

DQMH in Action

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Certified LabVIEW Architect
Renishaw

Agenda

About Renishaw

Identity crisis

Evolution

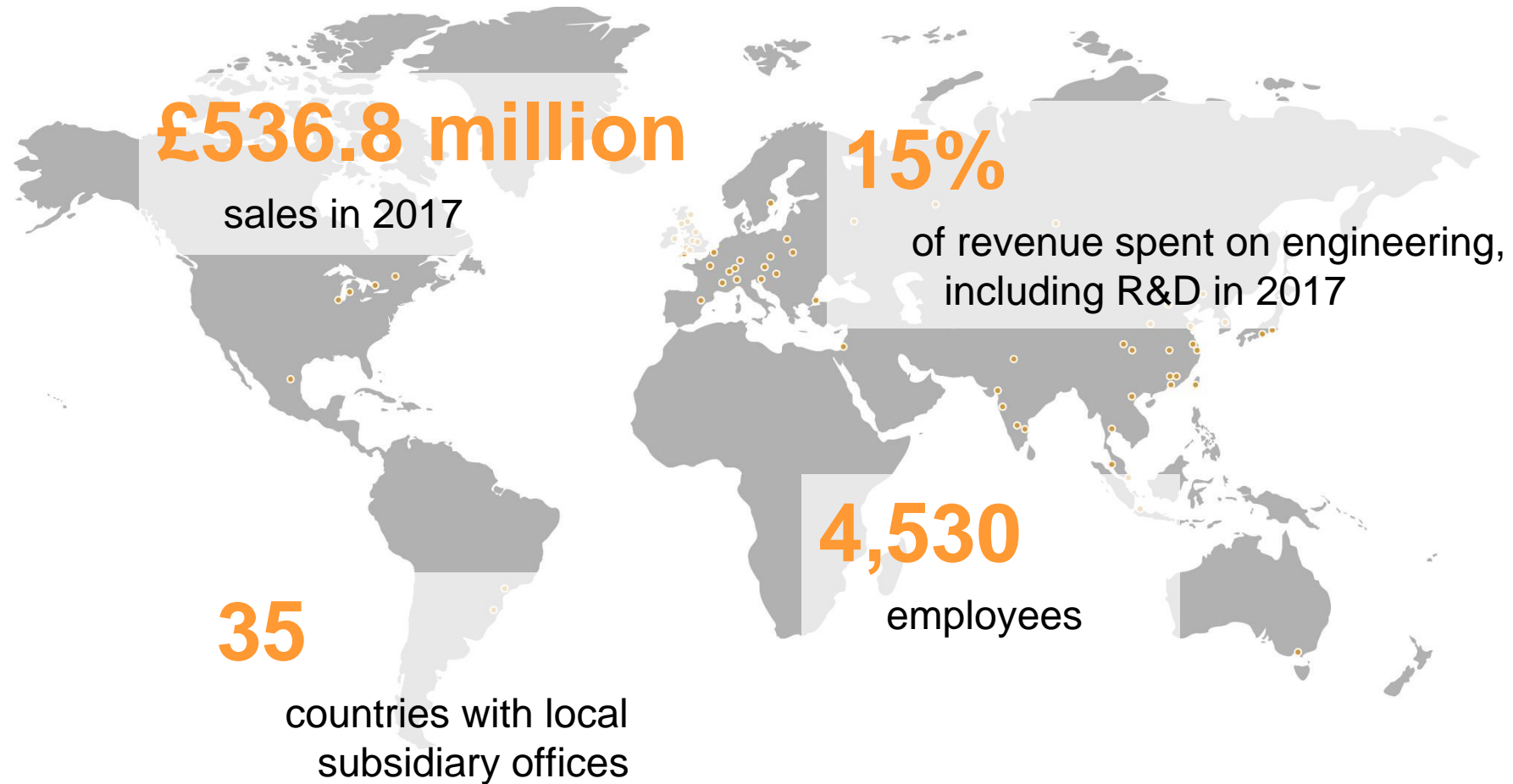
Core DQMH modules

- Central Error Handler**
- Controller**
- User Interface**

Application demo

How does it grow?

About Renishaw



About Renishaw

Certification	# Users
CLAD	7
CLD	7
CLA	4

# Users	Hours of LabVIEW / Year
33	Less than 100
37	Between 100 and 1000
34	More than 1000

Last Renishaw LabVIEW User Group turnout of 31 + 10 on Skype

About Renishaw

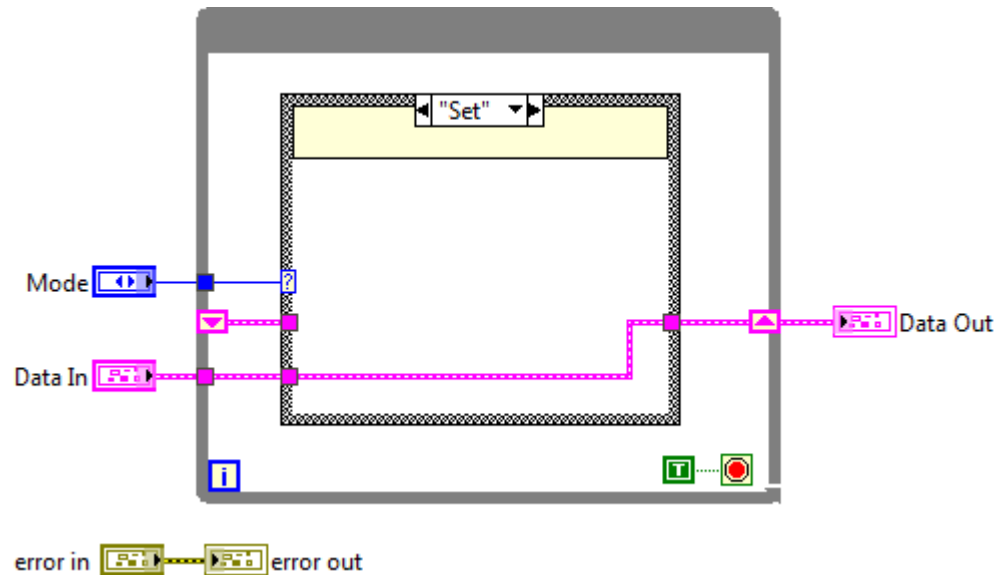
We are Hiring!!!

