



ENGINEER
NEXT

VIP2017

The logo features the text "ENGINEER" in a smaller, white, sans-serif font above the word "NEXT" in a larger, bold, white, sans-serif font. A yellow graphic element, resembling a stylized 'X' or a folded ribbon, is positioned between the two words. To the left of "NEXT" is a white rectangular box containing the text "VIP2017" in a white, sans-serif font. The entire logo is set against a blue background with diagonal stripes in various shades of blue, orange, and green.



Oscillation Stimulator to validate dynamic loaded parts or structures

IABG

Ferdinand Friedrich, Andreas Pfichner, Thomas Anderl



IABG Business Segments & Customers



AUTOMOTIVE



INFOCOM



MOBILITY, ENERGY &
ENVIRONMENT



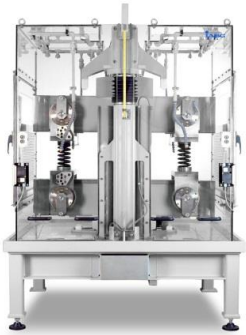
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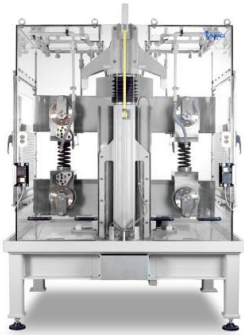
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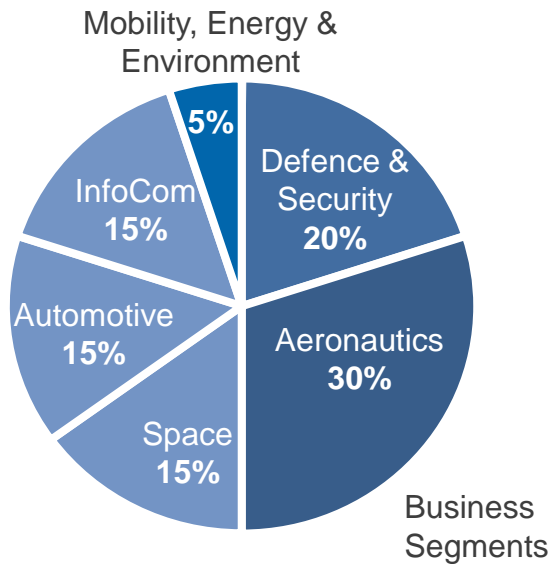
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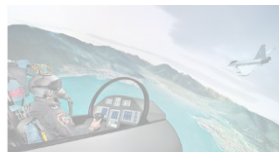
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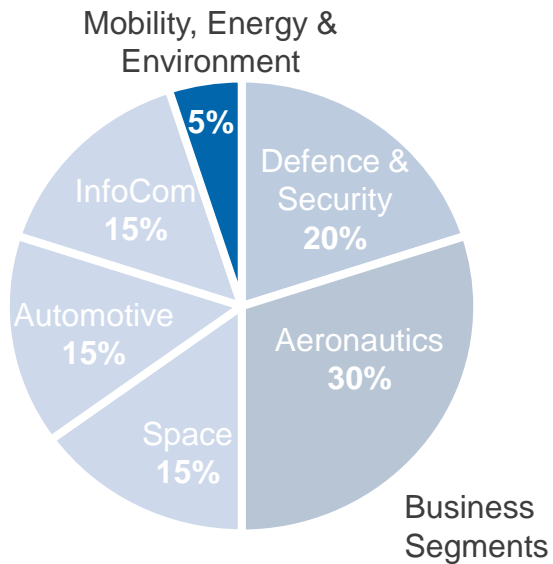
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LabVIEW Applikations-Entwicklung
System-Entwicklung
Versuchsengeering und Test

