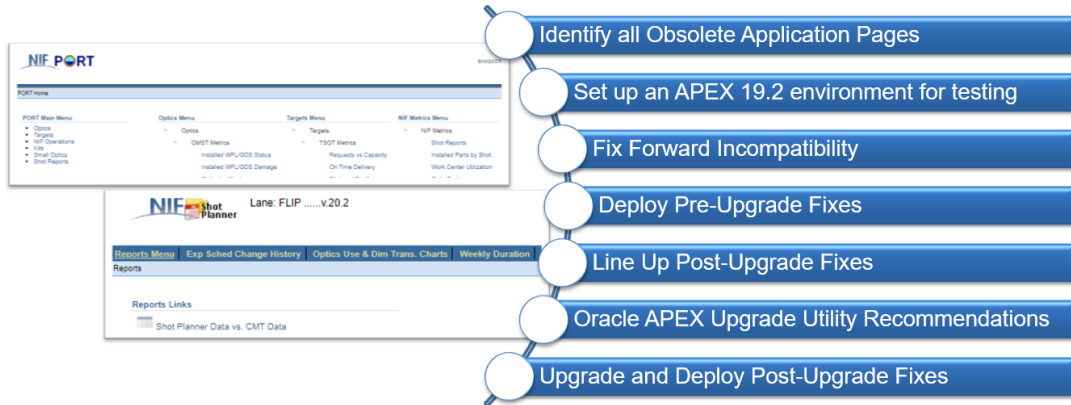# UPGRADING ORACLE APEX APPLICATIONS AT THE NATIONAL IGNITION FACILITY

Anumeha Bhasker, Raelyn D. Clark, Robert N. Fallejo
Lawrence Livermore National Laboratory (LLNL)

**MOPV047**
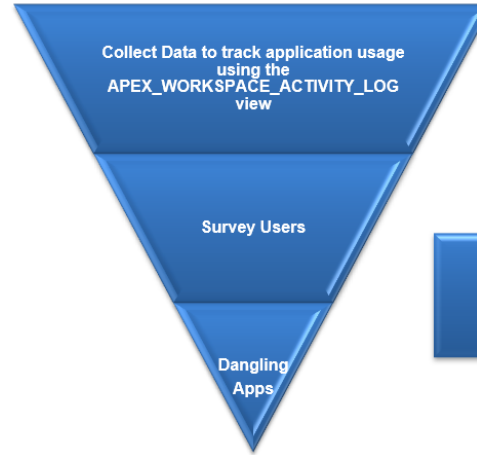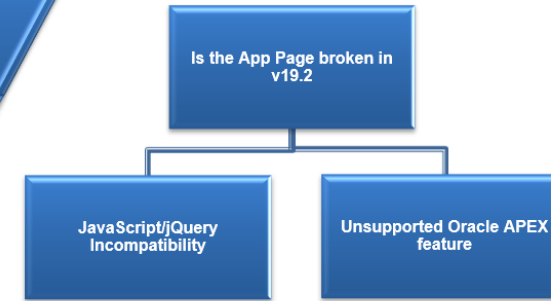
## Section I

### NIF APPLICATIONS & UPGRADE METHODOLOGY
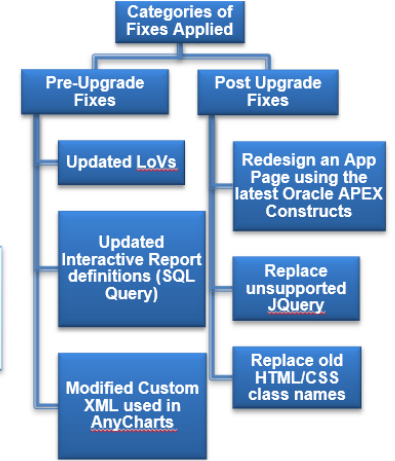
- Identify all Obsolete Application Pages
- Set up an APEX 19.2 environment for testing
- Fix Forward Incompatibility
- Deploy Pre-Upgrade Fixes
- Line Up Post-Upgrade Fixes
- Oracle APEX Upgrade Utility Recommendations
- Upgrade and Deploy Post-Upgrade Fixes

## Section II

### IDENTIFY OBSOLETE FUNCTIONALITIES

- Collect Data to track application usage using the APEX_WORKSPACE_ACTIVITY_LOG view
- Survey Users
- Dangling Apps

### FIX FORWARD COMPATIBILITY

Is the App Page broken in v19.2
- JavaScript/jQuery Incompatibility
- Unsupported Oracle APEX feature

