



The Third International Conference on Dependability

NETWARE 2010

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Panel: **Security in Sensors/Devices/Mesh/Internet
Infrastructures**

Moderator:

Paul Geraci, Technology Survey Group, USA
IARIA Board Chair, Emerging Technologies

Expert Panelists:

Aljosa Pasic, Atos Origin, Spain
Rainer Falk, Siemens AG, Germany
Masaru Takesue, Hosei University, Japan
Wolfgang Boehmer, TU-Darmstadt, Germany
Reijo Savola, VTT Technical Research Centre of Finland - Oulu,
Finland

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I. Introduction.

I must first humbly thank Dr. Petre Dini for inviting me to assist IARIA with the NETWARE 2010 Conference. I was tasked with moderating an extremely lively international panel of security experts representing academia and industry. We were tremendously lucky to have a panel consisting of such experts to discuss the issues of security; we also entertained quite a discourse on Privacy and Trust. In fact, of the original six or seven questions prepared for the panelists, we were able to get to only two due to the phenomenal discussions, thoughtful responses, and incredible audience participation. As such, the Panel still went over its stated time limit. Below is but a brief synopsis of the Panel, along with some direct responses of a more "lightening-rod" type question as the discussions were lengthy. The venerable panelists were, in no particular order: *Dr. Aljosa Pasic*, Atos Origin, Spain, *Dr. Rainer Falk*, Siemens AG, Germany, *Dr. Masaru Takesue*, Hosei University, Japan, *Dr. Wolfgang Boehmer*, TU-Darmstadt, Germany and *Dr. Reijo Savola*, VTT Technical Research Centre of Finland - Oulu, Finland. I would like to personally thank them all again for an enlightening and entertaining discussion, and their expert, frank answers to questions not only posited by the moderator - but to those thought provoking questions posed by the audience as well. And of course, we couldn't have had such a wonderful panel discussion without the attentive audience - and for that, I thank you all...

II. Panel

Moderator: The enormous advances in network technology has consequently resulted in the probable potential for changing the way we communicate and do business over the Internet. We also know that the utility of large networks, particularly social networks, can scale exponentially with the size of the network. This is known as Reed's Law. As such, wireless sensor networks have emerged as an exciting technology for a wide range of important applications that acquire and process information from the physical world. Further, Grid Computing has also evolved as a standards-based approach for coordinated resource sharing. This said, sensor grids combine resource sharing and the physical world by expanding the grid computing archetype; it allows the sharing of sensor resources in wireless sensor networks. As one can imagine, security is a major issue and challenge in the design of sensor grids, social networks and, in fact, any of our future physical and logical network topologies. Despite numerous privacy

regulations and customer demands, many of these topologies remain vulnerable to internal and external security breaches.

Leading up to the questions, the moderator used audience member participation to give an example of trust. Prior to the panel, the moderator had an assistant give a "password of the day" to a member of the audience. The assistant asked the audience member not to tell anyone the password. The audience member agreed. Just prior to the prepared panel questions, the moderator asked if anyone in the audience knew the password of the day. After some brief prodding, the participating, yet unwitting audience member raised his hand and told the password to the moderator in front of the audience. The moderator asked the audience member if he were told *not* to share the information, to which, the audience member gave an affirmative answer. The moderator then asked the audience if they should "trust" that audience member.

After some laughter, the audience response was mixed. After some deliberation, Dr. Aljosa Pasic, suggested that the issue was not one of *trust*, but rather *security*. "In fact", he said, "It is sometimes easier to define what something is *not*, rather than what they *are*." Most of the panel members agreed with Dr. Pasic, and some thought that it may, in fact, be a combination of trust *and* security.

III. PANEL QUESTION COVERED FOR PURPOSES OF SYNOPSIS:

1. Moderator: A great percentage of the population remains uninformed about Internet privacy issues; Trust, with regard to the Internet, is somewhat nebulous. There is little doubt that in most developed countries, citizens are increasingly relying on the Internet to gather information. Increasing Internet reliance is also evidenced by the dramatic increase of self-service options available to Internet users. Today, individuals are expected to book airline tickets, determine retirement plans, and, at times, decide between life-and-death medical treatments using Internet tools. Can you define "Privacy" and "Trust" for us as it pertains to the internet?

