards the adoption of RFID. So when you get to areas around the tag and some of the supporting network infrastructure required to communicate that information I'm not quite so sure that's a competitive advantage. I think it's the actual use of that information, maybe design of new products and services off of that common infrastructure, that become areas where we start to differentiate ourselves from each other.

SIMON LANGFORD: And I think Claus mentioned in our discussion earlier today, about collaborating and working within EPCglobal, and agreeing on the direction and where we need to have detailed research, whether that be on item level as we move forward or not. But I think that group of end users coming together and that that collaboration has worked great so far, and has really moved us on a pace, and make sure that the technology that's being developed is applicable, and will be deployed and used.

CLAUS GARBISCH: And I think we have a responsibility as big global companies to move it forward, because we see so many advantages. But I would not say that, on the long run, it is a competitive advantage. You may be an early starter, and you want that all the others follow you, because you believe in that technology. And therefore, I think as the biggest global companies, we have to go forward. We have to show that as an example, and then the others will follow.

MARK ROBERTI: Right. Claus, you're in the middle of the supply chain. And we often hear about the benefits for the retailer, we hear about the benefits to the manufacturer. Are there benefits for the logistics provider, and are there applications where you can work with the research community to drive some of the benefits for the logistics providers?

CLAUS GARBISCH: Yeah, I see it very strongly in parts which I have not mentioned today. I would say the asset tracking for all our containers in the-- if you go there on the sea freight side or for our freight part, this is one of the very important things. And in the supply chain, we have advantages as well. The only thing what I was mentioning was that it might be that the retail side has more advantages if it is fully deployed and fully implemented.

MARK ROBERTI: Right. When the internet came along, companies found some new business opportunities, new business models that hadn't existed before. Are there going to be some new business models for RFID, and should the research community be looking at those as well? And I'll just give you a potential example.

As a logistics provider, you're collecting a lot of data. You could be aggregating that data, and somehow perhaps selling that data to whoever would get value out of it. Do you see opportunities like that, and would you like to see the academic community looking at those opportunities?

CLAUS GARBISCH: Yeah, I think we are as a logistics provider. In the past, we were only carrying goods, parcels, and pallets, and so on. And today, I think we have another-- we carry more information. And we see in this new community fields where we can find new products, and where maybe that we can store all the information, and that we are a mediator between our customers. So we see there chances that we get their new products, and where we can find new products.

MICHAEL ROSE: One thing that I received within J&J is an RFID incubator fund. And it's a pot of money that we put together last year, and we fund it again for this year. And we'll see how long we can continue this pot of funding. And the idea is to help us to think differently about this technology-- think transformationally.

And so yes, I think there could be some new business models popping out of this. Some of the work that we've done internally, J&J tells us that that could be the case. So at least some exciting areas here.

DICK CANTWELL: I think we're just starting to scratch the surface with some very basic applications. If I use the display examples from this morning from Procter, that's very basic stuff. It's just knowing that your display went out onto the sales floor.

Once that display is on the sales floor, it opens up a whole new set of opportunities to understand how the consumer approaches that display, how fast does the merchandise sell, what locations in the store sell better than others? There's a tremendous amount of data and information. And then you can take it to the next level of actually starting to have an interactive experience with the consumer. That's all greenfield innovation, once we lay the basic pipe to establish the technology.

MARK ROBERTI:OK, I'd like to go back to Simon's comment about working through EPCglobal and making sure that the research is on track with where the industry is going. How do the people in the audience participate in that? Can they get involved with the BAG meetings?

Is there a potential for opportunities for perhaps ancillary meetings around the BAGs, where maybe they're not involved in the BAG meetings, but then come in afterwards and contribute? I think a lot of people are struggling. They're reading what's going on from the outside, and they're not really able to jump in.

MICHAEL ROSE: Mark, in work with the EPCglobal, I'm a tri-chair of the Healthcare & Life Science Business Action Group. And not to get into the detailed structure, we actually have one work group that's focused on R&D. And we would welcome some participation from the various auto-ID labs to participate directly on that team. Frankly, it's a team that is looking at some longer range areas of opportunity, but we really could use the help from folks from MIT, and any other auto ID lab.

MARK ROBERTI:OK, that's good to hear. What about the sensitivity around your business processes and what you are doing? So if the academics come in, do they need to sign NDAs? Is that an issue? How does that relate to-- if they're going to produce a paper or some publication, how do we manage that sensitivity, so that we're getting work done, but we're not compromising a company's proprietary secrets?

