



# Nordiasoft

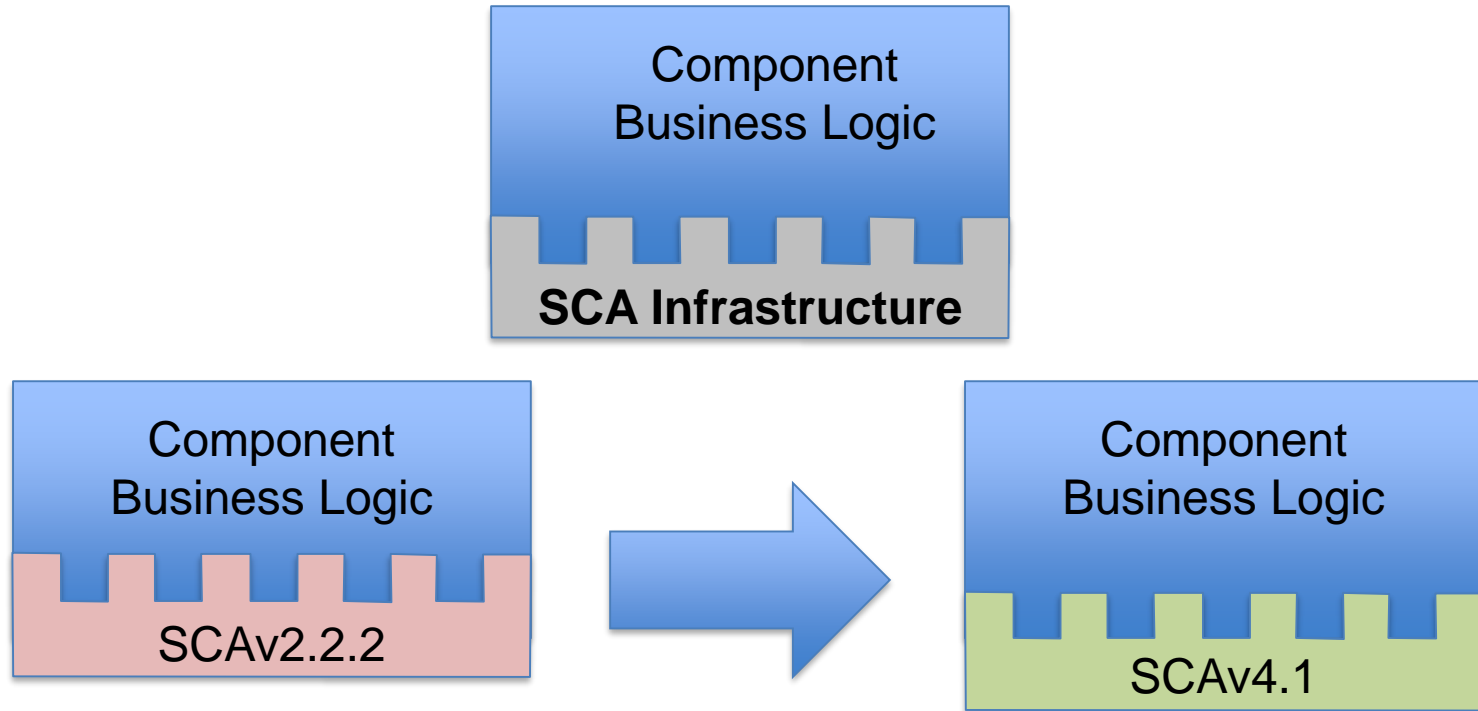
**An Innovator for  
Software Defined Systems**

**Advanced Tools for SCA  
Development**

Copyright © 2018 Nordiasoft.

All rights reserved. This presentation or any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of the publisher except for the use of brief quotations.

# NordiaSoft WinnComm 2017 Presentation



**SCA as infrastructure code: A seamless migration from SCAv2.2.2 to SCAv4.1**

# Outline

## Development of an Application Component

### Host Colocation for Device and Application Components

### WInnF SCA Transceiver v2.0 Implementation

# A DPSK Modulation Application

workspaceRuntime - eCo Inspector - - Eclipse

File Edit Navigate Search Project Run NordiaSoft Retrace Window Help

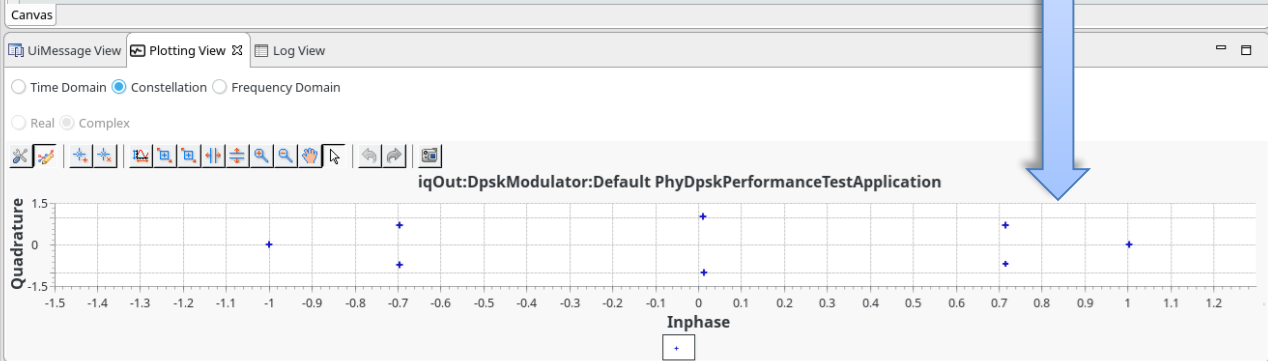
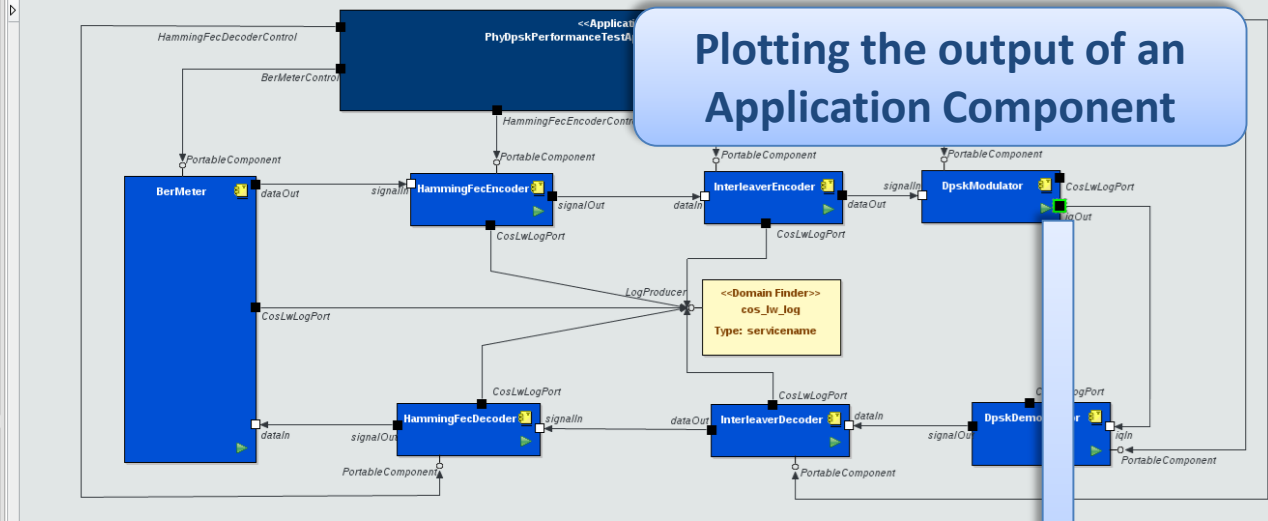
Quick Access