### PRE-UPGRADE & POST-UPGRADE FIXES

**Categories of Fixes Applied**

**Pre-Upgrade Fixes**
- Updated LoVs
- Updated Interactive Report definitions (SQL Query)
- Modified Custom XML used in AnyCharts

**Post Upgrade Fixes**
- Redesign an App Page using the latest Oracle APEX Constructs
- Replace unsupported JQuery
- Replace old HTML/CSS class names

## Section III

### ORACLE APEX 19.2 UPGRADE UTILITY

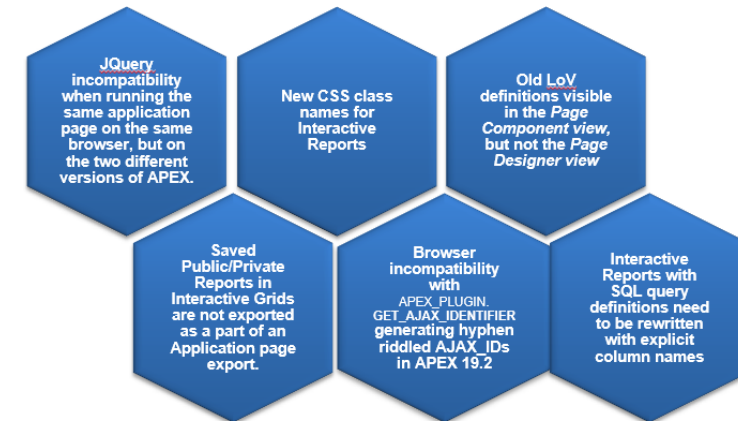| Upgrade Type | Candidate Objects |
| --- | --- |
| Enable Save Public Report for Interactive Reports | 6 |
| Enable Subscription for Interactive Reports | 149 |
| Enable Rows Per Page Selector for Interactive Reports | 5 |
| Numeric, Required, and Date Picker Item updates based upon conditional validations | 1 |
| Enable fixed report headers to the top of the page, for Interactive Reports | 1 |
| Upgrade AnyChart Charts to Oracle JET Charts | 109 |
| Upgrade Tabular Form to Interactive Grid | 62 |
| Upgrade Legacy Form page to page containing Form Region, where appropriate | 19 |

The in-built 'Upgrade Application' Utility makes recommendations for individual features in pages eligible for upgrade.
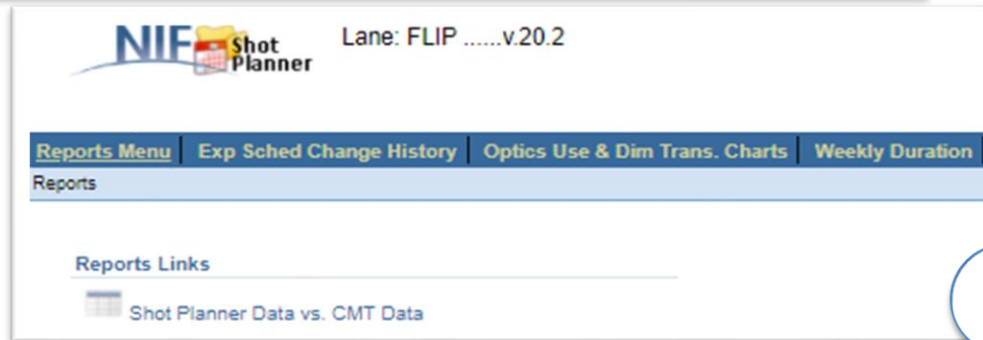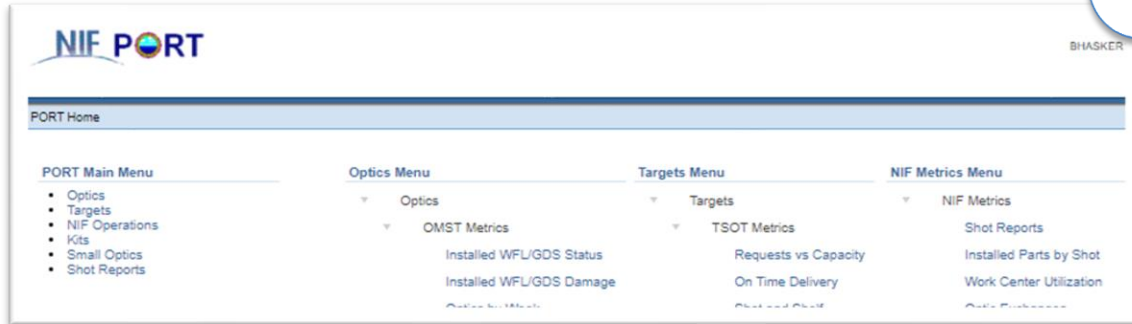
### UPGRADE AND DEPLOYMENT

