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The Design of Tango Based Centralized Management Platform for Software Devices

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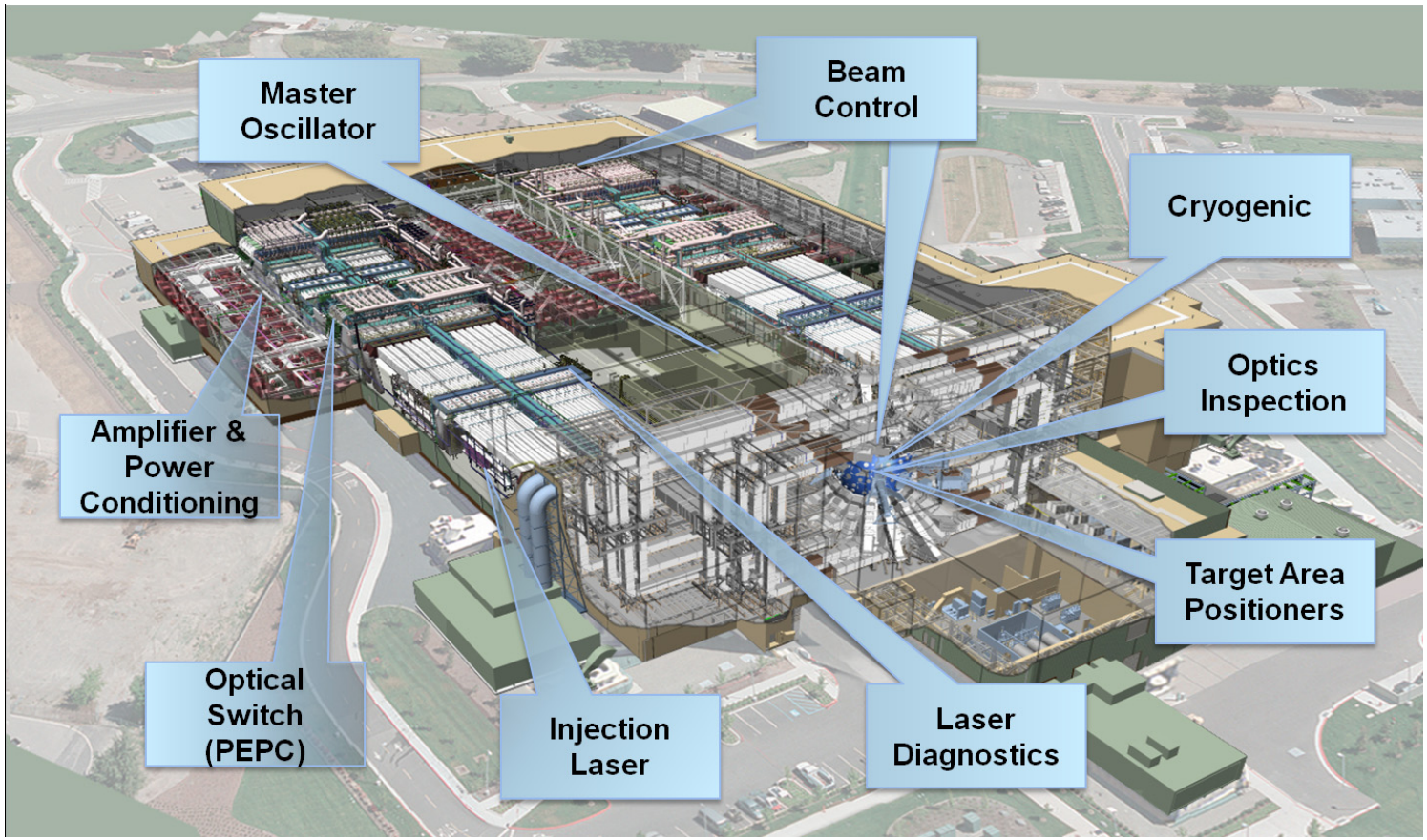
Outline

Background: Introduction

The large-scale scientific experimental device consists of a number of systems, units and components.