Application Domain View Deployment

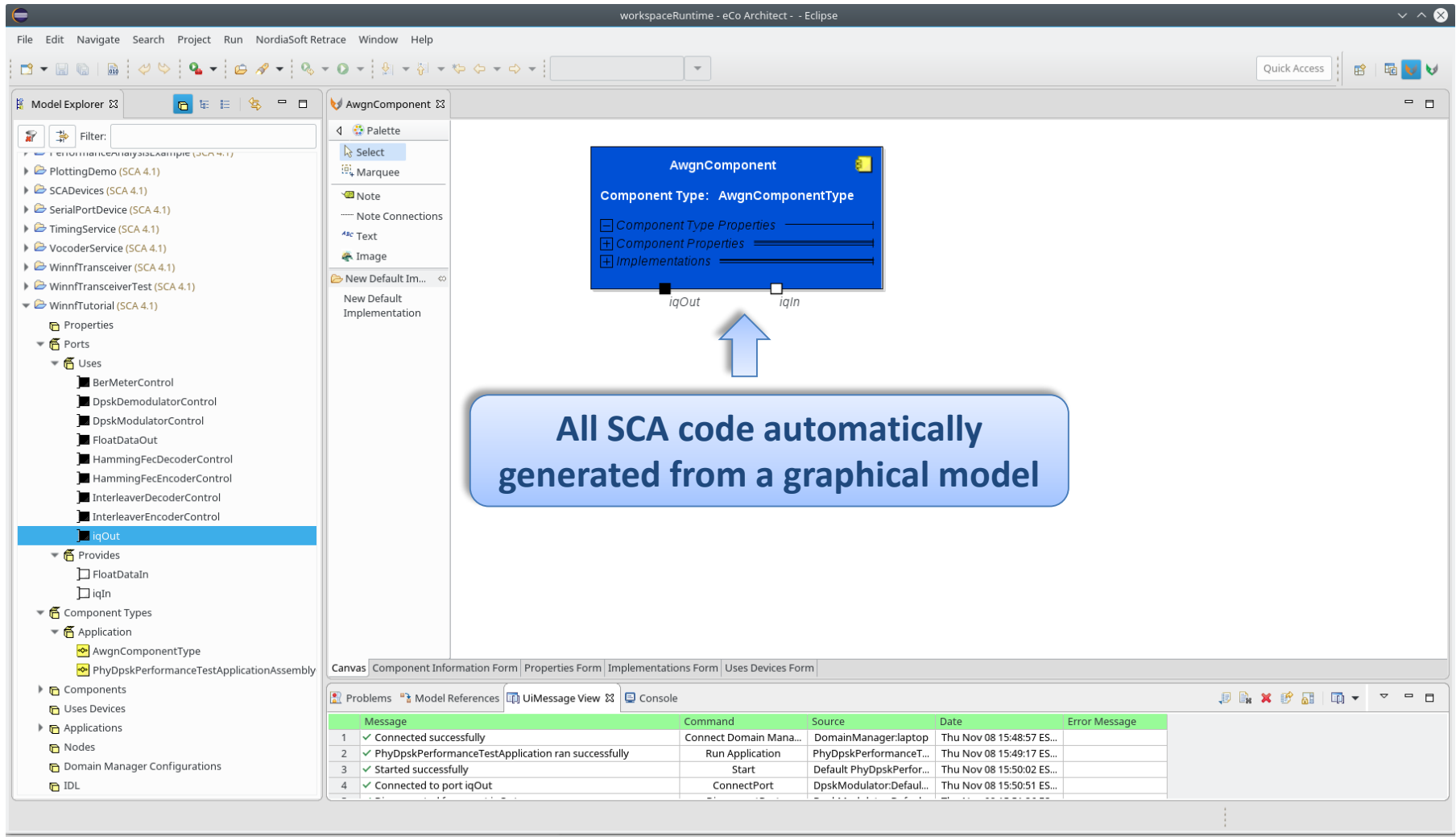
type filter text

- PerformanceAnalysisApplication
- PhyDpskPerformanceTestApplication
  - Default PhyDpskPerformanceTestApplication
    - BerMeter
    - HammingFecEncoder
    - InterleaverEncoder
    - InterleaverDecoder
    - HammingFecDecoder
    - DpskModulator
    - DpskDemodulator
    - PhyDpskPerformanceTestApplicationAssemblyCo
  - PlottingDemo
    - LinuxAudioNodeDeviceManager
      - LinuxAudioNodeAudioDevice
      - LinuxAudioNodeExecutableDevice
      - LinuxAudioNodeLogger
      - PerformancePassThroughDevice

Plotting the output of an Application Component



# Creating an AWGN Application Component

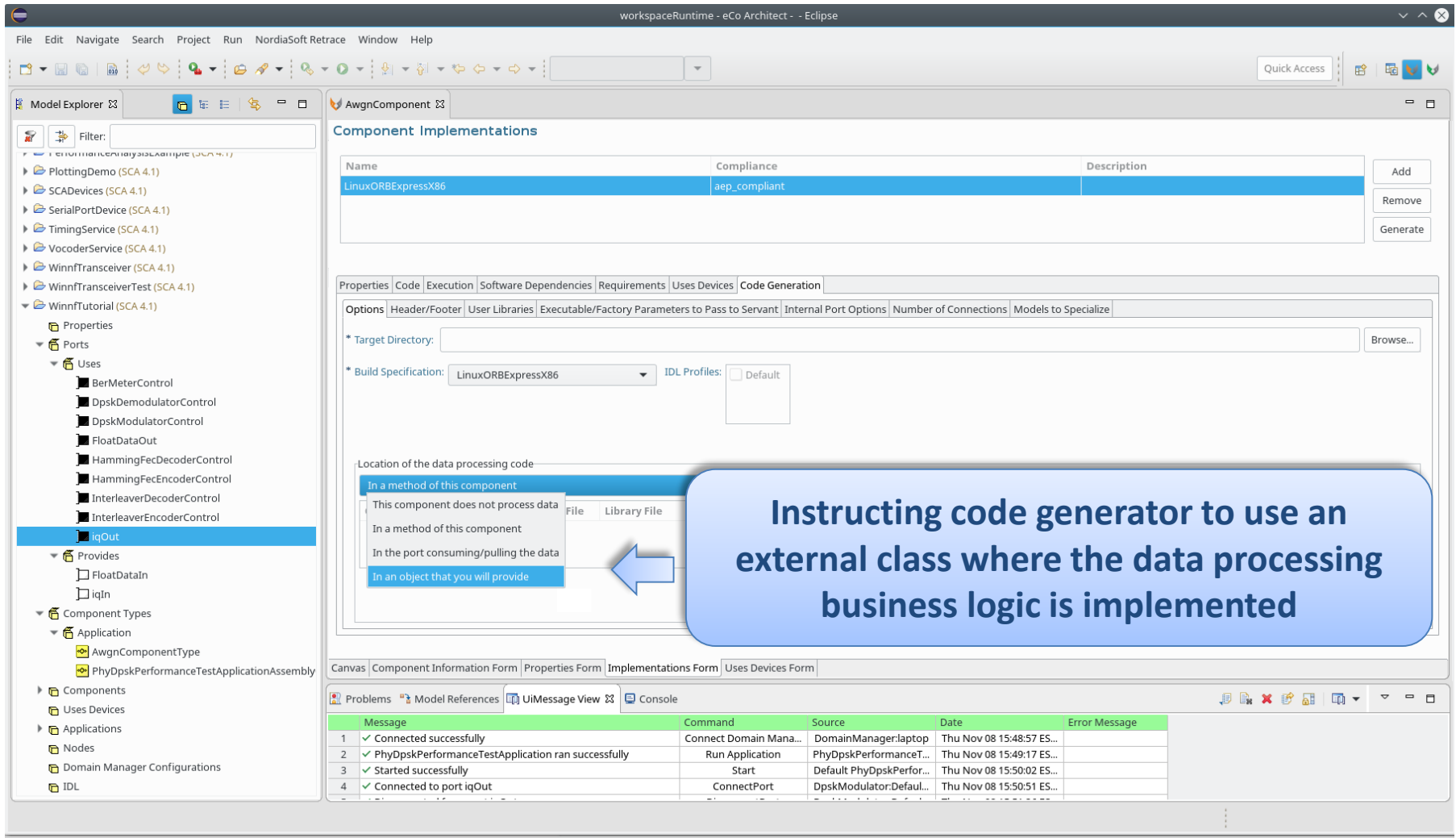


The screenshot shows the Eclipse IDE workspace with the following components:

