

# Project Proposal for Monique

SUPERB Summer 1998

## **Description:**

Design and implement a network control protocol for a wireless intercom system. Includes high-level modelling, simulation, verification, implementation, and testing. The protocol will perform all control tasks related to call setup and termination, including point-to-point and conference calls. The protocol will also be responsible for resource allocation and aspects of network security.

## **Task Outline:**

1. High-level modelling using Telelogic SDL.
2. Simulation and verification using Telelogic tools.
3. Implementation in ANSI 'C'.
4. Bench testing.

## **Goal:**

This project should take a couple of months to complete. What "complete" means can vary because step 4 tends to be somewhat painful and full of nasty surprises for reasons usually unrelated to protocols. So, we should probably shoot for completion of step 3, at least, and as much of step 4 as possible.

## **What You'll Be Learning:**

Object Oriented Modelling concepts  
System design methodologies e.g. functional partitioning, encapsulation  
Message passing network protocols  
Finite State Machines (FSMs)  
Standard lab test procedures

## **What You Need To Do First:**

To get started, you should get up to speed on OMT and SDL. There are a couple of books that cover the subjects pretty well (we have copies). Once you feel comfortable with these, learn how to use the Telelogic tools - there will be a research computer account ready for you, and all the necessary resources will be set up. In the meantime, we'll define the problem in detail together so you'll have a clear understanding of what's involved before you proceed with modelling. Also, you may want to develop a broader understanding of protocols in general - there are some good recent examples you can study as time permits.

## **Some Background:**

This four-step approach (Fred's enumeration) is relatively new in protocol design, although the concepts have been around for a while. The primary concepts used here are object oriented methodologies and system modelling; the new part is the marriage of the two, and the emergence of software tools that automate the procedure. SDL (Specification and Description Language) is a modelling standard that was developed some twenty years ago. Recently, OO concepts, specifically the Object Modelling Technique (OMT), described by Rumbaugh et. al, were added. Due to the fact that SDL was never intended to be OO based the combination is somewhat of a kludge. It is, however, a workable system. The Telelogic tools implement what they call SDL-oriented Object Modelling Technique (SOMT), which is a combination of SDL 96 and OMT. In addition, they include simulation and verification capability that used to be done largely by hand.