

Engineering Dependable Systems

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The modern society, where we live, relies on information systems more than ever. Information systems, as computing and communication infrastructures of the society, deliver a variety of services in every aspect of our daily life. Individual and organizational activities need to place great reliance on these services. In different circumstances, the focus should be on different property of such services, e.g. continuity, readiness, real-time response, avoidance of catastrophic failures, prevention of malicious intrusion, etc. The notion of dependability, defined as the trustworthiness of an information system which allows reliance to be justifiably placed on the service it delivers, enables these various concerns to be subsumed within a single conceptual framework. Dependability thus includes, as special cases, such attributes as reliability, availability, safety, maintainability and security.

This talk aims to provide basic concepts and design principles for such information systems that should exhibit some or all of these attributes, i.e. targeting the realization of networked information systems that can remain dependable in all respects, in spite of possible problems caused by accidental events such as human mistakes and physical malfunctions or by intentional behavior being either malicious or non-malicious. Motivated by questions frequently asked in the practice of introducing and deploying dependability efforts, we also discuss on how much we should pay for dependability and what we need to identify the relation among dependability efforts, dependability measurements and dependability costs toward a goal of establishing dependability engineering.

References

- 1) T. Nanya: "Toward Dependability of Information Society", 18th PRDC (Nov. 2012)
- 2) T. Nanya: "Economics of Dependability", IFIP WG10.4 Workshop (June 2013)
- 3) T. Nanya: "FAQs on Dependability", IFIP WG10.4 Workshop (Jan. 2017)