www.Renishaw.com/careers

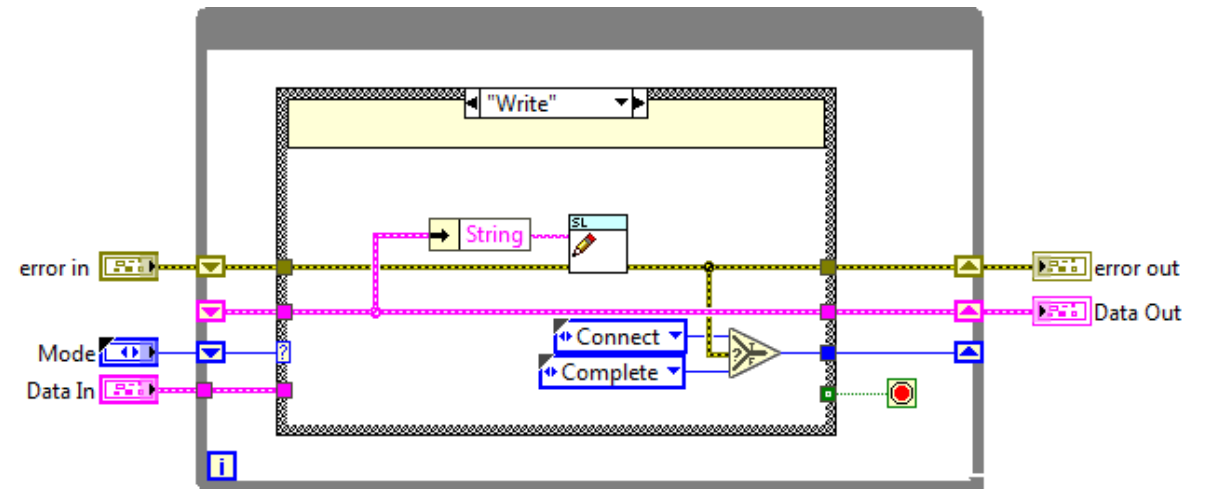
9 jobs quoting LabVIEW (last I checked)

Identity Crisis

Functional Global Variable (FGV)

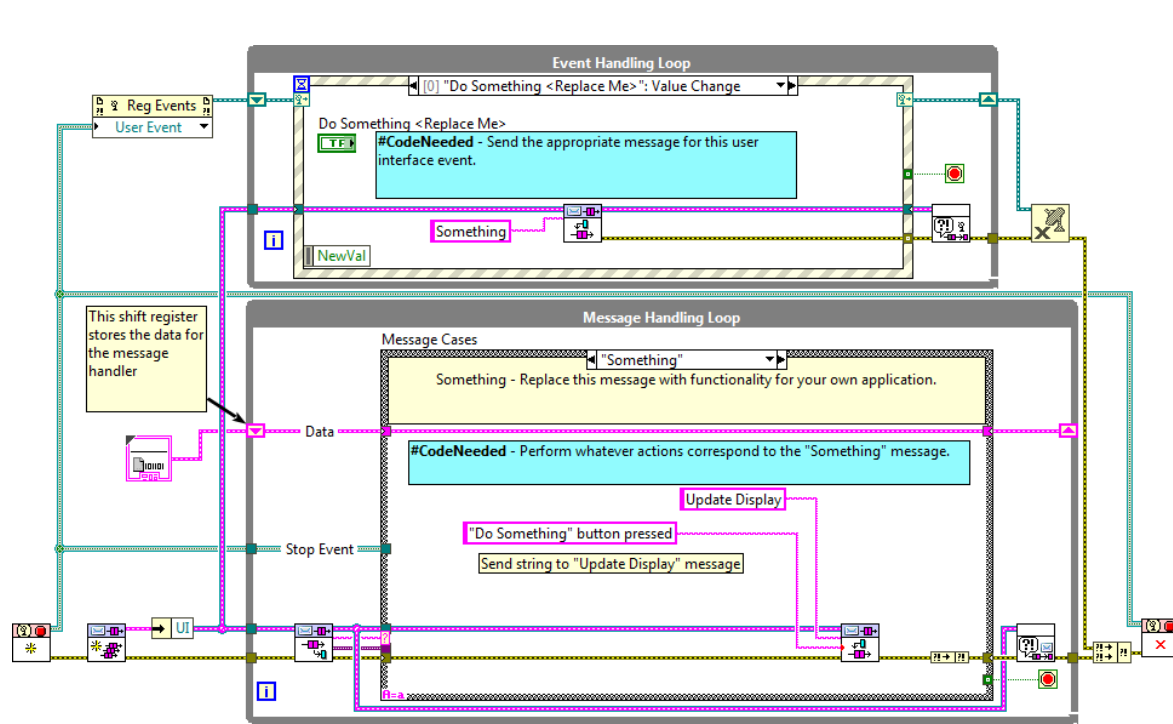


Action Engine (AE)/State Machine (SM)