- Model Explorer:** A tree view on the left showing a project structure. The 'Ports' folder is expanded, and 'iqOut' is selected.
- AwgnComponent Canvas:** A graphical model of the 'AwgnComponent' with two ports, 'iqOut' and 'iqIn'. A blue callout box with an arrow points to these ports, containing the text: "All SCA code automatically generated from a graphical model".
- Console:** A log window at the bottom showing the following messages:
 

Message	Command	Source	Date	Error Message
1 ✓ Connected successfully	Connect Domain Mana...	DomainManager:laptop	Thu Nov 08 15:48:57 ES...	
2 ✓ PhyDpskPerformanceTestApplication ran successfully	Run Application	PhyDpskPerformanceT...	Thu Nov 08 15:49:17 ES...	
3 ✓ Started successfully	Start	Default PhyDpskPerfor...	Thu Nov 08 15:50:02 ES...	
4 ✓ Connected to port iqOut	ConnectPort	DpskModulator:Defaul...	Thu Nov 08 15:50:51 ES...	

# Business Logic in an External Class



The screenshot shows the Eclipse IDE interface with the 'Component Implementations' view for 'AwgnComponent'. The 'Code Generation' tab is active, showing options for 'Target Directory' and 'Build Specification' (set to 'LinuxORExpressX86'). A dropdown menu is open under 'Location of the data processing code', with 'In an object that you will provide' selected. A blue callout box with an arrow points to this option, containing the text: 'Instructing code generator to use an external class where the data processing business logic is implemented'. The console at the bottom shows a list of messages, including 'Connected successfully' and 'PhyDpskPerformanceTestApplication ran successfully'.

Message	Command	Source	Date	Error Message
1 ✓ Connected successfully	Connect Domain Mana...	DomainManager:laptop	Thu Nov 08 15:48:57 ES...	
2 ✓ PhyDpskPerformanceTestApplication ran successfully	Run Application	PhyDpskPerformanceT...	Thu Nov 08 15:49:17 ES...	
3 ✓ Started successfully	Start	Default PhyDpskPerfor...	Thu Nov 08 15:50:02 ES...	
4 ✓ Connected to port iqOut	ConnectPort	DpskModulator:Defaul...	Thu Nov 08 15:50:51 ES...	

# Using a Passthrough Component

workspaceRuntime - eCo Inspector - - Eclipse

File Edit Navigate Search Project Run NordiaSoft Retrace Window Help

Quick Access

Application Domain View Deployments

type filter text

- PerformanceAnalysisApplication
- PhyDpskPerformanceTestApplication
  - Default PhyDpskPerformanceTestApplication
    - BerMeter
    - HammingFecEncoder
    - InterleaverEncoder
    - InterleaverDecoder
    - HammingFecDecoder
    - DpskModulator
    - DpskDemodulator
    - PhyDpskPerformanceTestApplicationAssemblyCo
  - PlottingDemo
  - LinuxAudioNodeDeviceManager
    - LinuxAudioNodeAudioDevice
    - LinuxAudioNodeExecutableDevice
    - LinuxAudioNodeLogger
    - PerformancePassthroughDevice

Properties Component Property View

Identifier	Value	Attribute	Value
ber	0.0	Name	ber
berDataGenerationMo	COUNTER_DAT	Type	float
dpskOrder	DPSK8	Kind	configur
errorBits	0	Mode	readonly
errorPackets	0		
hammingMode	HAMMING_7_4		
interleaverBlockLength	400		
interleaverDepth	3		
numberOfDataBytes	400		
per	0.0		
snr	20.0		
transferredBits	0		

Canvas

UiMessage View Plotting View Log View

Time Domain Constellation Frequency Domain

Real Complex

iqOut:DpskModulator:Default PhyDpskPerformanceTestApplication

Quadrature

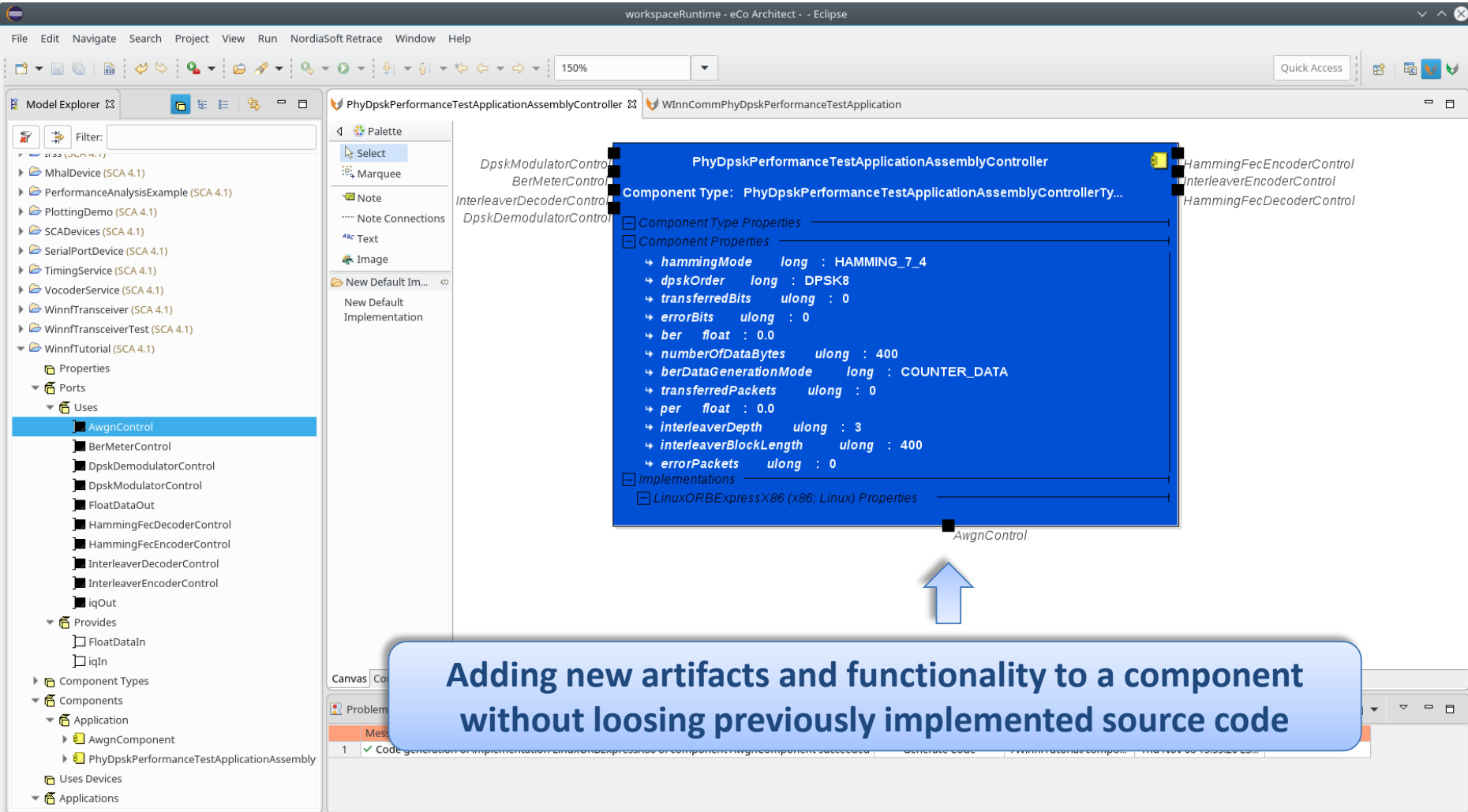
Inphase

1.5  
0  
-1.5

-1.5 -1.4 -1.3 -1.2 -1.1 -1.0 -0.9 -0.8 -0.7 -0.6 -0.5 -0.4 -0.3 -0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2