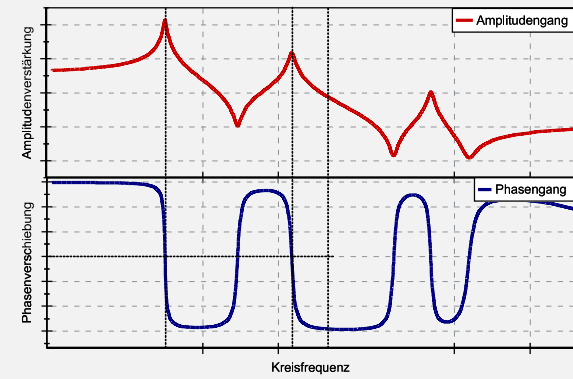
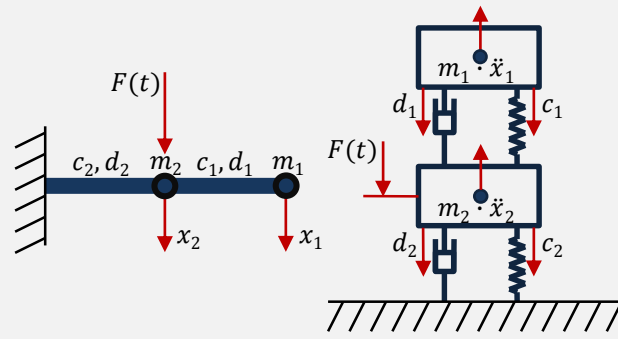
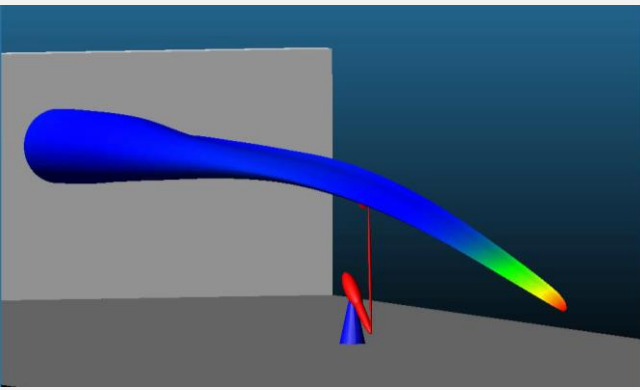


APSysteme GmbH, Andreas Pfichner (Dipl.-Ing.)



