

Development of a Stand-Alone Trigger System for Research Vessels using Embedded Real-Time Java

To achieve correlateable data during a distributed acquisition process it is essential to synchronize the measuring devices involved via a trigger-impulse on the same time reference and to link the data obtained with meta-information, such as the acquisition time and position.

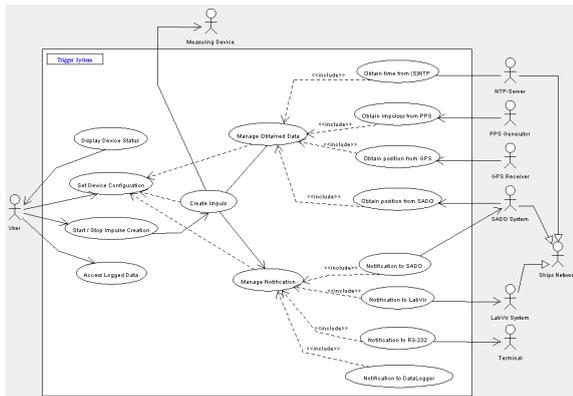


Fig. 20. Simplified «Use-Case Diagram», showing the trigger system's main functionality

Usually the trigger moments are defined either manually, by a certain point in time or by the vessel's position.

The system we are developing will be able to access the vessel's NTP (Network Time Protocol) server as time reference and a GPS receiver as position reference to determine the desired trigger moments. Additionally, the vessel's network will be notified of the data's meta-information in a LabVir or SADO compatible format.

The trigger system's hardware is based on a Systronix «SaJe» board, equipped with aJile's native Real-Time Java processor aJ-100 and the necessary peripherals.

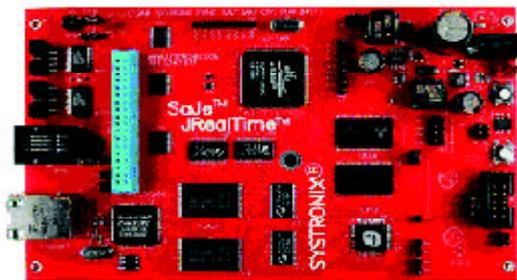


Fig.21. Embedded Real-Time Java System «Systronix SaJe»

By employing «SaJe» we will not only benefit from the advantages of Java as an object orientated, high-level language, but also from the natively integrated full real-time capabilities without disadvantages in execution speed or the need of an underlying Real-Time Operating System (RTOS).

Combining Undergraduate Research and Industrial Practice: A successful Approach to University – Industry Relationships

Much has been said about the role that government, industry and universities play in the development of a society. Cooperation among the three players is desirable and setting a model of cooperation that guarantees a smooth interaction of the roles would be wonderful. However, it is clear that there is no one unique model for those roles, and many factors affect the objectives that a player can set to be part in the goal of development, as well the manner in which such objectives will be pursued. There seems to be a common thread in the arguments put forth by social, industrial and university leaders,. Basically, these arguments can be summarized as follows: Universities provide education to continue development, in addition to other skills and knowledge necessary for social continuity and order; industries provide economic tools for development and/or social well being, at least at the level of employment providers; governments act as facilitators for the other players, and will intervene in several ways, depending on the degree of involvement that players and leaders alike are willing to accept.

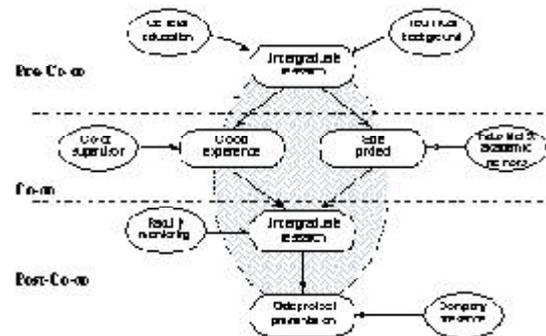


Fig 22. Cooperative Model Used for University-Industry Relation

In general, most countries, specially developing countries, have no similar programs, even though some American and European companies with plants outside their countries have contacted private universities, mostly graduate studies institutes or departments, from elsewhere to provide some students with co-op experience either in the US or Europe. However, very few companies do it in the country of origin of those students. Also, some universities require practical experience as part of the requisites for graduation, but no particular advantage is obtained from these practices. The purpose of this paper is to extrapolate two different experiences, that of the ECE Department at UPRM, and that of SARTI-UPC. Both illustrate successful interaction but at different levels.