Putting a bow on your reusable code by packaging with VIPM

NI Connect 2023

Derrick Bommarito

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IG AutoComplete	1.0.0.3	VIPM Community	IlluminatedG	
IG Conditum	1.0.0.26	Unpublished	IlluminatedG	- 1
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IG Conditum Base	1.0.0.39	Unpublished	IlluminatedG	- 1
IG Flex Channel Examples	1.0.0.1	VIPM Community	IlluminatedG	
IG FlexChannels	2.0.0.21	Unpublished	IlluminatedG	- 1
IG Gmail API	1.0.0.1	Unpublished	IlluminatedG	
IG HTTP Server	0.5.2.34	VIPM Community	IlluminatedG	- 1
IG HTTP Utils	1.0.1.52	Unpublished	IlluminatedG	
IG HTTP-Conditum	0.1.0.3	Unpublished	IlluminatedG	- 1
IG IDE - Snippets	1.2.0.27	Unpublished	IlluminatedG	
IG Joystick	0.1.0.5	VIPM Community	IlluminatedG	- 1
IG OOPanel	0.2.0.28	VIPM Community	IlluminatedG	
IG Serial Stream	1.0.0.13	VIPM Community	IlluminatedG	
IG Stream Base	1.2.0.46	VIPM Community	IlluminatedG	
IG Stream Messaging	1.0.0.35	VIPM Community	IlluminatedG	
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IG TCP Stream	0.1.0.42	VIPM Community	IlluminatedG	
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What shall we talk about?

• Me

- Shameless Plugs
- Why package reusable code?
- vipm.io
- Comparison with NI Package Manager
- The Simple[™] Case
- To split or not to split packages
- Package Polish
- Extra tips

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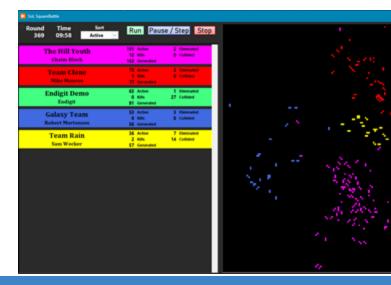


Summer of LabVIEW

Programming competitions and challenges to grow skill and excitement for LabVIEW development.

Being run publicly in partnership with G Central.

SquareBattle project template available on VIPM.





https://discord.gg/KxtUER4NGS SoL Discord Server

15 recertification points for submitting a working entry!

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We want YOU!

Many positions across all skill levels. (Not just LabVIEW)

DSCE, the team I'm on, has lots of work to do!

Help make a LOT of cool stuff possible.

https://blueorigin.wd5.myworkdayjobs.com/BlueOrigin?q=labview

Disclaimer!

I am not affiliated with JKI or VIPM, I just have a bunch of packages posted, some that get used by others.

I'm just a LabVIEW dev here to encourage more open-source LabVIEW development and try to rise the tide for all ships.

Packaging of development dependencies is also just very convenient for a host of reasons.

My Published Packages

Package	Version	Released	Installs / Stars	Actions
Sol, SquareBattle	1.1.0.46	2023-05-04	45/0	Edit Details, New Release
IG WebSocket & TCP Messaging Example	1.0.0.2	2022-11-12	91/0	Edit Details, New Release
IG WebSocket Stream	1.0.0.14	2023-01-03	237/0	Edit Details, New Release
IG Web&Crypto	0.1.0.9	2022-11-12	308/0	Edit Details, New Release
IG VoicemeeterRemote API	0.1.0.3	2022-12-22	25/0	Edit Details, New Release
IG Tiny TCP	1.0.2.7	2023-04-15	96/2	Edit Details, New Release
IG TCP Stream	0.1.0.42	2022-11-12	375 / 1	Edit Details, New Release
IG Stream Messaging Examples	1009	2022-11-12	115 / 1	Edit Details, New Release
IG Stream Messaging	1.0.0.35	2022-11-12	307 / 1	Edit Details, New Release
IG Stream Base	1.2.0.46	2022-11-12	512/1	Edit Details, New Release
IG Serial Stream	1.0.0.13	2022-11-12	132/0	Edit Details, New Release
IG OOPanel	0.2.0.28	2023-03-02	350 / 2	Edit Details, New Release
IG Joystick	0.1.0.5	2021-10-28	108/0	Edit Details, New Release
IG IDE - Snippets	1.1.0.21	2023-02-21	120 / 4	Edit Details, New Release
IG HTTP USIS	1.0.1.46	2022-11-22	351/2	Edit Details, New Release
IG HTTP Server	0.5.2.34	2023-04-04	187/0	Edit Details, New Release
IG FlexChannels	2.0.0.20	2022-03-04	89/0	Edit Details, New Release
IG Flex Channel Examples	1.0.0.1	2022-03-01	75/0	Edit Details, New Release
IG AutoComplete	1.0.0.3	2022-05-19	80 / 1	Edit Details, New Release
ControlArray	0.1.0.4	2021-10-13	227 / 1	Edit Details, New Release