Newly created component acts as a passthrough component without having to add source code

# Zero – Merge Code Generation



workspaceRuntime - eCo Architect - - Eclipse

File Edit Navigate Search Project View Run NordiaSoft Retrace Window Help

150%

Quick Access

Model Explorer

PhyDpskPerformanceTestApplicationAssemblyController WinnCommPhyDpskPerformanceTestApplication

Component Type: PhyDpskPerformanceTestApplicationAssemblyControllerTy...

Component Type Properties

Component Properties

- hammingMode long : HAMMING\_7\_4
- dpskOrder long : DPSK8
- transferredBits ulong : 0
- errorBits ulong : 0
- ber float : 0.0
- numberOfDataBytes ulong : 400
- berDataGenerationMode long : COUNTER\_DATA
- transferredPackets ulong : 0
- per float : 0.0
- interleaverDepth ulong : 3
- interleaverBlockLength ulong : 400
- errorPackets ulong : 0

Implementations

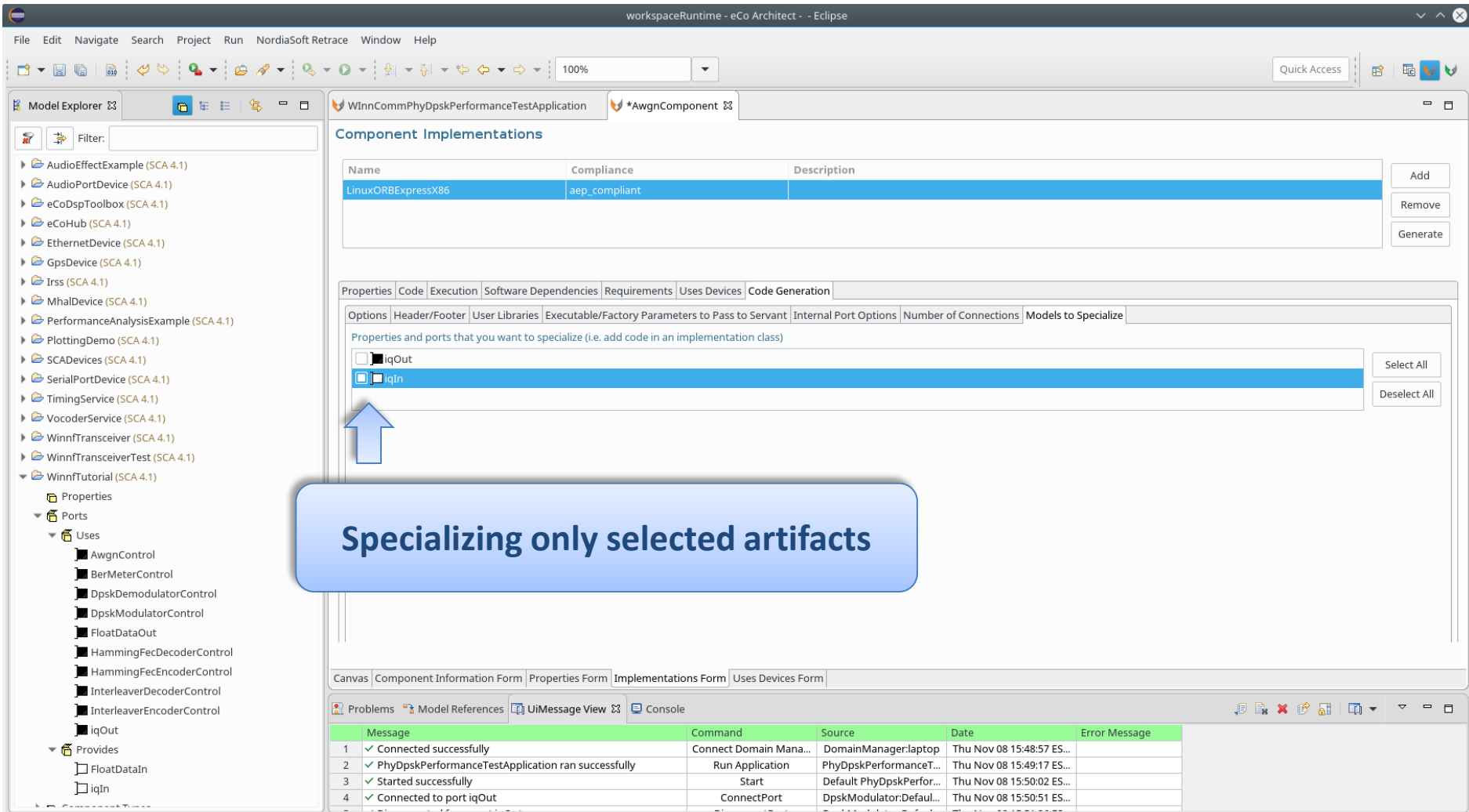
LinuxORBExpressX86 (x86; Linux) Properties

AwgnControl

Adding new artifacts and functionality to a component without losing previously implemented source code



# Class Specialization



The screenshot shows the Eclipse IDE interface with the following components:

- Model Explorer:** A tree view on the left showing a project structure with folders like 'Ports' and 'Uses'. Under 'Ports', 'iqIn' is selected.
- Component Implementations:** A table in the center-right showing a list of implementations. The first row is selected:
 

Name	Compliance	Description
LinuxORBExpressX86	aep_compliant	
- Properties and ports that you want to specialize:** A list below the table with checkboxes. The 'iqIn' checkbox is checked, and a blue arrow points to it.
 

Options	Header/Footer	User Libraries	Executable/Factory Parameters to Pass to Servant	Internal Port Options	Number of Connections	Models to Specialize
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	iqOut
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	iqIn
- Console:** A log window at the bottom showing messages such as 'Connected successfully', 'PhyDpskPerformanceTestApplication ran successfully', and 'Connected to port iqOut'.

**Specializing only selected artifacts**

# Adding Business Logic

The screenshot shows the Eclipse IDE workspace. The main editor displays the source code for `AwgnComponentImplIqInPort.cc`. The code includes a constructor, a destructor, and two `processData` methods. A blue callout box highlights the `processData` method at line 35, with an arrow pointing to the text "Adding calls to non-sca external implementations".

Below the code, a console window shows the following messages:

Message	Command	Source	Date	Error Message
2 ✓ Code generation of implementation LinuxORBExpressX86 of component PhyDpskPerformanceTestA...	Generate Code	/WinnTutorial/compo...	Thu Nov 08 15:59:30 ES...	
3 ✓ Code generation of component PhyDpskPerformanceTestApplicationAssemblyController succeeded	Generate Code	/WinnTutorial/compo...	Thu Nov 08 15:59:31 ES...	
4 ✓ WinnCommPhyDpskPerformanceTestApplication export succeeded	Export Application to D...	/WinnTutorial/applicat...	Thu Nov 08 16:01:02 ES...	
5 ✓ Code generation of implementation LinuxORBExpressX86 of component AwgnComponent succeeded	Generate Code	/WinnTutorial/compo...	Thu Nov 08 16:03:55 ES...	