www.apsysteme.de

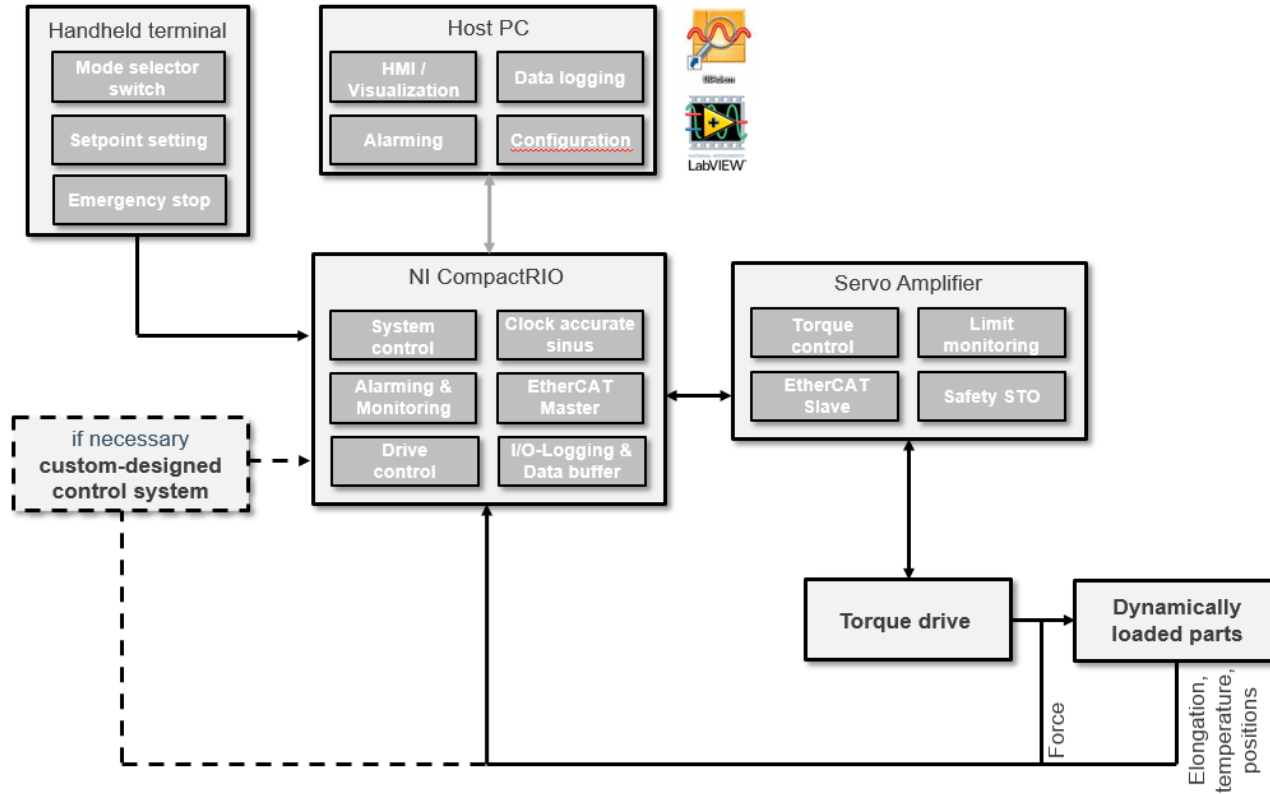




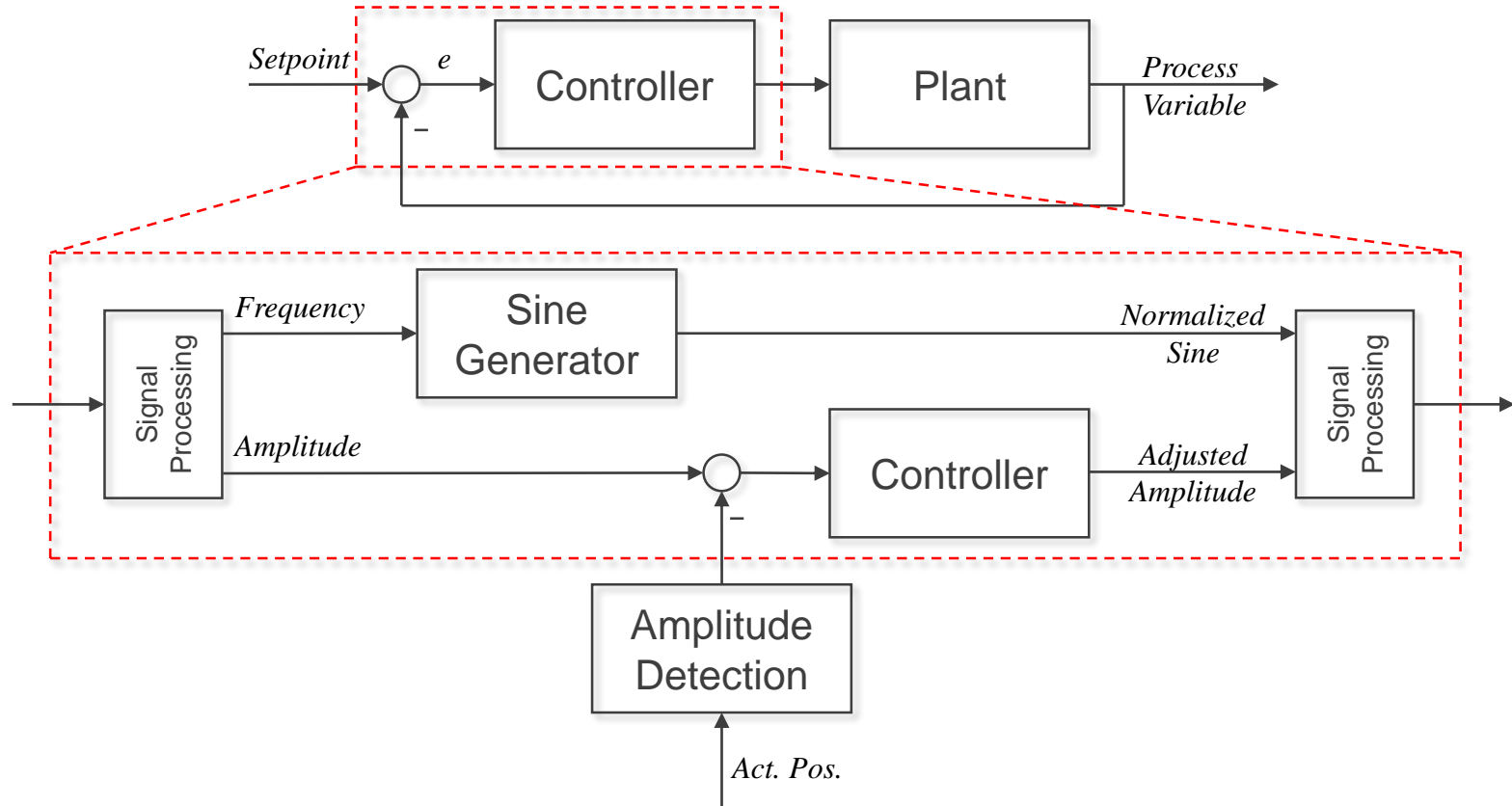
Challenge

- Applicable test facility rig for fatigue tests
- Short and stress-related tests for reducing the testing time
- Development of a gain and phase controller
- Virtual & Model-Based Development (effective commissioning of new specimen)
- Effective module functions development and implementation