Why create packages?

Pros

- Easy to distribute
- Easy to version
- Easy to consume
- Vipm.io packages are open source
 - Inner-source (private repos) available with VIPM Pro
- VI Package Configurations



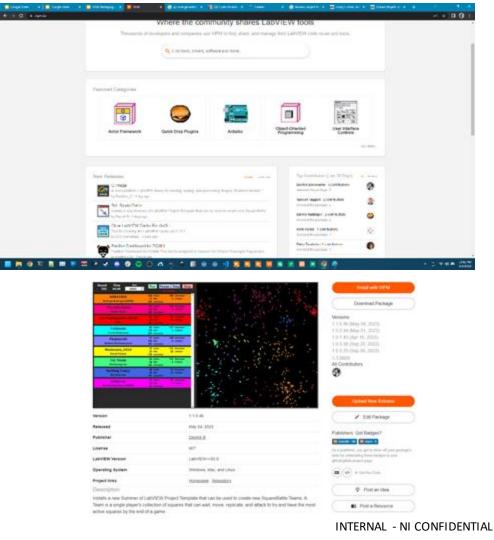
- Extra steps
- Not easy to switch back (Not that you'd want to)

https://vipm.io

More than just package search:

- Links to source code repos
- Ability to post ideas to authors*
- Authors & others can post pages about packages
- Version history and notes

* My opinion is that this is best accomplished with issues on the source code repo.



What about NI Package Manager?

Pros

- Packages can depend on products and toolkits besides just LabVIEW
- Useful for built applications
- Better remote management (SystemLink)
- Complex dependencies
- LabVIEW Package Build spec
- Installers

Cons

 Unable to target multiple versions of products

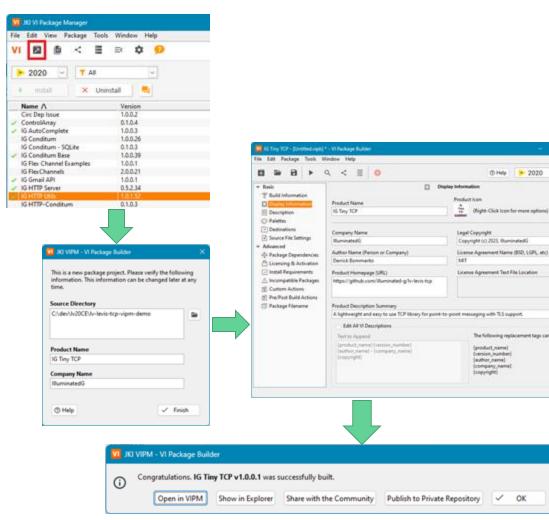
The Simple[™] Case

Creating a New Package

- Select source folder 1
- 2 Fill out author information
- 3. Fill out package description
- Build! 4

You now have a .vip file you can install with VIPM and share. congratulations!

We'll talk about everything else you should do for a package shortly.



1 OK

@ Help > 2020 -

The following replacement tags can be used:

(product, name)

(version number

(author name) (company, name)

(copyright)

14

The Not-So-Simple Cases

To split or not to split?

