

In this talk, we introduce a new model for the interconnection of processes. It is based on relays, which give processes more control over their incoming connections than standard models. This allows to solve the Finite Departure Problem, in which processes want to decide when it is safe to leave the system (i.e., without breaking connectivity among the remaining processes). Traditionally, solving the Finite Departure Problem required the use of oracles. We show that relays preserve universality, i.e., it is possible to transform any weakly connected topology into any other weakly connected topology, which is important for being a useful interconnection model for overlay networks.

In addition to this, we demonstrate that the relay model is useful because it can be incorporated directly into the Trusted Computing Model. In this model, every system is divided into an Application Layer that has large storage capacity and computational power but is potentially insecure, and a Trusted Communication Layer that is lightweight in both its resources and its functionality, but that can securely manage ports and keys and can securely execute basic primitives. This model offers additional advantages in both security and anonymity. One of our projects is to implement this model with the use of so-called "Trusted Communication Modules", which are mini computers that operate between the network card of a PC and the router.