Risk Management Holds the Key to Security and Trust: In a nutshell

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We contend that risk management holds the key to security and trust, and that risk management, security, privacy, policy, and trust management are central aspects of any dependable and security framework. Let us describe and analyse why they are central, the nature of their interaction, and their synergetic effect in meeting the security and dependability requirements of any security framework.

In our conceptualizations and descriptions it is frequently helpful for us to use a metaphorical model.
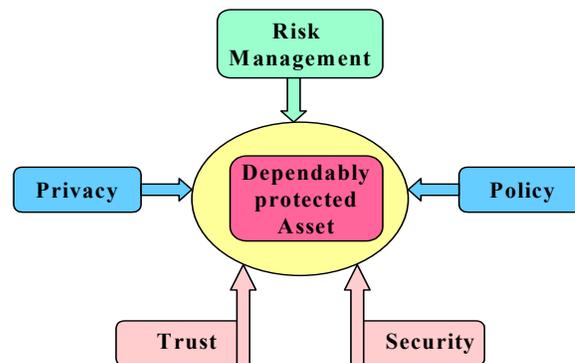
Figure 1The Thinking and Walking Dependable Rover

As stated in the white paper entitled "security risk analysis and management" by B. D. Jenkins, we practice risk analysis as a matter of course in our everyday lives. For example, when about to cross a road we always check whether it is clear, i.e. we analyse/assess whether there is risk involved (to the extent that we are still around), and cross if we perceive no unacceptable risks. For this procedure to be adaptive, we must be able to trust both our judgement and the reliability or security and predictability of the environment. As an elementary example, when deciding to cross a road we must be able to trust our ability to assess the speed of a moving vehicle, and to trust that it will behave in a predictable and regulation manner, i.e. to trust the driver's competence and the road-worthiness of the vehicle. We must also be able to trust that our privacy will not be at risk. This standard procedure is our standard general policy that governs our actions in this situation.

In our metaphorical model, which we dubbed "The Thinking and Walking Dependable Rover" (see the figure), the five central aspects of a security framework are represented by the head and extremities. In the course of its explorations, it first assesses and evaluates risk, i.e. it uses its head. If, in its judgement, there is no unacceptable risk, it advances resolutely, confident in the firmness of its footing on trust and security, i.e. it stands on its legs. It implements the policy that governs its actions and implements the mechanisms that protect privacy, i.e. it does things with its hands. For the Rover's explorations to be successful, all these five central aspects must be reliable, efficient and co-ordinated.

Our analogy may seem a little trivial, but it reflects reality and illustrates the importance of these five central aspects, and it is (precisely) the importance of these five central aspects that forms the basis of our contention that any security framework must address them in an integrated manner in order to meet the demands for security, privacy and trust, and that risk management is the kingpin. It has, after all, been stated that "because absolute security is impossible to achieve", a security framework that does not incorporate a risk management approach incorporating detection and reaction, is incomplete.