Should you split layers of a set of libraries into multiple packages or not?

Splitting Benefits

- Smaller downloads
- Faster CI/CD
- Less palette clutter
- Flexibility in fixes

Not-splitting Pros

- Easier Development
- They're typically just dev libraries so extra download doesn't impact builds

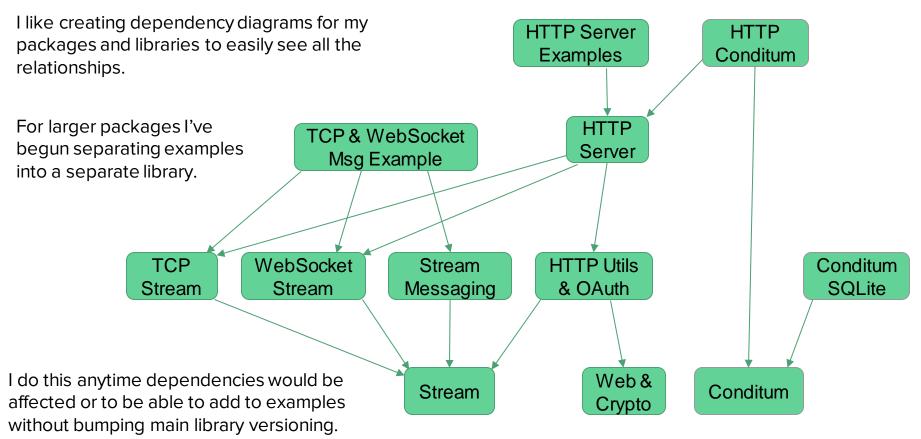
Splitting Cons

- Increased development effort
 - \circ Workflow equivalent of using PPLs
- CI/CD for LabVIEW still primarily driven by private companies that treat it as their IP
- Potential versioning hell

Not-splitting Cons

• Less likely to be designed to be easily extendable

My Web Packages



Splitting up packages

- Follow the Simple Case steps for the lowest level package(s).
- [Re]move packaged source from disk.
- Open next package.
- Ensure everything relinks to vi.lib properly
 - *Should* happen automatically, LabVIEW searches vi.lib for missing dependencies by default.
- Package, specify package dependencies.
- Install.
- Repeat.

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• Basic]	Package Deper	idencies
"Build Information			
Display Information	Package Name	Version	Description
Description	IG HTTP Utils	>=1.0.1.46	Source VIs call VIs in this package
Palettes	IG Stream Messaging	>=1.0.0.35	Source VIs call VIs in this package
Destinations	IG Stream Base	>=1.2.0.46	Source VIs call VIs in this package
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Package Dependencies			
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A Incompatible Packages			
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Polishing things up

Large Classes and APIs

I've heard that a lot of people rely on the automatic class palette.

I personally can't stand it.

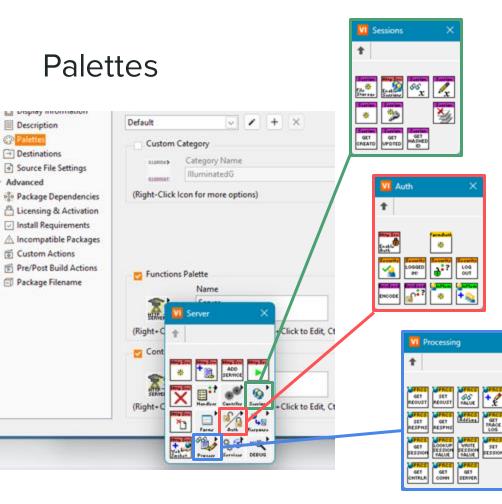
No scope control (most of this isn't accessible outside the class).

No organization.

A lot of footprint taken by optional features.

Save anyone using your package some sanity!

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CONCEPTION OF THE	ana and the second second	Get Trace	Enable Auth.vi	Enable	Access Log	Register



Organize your code and features based on related functionality.

Palettes are generally organized with initialization in top-left, cleanup/close towards top-right.