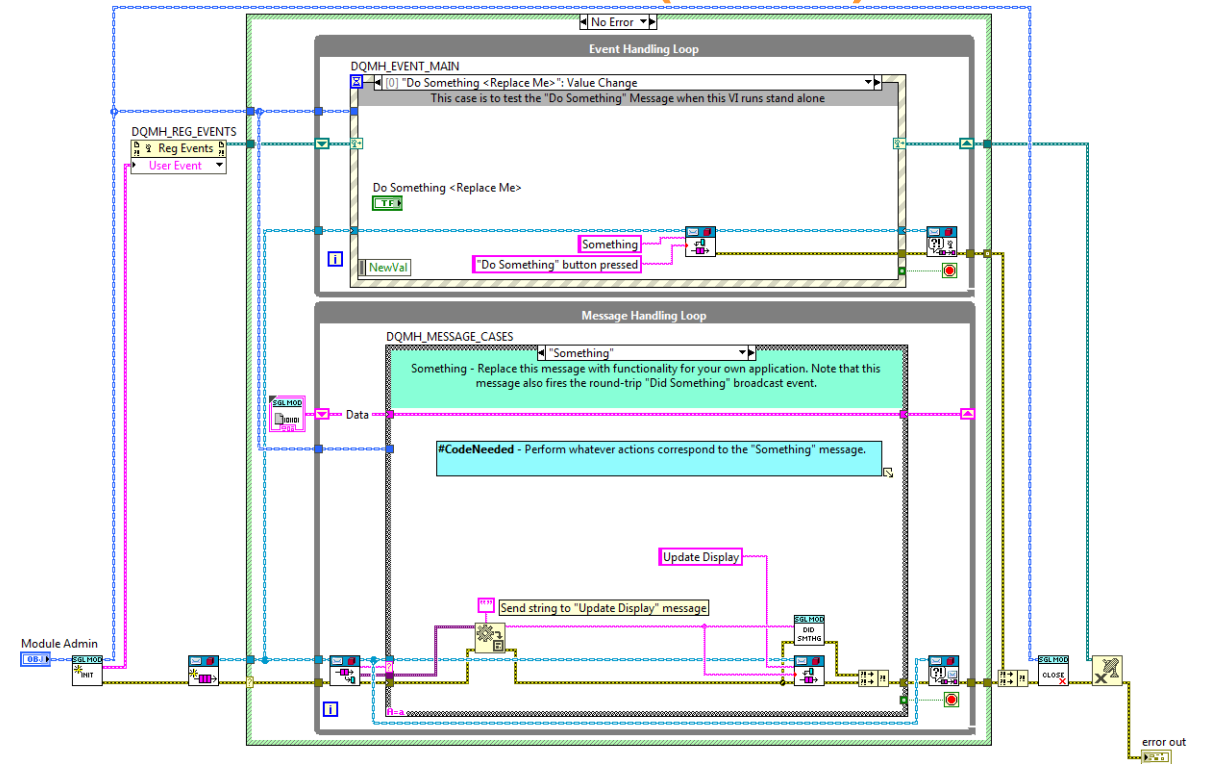


Identity Crisis

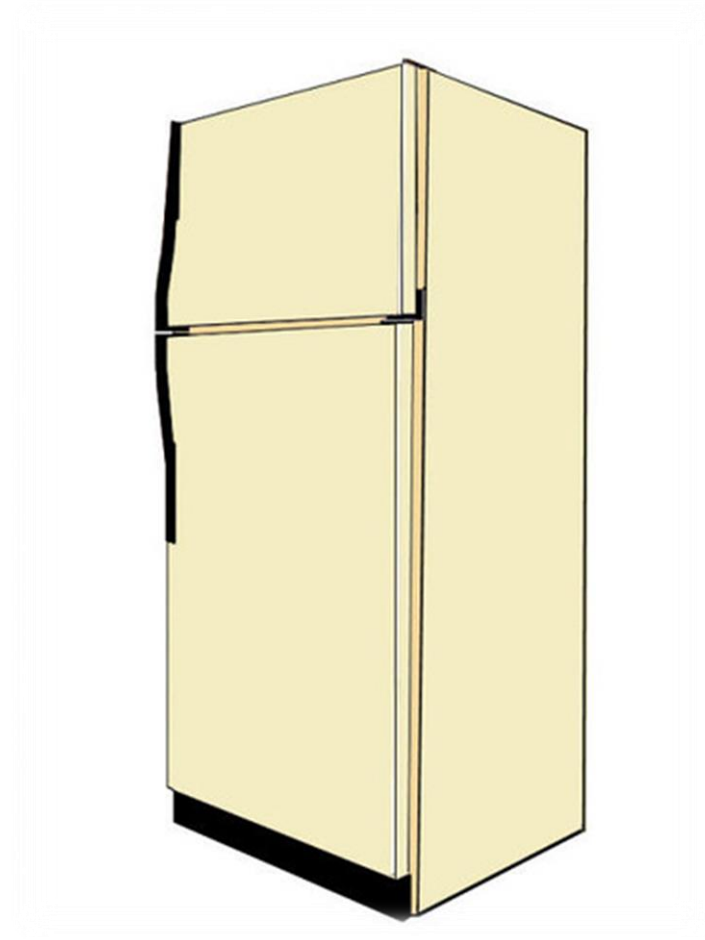
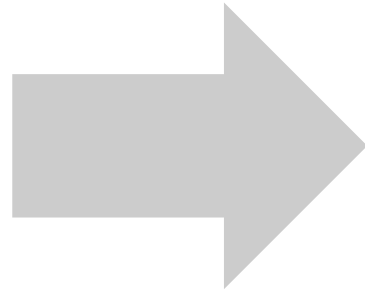
Queued Message Handler (QMH)



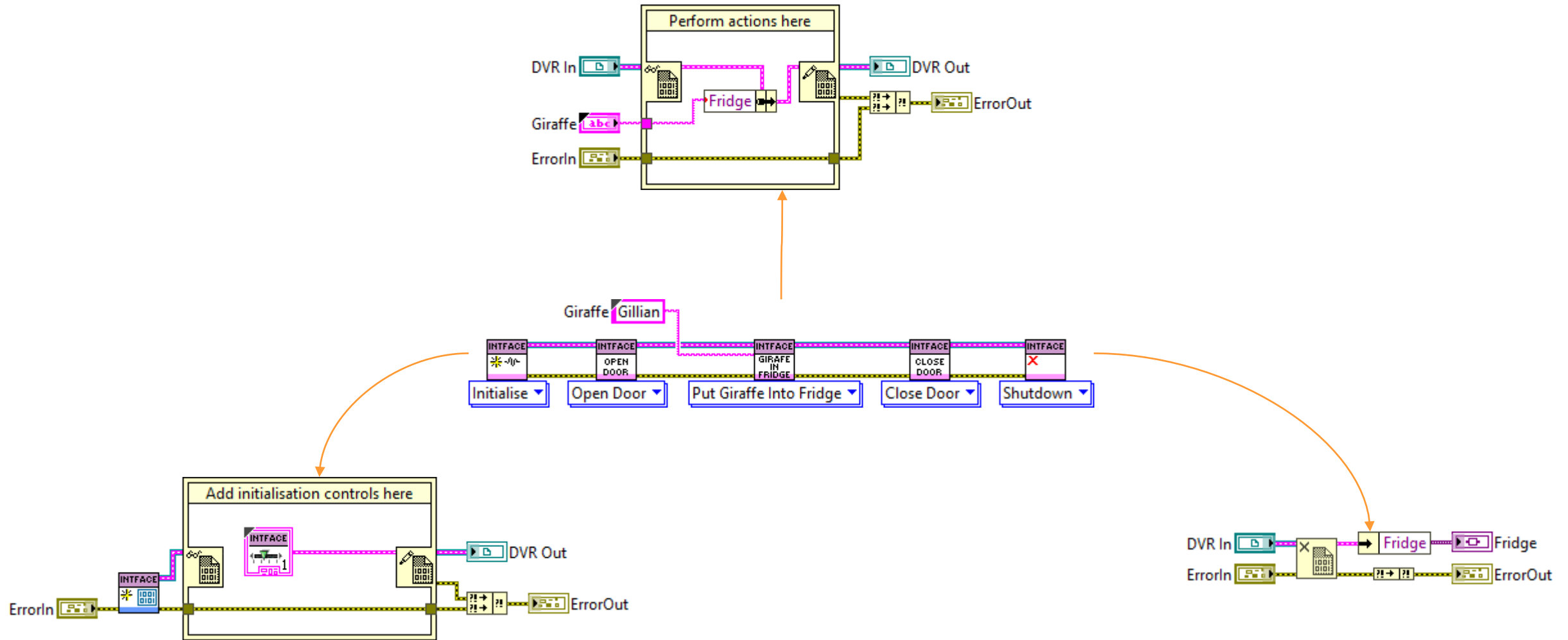
Delacor QMH (DQMH)



How do you put a giraffe into a fridge?



