

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
- 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



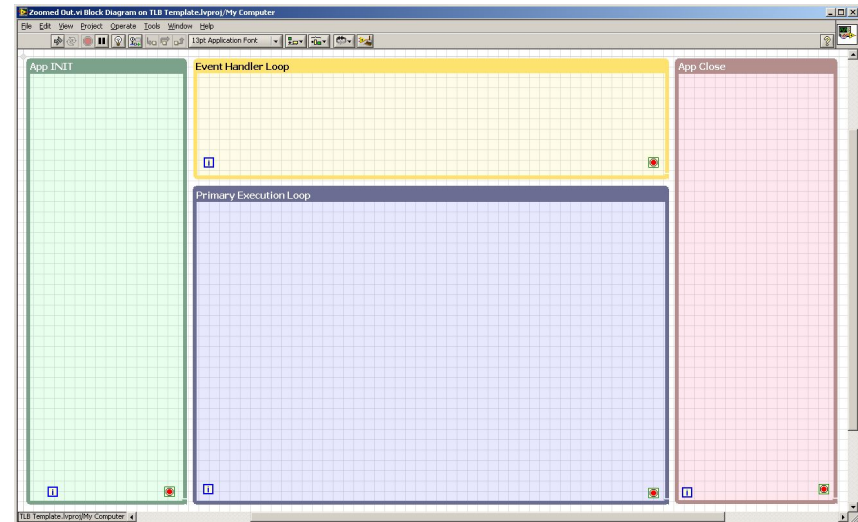
Baseline Architecture

- Application INIT
 - once and only once code

- Event Handler Loop
 - user interaction response

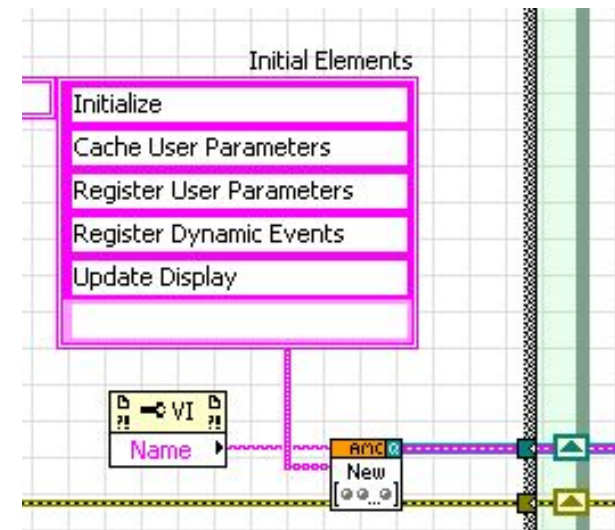
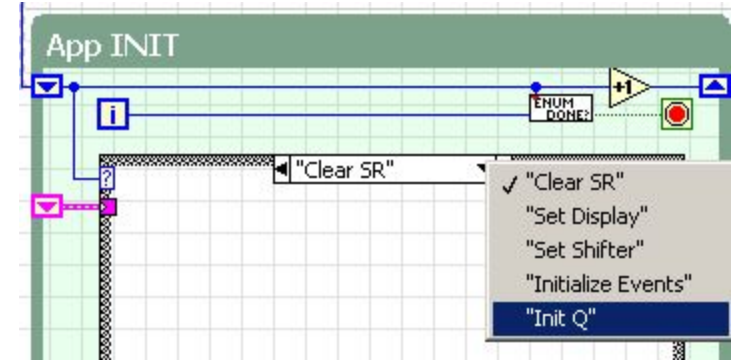
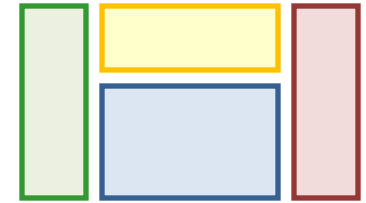
- Primary Execution Loop
 - main flow of program