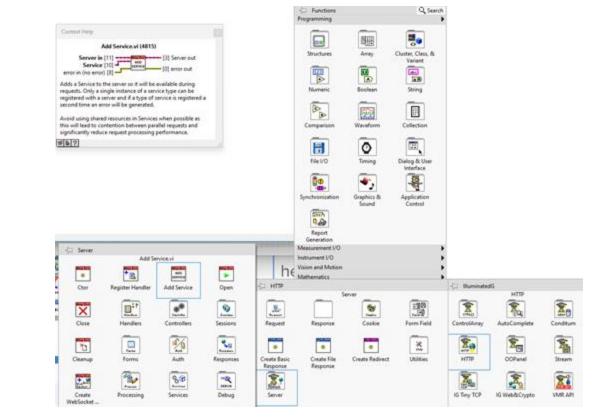
Good VI names and context help are crucial for quick browsing of palettes.

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Aiding Palette Browsing

Good VI names and VI/Ctl documentation are crucial for browsing the palettes.



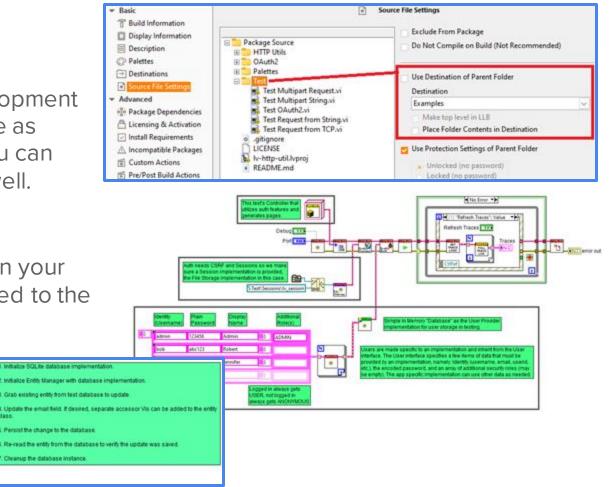
Examples

DB Path 15 Tar

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New Email II.

I call them "tests" during development and my style of tests also serve as usage examples. Of course you can have dedicated examples as well.



Throw down some comments in your tests and set them to be installed to the examples folder.

1

to will error out

Values

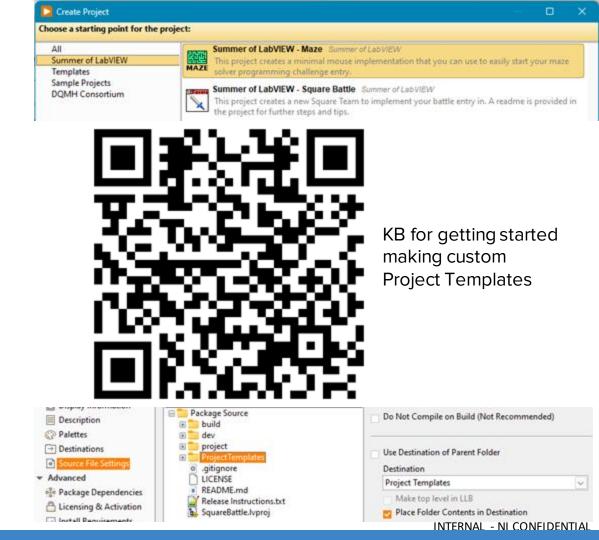
and the

Project Templates

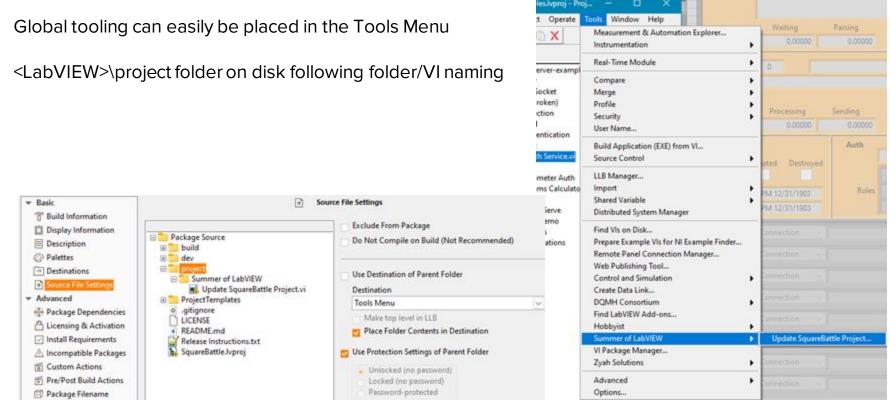
When they're applicable, they're a great way for getting new users ramped up on your tool / framework.