DICK CANTWELL: Any academic institution that does work with Procter will sign an NDA. But the value of having an academic institution do that work is, after the work is done, the proprietary information or connection can be culled out of it. It can be genericized. It could be combined with other companies' data that they're also working on. And an academic white paper that's very compelling, that sends a message to the industry, can be published.

SIMON LANGFORD: That's exactly the same situation from our perspective.

MARK ROBERTI:OK. I'd like to open it up to the audience. This is a chance to ask some of the leaders in the RFID sector questions. So if you've got a question, come on down and fire away. I know everybody's a little bit tired after two days. But Steve, go ahead.

STEVE MILES: I have a question that's an area that we've been working on. But with this notion that we now have a common XML representation of something, now part of our challenge as industries is to work out how we communicate this. And in the XML world, those of us who live in web services-- and we started out this whole convocation with Steve Bradt saying, well, remember it's not so much an internet of things as things connecting to the internet from the World Wide Web Consortium's point of view. So many of the technologies and opportunities for data sharing that we've talked about over the last two days rely on a multipoint-- something like a web services transport. John presented the notion of Google capabilities and so on.

But all of our legacy transaction systems, the businesses that we run together traditionally, the way in which we've shared data traditionally, those of us who have done that successfully, has been in point-to-point EDI protocols. And there's the larger-- I mean, when we talk about what are some of the underlying trends around us, this notion of moving to services-oriented architectures and something, many of us have initiatives inside our companies. But when we get down to supply chains, we're still used to connecting point-to-point.

So when I connect for data, even if it's the same XML schema, it's a separate call setup and a separate protocol if I'm connecting with one retailer or another. And I just wondered, from your perspectives of how you're moving with your organizations to this world of machine-readable content, where you saw yourselves in that process, and whether there were roles for academia to play to assist in making that transition.

SIMON LANGFORD: In terms of where the data resides, I think that the data will still reside in our case with Walmart, and with the holder of that data. And so I think it's difficult to get away from that point-to-point, and even on sort of track and trace, than using the ONS to find out where that case or all that batch of product has actually been seen last. But I still think you're going to get to a stage where you're then going into point-to-point connections to retrieve that information more detailed information.

MICHAEL ROSE: Yeah, I think the challenge you articulate there, Steve, is based upon our businesses between J&J and Walmart. It's not J&J and the community at large you know. I think, however, there are mechanisms that we could posit that allow us to more open up the way we exchange data.

So even though the business arrangements are one-on-one, and the data appears to be exchanged one to one, or will exchange one-to-one, there could be some common mechanisms that are used to exchange it across the community. Because I can't see nature of business changing. This case is, Simon's [INAUDIBLE] with Walmart. It's not with 55 other retailers talking to Simon.

SIMON LANGFORD: [INAUDIBLE] to this is to have a common format. So when you pull up various data from different retailers, then it's in the same format. And then you can just, machine to machine, handle that in the same way, which is less of a burden on the supplier or whoever is making that query. And I think there is, then, the big advantage.

DICK CANTWELL: I think where academia can play a role, once you have that common format, is to do some modeling and demonstrate uses of the data that can go beyond point-to-point exchange. Maybe it's a discovery mechanism that has something to do with counterfeiting and authentication. I don't know, but use the academic research to show how it can be done, and then industry will follow.

SIMON I guess building on that, Dick, it's really some of the triggers. What triggers are you looking for, not just on track and trace, but on replenishment and out of stocks and things like that? One of the key triggers that you would want to then build algorithms and some logic within your systems that, instead of having to troll through masses of data manually, you're really then just working by exceptions.

MARK ROBERTI: Question there?

AUDIENCE: My name is [INAUDIBLE] I'm from China. So I actually looked at you four here. I know you have big business in China-- like Walmart, purchase stuff from China, and you open one more store in China DHL is really famous in China.

But look at something-- China from the RFID industry and infrastructure is very different from the States and from Europe because it's really backward. So my question is, do you have special strategies for the RFID adoption for a company, especially for China? Or you will say that China will be just a part of your global strategies?

And also the second question, I'm doing some research work for RFID in China. So do you have any requests or something we can do for you? Because we know China and we [INAUDIBLE] the technology to see whether we can do some research work for these global companies to have some suitable things for China?

