

# TLB – Top Level Baseline

application and component  
template/tool

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# Top Level?

- A VI that can be considered the primary of a system
  - or major component of a system
- Typically has front panel shown
  - but not a requirement
- Controls flow of application and processing
  - Processing happens within executed states
- Runs for lifetime of application or component

# Get Installed

- Install VI Package Manager (free community edition)
  - [www.jki.net](http://www.jki.net)
- Install package
  - <http://lavag.org/topic/13003-tlb-top-level-baseline/>
- Restart LV
  - Refreshes tools menu

# Get Developing

- Tools>>TLB – New Baseline
  - Follow Interactive Dialog



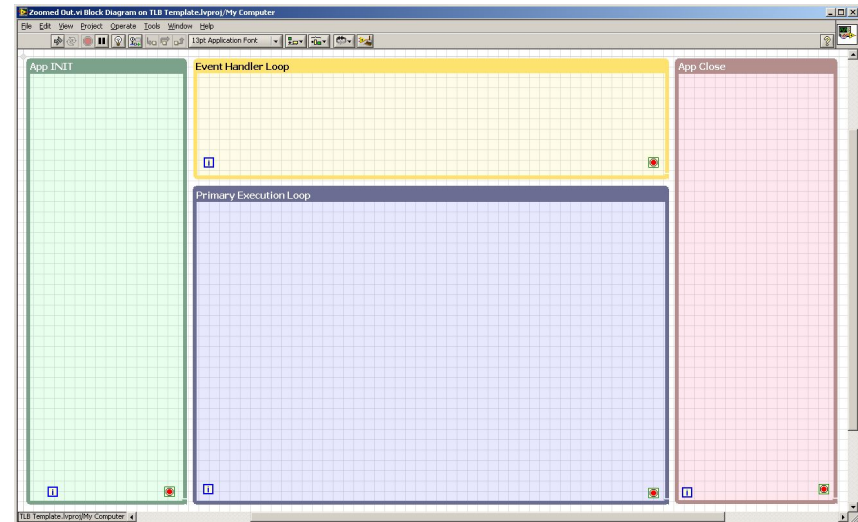
# Baseline Architecture

- Application INIT
  - once and only once code

- Event Handler Loop
  - user interaction response

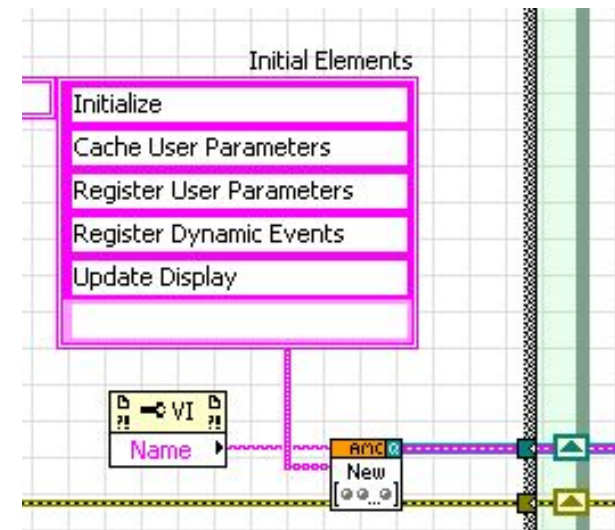
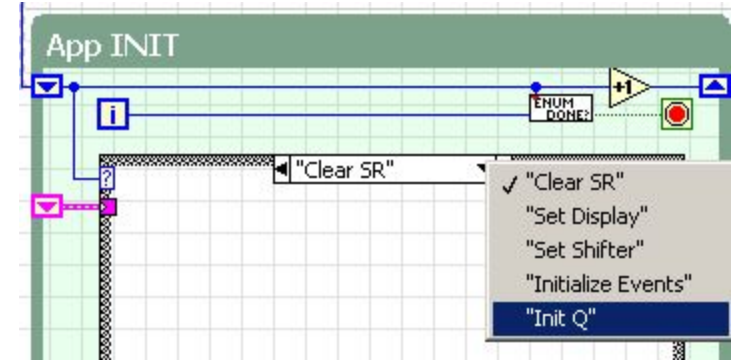
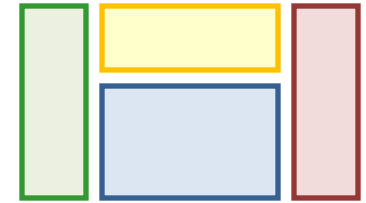
- Primary Execution Loop
  - main flow of program