- App Close
 - close references & shutdown

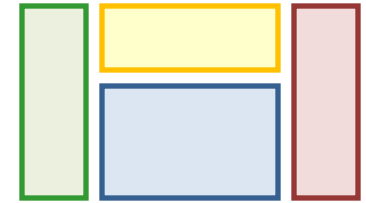


Application INIT

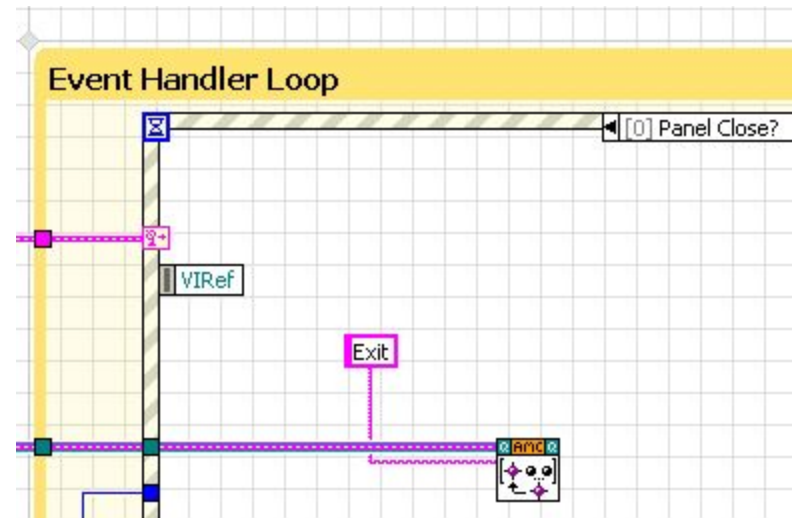
- Sequence of cases
 - primes the application
 - stacked instead of flat for cleanliness
- Not 'all' init. code goes here
 - Just once and only once stuff
- Enqueues specific set of states to Primary Execution



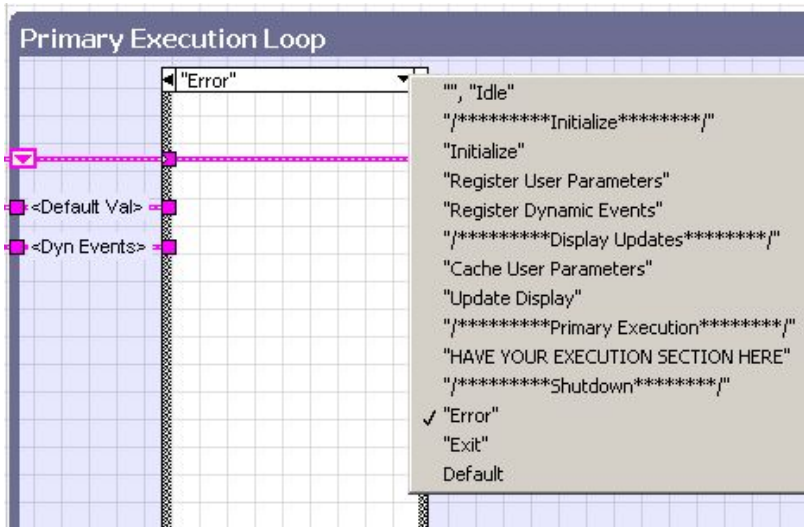
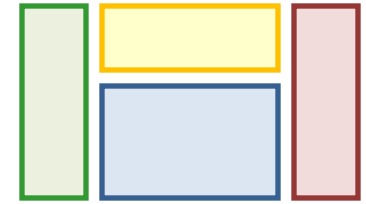
Event Handler