DICK I think there's a huge opportunity for China to leapfrog a whole generation of legacy systems that exist elsewhere in the world, and be a real innovator, which of course would be led by people like yourself.

CLAUS From our point of view, we are working at the moment on one trial, which we call China Europe-- and this is on the fashion side, where we have one manufacturer who is sourcing in China. And we want to bring this stuff into Europe, and we want to do it first with RFID. So this is the first trial where we want to go outside of Europe and try the overall supply chain. But this is only on a fashion trial.

SIMON In terms of how we operate our business in China, we try to have a level set of applications or systems, so that if we make a change in any country, we can very quickly roll up benefit to all our countries. And so in respect to that of your first question, we would treat China as any other country in terms of internal systems. But I think it's important that we can all work towards a common standard for RFID. That will mean that, whether we're operating internally with systems, or importing goods from China, those products are able to be read, whether they're going to Europe, the US, South America, around the world.

DICK If you're looking for a single application for research, one that would be particularly germane to my company is counterfeiting and authentication-- the ability to have a more reliable way to screen products and know what's real and what's not.

MARK ROBERTI: OK.

AUDIENCE: [INAUDIBLE] we are going to do, really working out the anti-counterfeit issues. And we joined the European committee project called [? Bridge, ?] and we're actually especially working for [INAUDIBLE]. Thank you.

MARK ROBERTI: OK. [INAUDIBLE].

AUDIENCE: Yes, hello. We've been meeting with certain manufacturers, which have been strongly asked to add RFID technology to their shipments that are going to a certain distribution center or certain retail stores in the United States. The manufacturers that we met said that they would be complying with the mandate. However, they were not always very happy to do it.

Some of them that we've met said that they don't really see any short-term benefit in doing that at the present moment. They're trying to take a look at where the ROI would be. They think there is an ROI, but they don't know for sure. And their answer to us was, when we started asking them questions, we're going to go ahead with this because we have to do.

And we've met other retailers afterwards who think that the whole Walmart initiative is a great idea, and they'd also like to do the same thing. But their suppliers are probably going to give them some pushback to implementing the RFID technology. So my question would be, what would be some of the best practices that you've encountered or developed in order to help the suppliers and manufacturers implement the RFID technology?

SIMON A couple of points I would make and-- I referenced this earlier in my presentation is-- an educational piece.

LANGFORD: Educating and sharing, as Dick mentioned, of whether internally you're working on white papers or with the academic world working white papers, and research and development, to share that with the wider community. And that's what we try to do to collaborate with our suppliers.

When we've asked our suppliers to join us on our initiative, it's not been, OK, you take these products or all these [? SKUs ?] in your portfolio. And if you think back to Dick's presentation this morning about his advantage products. And Gillette and P&G both independently looked at their portfolio and chose the products that were right to tag. And there's one company now, P&G, looking at the right products that deliver ROI in the short term, but looking at those next products that are just on the brink of delivering a positive ROI, and how do we get those into the program as well.

And it may be cost. It may be technology developments. But I think it's incumbent on us all to share information, where we're finding positive ROI in business cases to share those.

And that'll be different for every company, depending how they're set up, how mature their systems are. And really, the same answer to the gentleman from China, where some smaller companies have got older systems. Then there's an opportunity for them to leapfrog their computation as well.

AUDIENCE: If I may have a follow-up question, companies like Procter and Gamble and Gillette are definitely seeing advantages to RFID from the presentation that we saw today. So according to you, what would explain some of the manufacturers are seeing advantages and are going forward with the RFID initiative, whereas others will probably give more pushback?

SIMON I think it comes down to taking a hard look at your business. If you look at P&G, for example, a very efficient

LANGFORD: company. But yet, they've still identified-- and I don't want to speak for you, Dick, internal benefits and collaborative benefits. And that's a very efficient company. And as a technology matures, and we get into other areas, that will only go from strength to strength.

And we've would not just got our top 100 and the suppliers that are going live during this month, but we've also got volunteers, don't forget. We have over 60 volunteers now in the program. And those companies just haven't volunteered just for the heck of it.

They see real value, and a lot of those companies are getting real value out of it. And knowing that where we are today in a number of DCs-- a handful of DCs and stores aligned to those DCs, yes, we're all investing in the technology today. But we're going to reach a tipping point very quickly where we start to get that critical mass.

