



NIAGARA SUMMIT 2016  
HYATT REGENCY, NEW ORLEANS  
MAY 15-17, 2016

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# Migrating from Niagara AX to Niagara 4

Craig Gemmill & Blake Puhak  
Software Engineers - Tridium

# Major Changes in Niagara 4

Java 8

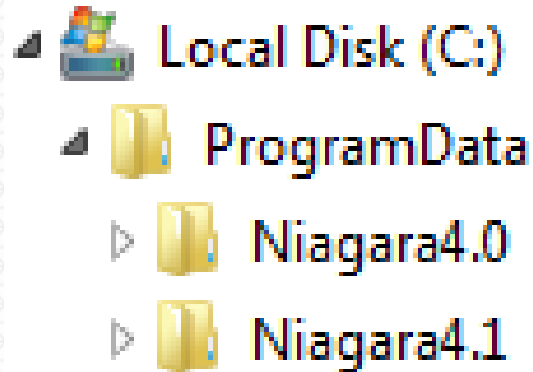
Build Tools

Directory Changes

Runtime Profiles

API Updates

Windows Explorer

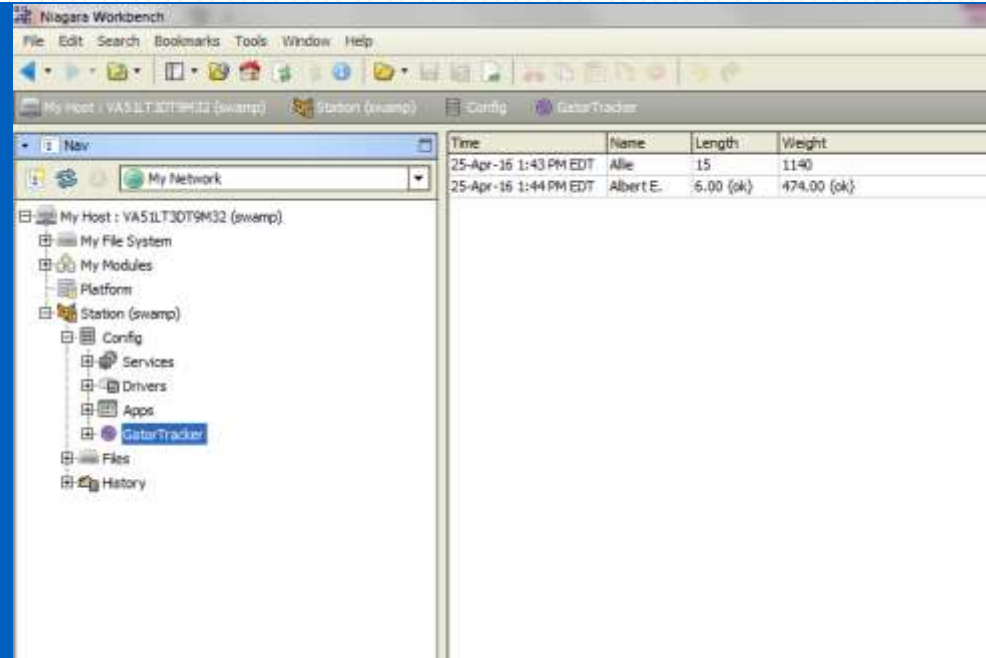


# Niagara AX Module

## Module Demo in Niagara AX

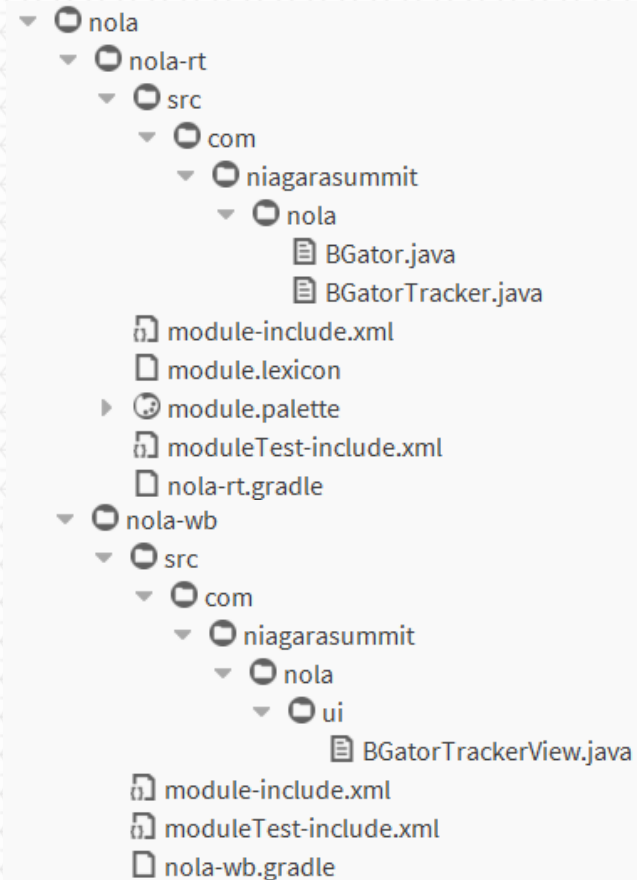
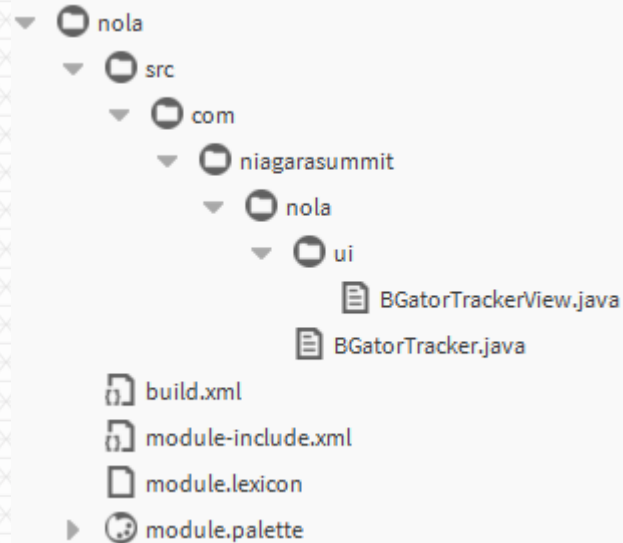
Logs Gator Sizes