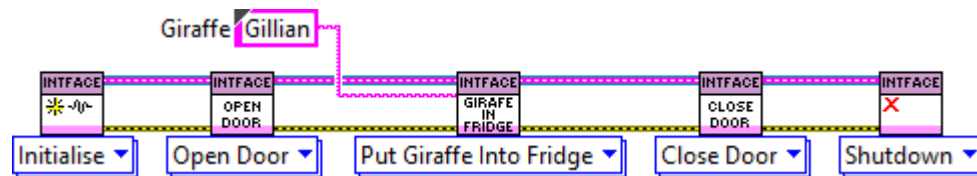
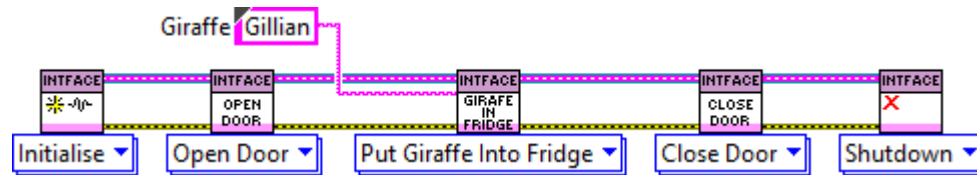
How do you put a giraffe into a fridge?



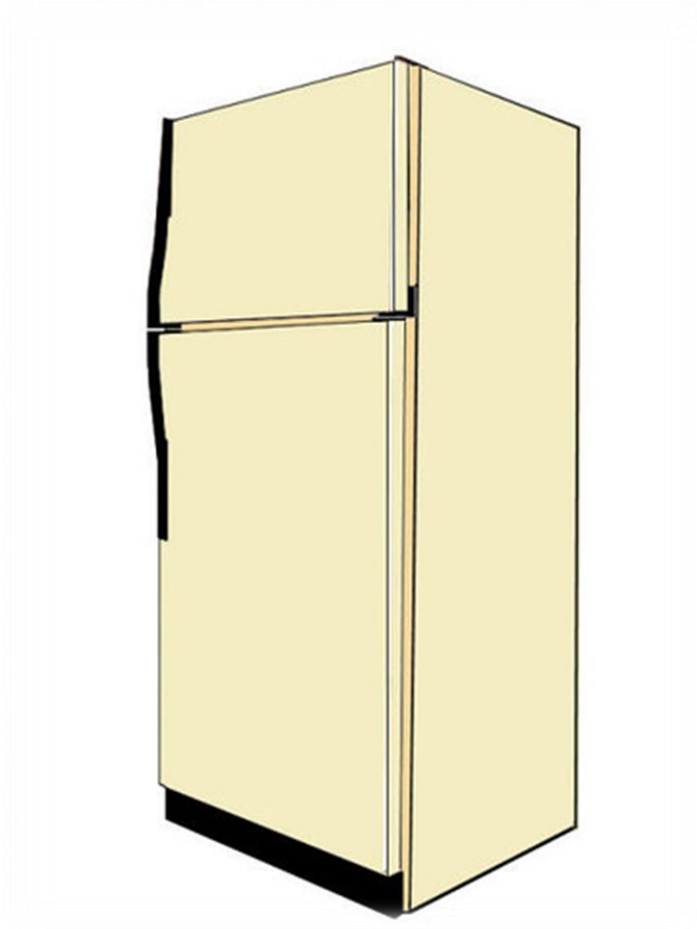
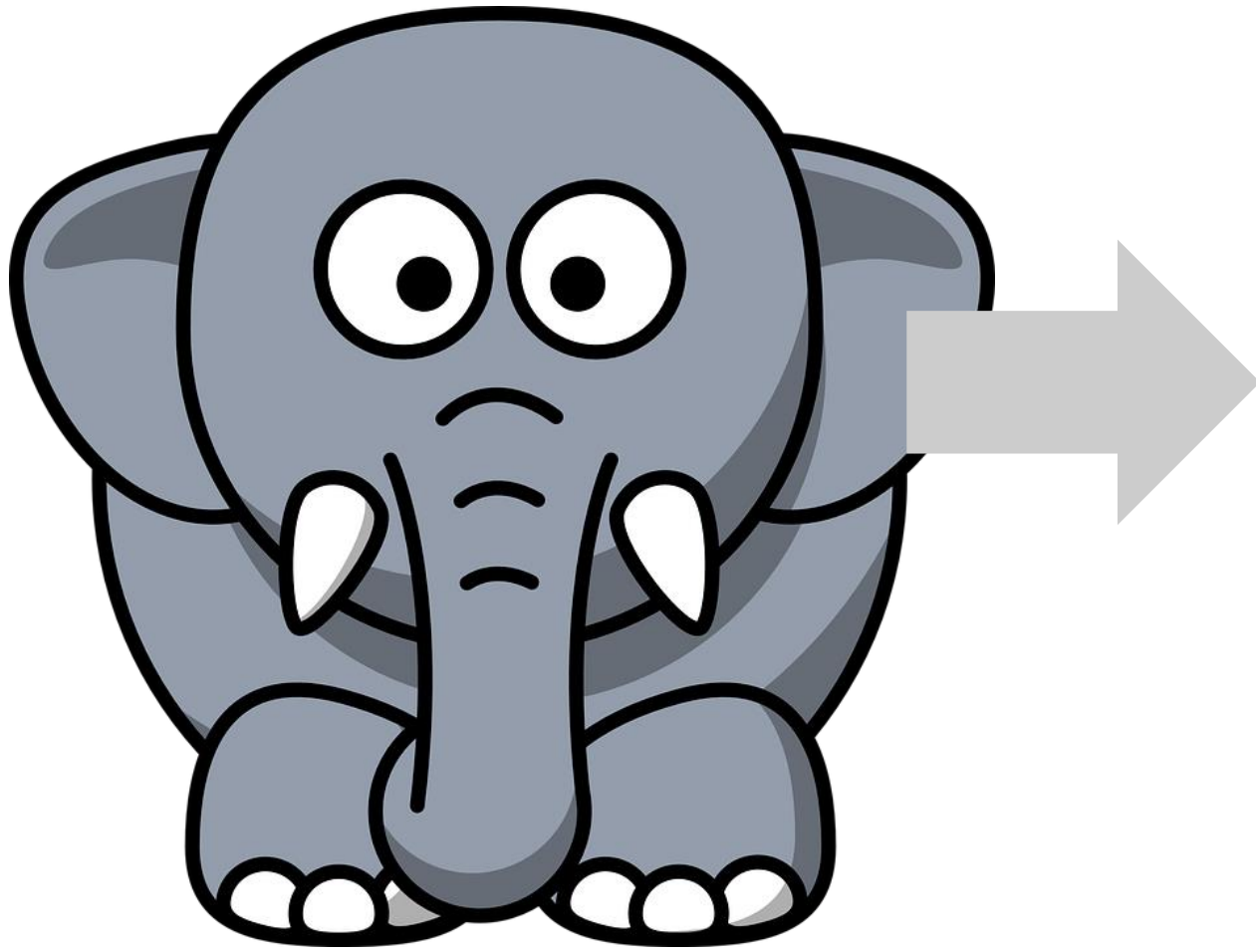
Evolution