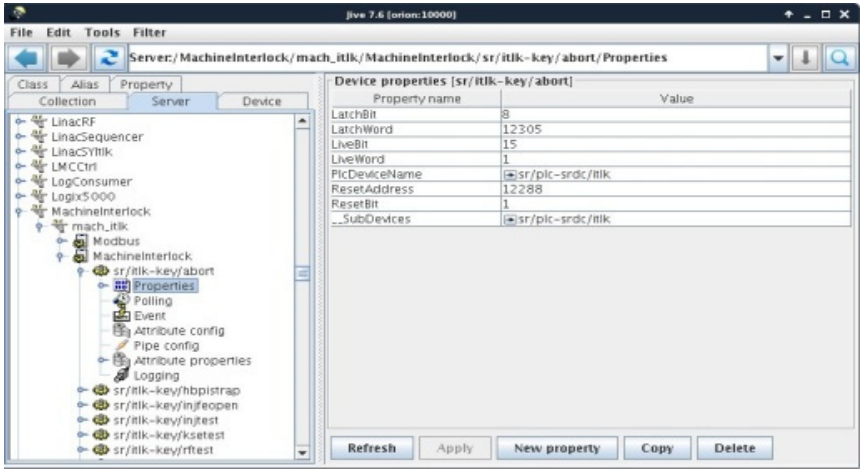


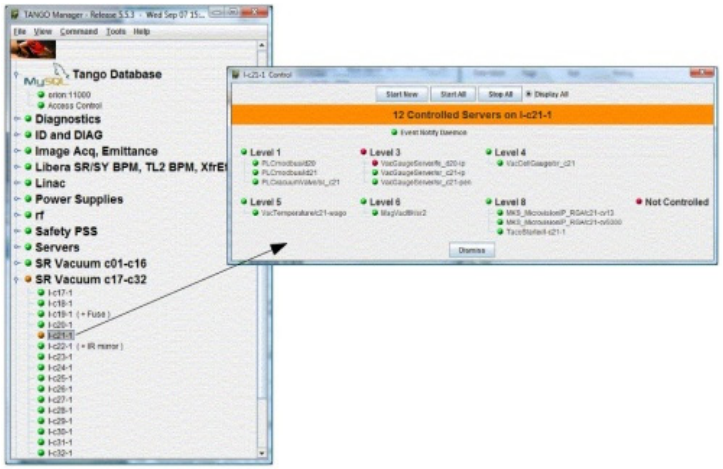
Background: How to manage a large number of devices?

- For example: NIF ICCS is a layered architecture of 300 front-end processors attached to nearly 60,000 control points
- Such as valves, motors, CCD, and so on.
- How to effectively deploy, monitor, upgrade and visualize a huge number of devices is a topic worthy of study. Centralized Management Platform named VisualDM is designed to address this issue.

Background: Jive or Astor can do it? No.

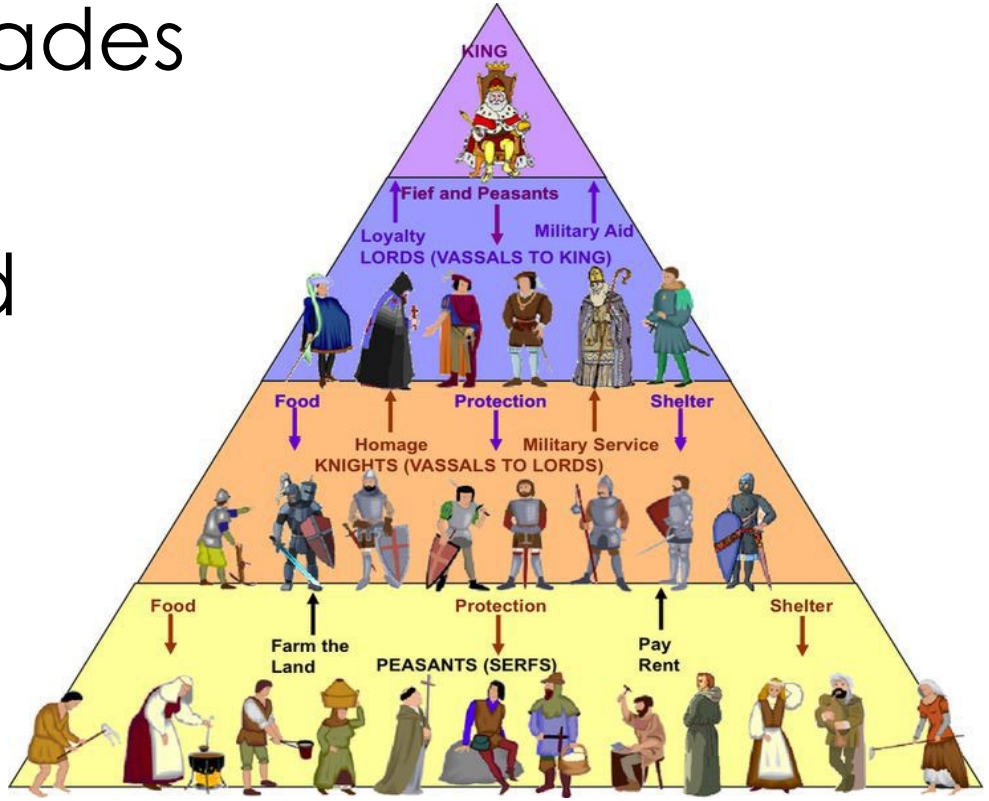
- Jive can manage and create devices, properties and classes. Jive also offers advanced search/selection features.
- Astor display a tree where node could be a family of hosts, and leaf are hosts where a Starter (a program belonging to tango) device server is registered in database.