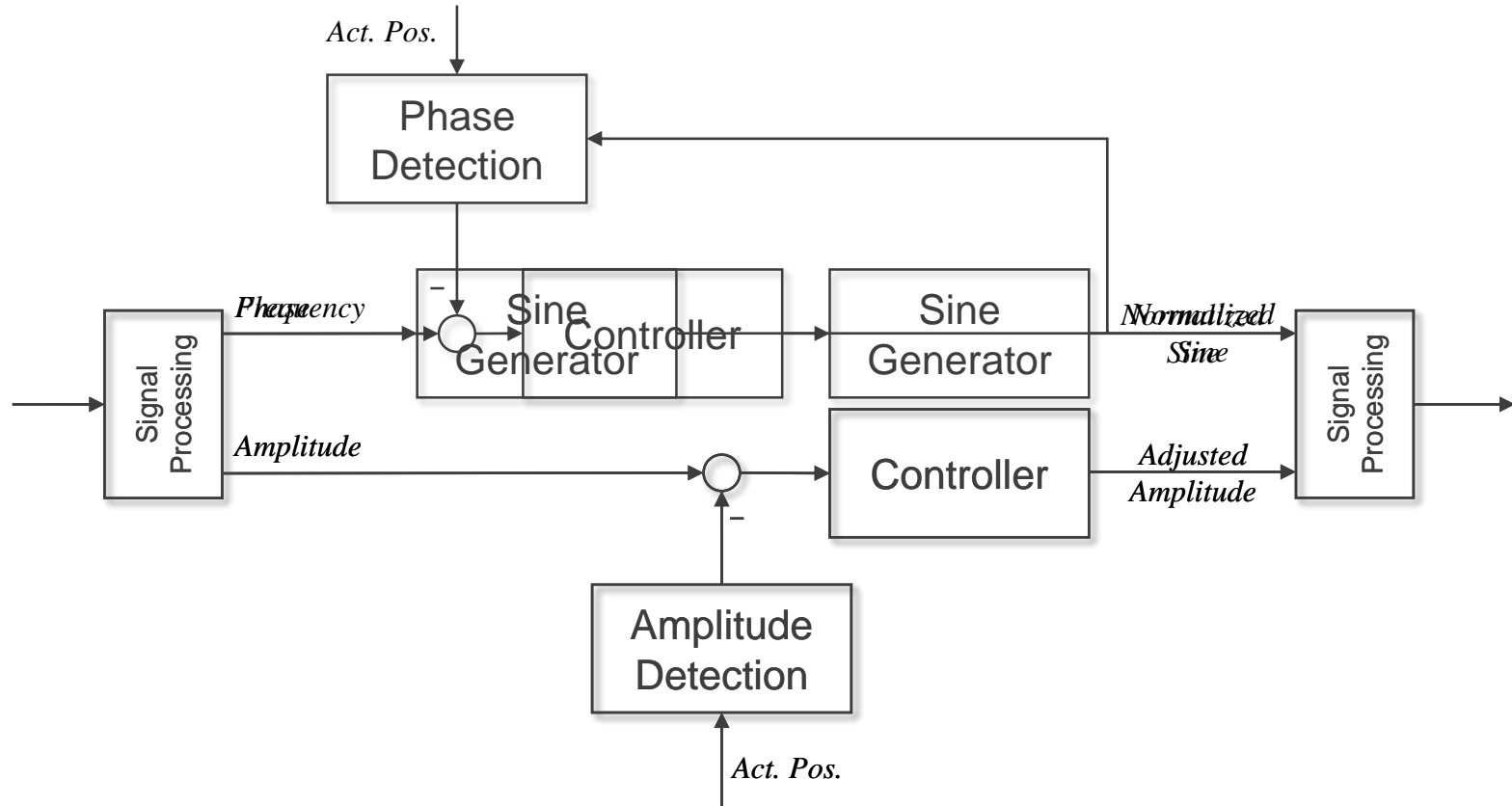
Solution



Solution – Amplitude control



Solution – Amplitude and Phase control



LabVIEW Architecture

Always a compromise

- Modularity (development processes)
- Safety (state machine: data flow)
- Distribution of actuators (no data flow)
- Performance
- Developer team skills
- Project issues (time, cost)
- ...

