The Design of Intelligent Integrated Control Software Framework of Facilities for Scientific Experiments

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Challenge

- Hundreds of thousands of irregular control points.
- System is required to work properly for several days.
- The construction period of the project is very long, and the demands are changing over time in many fields.
- The control system needs to adapt quickly to those changes and expanding demands.
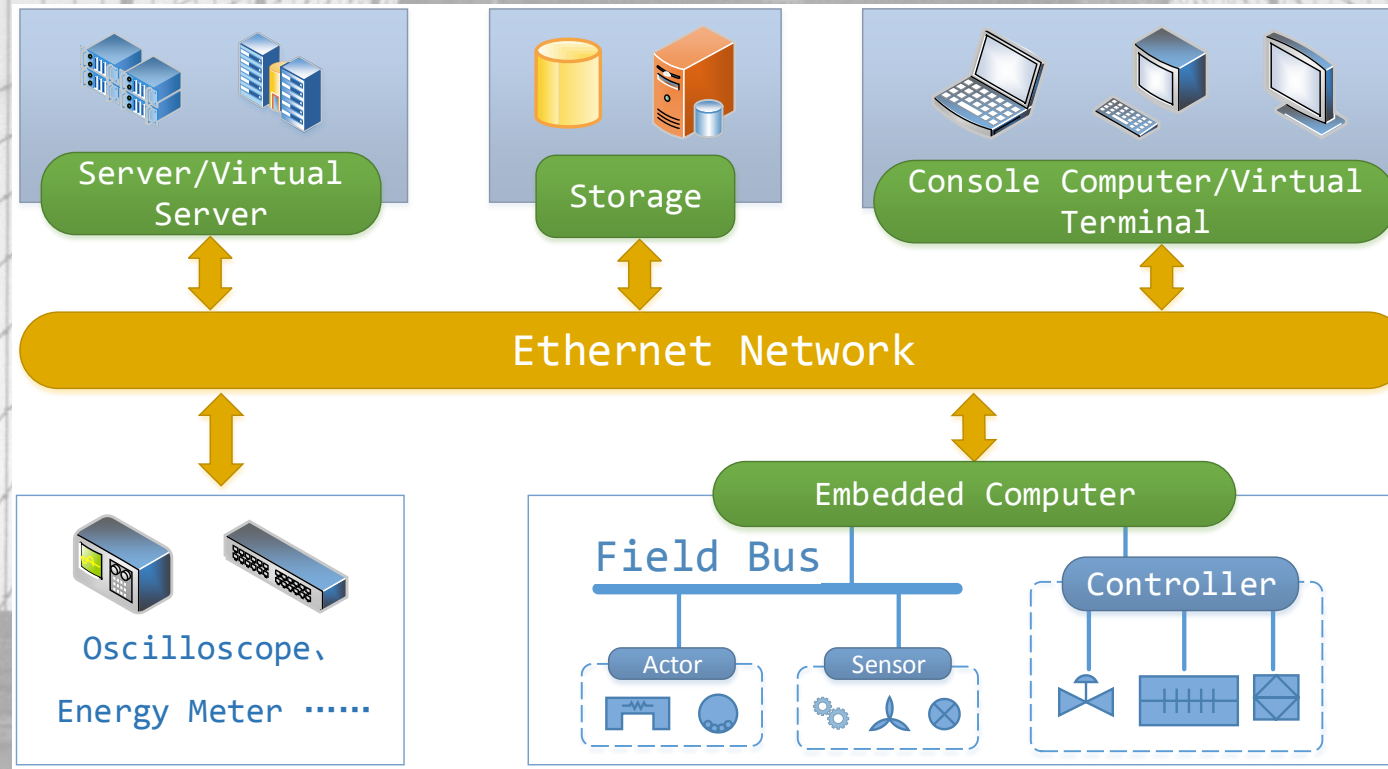
Our work

- We have abstracted the common requirements of monitoring, control, data acquisition and storage of the control system.
- We are developing a distributed, hierarchical, object-oriented control software framework called iCOFFEE.
  - ✓ Implement device library(software device library, domain algorithm library, control flow library).
  - ✓ Provide a friendly GUI for the operators.
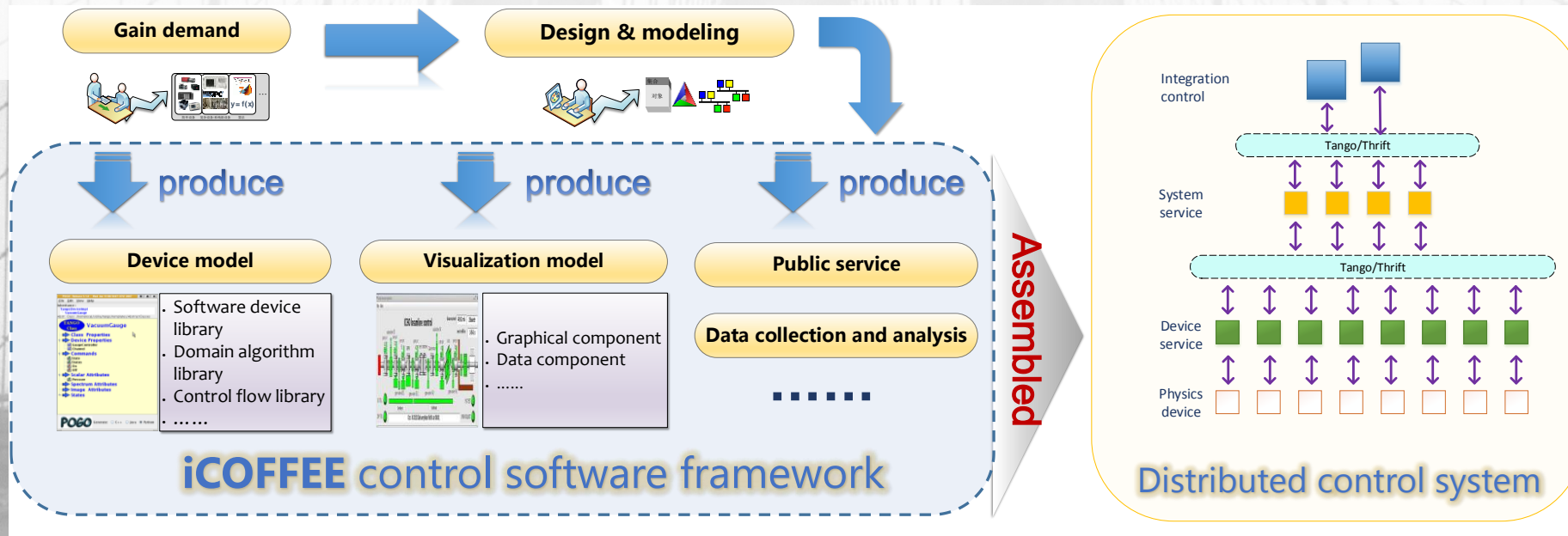
Conclusion

- The construction of the iCOFFEE incorporates many of the latest advances in distributed computing and object-oriented software technology. The primary goals of the design are to provide an open, extensible, and reliable architecture that can be used by many entities and provide long-term maintenance and upgrades. The original intention of the design was to reuse the software and quickly build the application software.

- Based on the framework of Tango and Thrift, the framework uses the factory architecture and component technology to reuse the software at a higher level, and build a big data analysis platform based on data collection.