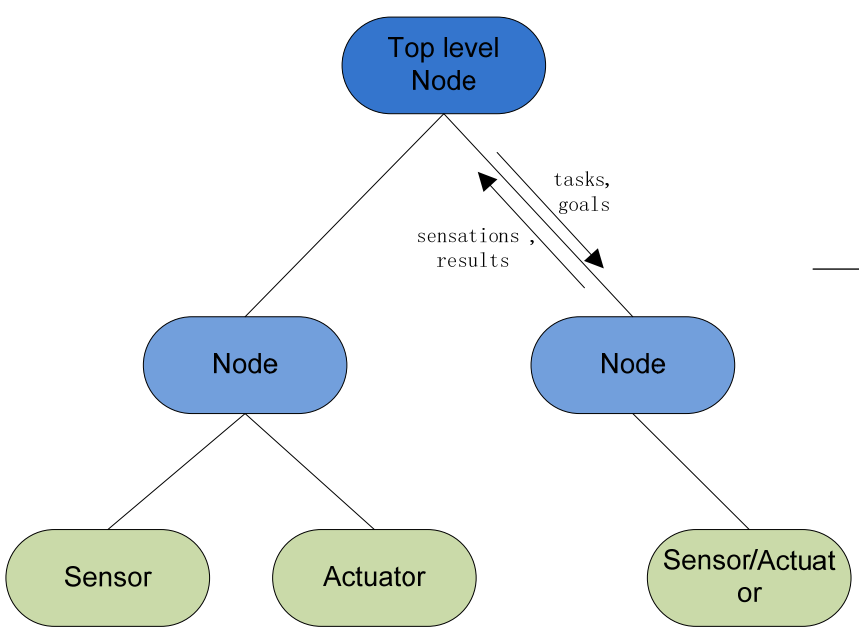
Human society is hierarchical

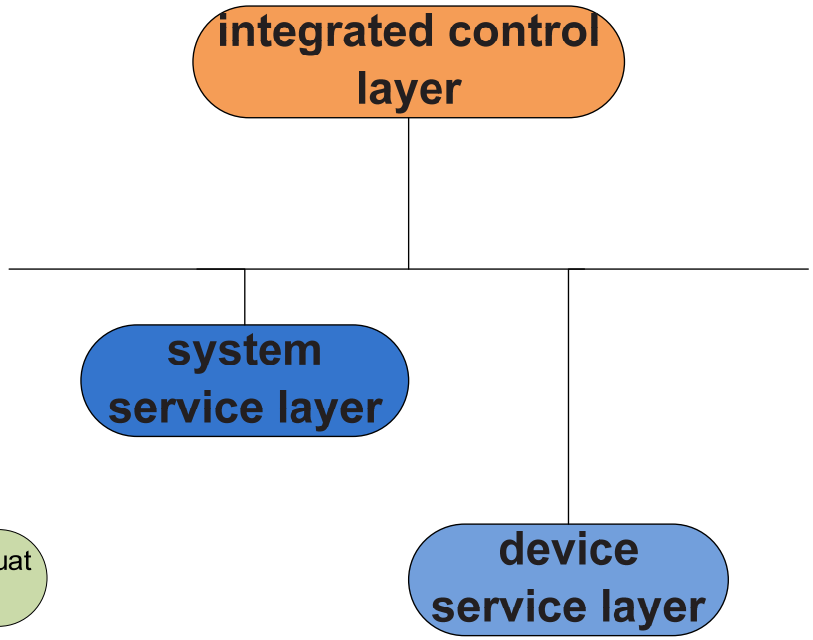
- From the king to the civilians, divided into many grades
- The rights are incremented