Alarms on Record Gator Size



# Source Code

## Directory Structure





# Runtime Profiles

## **rt**

Data Model & Communications, executes on JACE - compact3

## **ux**

Bajaux, BIJavaScript, HTML5, CSS, Themes - compact3

## **wb**

Workbench UI, HX - compact3

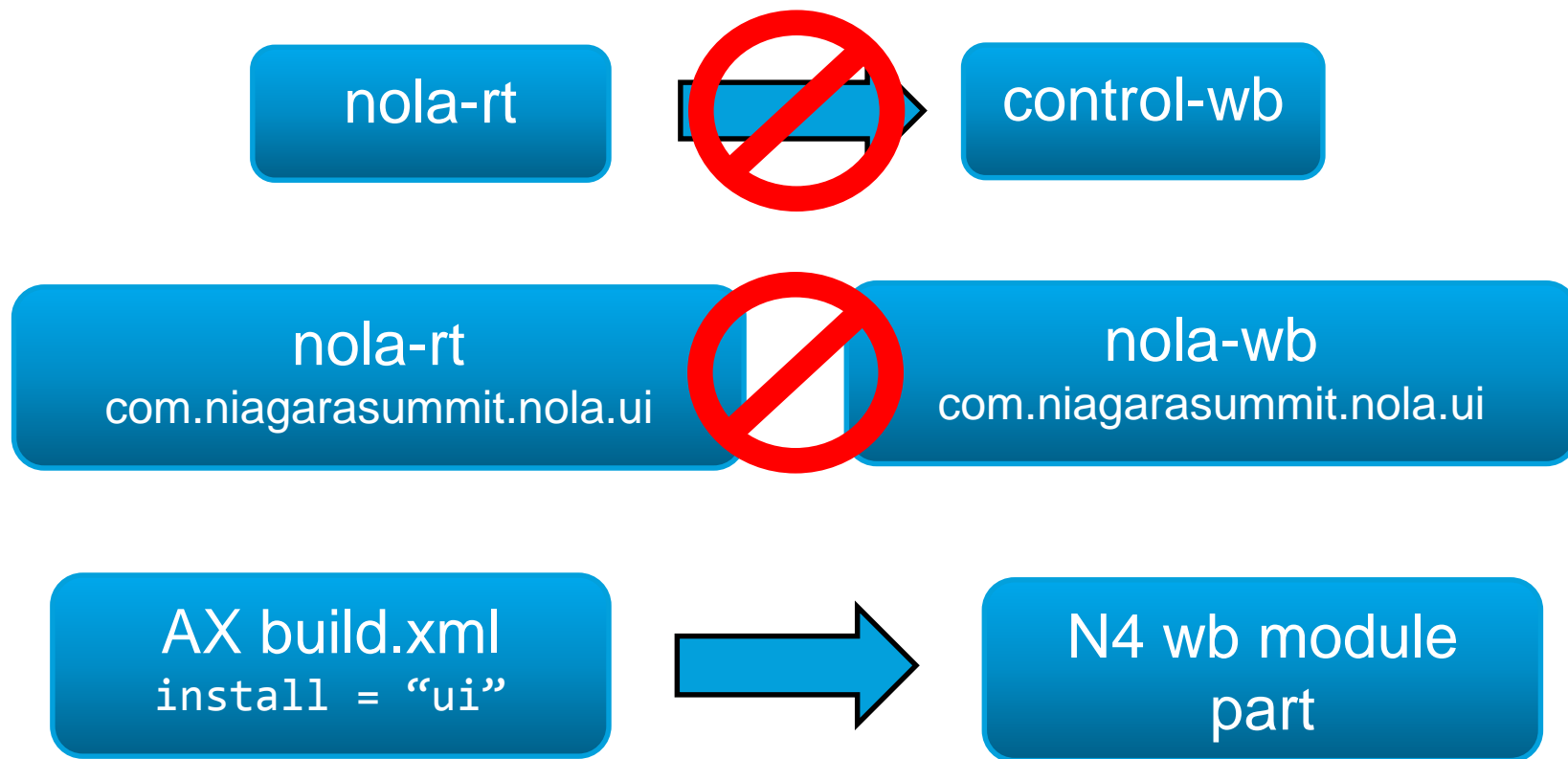
## **se**

Anything that uses Java 8 SE


## **doc**

Documentation


# Tips & Tricks



# New Module Wizard

 **New Module Wizard**  
Step 1 of 3

Create Module under Directory



Module Name

Preferred Symbol

Version

Description

Vendor

Runtime Profiles

- ☒ RUNTIME: Module JARs having core runtime Java classes only, no user interface.
- ☐ UX: Module JARs having lightweight HTML5+JavaScript+CSS user interface only.
- ☒ WB: Module JARs having Workbench or Workbench Applet user interface classes.
- ☐ SE: Module JARs having Java classes that use the full Java 8 Standard Edition (SE) platform API.