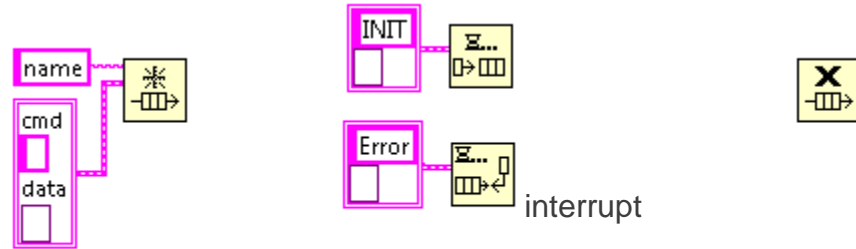
LabVIEW Architecture

Architecture elements discussed in this presentation...

- Queues
- Network streams
- Message cluster

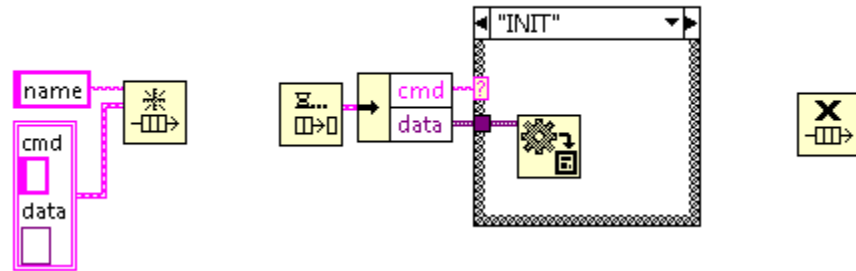
- State machine
- Modules (actuators)

Producer-consumer



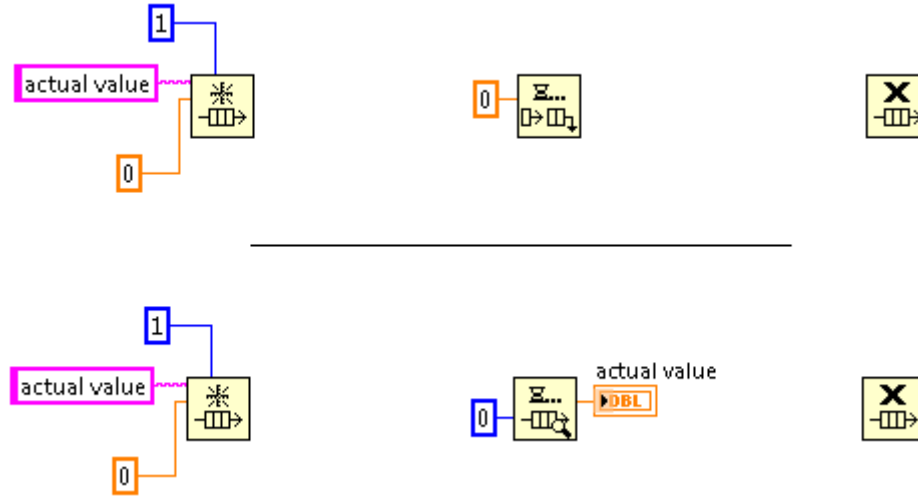
Producer

Named queues!



