We look at how to use NI and 3rd party tools (requirements gateway, UTF, JIRA, Source tree etc) to implement a software engineering process in LabVIEW. We show how this allows development progress and requirements management and enforcement of testing/testability. Such tools and processes also enable efficient teamwork with multiple developers.
Who am I?
Who are Precision Acoustics?
Presentation objectives

- Hg Flow
- Combining LV tools in a process

Hmmm that might work…
Software development process

Unit test

VI Analyzer

Code review

Source code control
Define a new feature (epic in scrum)
Plan out the design of that feature and the smaller tasks needed to complete it (Stories in scrum)
Create a new feature branch from the develop branch
Run unit tests on existing code to ensure inheriting good code
Write new unit tests which test/prove the requirement of the feature
Start ticking off the stories, testing along the way
Complete the feature (all new and old unit tests pass)
Pull any changes from the develop branch which may have happened (e.g. completion of another feature in parallel)
Check all the unit tests in the project still pass!
Run VI analyser
Formal code review
Merge back to develop and close the branch

Easy!
Build process around SCC
Source code control – Hg-flow
Flowing with Hg Flow

**Do’s**
- Commit mindfully (Fabiola De la Cueva – 2018)
- Branch mindfully

**Don’ts**
- Merge VIs
- Merge .lvlib files or .lvclass files
- Use LVMerge

**Can’s**
- Merge project files – but only for changes of substructures
- Use LVCompare to compare changes between vis in different branches.
Putting it all together – Hg-flow

Time

Feature Branch 2
Feature Branch 1
Development
Release

Build
App.exe v1.0

Build
App.exe v1.1
Putting it all together – Hg-flow + TDD

- All tests pass
- New tests fail
- Some fail
Putting it all together – Hg-flow + VI Analyzer
Putting it all together – Hg-flow + Code review

Time

Feature Branch 2

Feature Branch 1

Development

Release

Build

App.exe v1.0

Build

App.exe v1.1

Light.cfg

Internal.cfg

Pre-release.cfg
Does it work?!

- “Work in progress”
  - We’re still learning! Still tweaking!
- What’s working well?
  - JIRA/Scrum(ish)
  - Hg Flow
- What do we need to work on?
  - Test driven development
  - VI analyzer
- Why don’t we always follow the process?
  - “Get it done” vs “Do it right!”
  - Change is hard! Big change is harder!
Before you go, take the survey.