The SPring-8 Linac Control System Using Object Oriented Concept

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1.Introduction

At the present software technic, the methodology of Object Oriented Programming(OOP) has become the mainstream, because it give the efficient development of programing and the easy maintenance. OOP needs many parts of program that called Object, and these objects are assembled into one main program. Many Objects are accumulated in the system, so that the future development will be easy by using these Objects. On the accelerator, we consider the system as an assembly of many parts. And it will be always improved or replaced. So OOP is suitable for the accelerator system[1], then we try for using OOP.

2. The SPring-8 Linac

Fig.1 shows a layout of Objects in Linac. Each Objects in the VME system, is one-to-one projection of real components.(Figure 1) So that we can control as if the Object is a real component. When a real device is replaced by a new device, the Object is only replaced by the new Object, that's all. This is different from a conventional structured programming, therefore we can get high programming efficiency. About the Man Machine Interface(MMIF), now we are designing.

3. Super Class "MACHINE"

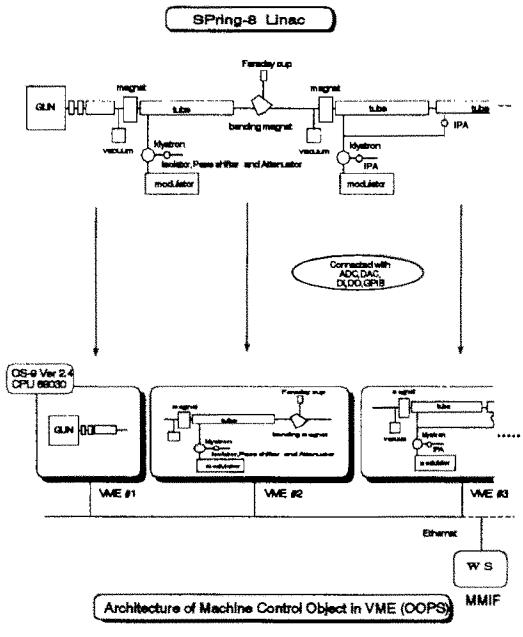

Fig.1. Layout of Object in SPring-8 Linac

Assuming that Linac is constructed by similar simple components, we can design the Super Class "MACHINE" as the core of Object. It have common characters of all devices. Figure.2 shows the Super Class "MACHINE" and its Sub Classes. Main attributes of "MACHINE" are the "parameter and status" and the "Behavior". The "parameter and status" means the operation elements of Object, and the "Behavior" means the transitional status of Object. Further, the "MACHINE" can recognize SPring-8 Linac Control Command(SCC). SCC means the inter-Object message for SPring-8 Linac Control system. So that all sub classes are operated by SCC.

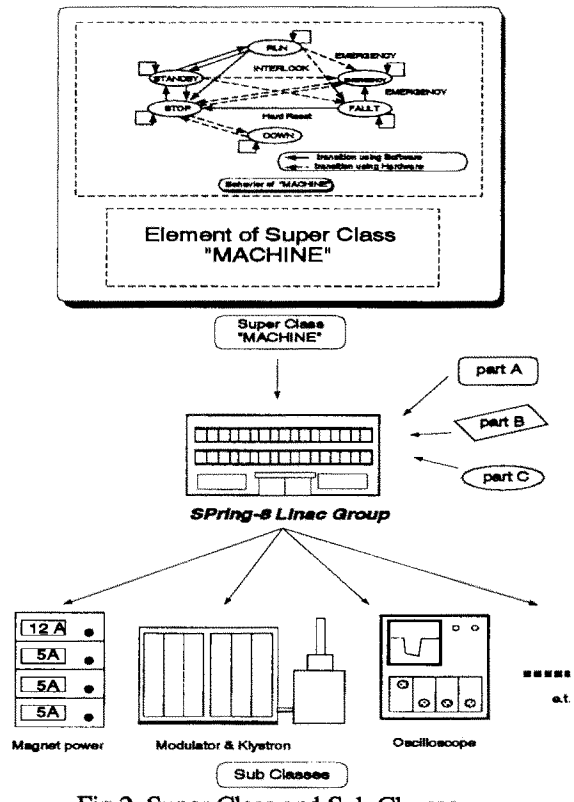

Fig.2. Super Class and Sub Classes

4. Conclusion

The Super Class for the Linac was designed, and the Sub Class is able to be designed easily. Now many Objects of the LINAC are in production. These Objects are going to be tested at this year.

Reference

[1] H.Nishimura, "Dynamic Accelerator Modeling Uses Objects in Eiffel", COMPUTERS IN PHYSICS, Vol.6, No.5, 1992,p456.