Read the KB for getting started, reference existing templates in LabVIEW.

Specify a folder to put in the Project Templates Destination in VIPB.



Tools Menu



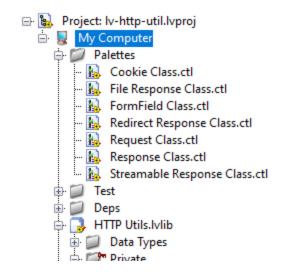
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"Place-contents" Palette Items



You can right-click a palette menu entry in VIPM and enable the option to "Place VI Contents". This is useful for code-snippets and placing class controls on VIs.



I'll often create a Palettes folder in the project specifically for these.

Custom install actions & replacing shipped NI code

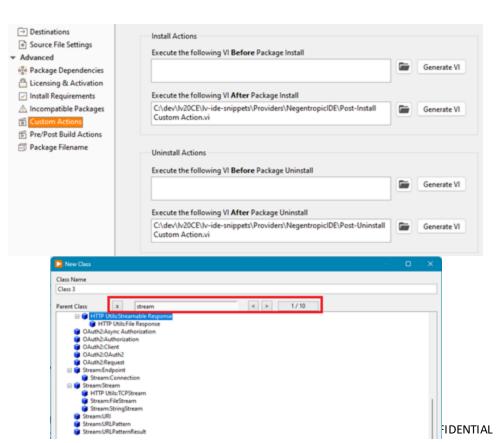
You should never have VIPM directly overwrite VIs that ship with LabVIEW. VIPM will not replace the old file when uninstalling the package.

Install to a "standard" VIP destination and use postinstall scripting to backup the shipped VI, move the new VI into place.

Use post-uninstall scripting to restore the backed up original VI after package is uninstalled.

E.g. A package that replaces class member VI template and custom class override VI scripting to get everyone using the same standard templates without the full-VI error case.

Or new class parent search.





Give us your feedback! Quick 2 Question Survey

In the mobile app,
click into the
session you would
like to provide
feedback for



10:15 AM Multichannel RF Data Recording 11:15 AM and Analysis

- Meeting Room 19A
- Aerospace & Defense Technical Session

10:15 AM Optimizing Validation Processes: 11:15 AM Building Complex Test Systems with Distributed I/O

- Meeting Room 19B
- Aerospace & Defense -Technical Session

10:15 AM Panel: Continuous Integration (CI/ 11:15 AM CD)-Don't Leave Home without It

- Meeting Room 12A
- Programming Essentials -Technical Session

10:15 AM Using Python and TestStand to 11:15 AM Boost Your Test Development

- Ballroom G
- Product & Technology -Technical Session

10:15 AM What Does Left Shifting Test 11:15 AM Mean in the NI Ecosystem?

- Meeting Room 18A
 - Meeting Room 187
 - # Transportation Technical Session

Tue May 23

🖈 Add to Schedule 🛛 🛗 iCal 🖉 Check In

Optimizing Validation Processes: Building Complex Test Systems with Distributed I/O

Tue May 23 10:15 AM - 11:15 AM

Map Meeting Room 19B
 Aerospace & Defense - Technical Session

[]_ Surveys

Take Session Survey

In this session, learn to improve efficiency and reduce non-recurring engineering costs in validation labs by connecting multiple distributed line-replaceable unit (LRU) test systems. Also learn how to abstract LRUs and construct complex test systems faster and more efficiently using existing distributed I/O and edge computation technology.

Click "Take the Session Survey"

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