MICHAEL ROSE: I think our observation around ROI is you can't expect an ROI right away in this. I think there's a fair amount of experimentation and design of experiment that's required to figure out where the ROI is. So my advice to anyone getting into this, don't expect a real quick ROI right now, because you have to understand what products-- like, Dick went through selection of products. It's a very important step to go through.

And also, then you adjust your focus as you learn more and more about it. So I think we're very close to Simon's point, getting to the tipping point on this. But to the observations that you're hearing and comments you're hearing from some manufacturers, they're very real comments. I can't deny that.

But I think what they have to do is understand that dealing with a little bit of an R&D-based approach and they're going to have to invest a bit. And they may not see that return right away, but they will see it down the road. And a question comes in is, if you're going to play the game, do you want to sit in the sideline and watch the game occur and not participate? Or do you want to get on the field and practice and participate?

DICK CANTWELL: I would reinforce what Mike said. If you believe RFID is going to happen-- and I think 99.9% of people believe that, then why don't you want to get in the game and help shape the future? In the process learn together, with your retail partner, and create a strong partnership that takes the focus away from the day-in grind of price and promotion and negotiation, and begin to plan a future that is going to benefit you both?

MARK ROBERTI: OK, question here?

AUDIENCE: I'm Alfonso Gutierrez from the University of Wisconsin in Madison. My question is related to the impact of RFID in core management information systems, like manufacturing, resource planning, MRP, and DRP, the distribution of resource planning. Those systems which let's say that we could consider core, but also may consider legacy types of systems related to new technologies, are based on, basically, inventory levels.

And if we say that RFID is bringing a new paradigm, where planning should be done based on velocity-- meaning velocity, speed, and direction, those are terms that MRP and DRP don't know, don't understand. So my question is, do you see those systems as resilient enough to absorb these new concepts, or they have to be revamped? If so, when do you see that happening?

SIMON LANGFORD: One thing I mentioned earlier is, I think there's a lot to learn still replenishment systems. And that's one area that academia can help with as to really what does RFID and the UPC data mean to replenishment, for example, and our distribution methods? And as I said earlier, we don't know what we don't know. And as we start to peel the layers of the onion and look further into the data, there are more wows and ahas along the way.

DICK Procter & Gamble believes very strongly in a consumer-driven supply network. And RFID is going to be a huge enabler to get that real demand signal that can then be worked back upstream eventually to the factory. And IT infrastructure and IT systems are going to have to evolve to accommodate it. But I'm not smart enough to tell you how that's actually going to happen.

MARK ROBERTI:OK. Question here?

AUDIENCE: Yeah, given that your companies have been studying RFID business models for some time, and you've crunched through the numbers, I had a question related to item level and smart shelves. We've all talked about the \$0.05 tag for a number of years. But I was wondering if there's an equivalent price point for readers that you'd like to mention, either per reader or per linear foot of shelf space.

SIMON LANGFORD: In terms of readers on shelves and that sort of thing, that's not really anything we've looked at right now. We've been looking at the supply chain, case and pallet. I think as we get to that stage, I don't believe you're going to need readers on every single shelf in the store. I think there will be different ways.

And when we started to look at out-of-stocks, using case level information, some people said, well, how can you do that? Surely, you need to be at the item level. And we walked through our process and shared that with the industry as to how we can affect the customer shopping experience at case level without going to the item. And that surprised quite a few people, and I think that there are still more things there that we can do with case than we know today. But in terms of reader prices in general, I would like to see those fall in line with how tech prices are falling over the last few months.

MARK ROBERTI:I'll add a comment to that. Meadwestvaco, there's a gentlemen here-- they are smart systems. They developed a networking architecture that allows one reader to control many antennas. So you don't necessarily have to have a reader on every shelf. You just put the antennas in, and then you cycle through the antennas and read the inventory. So it's a possible solution.

AUDIENCE: I have a follow-up question now to Steve's question of whether it's peer-to-peer [INAUDIBLE]. I understand the business is always going to be peer-to-peer, Johnson & Johnson, Walmart, because if you look at the supply chain, the movement of the RFID tags, the merchandise is going to, let's say, Walmart, DHL, and then Johnson & Johnson. Then that's just one chain, and Walmart is simultaneously have many suppliers, and Johnson & Johnson is supplying to many retailers.

So Simon says they are always going to keep their own data. They're not going to surrender the data. So given those constraints, how will this kind of Google sync happen?