Consumer

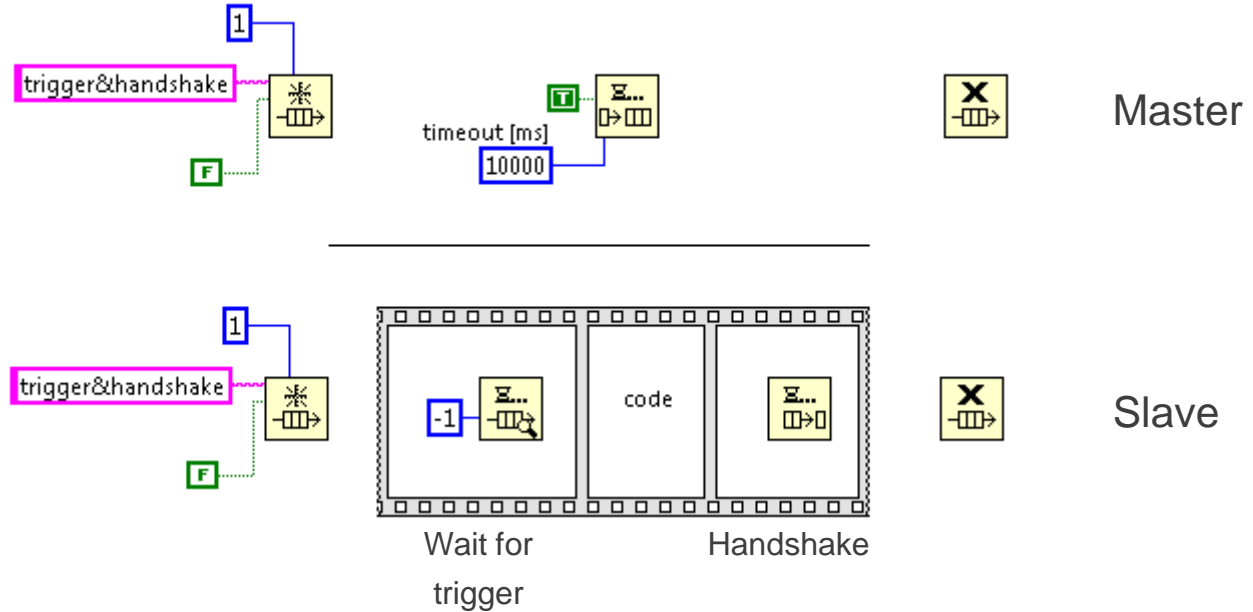
Actual value



DAQ task

Visualisation

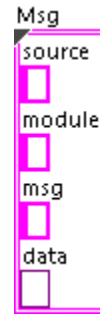
Implicite trigger and handshake



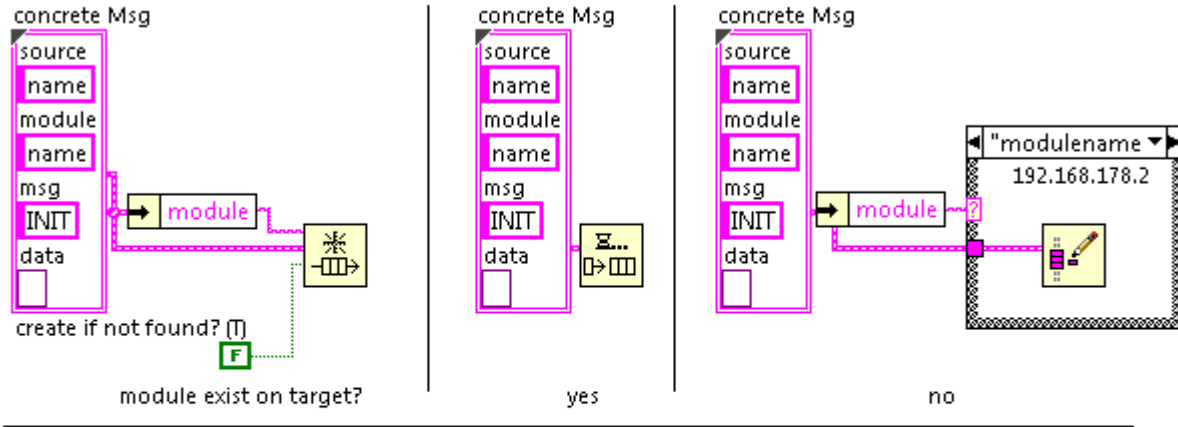
Network Streaming



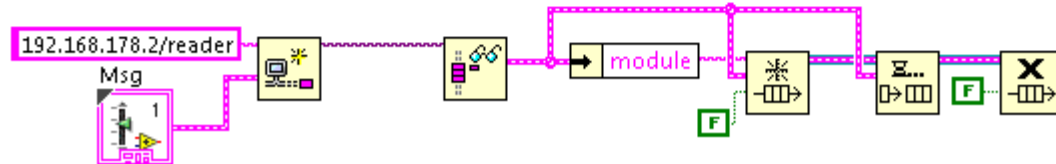