**Pre-Upgrade Fixes**
- Apply the pre-upgrade fixes in the Oracle APEX 5.0 environment

**Upgrade**
- Upgrade the Oracle APEX 5.0 environment to Oracle APEX 19.2
- Accept Upgrades from the APEX Upgrade Utility

**Post-Upgrade Fixes**
- Apply post-upgrade fixes as a part of a release immediately after the upgrade is performed.

## Section IV

### NOTABLE LESSONS LEARNED

- JQuery incompatibility when running the same application page on the same browser, but on the two different versions of APEX.
- New CSS class names for Interactive Reports
- Old LoV definitions visible in the *Page Component* view, but not the *Page Designer* view
- Saved Public/Private Reports in Interactive Grids are not exported as a part of an Application page export.
- Browser incompatibility with APEX_PLUGIN. GET_AJAX_IDENTIFIER generating hyphen riddled AJAX_IDs in APEX 19.2
- Interactive Reports with SQL query definitions need to be rewritten with explicit column names

# NIF APPLICATIONS & UPGRADE METHODOLOGY



- Identify all Obsolete Application Pages
- Set up an APEX 19.2 environment for testing
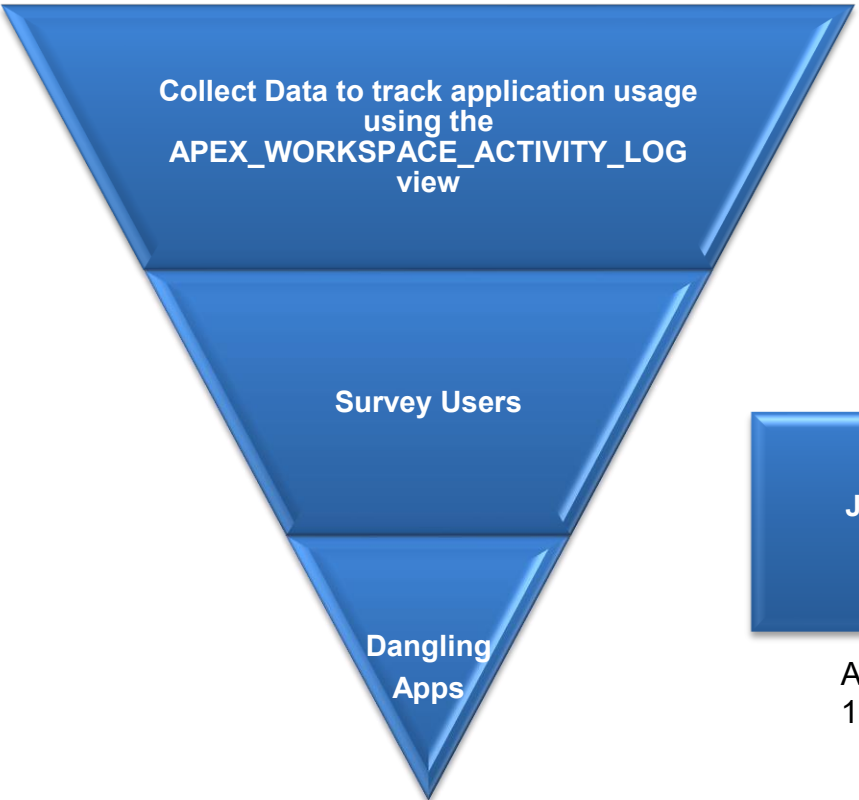- Fix Forward Incompatibility
- Deploy Pre-Upgrade Fixes
- Line Up Post-Upgrade Fixes
- Oracle APEX Upgrade Utility Recommendations
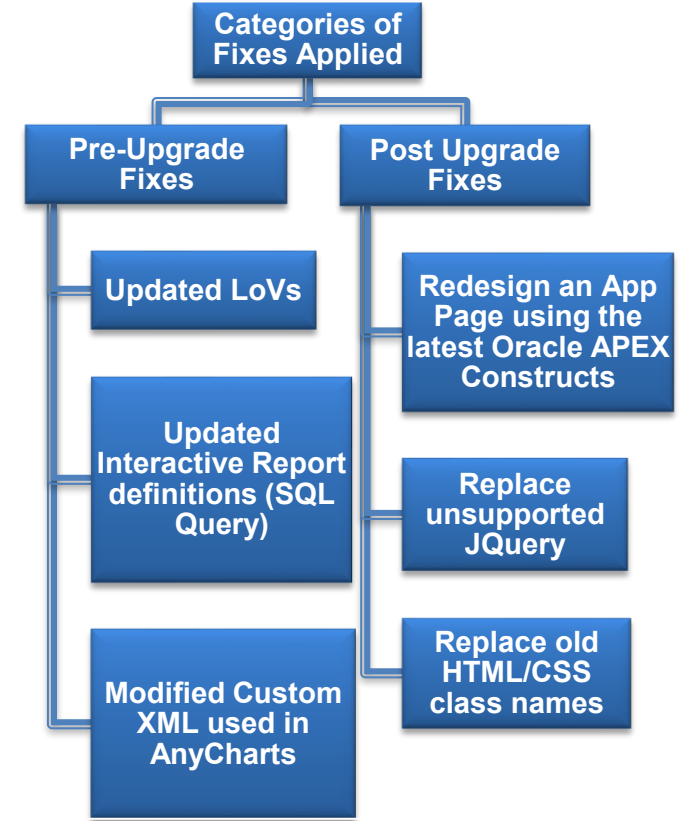- Upgrade and Deploy Post-Upgrade Fixes