Adding calls to non-sca external implementations

← Generated code

← New added calls

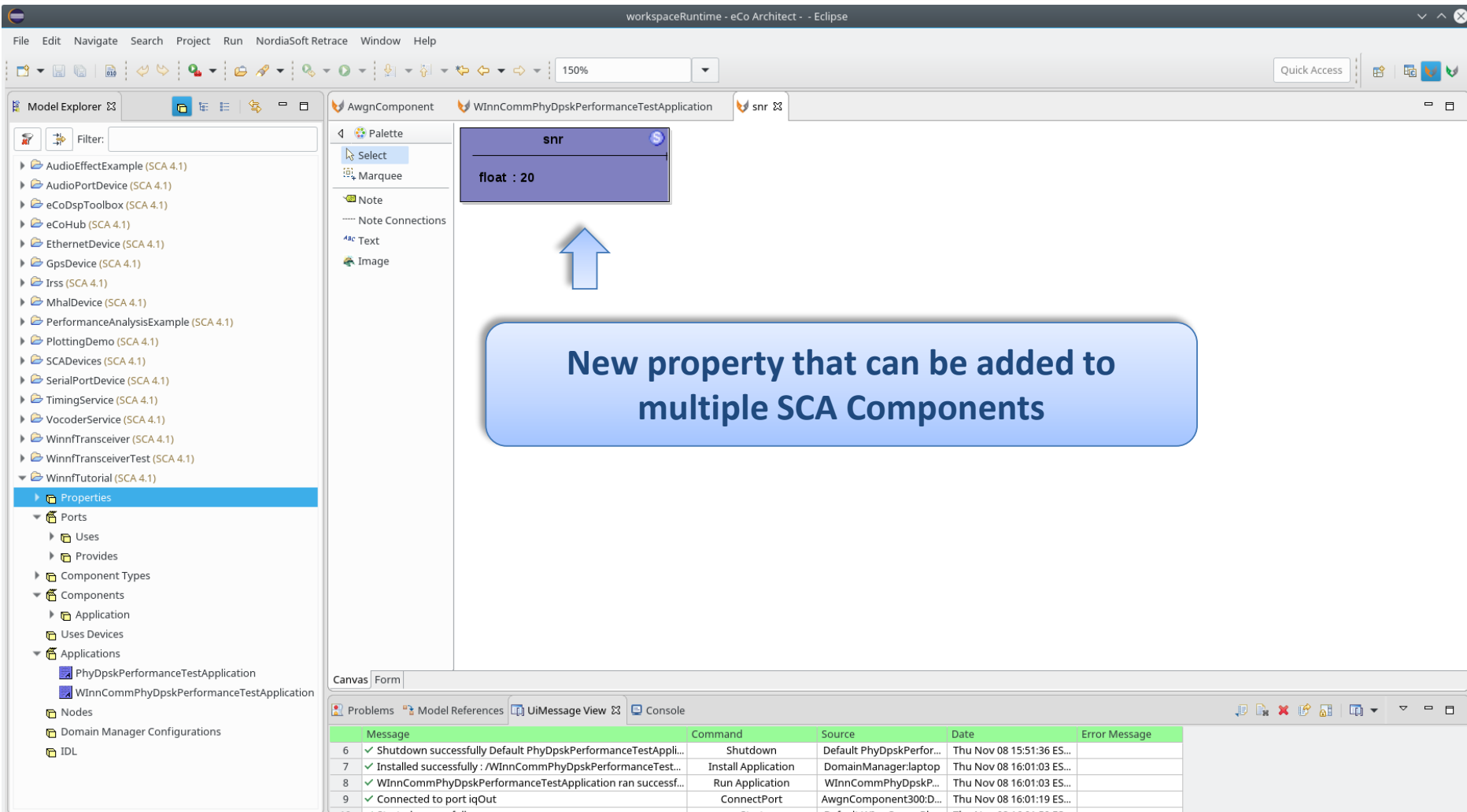
# Execution with Fixed Signal to Noise Ratio

The screenshot displays the workspaceRuntime - eCo Inspector - Eclipse IDE. The main canvas shows a block diagram of a communication system. A large blue arrow points from the text "Output signal with AWGN" to the "iqIn" port of the "AwnComponent300" block. Below the diagram, a constellation plot titled "iqOut:AwnComponent300:Default WinnCommPhyDpskPerformanceTestApplication" shows the signal constellation in the Inphase vs Quadrature plane. The plot shows a dense cluster of points around the origin, indicating a noisy signal.

The Component Property View on the left shows the following properties:

Identifier	Value	Attribute	Value
ber	0.0	Name	ber
berDataGenerationMo	COUNTER_DAT	Type	float
dpskOrder	DPSK8	Kind	configur
errorBits	0	Mode	readonly
errorPackets	0		
hammingMode	HAMMING_7_4		
interleaverBlockLength	400		
interleaverDepth	3		
numberOfDataBytes	400		
per	0.0		
snr	20.0		
transferredBits	0		

# A Signal to Noise Ratio Property



The screenshot shows the Eclipse IDE workspace with the following components visible:

- Model Explorer: A tree view of SCA components including AudioEffectExample, AudioPortDevice, eCoDspToolbox, eCoHub, EthernetDevice, GpsDevice, Irss, MhalDevice, PerformanceAnalysisExample, PlottingDemo, SCADevices, SerialPortDevice, TimingService, VocoderService, WinnTransceiver, WinnTransceiverTest, and WinnTutorial. The 'Properties' folder is expanded, showing 'Ports', 'Component Types', 'Components', and 'Applications'.
- Palette: A list of design elements including Select, Marquee, Note, Note Connections, Text, and Image.
- Canvas: A form view showing a property named 'snr' with a value of 'float : 20'. A blue arrow points to this property from a callout box.
- Console: A table of messages and commands.

**New property that can be added to multiple SCA Components**

Message	Command	Source	Date	Error Message
6 ✓ Shutdown successfully Default PhyDpskPerformanceTestAppli...	Shutdown	Default PhyDpskPerfor...	Thu Nov 08 15:51:36 ES...	
7 ✓ Installed successfully : /WinnCommPhyDpskPerformanceTest...	Install Application	DomainManager:laptop	Thu Nov 08 16:01:03 ES...	
8 ✓ WinnCommPhyDpskPerformanceTestApplication ran successf...	Run Application	WinnCommPhyDpskP...	Thu Nov 08 16:01:03 ES...	
9 ✓ Connected to port iqOut	ConnectPort	AwgnComponent300D...	Thu Nov 08 16:01:19 ES...	

# Zero – Merge Code Generation

The screenshot shows the Eclipse IDE interface with the following components:

- Model Explorer:** Lists various SCA components, with 'snr' selected under 'WinnCommPhyDpskPerformanceTestApplication'.
- Properties View:** Shows the properties of the selected component, including 'Component Type: AwgnComponentType', 'Component Type Properties', 'Component Properties', and 'snr float : 20'.
- Canvas:** Displays the component diagram for 'AwgnComponent' with ports 'iqOut' and 'iqIn'.
- Console:** Shows a log of messages, including 'Shutdown successfully', 'Installed successfully', 'Run Application', and 'Connected to port iqOut'.