Because Google here, there's a spider that visits all the websites unwilling to publish those data. So put it another way, do you see EPC as a data clearinghouse of all those potential traces of data? Or also, do you see other companies or other organizations that, if they follow, let's say, EPC standard, they can set up their whole data warehouse, the clearinghouse, sorry, so as to achieve the sort of overall holistic view of traceability [INAUDIBLE].

SIMON LANGFORD: [INAUDIBLE] is held by others. But I think we need to take a step back as well as to what business problem we're trying to solve. Where do we want to get to? How do we want to work in the future? And then design applications and systems around that and meeting those needs.

MICHAEL ROSE: Yeah, and your question about how will this Google approach be implemented? I don't know that. I haven't a brain big enough to figure that one out. Sorry. But I think to Simon's point, we believe in a distributed architecture around this. To think that it's all going to be centralized in one place and one clearinghouse-- if Google could pull it off, maybe we'd would be willing to entertain it. But I'm not so sure yet that I see that and envision that right now.

CLAUS GARBISCH: Actually, in my opinion, it's not [INAUDIBLE]

MICHAEL ROSE: Right, but Google [INAUDIBLE].

MARK ROBERTI: But what about the issue specifically to the pharma industry, where you've got track and trace. You may have the FDA that needs to go and get data. You may need a customs official that needs to go and get data on a shipment. There's got to be somebody who's going to hold those Epedigrees and guarantee that they're secure so that that data can be recovered, isn't there?

MICHAEL ROSE: Well, that's a very interesting question. It's still being sorted out with the regulations. So I think it's a little difficult to presuppose what the FDA may want to do. I mean, they comment about how they may want to dip in and access this information.

But even if they do that, today, if they want to access information in, say, Johnson & Johnson, and subpoena us for that information. So the question comes in is just because magically, we're now producing pedigrees, does it all of a sudden this open up access to everyone. I'm not so sure that that's realistic.

MARK ROBERTI: Right OK, question here?

AUDIENCE: I'm [INAUDIBLE], and I'm a faculty at MIT. So it seems to me that RFID is currently in the adoption phase. So the next stage would be business processing and so forth. And then even further it would be business applications. So my question is, have you started thinking about business applications? And by that, I mean, for example, by using RFID data to say improve replenishment strategies, improve forecasting, promotions, and so forth, even with respect to marketing, for example? And a related, similar question, is, so RFID will definitely could save less stress on planning, because the supply blockchain will become more event-driven. Because RFID, it's about real time information. So when do you see this transition, or gradual transition, from planning more to being event-driven, more responsive, agile supply chains?

SIMON LANGFORD: I would say we're moving into that next phase. We're right on the cusp of taking that next step with some of our key trading partners.

AUDIENCE: I mean, I guess the question is, have you started thinking about the next step, which is business applications?

SIMON LANGFORD: Absolutely, involving various parts of our business, as well as our trading partners, whether that be on accounts payable to look at proof of deliveries and how that would work, and how we can evolve and work differently and smarter in the future-- to how do we replenish and how do we really work by exception, but automate everything else in the background using EPC data? So I think there's a lot of work that's still to be done. Lots of ideas and lots of input from lots of people and different organizations.

DICK Once the tag reader infrastructure is in place, on whatever scale, business applications are going to come very, very quickly and exponentially. Because as you prove value, it's just going to beget more value.

AUDIENCE: Thank you.

MARK ROBERTI:[INAUDIBLE].

AUDIENCE: Hello, I'm Antonio Rizzi with the University of Parma, Italy. My question is especially for the manufacturers, but also for Walmart. We've carried out research in Italy to assess the potential of and RFID and NPC global network on the fast-moving consumer goods. And we came out with one conclusion was that-- one possibility to cover the costs of tagging all pallets and cases could be found in the reduction of stock levels.

And I've heard a lot about reducing out-of-stocks, but very little has been mentioned about the reduction of stocks. And I'm talking of both cycle stock levels and safety stock levels-- safety stocks because of the visibility and cycle stock levels because of the possibility to adopt transshipment strategies. I'm just wondering whether the manufacturers here-- so Gillette and J&J have benefited from those stock reductions from weeks to days, because of the visibilities, if they quantify the reduction? And finally, if they've been able to adopt transshipment inventory pooling strategies because of this visibility for the APC global network?

