A module for the FTT-SE protocol in ns-3

Fábio Oliveira, Ricardo Garibay-Martínez, Tiago Cerqueira, Michele Albano, Luis Lino Ferreira
Modern real-time applications, for example automotive applications, are becoming larger and more complex.
- Tens of interconnected ECUs requiring high bandwidth and computing power.

FTT-SE provides higher bandwidth and conciliates
- best-effort traffic
- real-time traffic (synchronous and asynchronous) in reserved time slots

Master on the bus to manage reservations
Features of the FTT-SE module

• It implements the FTT-SE protocol:
  – **Helper to configure** FTT-SE network,
  – **Runtime** *Plug-and-Play* scenario for the dynamic registration of streams (messages)
  – **Traffic scheduling** by the **Master** node guaranteeing hard real-time constraints
  – **Bandwidth guarantee** for two types of traffic: **Synchronous** and **Asynchronous**

• **Fork-Join Parallel/Distributed paradigm**
  – **Real-time Concurrency modelling** for single core distributed nodes