Interface Module

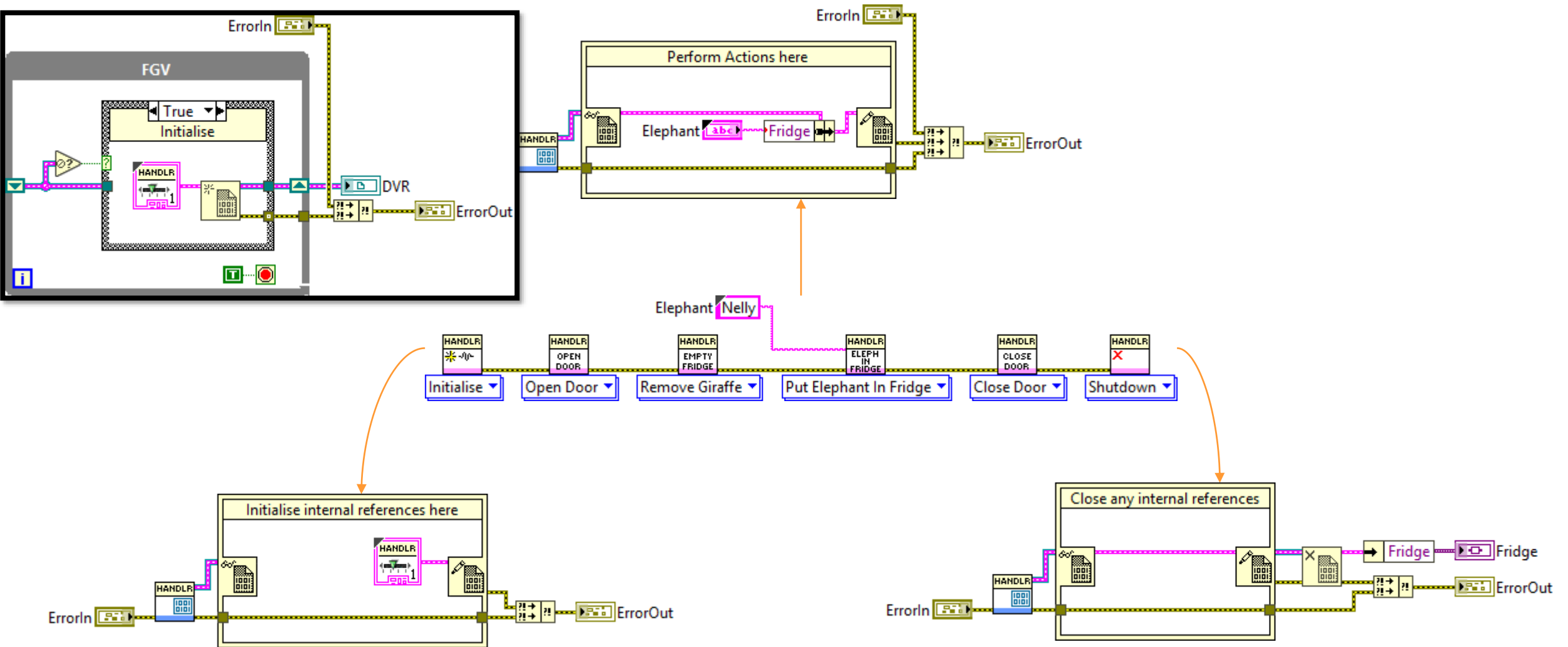
- Data or Data Value Reference (DVR) is passed from VI to VI
- Any number of instances within an application
- “Cloneable Module”
- Use “Initialise VI” to create new instance of the data



How do you put an elephant into a fridge?

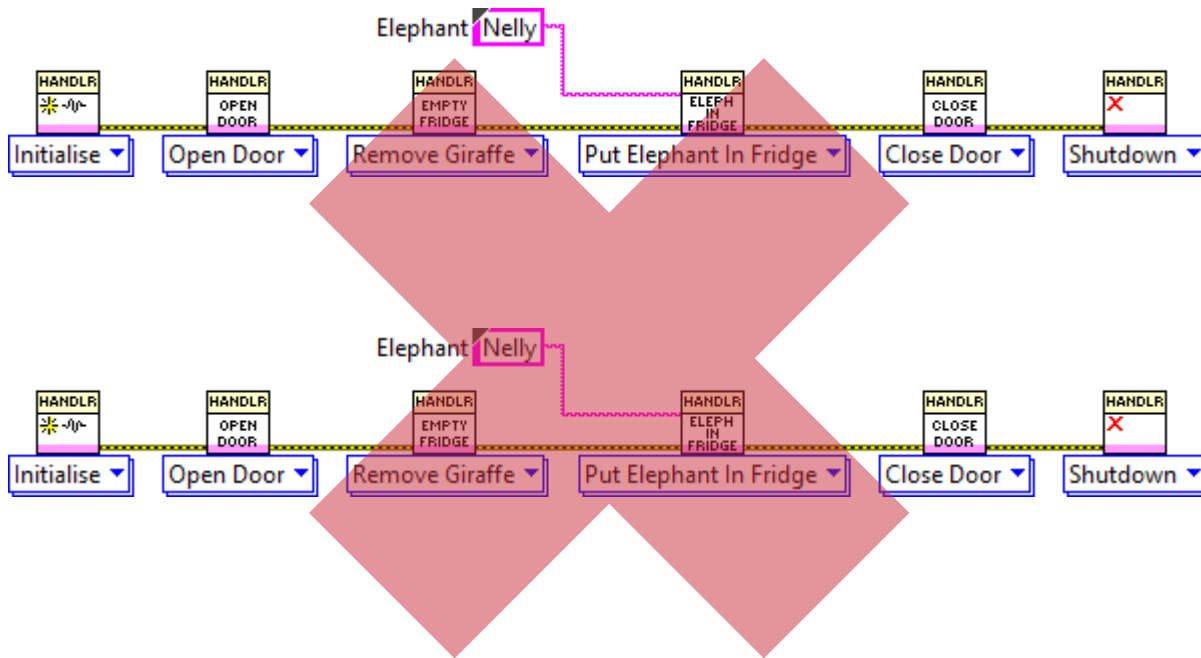


How do you put an elephant into a fridge?