**SCA Property added to a Component**

# Proxy Properties in Assembly Controller

workspaceRuntime - eCo Architect - - Eclipse

File Edit Navigate Search Project Run NordiaSoft Retrace Window Help

Model Explorer

- AudioEffectExample (SCA 4.1)
- AudioPortDevice (SCA 4.1)
- eCoDspToolbox (SCA 4.1)
- eCoHub (SCA 4.1)
- EthernetDevice (SCA 4.1)
- GpsDevice (SCA 4.1)
- Irss (SCA 4.1)
- MhalDevice (SCA 4.1)
- PerformanceAnalysisExample (SCA 4.1)
- PlottingDemo (SCA 4.1)
- SCADevices (SCA 4.1)
- SerialPortDevice (SCA 4.1)
- TimingService (SCA 4.1)
- VocoderService (SCA 4.1)
- WinnTransceiver (SCA 4.1)
- WinnTransceiverTest (SCA 4.1)
- WinnTutorial (SCA 4.1)
- Properties
  - snr
- Ports
  - Uses
  - Provides
- Component Types
- Components
  - Application
    - AwgnComponent
    - PhyDpskPerformanceTestApplicationAssembly
- Uses Devices
- Applications
  - PhyDpskPerformanceTestApplication
  - WinnCommPhyDpskPerformanceTestApplication
- Nodes

AwgnComponent WinnCommPhyDpskPerformanceTestApplication \*PhyDpskPerformanceTestApplicationAssemblyController

Component Type: PhyDpskPerformanceTestApplicationAssemblyControllerTy...

Component Type Properties

Component Properties

- hammingMode long : HAMMING\_7\_4
- dpskOrder long : DPSK8
- transferredBits ulong : 0
- errorBits ulong : 0
- ber float : 0.0
- numberOfDataBytes ulong : 400
- berDataGenerationMode long : COUNTER\_DATA
- transferredPackets ulong : 0
- per float : 0.0
- interleaverDepth ulong : 3
- interleaverBlockLength ulong : 400
- errorPackets ulong : 0
- snr float : 20

Implementations

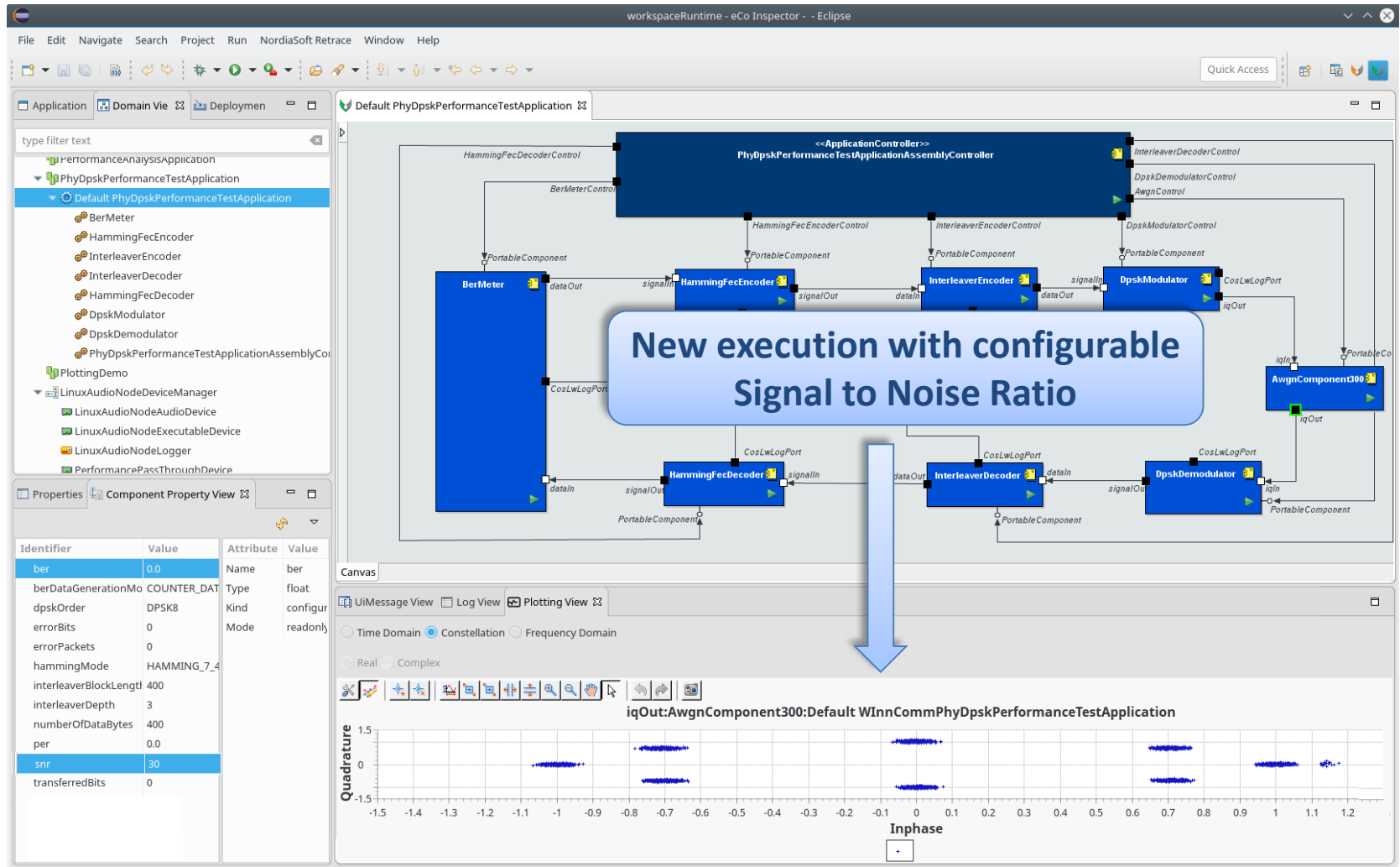
- LinuxORBE...ssX86 (x86; Linux) Properties

Canvas Component Information Form

Message	Command	Source	Date	Error Message
14 ✓ Installed successfully : /WinnCommPhyDpskPerformanceTest...	Install Application	DomainManager:laptop	Thu Nov 08 16:05:51 ES...	
15 ✓ WinnCommPhyDpskPerformanceTestApplication ran successf...	Run Application	WinnCommPhyDpskP...	Thu Nov 08 16:05:51 ES...	
16 ✓ Connected to port iqOut	ConnectPort	AwgnComponent300:D...	Thu Nov 08 16:05:57 ES...	
17 ✓ Started successfully	Start	Default WinnCommPh...	Thu Nov 08 16:06:00 ES...	

