

*SES/workbench*

**Modelling of High Speed Data Network  
Protocols**

by

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# **High Speed Data Network Protocols**

- ATM Satellite Links, Jet Propulsion Laboratory**
- X.25 Networks, Advanced Technical Skills**
- Basic Queueing, Undergraduate Teaching**
- Source Modelling**
  - Voice, Two state model**
  - Video, H.261 One layer model**
  - Two layer model**
  - Data, File transfer model**
- ATM CAC, Call Admission Control**
  - Leaky bucket**
  - Distributed pricing**

## **SES/workbench:**

# **Modelling of High Speed Data Network Protocols**

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### **Abstract**

This talk will illustrate some examples of the successful use of *SES/workbench* in modelling data communication protocols.

In the first instance from an educational point of view a presentation will be made of the use of *SES/workbench* in modelling some X.25 link control protocols, such as the Stop-And-Wait and the Go-Back-N. These have been used in a EU funded course on Advanced Technical Skills (ATS) in telecommunications. Other educational benefits have been used in the graduate and undergraduate curriculum in the teaching of communications and especially queueing theory.

From the current research the use of coded video and voice has been analysed and some models built using the *SES/workbench* [1]. These include a two state model for voice and an eight state model for H.261 one layer video codecs. There is also an ATM type video codec that consists of two layers and this has been modelled on each layer [2].

There is also work dealing with the congestion control of ATM sources. So far the leaky bucket method has been implemented and is likely to be one of the standard approaches to traffic policing in the ATM's. A novel approach of pricing the sources is in progress with results expected this summer [3].

To conclude a piece of work that has been accomplished in the Jet Propulsion Laboratory on modelling ATM (Asynchronous Transfer Mode) over Satellite Links will be addressed. This shows a new proposed protocol for the ATM when using satellite links, which adheres to the ATM standards [4] [5]. It will be shown how the *SES/workbench* was used to model the critical parts of the protocol.

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## **References**

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