Evolution

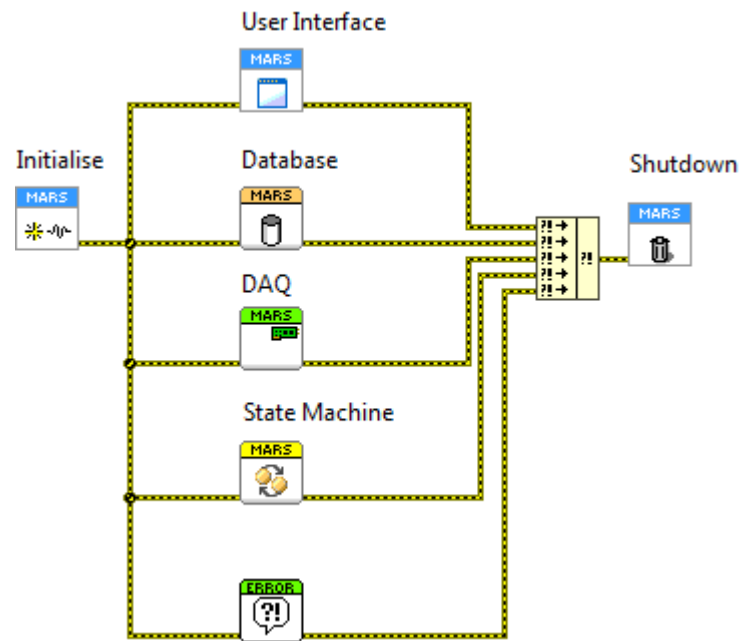
Handler Module



- Data or Data Value Reference (DVR) is stored within the module
- Only one instance within an application
- “Singleton Module”
- “Save As...” a different module to create a new instance of the data

Evolution - Then

Application Launcher

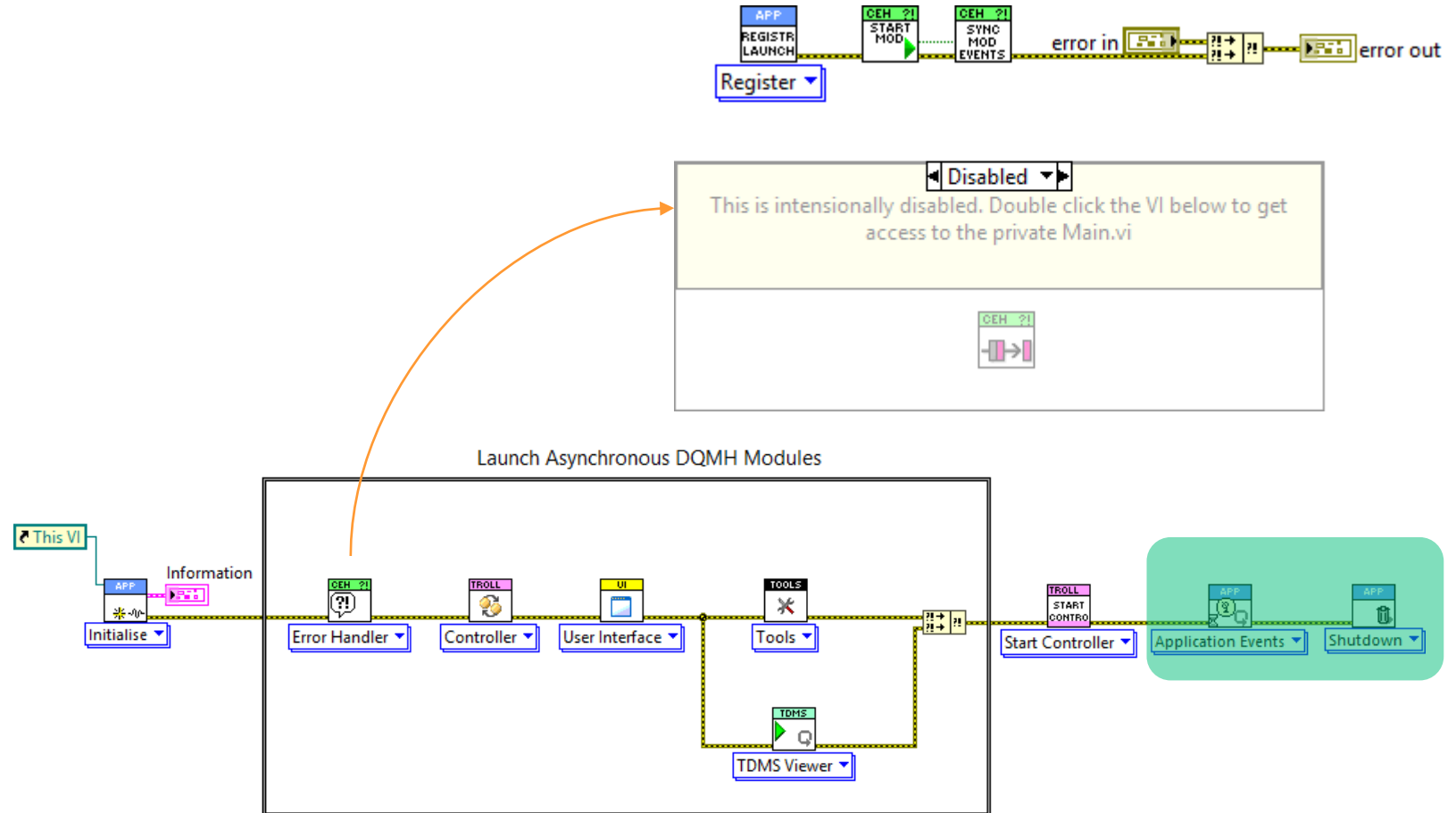


Module	Design Pattern
User Interface	QMH
Database	Action Engine within QMH
DAQ	Interface Module within QMH
State Machine	Handler Module within QMH
Error	Interface Module within QMH