**SCA Property added in the Assembly Controller as a Proxy Property to the AWGN Component**

# Execution with Configurable Signal to Noise Ratio



**New execution with configurable Signal to Noise Ratio**

iqOut:AwgnComponent300:Default WinnCommPhyDpskPerformanceTestApplication

Quadrature

Inphase

Identifier	Value	Attribute	Value
ber	0.0	Name	ber
berDataGenerationMo	COUNTER_DAT	Type	float
dpskOrder	DPSK8	Kind	configur
errorBits	0	Mode	readonly
errorPackets	0		
hammingMode	HAMMING_7_4		
interleaverBlockLength	400		
interleaverDepth	3		
numberOfDataBytes	400		
per	0.0		
snr	30		
transferredBits	0		

# Outline

Development of an Application Component

**Host Colocation for Device and Application Components**

**WInnF SCA Transceiver v2.0 Implementation**



# Application Factory Default Deployment Behavior

workspaceRuntime - eCo Inspector - - Eclipse

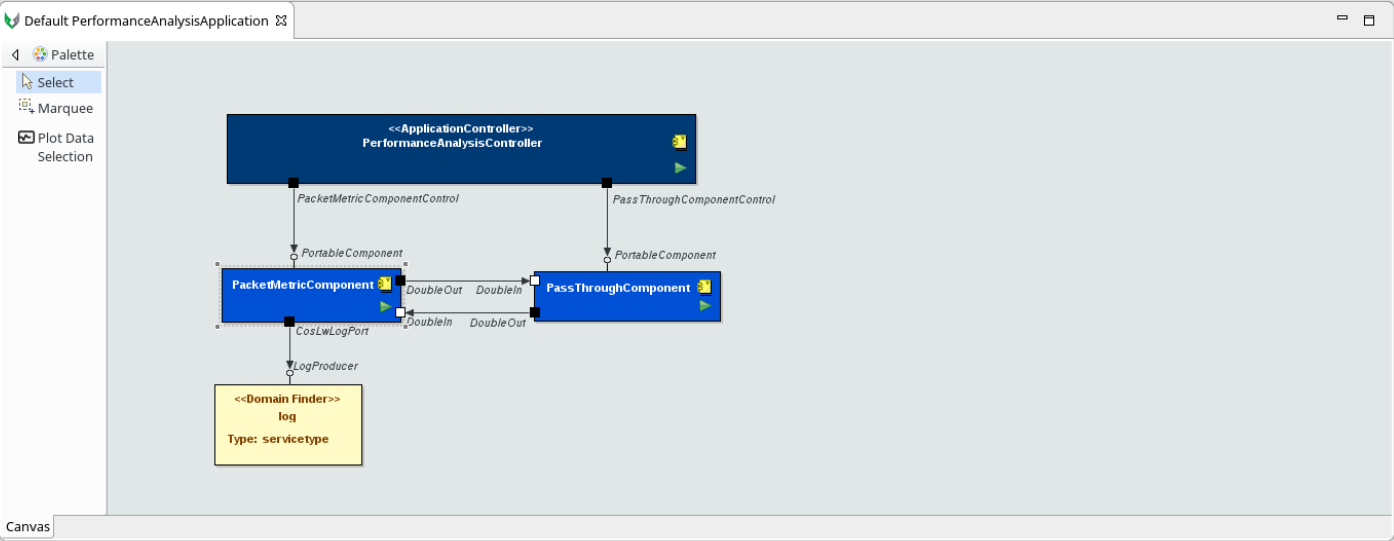
File Edit Navigate Search Project Run NordiaSoft Retrace Window Help

Quick Access

Application View Domain View Deployment View

type filter text

- DomainManager (laptop)
  - FMTTransceiverApplication
  - FileTestTransceiverApplication
  - PerformanceAnalysisApplication
    - Default PerformanceAnalysisApplication
      - PassThroughComponent
      - PacketMetricComponent
      - PerformanceAnalysisController
    - PerformanceAnalysisApplicationByComponentFactory
    - PhyDpskPerformanceTestApplication
    - PlatformPerformanceAnalysisApplication
    - PlottingDemo
    - WinnCommPhyDpskPerformanceTestApplication
  - LinuxAudioNodeDeviceManager
    - LinuxAudioNodeAudioDevice
    - LinuxAudioNodeExecutableDevice
    - LinuxAudioNodeLogger
    - PerformancePassThroughDevice



Properties Component Property View

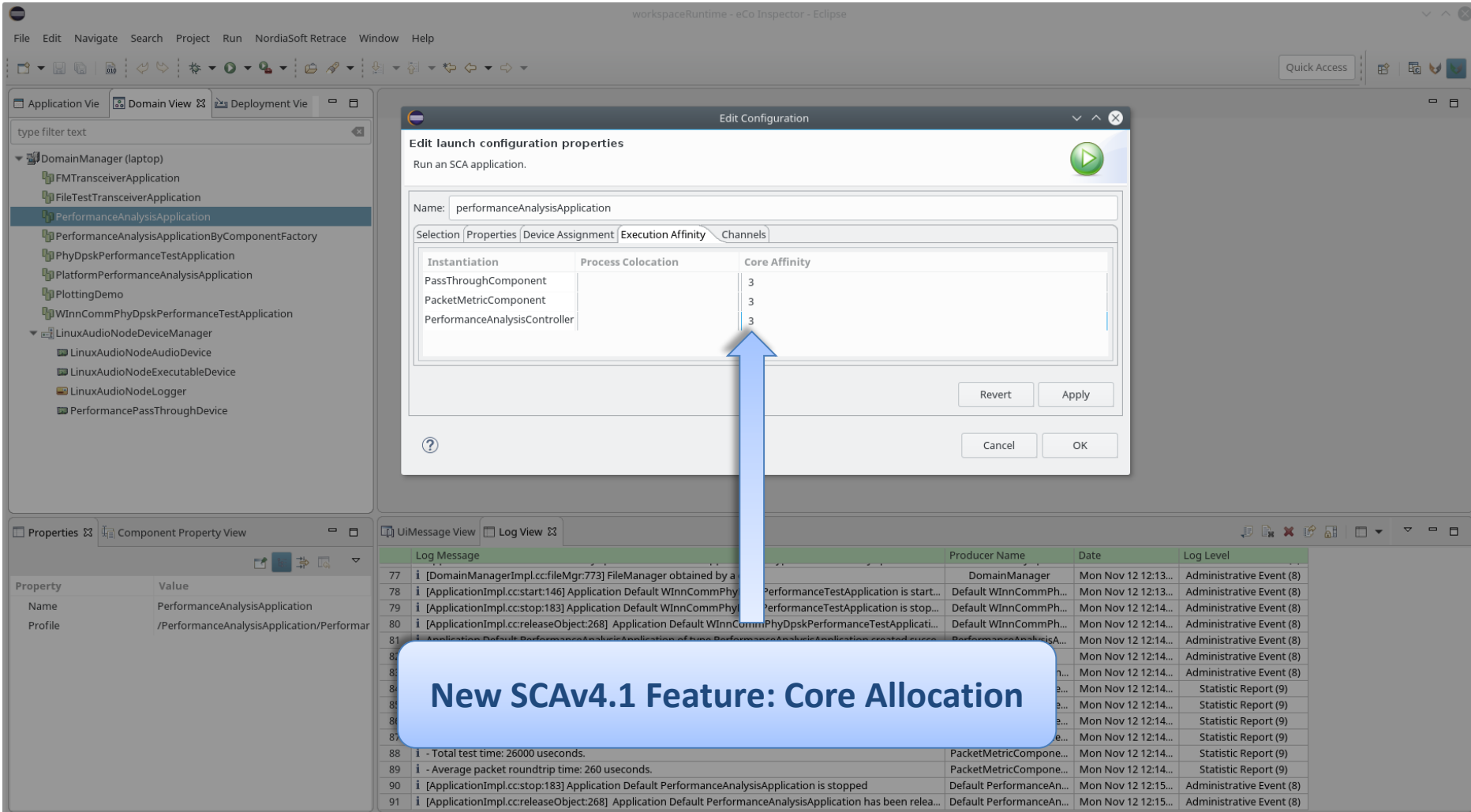
Property	Value
Name	PacketMetricComponent:Default Performan
Profile	/PerformanceAnalysisApplication/Performan
Provides Port	DoubleIn
Target Id	LinuxAudioNodeExecutableDevice
Process Id	7403
Core Assignment	0-7