- App Close
  - close references & shutdown

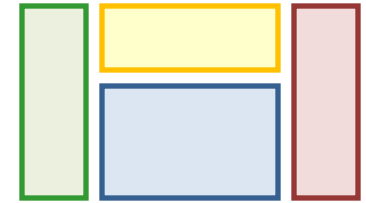


# Application INIT

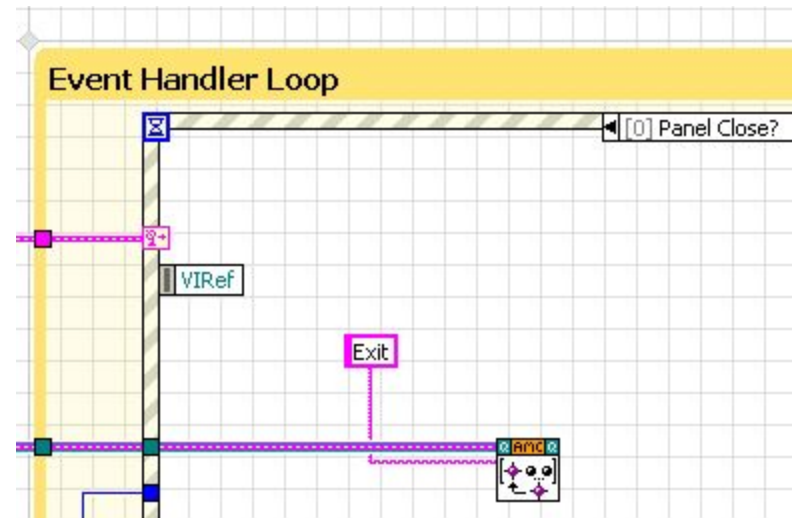
- Sequence of cases
  - primes the application
  - stacked instead of flat for cleanliness
- Not 'all' init. code goes here
  - Just once and only once stuff
- Enqueues specific set of states to Primary Execution



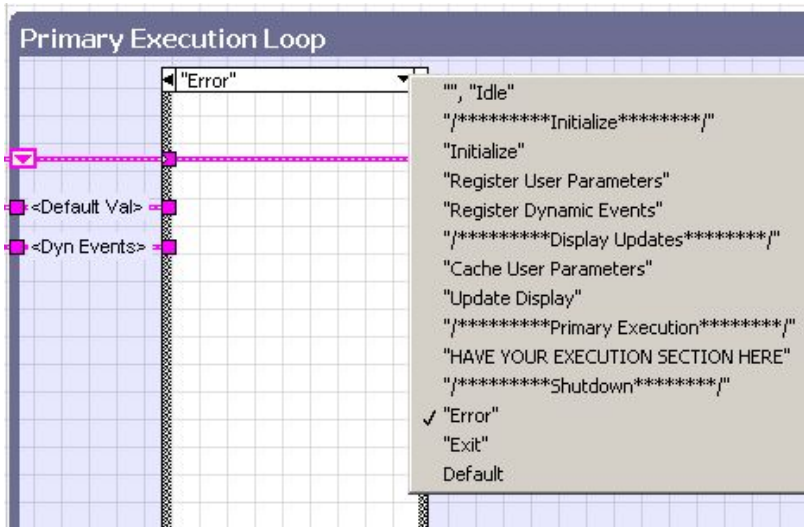
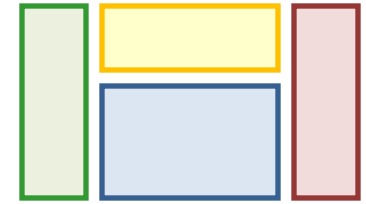
# Event Handler



- Responsive to button pushes and value changes
- Pre-defined cases handle window close and shutdown
- Source of queued messages to Primary Execution