☒ Create Lexicon

☒ Create Palette

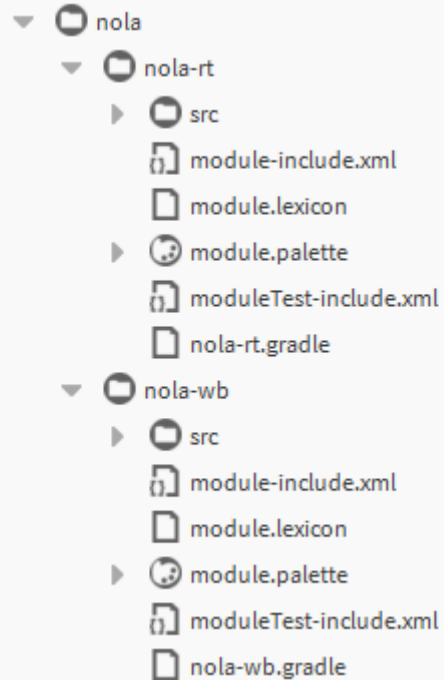


# New Module Wizard

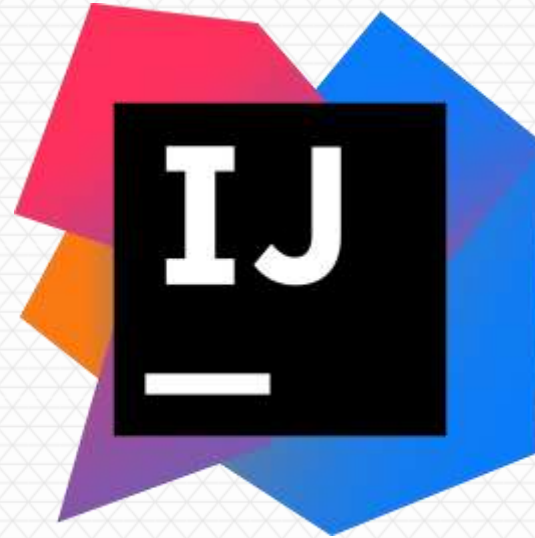
## Niagara AX build.xml

```
<module name = "nola"  
  bajaVersion = "0"  
  preferredSymbol = "nola"  
  description = "New Orleans Summit migration demo"  
  vendor = "niagarasummit">  
  
  <dependency name="baja" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="alarm" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="bajau" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="bql" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="control" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="file" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="gx" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="history" vendor="Tridium" vendorVersion="3.8" />  
  <dependency name="workbench" vendor="Tridium" vendorVersion="3.8" />  
  
  <package name="com.niagarasummit.nola" doc="true" />  
  <package name="com.niagarasummit.nola.ui" install="ui" doc="true" />  
  
</module>
```

# New Module Wizard



# Import into IDE



# Gradle Build Commands

## Using the Gradle Wrapper

gradlew slot

gradlew clean

gradlew jar

gradlew build

gradlew moduleTestJar



# Fixing Module-Include

## Option 1

Assign types into module-include.xml  
files for each runtime profile manually

Hand edit XML files

UGH!



# Fixing Module-Include

## Option 2: Let the Tools Work for YOU!

Copy module-include.xml into BOTH  
module parts

Migrate the slot code

BONUS: annotation based slot code!

Regenerate module-include.xml  
automatically!





# Slot-o-matic

## Now with Gradle!

Niagara AX

Niagara 4

```
/*-
class BGator
{
    properties
    {
        gatorLength: BStatusNumeric
            -- length of alligator
        flags { summary }
        default {[ new BStatusNumeric(0, BStatus.nullStatus) ]}
        slotfacets {[ BFacets.make(BFacets.UNITS, BUnit.getUnit("foot")) ]}
    }
}
-*/

/* length of alligator */
@NiagaraProperty(
    name = "gatorLength",
    type = "BStatusNumeric",
    defaultValue = "new BStatusNumeric(0, BStatus.nullStatus)",
    flags = Flags.SUMMARY,
    facets = @Facet("BFacets.make(BFacets.UNITS, BUnit.getUnit(\"foot\"))")
)
```



# Build Error

## Collections API

```
:nola-rt:compactProfileOption
:nola-rt:compileJava
...\niagarasummit\nola\BGatorTracker.java:15: error: cannot find symbol
import javax.baja.collection.BICollection;
                        ^
    symbol:   class BICollection
    location: package javax.baja.collection

1 error
:nola-rt:compileJava FAILED
```

# Build Errors

## Alarm API

```
symbol:   method getAlarmsForSource(BOrdList)
location: class BAlarmDatabase
...\niagarasummit\nola\BGatorTracker.java:525: error: cannot find symbol
    Cursor cursor = alarmService.getAlarmDb().getAlarmsForSource(source);
                                   ^
symbol:   method getAlarmsForSource(BOrdList)
location: class BAlarmDatabase
```

3 errors

:nola-rt:compileJava **FAILED**

# Build Error

## Incorrect Runtime Profile Import

```
:nola-wb:compileJava
```

```
...\niagarasummit\nola\ui\BGatorTrackerView.java:3: error: package javax.baja.gx  
does not exist
```

```
import javax.baja.gx.BInsets;  
                    ^
```

```
1 error
```

```
:nola-wb:compileJava FAILED
```

# Build Success

```
:nola-rt:compactProfileOption
:nola-rt:compileJava UP-TO-DATE
:nola-rt:generateModuleXml UP-TO-DATE
:nola-rt:processResources UP-TO-DATE
:nola-rt:classes UP-TO-DATE
:nola-rt:jar UP-TO-DATE
:nola-wb:compactProfileOption
:nola-wb:compileJava
:nola-wb:generateModuleXml
:nola-wb:processResources UP-TO-DATE
:nola-wb:classes
:nola-wb:jar
```