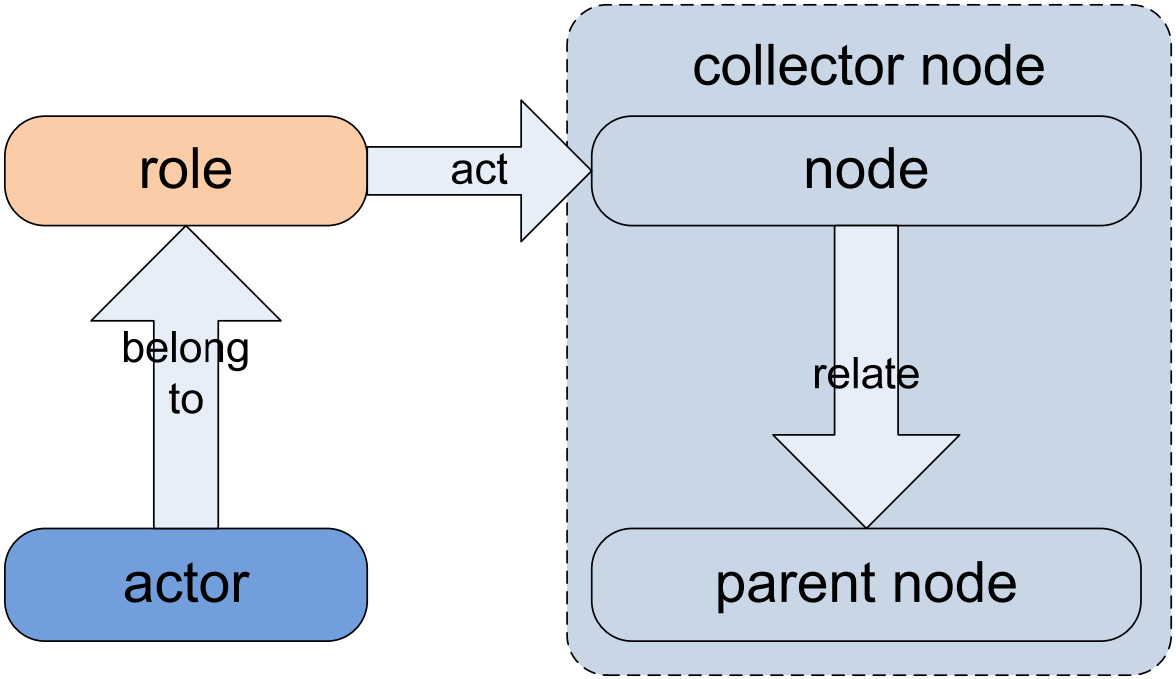
Control system is also hierarchical

- Commands, tasks and goals to be achieved flow down the tree from superior nodes to subordinate nodes, whereas sensations and command results flow up the tree from subordinate to superior nodes.





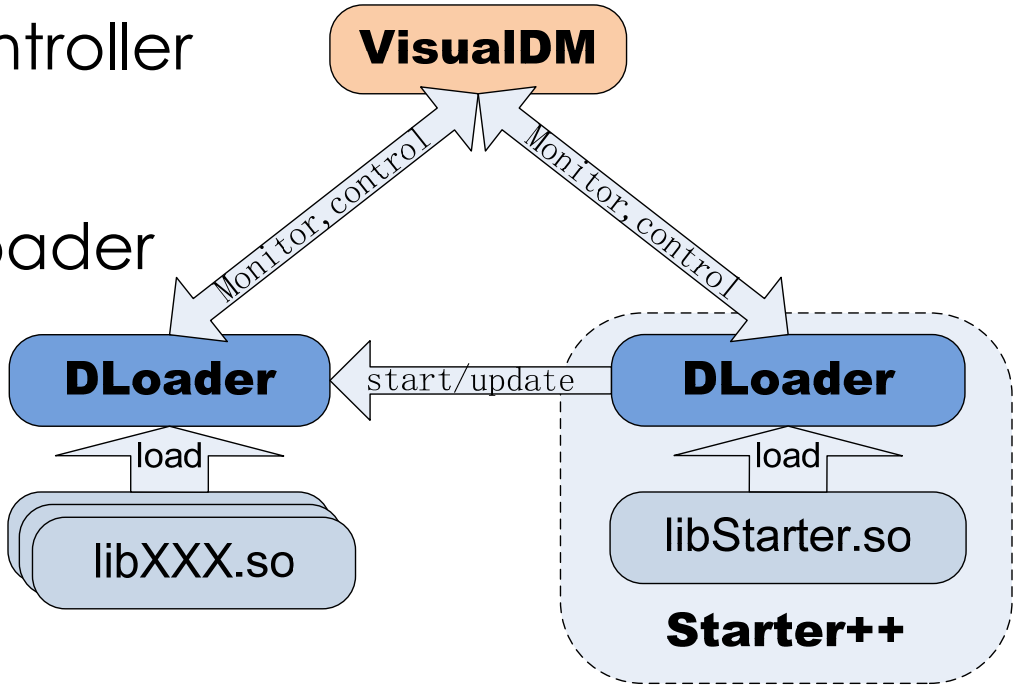
Device Monitor Model



- Each tango device is a node that can be monitored.
- Dependency between nodes and nodes, which can be expressed by directed acyclic graphs.
- The combination of nodes is a collection node.
- Give role permissions to manage nodes.
- The actor belongs to a specific role and can belong to multiple roles.