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

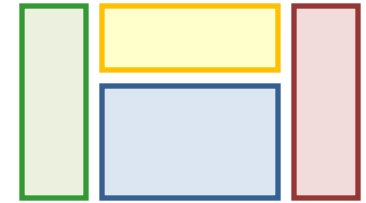


Primary Execution

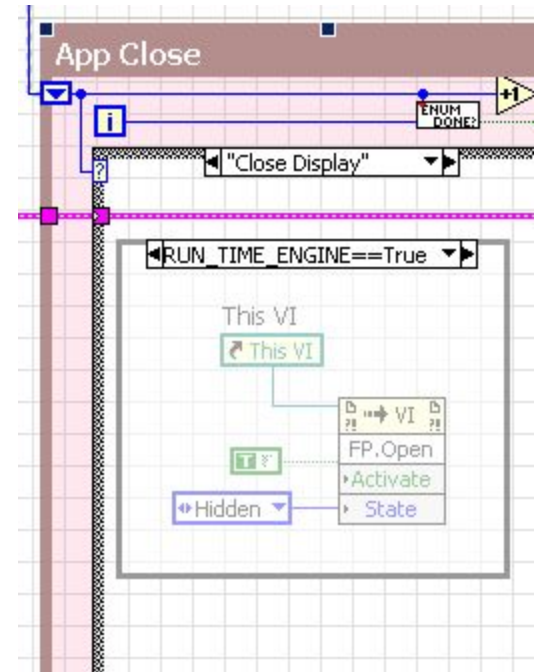


- Pre-defined cases handle common functions
 - Init
 - Error
- 95% of work happens here
- ‘Default’ case handles state typos

Application Close

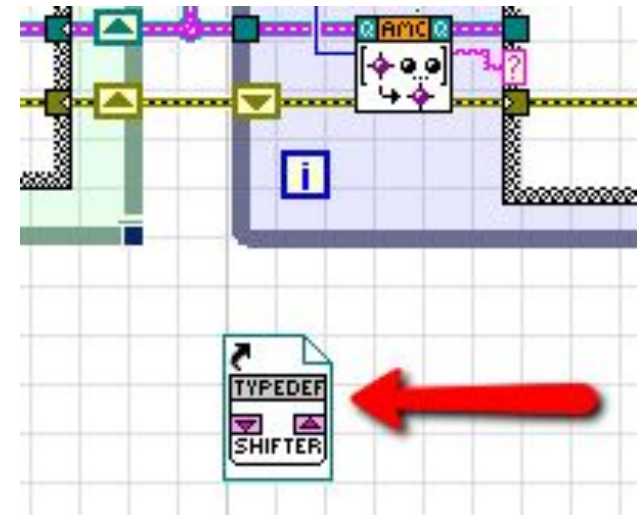
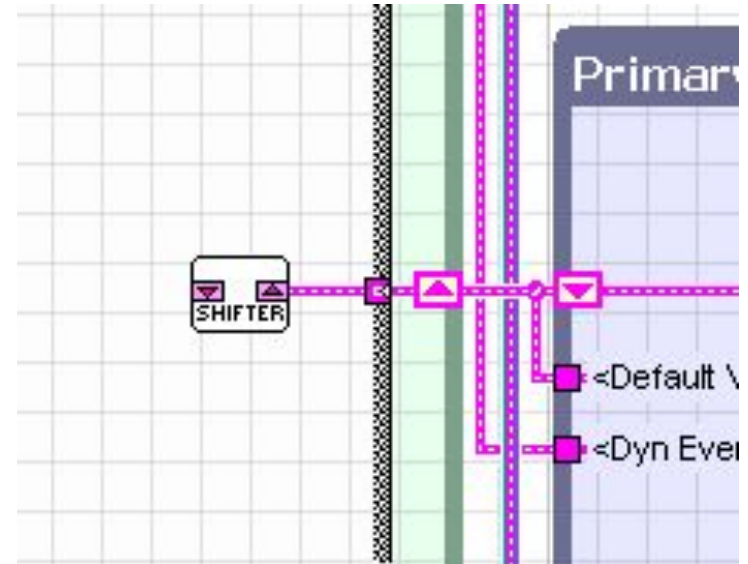


- Handles display consideration if built into EXE
- No real processing should happen here
 - Use 'Exit' in Primary Execution