**BUILD SUCCESSFUL**

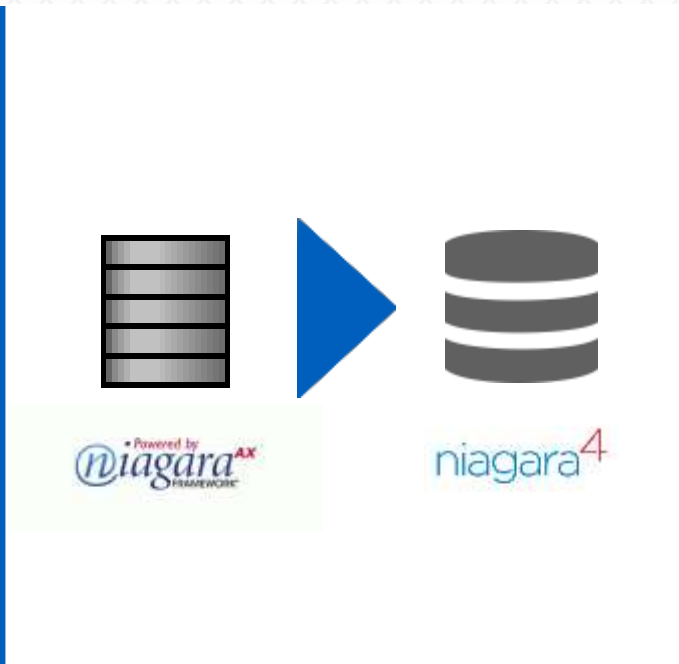
# Station Migration

## Station Migration

Convert AX Components to  
Niagara 4

Add Niagara 4 Properties

Update Px Pages



# Making Your Own N4 Changes

BIBogElementConverter

Changing Slot Names and Types

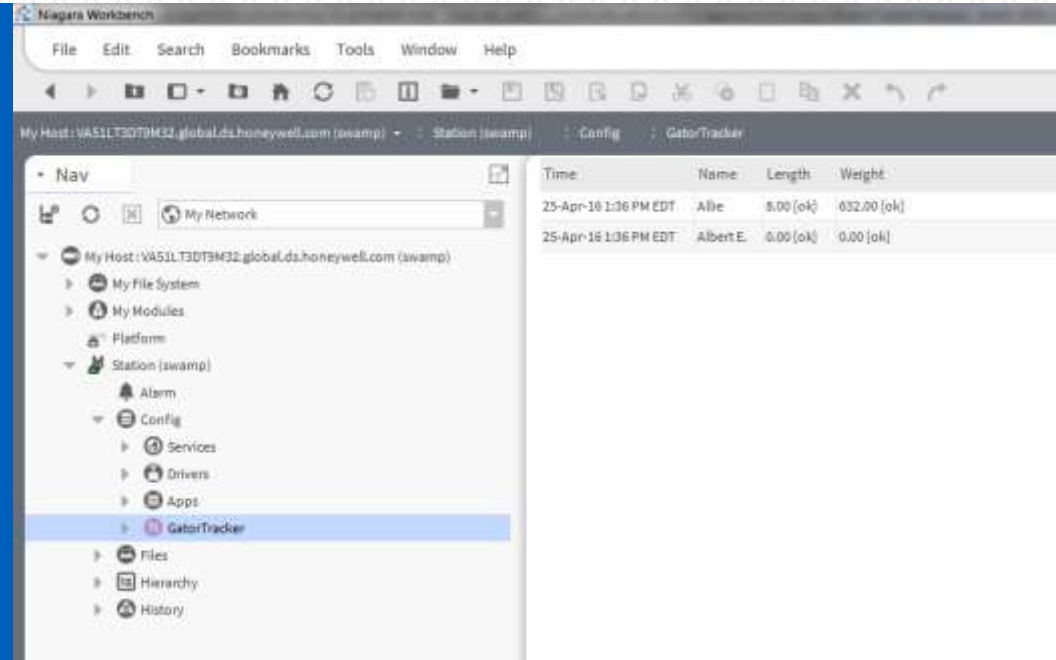
BIFileMigrator

Changing File Names and Formats

Developer Documentation

# Niagara 4 Module

## Module Demo in Niagara 4





# Questions?

**Source Code and Presentation can be found at:**

**<https://github.com/tridium/summit16-migrating-from-ax-to-n4>**



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