# IDENTIFY OBSOLETE FUNCTIONALITIES

Collect Data to track application usage using the APEX_WORKSPACE_ACTIVITY_LOG view

Survey Users

Dangling Apps

Identify Legacy Application Functionalities that are now obsolete.

# FIX FORWARD COMPATIBILITY

Is the App Page broken in v19.2

JavaScript/jQuery Incompatibility

Unsupported Oracle APEX feature
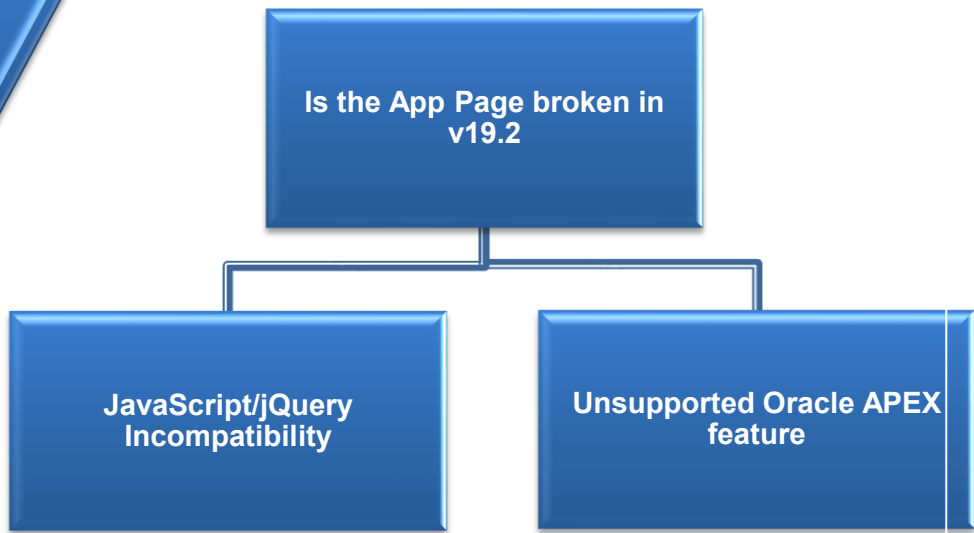
After setting up a test environment with Oracle APEX 19.2, identify broken application functionalities

# PRE-UPGRADE & POST-UPGRADE FIXES

Categories of Fixes Applied

Pre-Upgrade Fixes

Post Upgrade Fixes

Updated LoVs

Redesign an App Page using the latest Oracle APEX Constructs

Updated Interactive Report definitions (SQL Query)