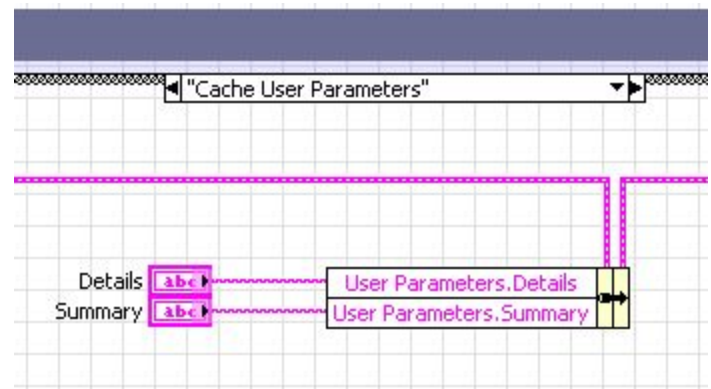
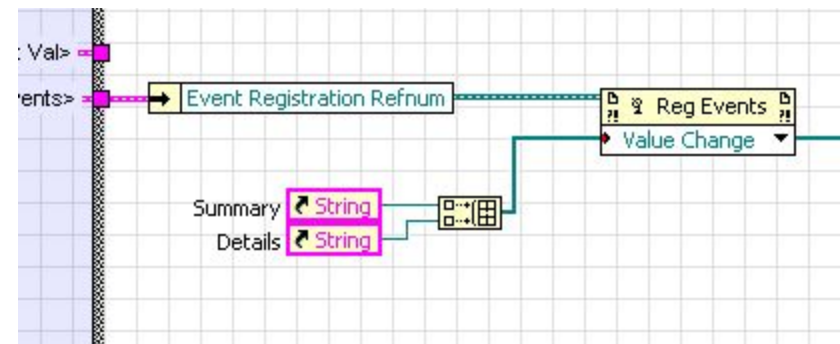
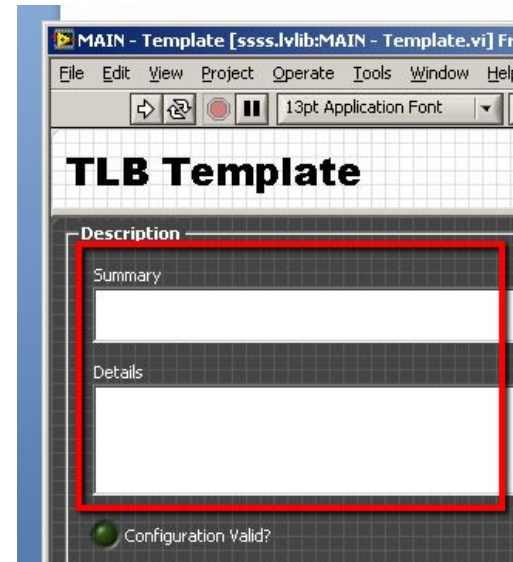
The SHIFTER

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



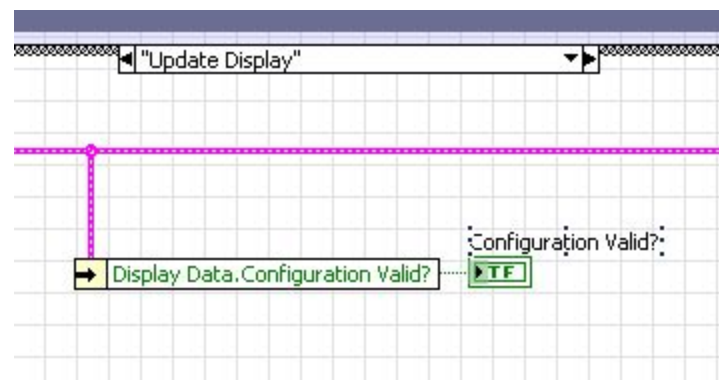
'User Parameters'

- 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