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Keynote Speech

Time Bombs in Modern Networks and Mitigation Thereof

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Electronics and Photonics Networks must be designed and produced to deliver the reliability required for the intended applications. Products 'Qualified' to inadequate levels of assurance can be time bombs when installed in networks. Such inadequacies arise through incompetent application, desk based 'qualification', and executive pressure. Commercial 'survival' pressures have resulted in expedient release of products which contribute to failures in the field. The vulnerability of such networks can be mitigated by designing-in fault-tolerance. While fault-tolerant networks incorporate primary and secondary recovery capabilities, such recovery must ensure there are no common-mode hardware or software faults that compromise the recovery systems themselves, which can also arise where reliability assurance has been inadequate. There are practical solutions for achieving reliability of the original products, namely, to follow the streamlined Building Blocks approach, with overstress designed to be fit-for-purpose for the level of assembly and sampling to provide statistical credibility. Skills in both hardware and software reliability methodology do exist to provide adequate reliability assurance to safeguard modern networks. Ensuring that telecommunications networks meet the desired lifetimes requires either that product reliability is built-in and proven or that the networks are built to be resilient, requiring investment. Who pays? In a market economy, the end-users must decide whether they want a reliable high Quality of Service and be willing to pay the price. If we keep going for the cheapest, we may get the worst.

About the speaker

Nihal Sinnadurai graduated with Honours in Physics at the University of London and obtained his PhD for his research into Reliability in electronics through the University of Southampton, England. He is a Fellow of IEEE, Fellow Institute of Physics, a Chartered Engineer and an IEEE Distinguished Lecturer. His career spans a strong grounding in

reliability with major responsibility for introducing cost-effective solutions for advanced digital systems for British Telecommunications. He headed the Computer Aided Engineering operations at BT Labs and subsequently was Chief of British Telecommunications Intelligent Networks. After a brief spell as Professor at Middlesex University, he returned to industry. As Vice President and Corporate Director of Bookham Technology (now Oclaro) a major photonics company, he was instrumental in establishing its leading photonics reliability team, achieving the Gold Award from Huawei and Best in Class in Reliability from Nortel Networks and a 75% reductions in global Customer Returns.