DICK I think one of the reasons you don't see a lot of emphasis being put on inventory reduction right now is we don't have absolute confidence in what our in-stock position is-- accurate book stock, if you will, and accurate location of the merchandise. That is beginning to happen. We are beginning to identify real out-of-stock levels, and beginning to put in place new processes to be in stock more often and be able to locate inventory to keep the shelves filled. Once that happens, and we have confidence in our in-stock position, then you're going to find that there's more appetite for lowering safety stock and reducing inventory.

MICHAEL ROSE: I would say those areas you identified are ones that we're very interested in and we're monitoring, but it's very early stage. But they are key areas that we'd say, yeah, this could make some sense for us. It could justify our approach here, and could justify the expense of tagging products. So they are two key areas that we're certainly focused on.

AUDIENCE: Yeah, thank.

CLAUS And you can see it done on fashion. They do it. Because the stock due to the short season, there it is worthwhile to do it with was tags fully. And then you can get these what you have mentioned, the stock reduction.

MARK ROBERTI:OK, question here?

AUDIENCE: Yeah, I have a question. On your slides, and also on your colleagues' slides, the word privacy occurred. And the question I have-- I mean, MIT in many papers the kill function is the optimal answer to solve all those privacy problems.

Some research I did also proposes that at least in Germany, 75% of consumers rather want to have chips killed at the retail store instead of using a privacy-enhancing technology. Now, the question I have is, do you think that killing the chip at the store exit will be the answer to privacy? Do you think that's realistic?

DICK No. I think as Simon said earlier, education is going to be the major opportunity to dispel concerns about privacy
CANTWELL: than respect of guidelines for the safe and responsible use of the technology. The kill function, as it becomes technologically available, is a necessary right of every consumer. I think what we will find is the educated consumer who has the option to kill or not kill is not going to kill the tech.

SIMON And also somebody-- I forget who it was, forgive me, mentioned about through that education and through
LANGFORD: people using the technology and touching the technology will transfer to a consumer pool. They want to use the technology for things either in their home or for returns and warranty information-- that type of thing. And there are huge benefits for consumers.

And rather than kill tags, then I know through some of the working groups, the Hardware Action Group, they're looking to reduce, for example, the read range. So a tag that may read 5 to 10 feet today to reduce that read range to contact. And so for privacy, if there's any concerns in the consumers' mind about privacy, and they would normally want that killed, then to reduce that read rate to contact still allows that customer to return that product, to look at the warranty information, the retailer. And so it can service them and still add all those benefits. But that's all for the future. But as Dick said, the key thing is education and why we're using it, and what's on the tag and what's not on the tag about personally identifiable information.

AUDIENCE: Thank you.

MARK ROBERTI: Doesn't it also depend on the category of products? So if it's clothes, I may not want a tag in my clothes. I may either want to cut it off if it's on a hang tag or kill it. Whereas if it's on-- I don't know, my television, I might want to keep it so that if my television is stolen, I could possibly recover it if it's found.

DICK I think you're right. I think that different products are going to have a greater or lesser likelihood to want to have
CANTWELL: the tag removed. But I think as Simon points out, as the benefits of the tag and keeping the tag are more understood by consumers, and they don't fear invasion of privacy because read range is not that large, it's not going to be necessarily something they're very interested in spending the time to disable or remove, because it's really not an issue in their life. In fact, it's something that's going to give them more opportunities to interact with the product after purchase.

MARK ROBERTI: OK.

AUDIENCE: I promise this is my last question. If RFID can have the potential to help Walmart better manage their inventory, reduce out-of-stocks, and et cetera, other benefits, then could the same be true for their manufacturers? Could their manufacturers-- if they ask their suppliers to incorporate RFID, could they also better manage their production inventory and their own processes? Do you see this happening where the technology will diffuse throughout the supply chain in that direction?

SIMON I don't want to speak for the manufacturers. But certainly, if there are benefits from our suppliers to ourselves,
LANGFORD: and to the end consumer, then surely, there are benefits all the way up the supply chain. And the session previously about packaging and the goal for tags [INAUDIBLE] to be incorporated into packaging, how can we better manage that packaging, that raw material in the process?

MICHAEL ROSE: Right now, we're very much focused on working on the consumer side with the retailers. And then also in this whole area of patient safety, there are two areas of focus. Over time, you see it expanding from there.

So yes, we can see where, as we receive goods, we may want to have a tag as well. We're not going to put it in a mandate to say [INAUDIBLE] tagged product that's coming into us. We're not at a point where that makes sense for us.