Message Cluster



Message Cluster

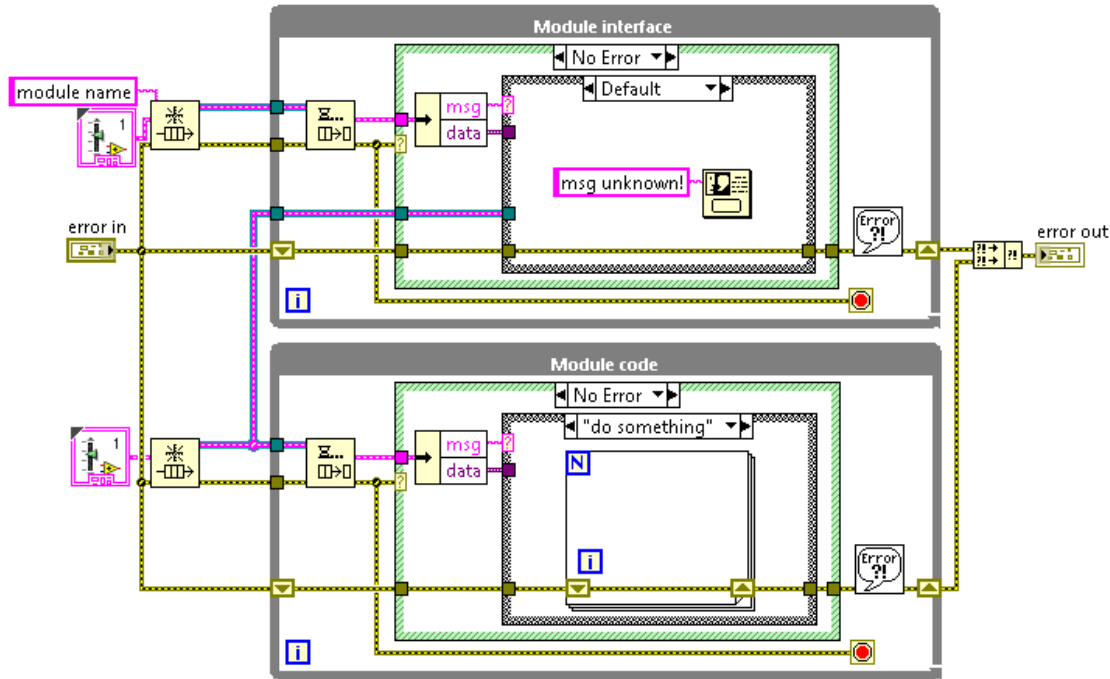


HOST



cRIO target

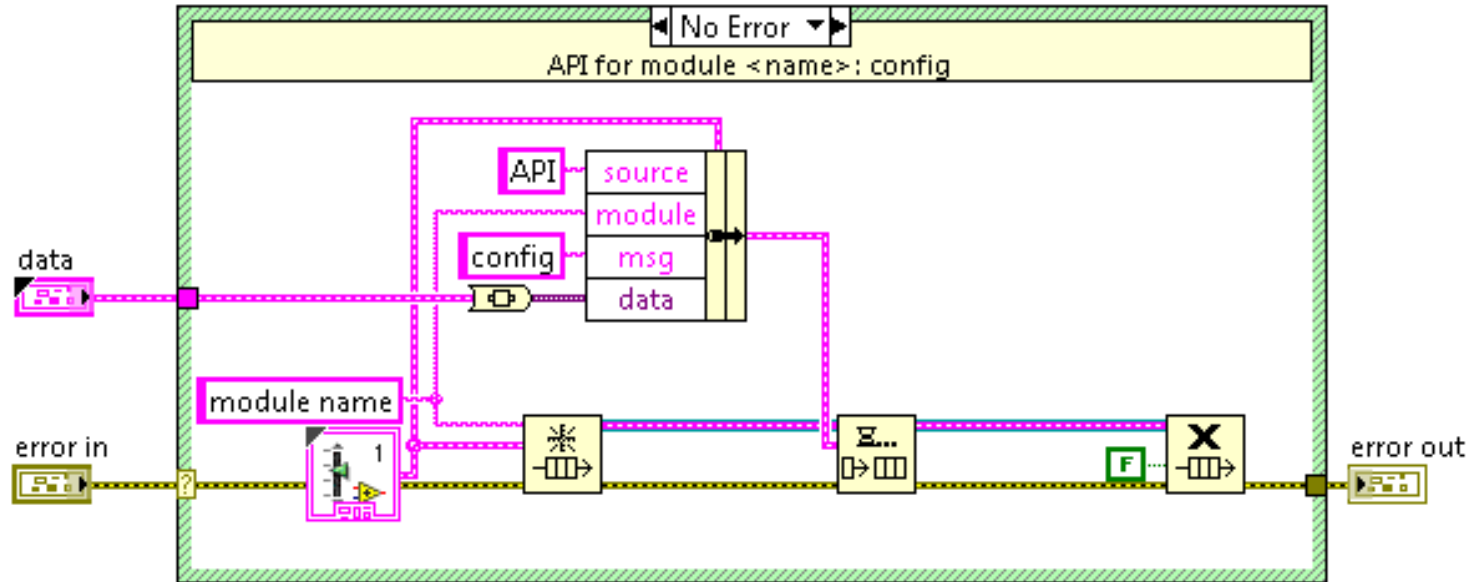
Message Cluster



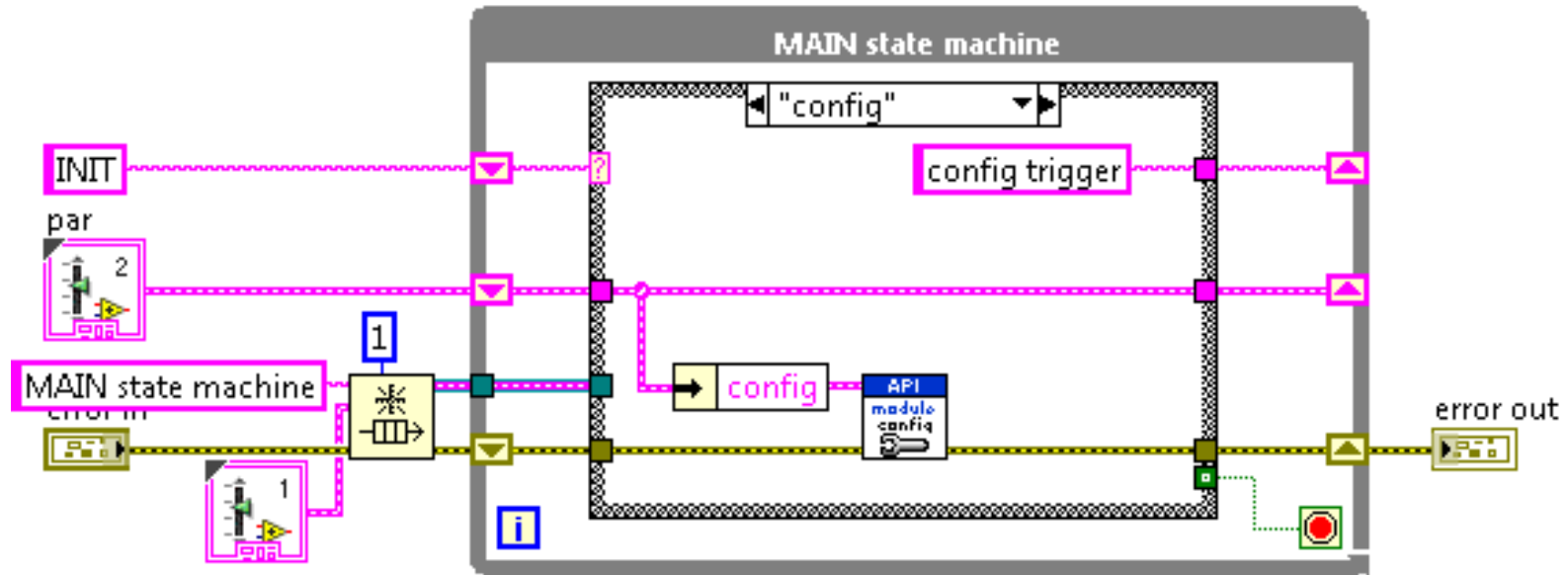
API VIs



Module API for config msg



State Machine example



LabVIEW Architecture

Other Architecture elements not discussed in this presentation

- Functional Global Variables
- Status messaging
- Errorhandling, errorlogging
- User interface
- Client server architectures
- ...