VisualDM based on DMM(0)

- **Three elements of VisualDM**
  - VisualDM
    - Client, Monitor, Controller
  - DLoader
    - Run-time Device Loader
  - Starter++
    - Default installed



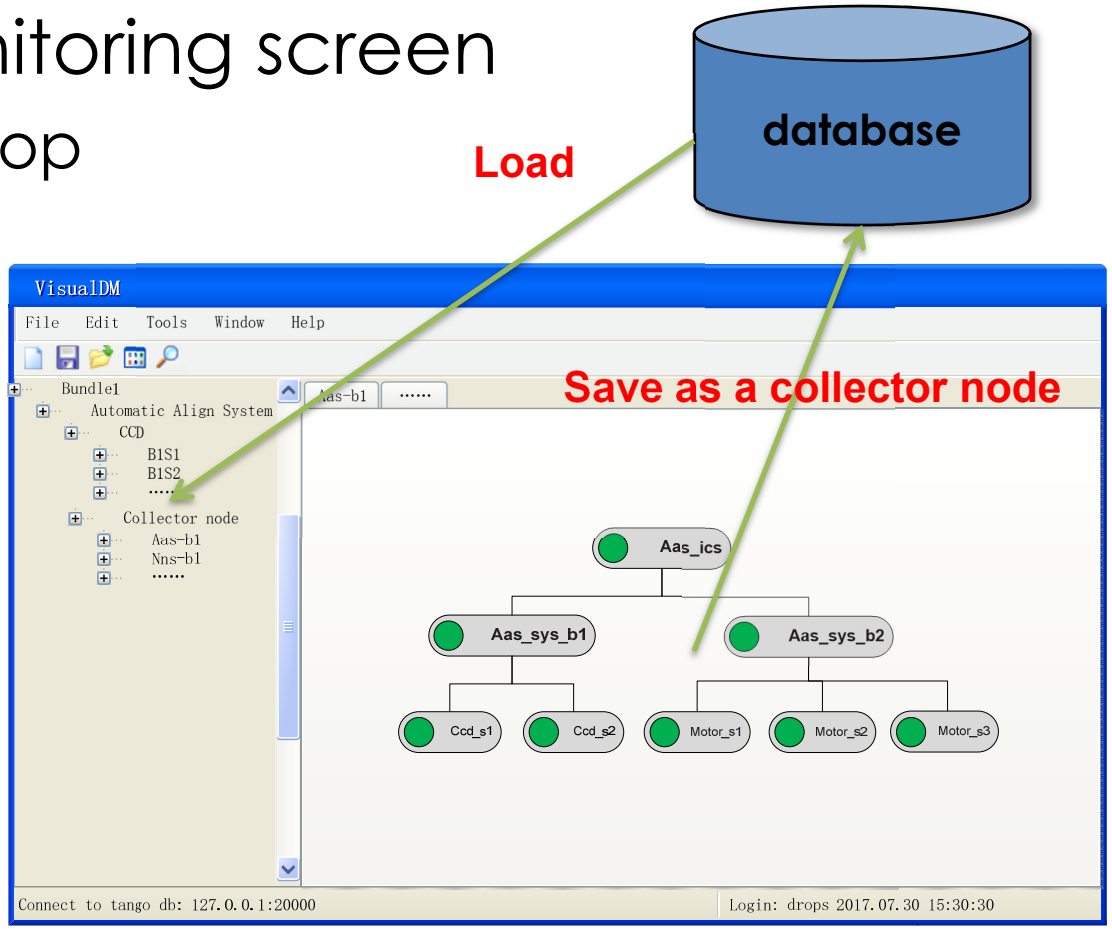
VisualDM based on DMM(1)

- **The features of VisualDM as follows：**
  - ① User Management
    - Different roles see different pages
  - ② Device dynamic library Management
    - Version, Running environment, Special requirements
  - ③ New node monitoring device
    - Host, Server, Register

VisualDM based on DMM(2)

④ Design monitoring screen
- Drag and drop
- Nested
- DAG

⑤ Run it
- Visualization
- Control



CONCLUSIONS

VisualDM is or can:

① Based on DMM

② Meet different users monitoring

③ Hierarchical view for devices

④ Real-time monitoring of device running status

- *In the future, we hope to achieve adaptive deployment, load detection of devices and so on.*

Thank you for your attention

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