Replace unsupported JQuery

Modified Custom XML used in AnyCharts

Replace old HTML/CSS class names

Apply fixes that allow application pages to work in both versions. The fixes that only work in the upgraded environment are exported and lined up for an immediate software release following the Application environment upgrade.
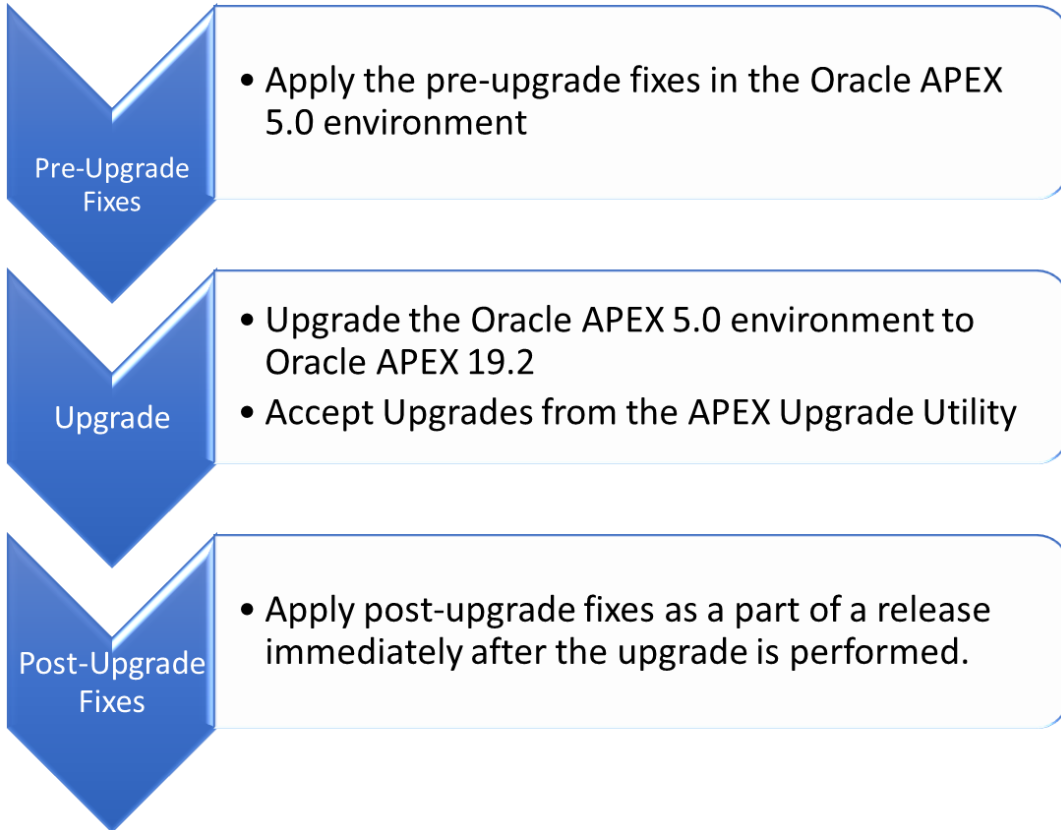
## ORACLE APEX 19.2 UPGRADE UTILITY



- The in-built 'Upgrade Application' Utility makes recommendations for individual features in pages eligible for upgrade.

- An upgrade should be accepted as-is only if it results in a *functional equivalent* of the original application, generally speaking.

- For example, accepting the upgrades to upgrade Tabular Forms (which are still compatible with Oracle APEX 19.2) to Interactive Grids did not result in functioning pages, and required further re-design of the page. Such upgrades were selectively applied during this phase of the upgrade. Other upgrades, such as 'Enable Group By for Interactive Reports' or 'Enable Save Public Reports' were accepted using this utility, as they only enhanced the features on the page.

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## UPGRADE AND DEPLOYMENT

**Pre-Upgrade Fixes**
- Apply the pre-upgrade fixes in the Oracle APEX 5.0 environment

**Upgrade**
- Upgrade the Oracle APEX 5.0 environment to Oracle APEX 19.2
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**Post-Upgrade Fixes**
- Apply post-upgrade fixes as a part of a release immediately after the upgrade is performed.

## NOTABLE LESSONS LEARNED

**JQuery incompatibility when running the same application page on the same browser, but on the two different versions of APEX.**

**New CSS class names for Interactive Reports**

**Old LoV definitions visible in the *Page Component view*, but not the *Page Designer view***

**Saved Public/Private Reports in Interactive Grids are not exported as a part of an Application page export.**

**Browser incompatibility with APEX_PLUGIN. GET_AJAX_IDENTIFIER generating hyphen riddled AJAX_IDs in APEX 19.2**

**Interactive Reports with SQL query definitions need to be rewritten with explicit column names**

## CONCLUSION

This upgrade to Oracle APEX 19.2 allows for these aging Oracle APEX applications to function in a more sustainable way, while enhancing user experience with a more modernized GUI for existing and future Oracle APEX webpages.

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