Evolution - Now

Application Launcher

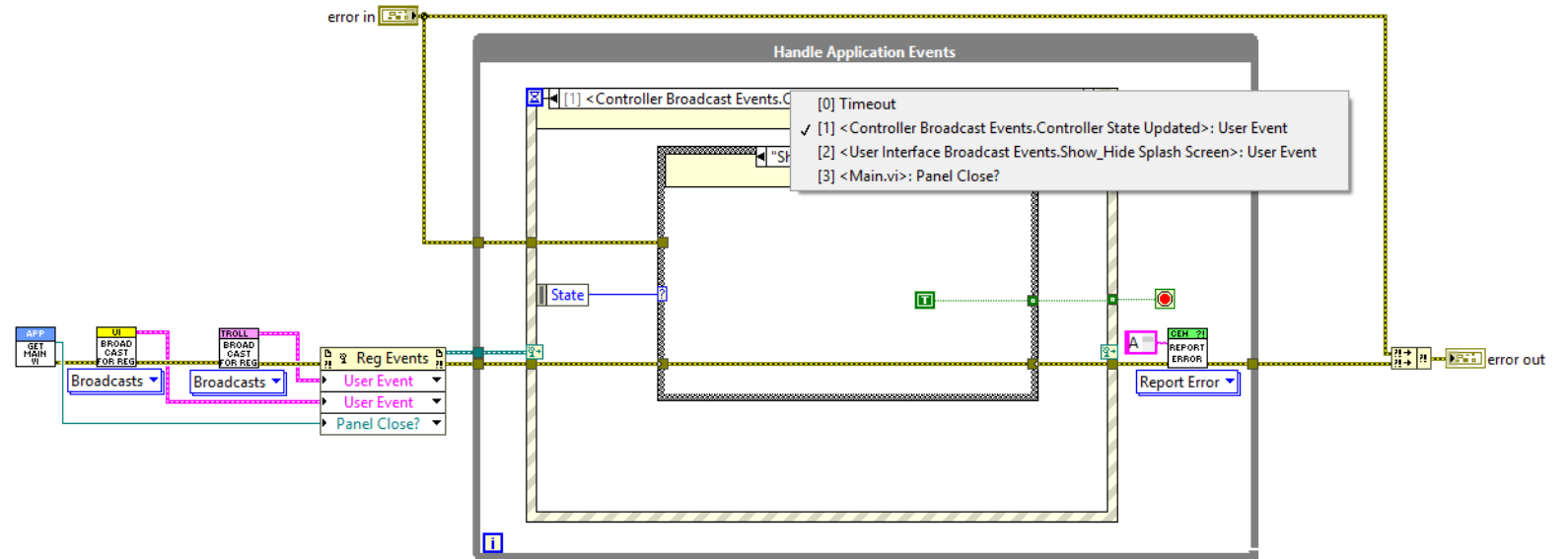
- Launcher VIs
- Register the module for silent stop at application shutdown
- Start DQMH Module



Evolution - Now

Application Events

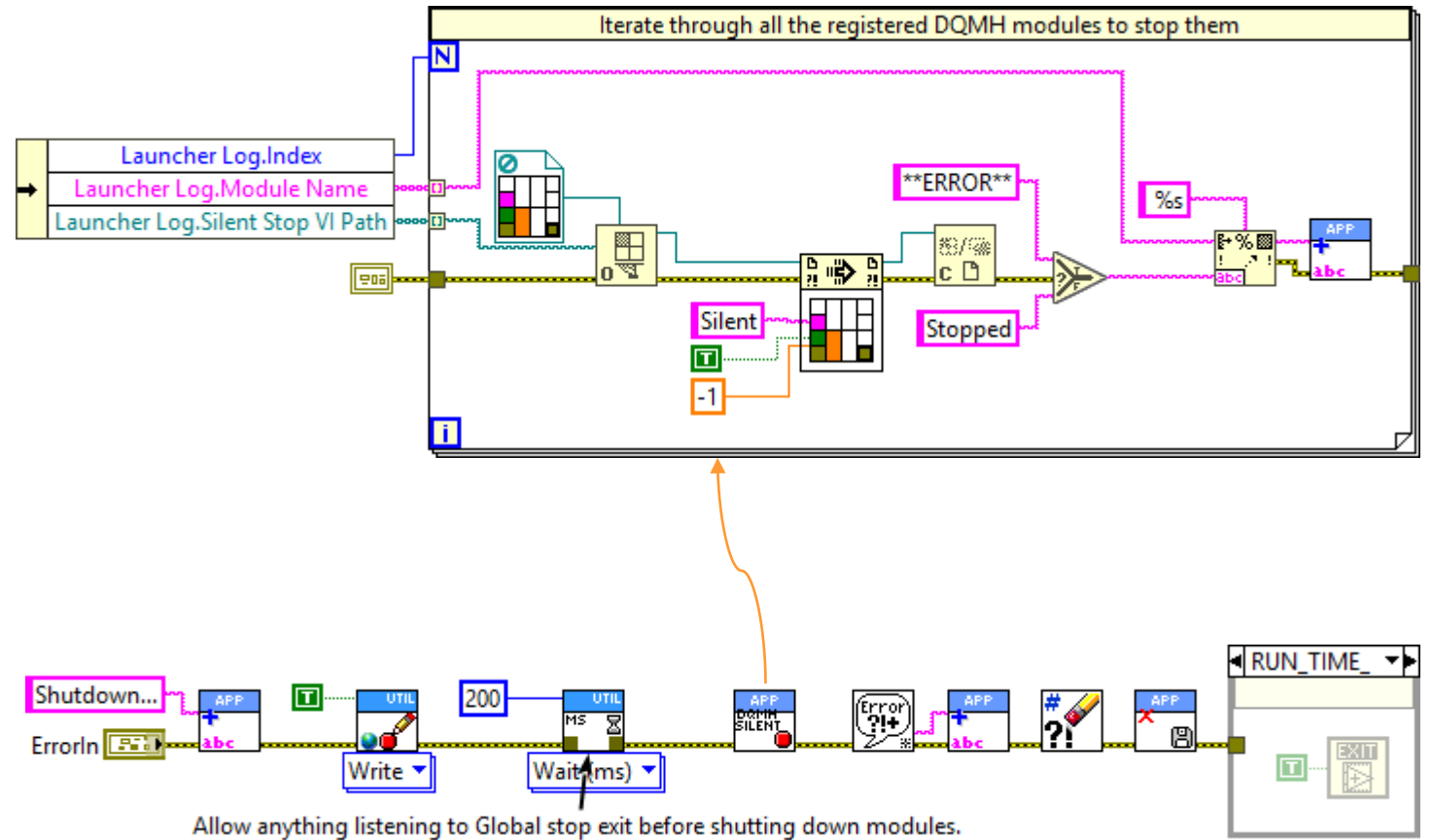
- Registered for Controller to broadcast state – “shutdown” so it can exit
- Show/Hide Launcher Window (for About)



Evolution - Now

Application Shutdown

- Global Stop Notification for nested loops (if any)
- Trigger silent stop for all registered DQMH modules



Core DQMH Modules

Central Error Handler

- Application status
 - Error
 - System
 - Process
- Log and report errors
- Individual system component status
- Process monitoring and failure reasoning

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- Trigger other sub-sequences to run
- Handle state machine aborts

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User Interface

- Sub-panel management
 - Page
 - Prompt
 - Splash
- Menu button events
- Status display

Lion King is hosting an animal conference!