AUDIENCE: OK, but this was a two-part question.

[LAUGHTER]

So if the suppliers are going to incorporate that into their product line, eventually, the products that have the packages that have RFID are not only going to go towards Walmart. But also, there are other buyers, there are other clients. So perhaps other retailers, because they're receiving packages that have RFID, will simply be putting readers and antennas in order to benefit from the chip that's already there. Do you see this happening? And if that's the case, how can Walmart keep their competitive advantage?

SIMON LANGFORD: I would say that's a good thing. To date, their product is product flowing here in the US. That is flowing to us as part of a manufacturer's tagging initiative that is flowing to other retailers. Whether they choose to use it and take advantage, that's up to that individual retailer.

But we talk about adoption, and one of the questions earlier was about competitive advantage, and sharing and not sharing information. And we're all about adoption and driving adoption, and sharing that information. How you choose to use that data internally, that's up to individual companies, then?

That's where you get your competitive advantage. But in terms of broad scale adoption and receiving product and distributing product, then they're the givens. It's then how you use that intelligent within your own four walls.

MARK ROBERTI: Thank you. OK, we got time for one more question, then we're going to wrap it up.

AUDIENCE: This is about the security of RFID before the point of sale. Do you think it's a concern for suppliers, manufacturers, and retailers that, if the track that you ship your products are scanned by malicious reader-- say by a [INAUDIBLE] or a competitor, is there really a concern? Or if it is, what can be done to solve this problem?

SIMON LANGFORD: I think one of the discussions in the HLS working group is around security and encryption of data. In the general throes of things, in terms of privacy, then somebody standing outside the store, trying to read product and determine what a person is carrying, then obviously, that's not viable. It's just a number, and it'd have to have the database to go along with that to tell what that consumer has. But in terms of within the supply chain, then we're looking at how we secure that merchandise and encrypt those tags so it can handle properly.

MICHAEL ROSE: Yeah, so I think Simon is right on. I'd look at it and say, well, we want to use the technology to secure the supply chain. But at the same time, if we put it on there, it could be red. So there, it may be more easily identified. So there has to be some sort of mechanism of which we can either allow people to read it, but then don't get the information about what that product is, or there's some sort of encryption mechanism.

So we're working for a way of how to sort this through. It's been identified in the Healthcare & Life Science Business Action Group as an area where some companies have expressed some concern around this. The reality, though-- if you look at the technology today as it exists, if you're trying to read it through the back of a truck, if the truck door is shut, it'd be hard.

But I think that's our experience. I mean-- but on the other hand, we do have to be vigilant, and making sure that we just don't, through the enabling of new technology, open up a whole other area of weakness. So that that's a very hot topic of discussion right now.

AUDIENCE: Just a quick follow up, do you think the current gen 2 [INAUDIBLE] pack is ready to be deployed broadly in the supply chain before the answer for my previous question is answered? I mean, is for sure the-- the security problem can be surely solved, do you think the gen 2 class tag be broadly deployed? Is it a concern?

SIMON LANGFORD: There are some security features built into gen 2. Whether they're robust enough to satisfy some of the concerns that Mike referred to [INAUDIBLE] from the requirement.

MICHAEL ROSE: I would say that it's a step forward with those security features built in. But I think we're looking at gen 2 also for other reasons-- not just for security purposes. If anything, I think we're all hoping-- and I think our tests are showing that we're getting some benefits of improved read rates and readability.

So again, with any new technology, it opens up a new potential area that needs to be secured. So we need to be vigilant about that through our business practices. We just can't always look to the technology providing security as well. You have to look at the business practices, the way the products are handled. There's a whole host of issues that are wrapped around it, not just the technical issues.

MARK ROBERTI: OK, that's all we have time for. Ladies and gentlemen, please join me in thanking our distinguished panel.

[APPLAUSE]

And I'd like to hand it back to Steve for some closing remarks.

STEVE MILES: Well, [INAUDIBLE] thank you everyone, all of you, very much for coming. There's some cabs out front. I know people have to rush off to the airport.

Just a reminder-- everyone is invited to the May 1 next RFID academic convocation. We'll want to open this up. We've initiated sessions on the model of the discussions that have happened over the last two days on the Auto-ID Lab's website.

Feel free to share that with your colleagues. We're opening this up beyond just this immediate academic group to vendors as well, and looking for opportunities to collaborate. Thank you all very much for coming.