UI Responsiveness Monitoring for the Masses

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What causes unresponsive UI?

- Lengthy processing on the UI (a.k.a. main) thread
  or
- UI thread is blocked waiting for something
Event loop

- Get an event
- Process it
Event loop

Get an event

Process it
this has to be quick!
Why haven't UI freezes been fixed yet?

• No enforcement of the rule not to call long-running methods on the UI thread

• Cumbersome to collect freeze information, especially for short freezes

• Not enough pressure from the users
What can we do to help?

If you are a plug-in developer:

• Every long-running method should take IProgressMonitor as a parameter
• Any method that may call long running methods is long running, there should be no new NullProgressMonitor() anywhere
• Never call long-running methods on the UI thread
• Add Display.getCurrent() == null assertion to long-running methods
What can we do to help?

If you are an Eclipse user:

- Enable UI Responsiveness Monitoring
- File bugs at https://bugs.eclipse.org
UI Responsiveness Monitoring

- Introduced in the Mars release
- Has to be enabled in preferences to be used
- Can be configured for your needs
Is anybody using it?

- Google
- Eclipse Platform Committers
- Automatic error reporter by Code Recommenders project goo.gl/6Mt4Vr
Under the hood

- Monitoring thread
  Collects thread stack samples
  Logs UI freezes

- SWT Events
  PreEvent
  PostEvent
  PreExternalEventDispatch
  PostExternalEventDispatch
Collecting thread stack samples

Event processing started
Collecting thread stack samples

First stack sample
Collecting thread stack samples
Collecting thread stack samples
Collecting thread stack samples

First sample of all threads
Collecting thread stack samples
Collecting thread stack samples
Collecting thread stack samples
Collecting thread stack samples
Collecting thread stack samples

Event processing ended
Collecting thread stack samples

Three samples is enough

Too close to the end
Collecting thread stack samples
Other work blockages

The user operation is waiting for "Building workspace" to complete.

- Building workspace
- Building workspace API baseline
- Waiting User Operation