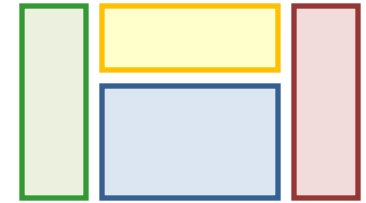
# Primary Execution



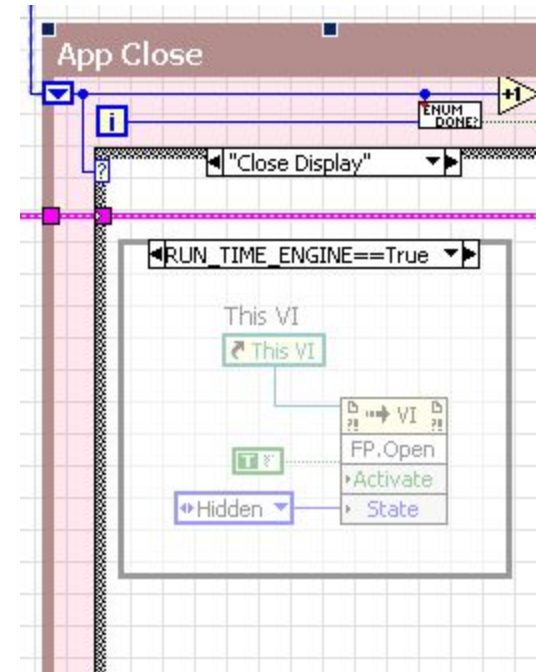
- Pre-defined cases handle common functions
  - Init
  - Error
- 95% of work happens here
- 'Default' case handles state typos



# Application Close

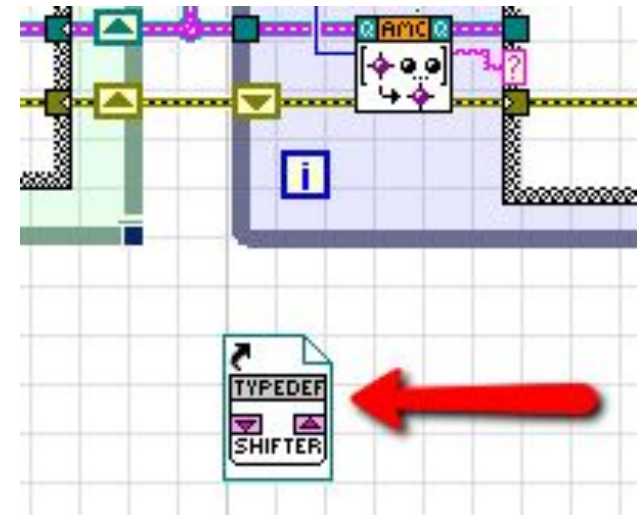
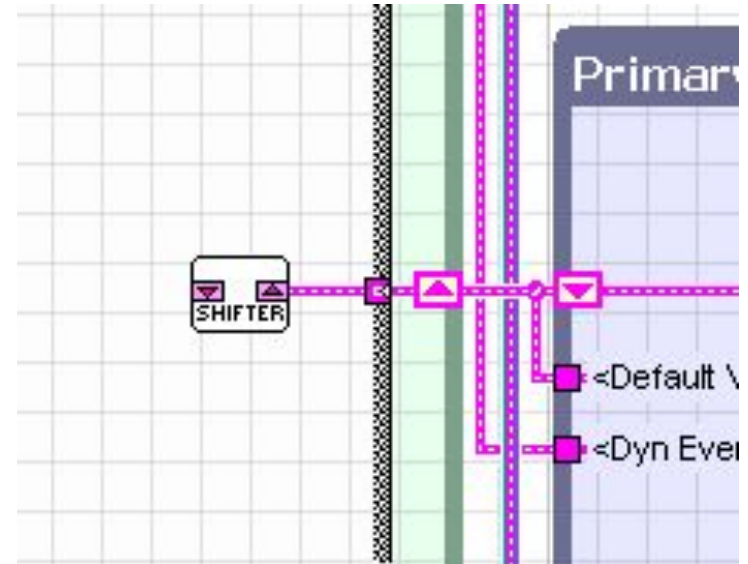


- Handles display consideration if built into EXE
- No real processing should happen here
  - Use 'Exit' in Primary Execution