Dr. Pasic, continuing with his excellent comments on privacy regarding the opening experiment, explained that when one puts something on the Internet, for whatever reason, in numerous instances, the user must agree, in one form or another, that the content of their information may be used. In further defining "trust", Dr. Pasic related that in Spanish, the word "Trust" is "Confianza". "Con" meaning "with" and "fianza" meaning "guarantee". He explained that trust defines the latter in a relationship, and is tied to the context. He stressed the idea of context by saying, "In other words, one may trust Ebay for purchasing an item on the Internet; however, not for building credence".

Dr. Savola claimed that the issue of privacy, with regard to the internet is a very subjective concept, and that it can mean different things to different people all over the world. He explained that "Basically, it is the attempt to protect information and understood as

very strict security and there is strict compliance to the legislation surrounding the protection of the person's data". The esteemed Swedish scientist, when defining trust, agreed with Dr. Savola; he added that, "a good question is whether trust can exist between humans and *something*, or can it be between different [elements]?" "For example," he continued, "can one *object* trust another *object*?" He went on to say that relationships play a large part in "trust". Elaborating, Dr. Savola stated that if a Service Provider, a popular [brand] is used by many people, and then the populace tends to "trust" that "brand" even when there may, in fact, be some privacy issues with the provider that they do not immediately attempt to repair. He continued that a smaller, *lesser-known* provider, with perhaps *better* privacy might not do as well as it isn't a well-known "brand", and that, if they noted a security issue, they are more likely to act upon it faster, in order to remain in competition with the other, larger providers. He concluded by stating that trust, real or perceived, need not be proven - that it can depend upon other parameters.

Dr. Rainer Falk interjected by stating that many, including possibly the audience and some panel participants tend to look at the word "Trust" through the eyes of a Computer Scientist. "In Computer Science, we know 'zero' and 'one' - trust is everything else..." He went on to agree with the other panelists that trust is context dependent. [Trust] is dependent upon one's objective, ergo trust is extremely subjective. He elaborated by stating, "some might say that 0.1 is the trust factor, whereas another may say that 0.9 is the trust factor; and if we agree that this is context dependent, then I believe that we are discussing artificial intelligence because we are out there now, where we actually do not have a model and cannot model trust to the degree that it needs to be modeled". Dr. Falk suggested that the young scientists and engineers in the audience take this topic seriously and, perhaps, look forward, to working these issues in their future.

Dr. Wolfgang Boehmer stated that trust is *not* binary behavior, and that Privacy *is* binary behavior, it is binary in its orientation. Dr. Boehmer went on to remind the audience that the crux is that the Internet *cannot forget any information*. He further relayed, regarding Privacy, that once information is put onto the internet by an individual or entity - it is gone, it's too late - it is no longer necessarily secure or *private*, due to its binary nature. Regarding *Trust*, Dr. Boehmer stated, "Trust, I can make my *own* experience. I agree that we have no morals, no mathematics, no *matter*... we have *nothing* without *trust* or *privacy*; and this, I think, is the issue."

Dr. Masaru Takesue affirmed that *privacy* is user generated, and refers to the individual user; the individual user can decide to whom the information that they input will go. As such, the information can be protected. Dr. Takesue defined trust by stating, "Trust is the *core* of the future Internet; it is necessary to move forward." He further stated that if an individual user can reach out, and communicate with a server, one that is restricted to *only* that user and a few others - then the privacy is protected.

iv. Conclusion:

Though the topic was broad, the panelists displayed the ability to not only answer the various questions posed, but they also provided direct, thoughtful responses to the inquiries of the audience. Their insight, coupled with their industrial knowledge, intelligence, and amiable personalities allowed for lively discussion, spirited debate, and approximately 90 minutes of frank, intellectual discussion regarding a subject that I believe all attendees viewed as important, relevant, and topical. It is important to note that further discussions, questions, and thoughts were shared by the panelists, the moderator, and many members of the audience after the official panel discussion; serving as testimony to the not only the respect for the panelists' considerations, but to their performance as well.

A handwritten signature in black ink, appearing to read "Paul J. Geraci", is enclosed within a light gray rectangular box. The signature is fluid and cursive, with a large initial "P" and "G".

- Paul J. Geraci
IARIA Board Chair,
Emerging Technologies