All the animals attend...

Except one.

Which animal did not attend?



Lion King is hosting an animal conference!

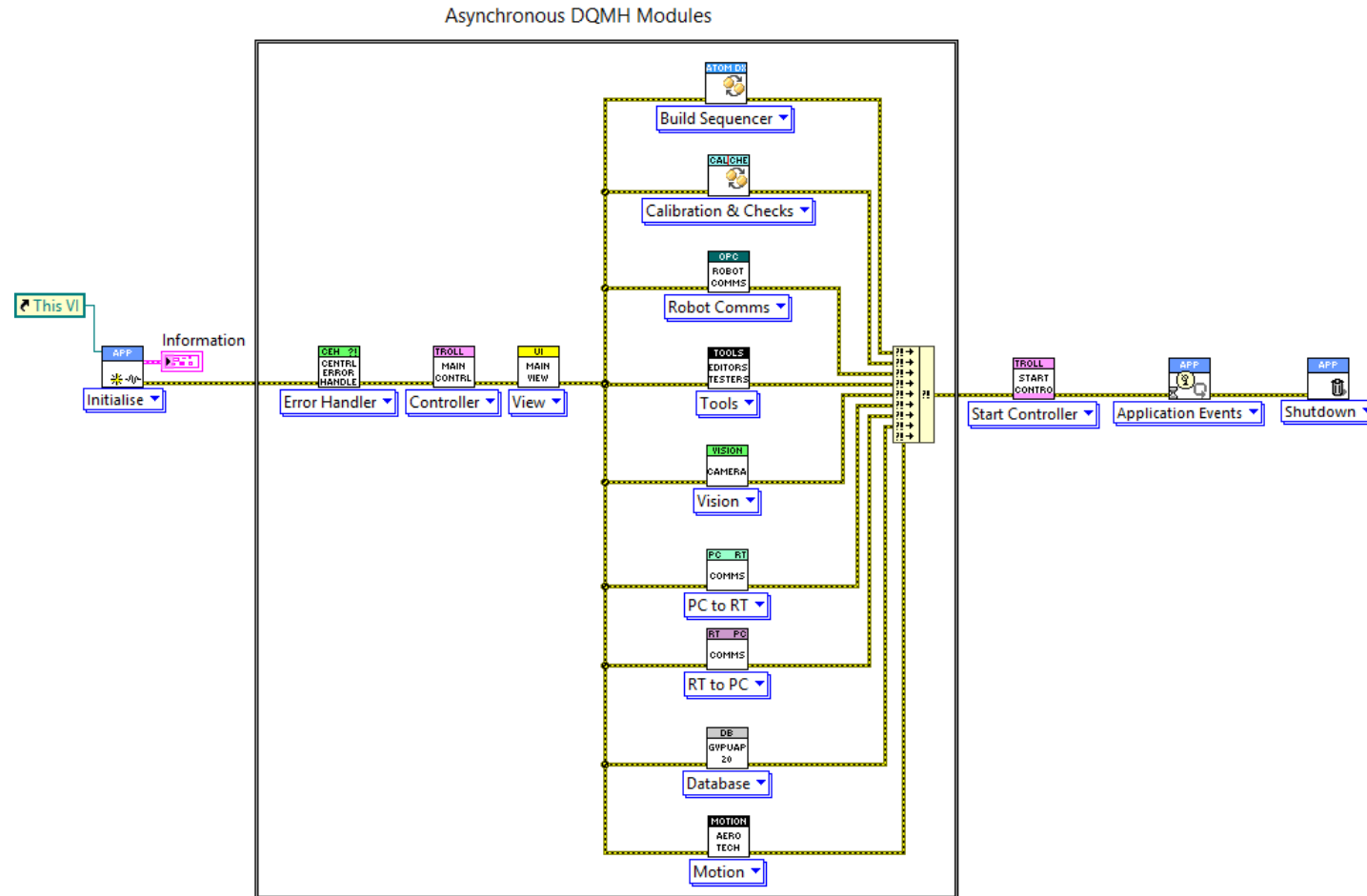


All the animals attend...

Except one.

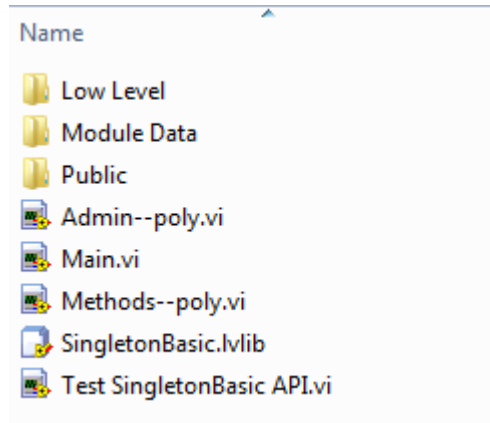
Which animal did not attend?

How does it scale?



Other housekeeping

- **Polymorphic VI for API selection**
- Admin—poly.vi
- Methods—poly.vi
- **Folder structure clean-up**
- **Tester VIs integrated into Application**
- **Access to Main.vi on the Launcher VI for ease of access to developer (without going to the project)**
- **All currently used DQMH modules are singletons**



So why DQMH?

- **Workflow defined by scripting**
- Creating testers for API is “in your face”
- Message handling framework is common – less training from application to application
- **Distributed development**
- Modular development is made easier for team development
- **Interface/Handler Modules do not have a “Main.vi” running**
- So are mostly “blocking VIs” (unless Start Asynchronous Call is used)

There is a river you must cross...

But it is used by crocodiles!

You do not have a boat...

How do you manage it?



There is a river you must cross...



You jump into the river and swim across to...

G DEV CON #1

Cambridge UK
4-5th September 2018

All the animals are at the animal conference!

References

<http://delacor.com/products/dqmh/>

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