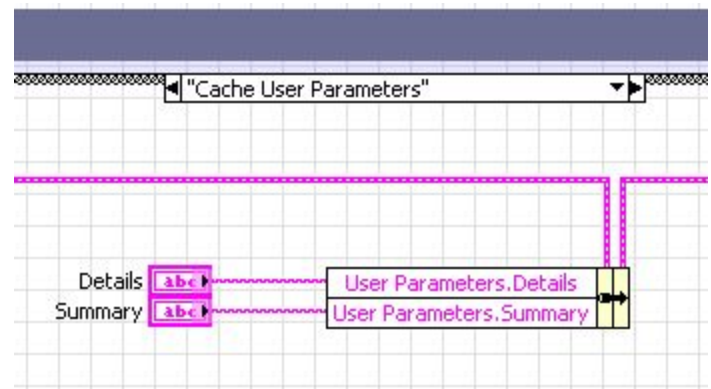
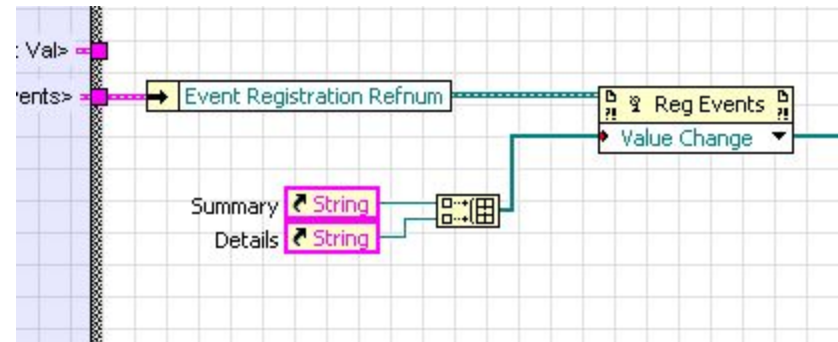
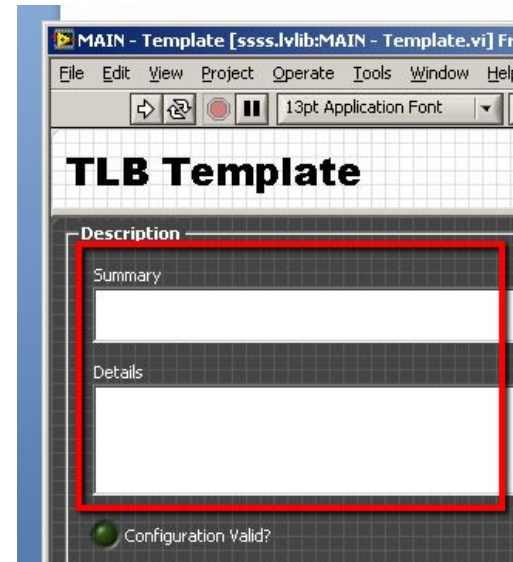
# The SHIFTER

- Master state cluster
  - ALL data associated with application
- NEVER send into sub-VI
- Easily add elements through Typedef shortcut



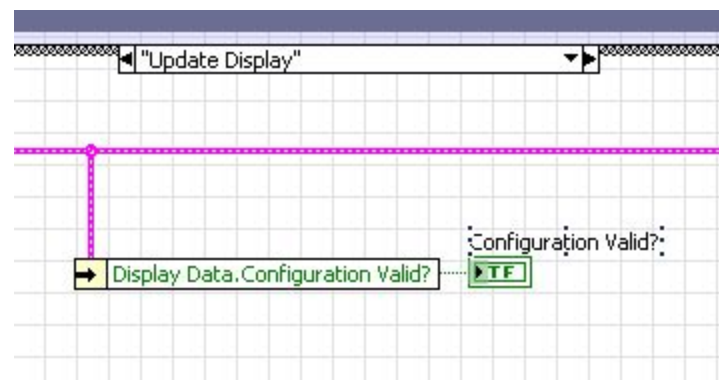
# 'User Parameters'

- Scalar inputs on the front panel
  - numerics, strings, etc.
- Register for 'value change' event dynamically
  - Prevents event structure bloat
- All terminals in 1 state: Update User Param.
  - Enables all param to be accessible to entire program without need for local Var



# 'Display Data'

- Scalars, plots etc
  - Any thing that needs to get updated on the panel
- Store in shifter to provide data access to entire app
  - Instead of outputting directly to indicator
- Call 'Update Display' state to refresh display



# Extra Handy Things

- Gracefully shuts down both loops
- Idle state defaults to 1s delay
- Caches current values of controls on startup in case of change while not running
- Graceful error in case of typo
- Interactive or headless execution
  - Your choice
- Error handling allows Stop OR continue

# Closing note

- Appropriate for simple and intermediate grade applications
- THIS IS NOT OVERKILL – it has all those things that you end up implementing anyway