Log View

Log Message	Producer Name	Date	Log Level
75 [DomainManagerImpl.cc:fileMgr:773] FileManager obtained by a client	DomainManager	Mon Nov 12 12:13...	Administrative Event (8)
76 [Application Default WinnCommPhyDpskPerformanceTestApplication of type WinnCommPhyDpskPerform...	WinnCommPhyDpskP...	Mon Nov 12 12:13...	Administrative Event (8)
77 [DomainManagerImpl.cc:fileMgr:773] FileManager obtained by a client	DomainManager	Mon Nov 12 12:13...	Administrative Event (8)
78 [ApplicationImpl.cc:start:146] Application Default WinnCommPhyDpskPerformanceTestApplication is start...	Default WinnCommPh...	Mon Nov 12 12:13...	Administrative Event (8)
79 [ApplicationImpl.cc:stop:183] Application Default WinnCommPhyDpskPerformanceTestApplication is stop...	Default WinnCommPh...	Mon Nov 12 12:14...	Administrative Event (8)
80 [ApplicationImpl.cc:releaseObject:268] Application Default WinnC			
81 [Application Default PerformanceAnalysisApplication of type Perfo			
82 [DomainManagerImpl.cc:fileMgr:773] FileManager obtained by a			
85 [PERFORMANCEANALYSISCOMPLETED:STATISTICSREPORT:			
86 [ - Packet Type: Double			
87 [ - Total number of packets received: 100	PacketMetricCompon...	Mon Nov 12 12:14...	Statistic Report (9)
88 [ - Packet size: 1024	PacketMetricCompon...	Mon Nov 12 12:14...	Statistic Report (9)
89 [ - Total test time: 26000 useconds	PacketMetricCompon...	Mon Nov 12 12:14...	Statistic Report (9)
90 [ - Average packet roundtrip time: 260 useconds.	PacketMetricCompon...	Mon Nov 12 12:14...	Statistic Report (9)

**No deployment options applied**

# Deployment using Core Allocation



The screenshot shows the 'Edit Configuration' dialog for 'performanceAnalysisApplication'. The 'Execution Affinity' tab is active, displaying a table with the following data:

Instantiation	Process Colocation	Core Affinity
PassThroughComponent		3
PacketMetricComponent		3
PerformanceAnalysisController		3

A blue arrow points to the 'Core Affinity' column. Below the dialog, a log window shows the following messages:

Log Message	Producer Name	Date	Log Level
77 i [DomainManagerImpl.cc:fileMgr:773] FileManager obtained by a	DomainManager	Mon Nov 12 12:13...	Administrative Event (8)
78 i [ApplicationImpl.cc:start:146] Application Default WInnCommPhy... PerformanceTestApplication is start...	Default WInnCommPhy...	Mon Nov 12 12:13...	Administrative Event (8)
79 i [ApplicationImpl.cc:stop:183] Application Default WInnCommPhy...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
80 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
81 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
82 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
83 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
84 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
85 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
86 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
87 i [ApplicationImpl.cc:releaseObject:268] Application Default WInnCommPhyDpskPerformanceTestApplicati...	Default WInnCommPhy...	Mon Nov 12 12:14...	Administrative Event (8)
88 i - Total test time: 26000 useconds.	PacketMetricCompone...	Mon Nov 12 12:14...	Statistic Report (9)
89 i - Average packet roundtrip time: 260 useconds.	PacketMetricCompone...	Mon Nov 12 12:14...	Statistic Report (9)
90 i [ApplicationImpl.cc:stop:183] Application Default PerformanceAnalysisApplication is stopped	Default PerformanceAn...	Mon Nov 12 12:14...	Administrative Event (8)
91 i [ApplicationImpl.cc:releaseObject:268] Application Default PerformanceAnalysisApplication has been relea...	Default PerformanceAn...	Mon Nov 12 12:15...	Administrative Event (8)

**New SCAv4.1 Feature: Core Allocation**

# Deployment using Core Allocation

workspaceRuntime - eCo Inspector - - Eclipse

File Edit Navigate Search Project Run NordiaSoft Retrace Window Help

Application View Domain View Deployment View

type filter text

DomainManager (laptop)

- FMTTransceiverApplication
- FileTestTransceiverApplication
- PerformanceAnalysisApplication
  - performanceAnalysisApplication
    - PassThroughComponent
    - PacketMetricComponent
    - PerformanceAnalysisController
  - PerformanceAnalysisApplicationByComponentFactory
  - PhyDpskPerformanceTestApplication
  - PlatformPerformanceAnalysisApplication
  - PlottingDemo
  - WInnCommPhyDpskPerformanceTestApplication
- LinuxAudioNodeDeviceManager
  - LinuxAudioNodeAudioDevice
  - LinuxAudioNodeExecutableDevice
  - LinuxAudioNodeLogger
  - PerformancePassThroughDevice

Canvas

```

    graph TD
      PAC[<<ApplicationController>> PerformanceAnalysisController]
      PMC[PacketMetricComponent]
      PTC[PassThroughComponent]
      LF[<<Domain Finder>> log]
      LF ---|LogProducer| PMC
      PAC -- PacketMetricComponentControl --> PMC
      PAC -- PassThroughComponentControl --> PTC
      PMC -- PortableComponent --> PTC
      PMC -- DoubleOut --> PTC
      PTC -- DoubleIn --> PMC
      PTC -- DoubleOut --> PMC
      PTC -- DoubleIn --> LF
    
```

Log Message

```

86 i - Total number of packets received: 100
87 i - Packet size: 1024
88 i - Total test time: 26000 useconds.
89 i - Average packet roundtrip time: 260 useconds.
90 i [ApplicationImpl.cc:stop:183] Application Default PerformanceAn
91 i [ApplicationImpl.cc:releaseObject:268] Application Default Perform
92 i Application performanceAnalysisApplication of type Performance
93
94
95 i PERFORMANCE ANALYSIS COMPLETED. STATISTICS REPORT:
96 i - Packet Type: Double
97 i - Total number of packets received: 100
98 i - Packet size: 1024
99 i - Total test time: 21659 useconds.
100 i - Average packet roundtrip time: 216 useconds.
    
```

PacketMetricCompone...	Mon Nov 12 12:16...	Statistic Report (9)
PacketMetricCompone...	Mon Nov 12 12:16...	Statistic Report (9)
PacketMetricCompone...	Mon Nov 12 12:16...	Statistic Report (9)
PacketMetricCompone...	Mon Nov 12 12:16...	Statistic Report (9)

Component Property View

Property	Value
Name	PacketMetricComponent:performanceAnaly
Profile	/PerformanceAnalysisApplication/Performar
Provides Port	DoubleIn
Target Id	LinuxAudioNodeExecutableDevice
Process Id	7472
Core Assignment	3

Decrease in component communication latency by deploying two communicating components in the same processor core

# Deployment using Component Factory

The screenshot displays the Eclipse IDE interface. The main window shows a UML Component Diagram for 'PerformanceAnalysisComponentFactory'. The diagram includes the following components and relationships:

- PerformanceAnalysisComponentFactory** (Container):
  - Contains **PerformanceAnalysisController** (Application Controller).
  - Contains **PacketMetricComponent** and **PassThroughComponent** (Portable Components).
- PerformanceAnalysisController** provides **PacketMetricComponentControl** and **PassThroughComponentControl** to the components.
- PacketMetricComponent** and **PassThroughComponent** are connected via **DoubleIn** and **DoubleOut** interfaces.
- PacketMetricComponent** provides **CosLwLogPort** to a **LogProducer**.
- LogProducer** provides **log** to a **Domain Finder**.

The Log View at the bottom shows the following messages:

```

97 | i | - Total number of packets received: 100
98 | i | - Packet size: 1024
99 | i | - Total test time: 21659 useconds.
100 | i | - Average packet roundtrip time: 216 useconds.
101 | i | [ApplicationImpl.cc:stop:183] Application per...
102 | i | [ApplicationImpl.cc:releaseObject:268] Applic...
103 | i | Application Default PerformanceAnalysisApp...
104 | i | [DomainManagerImpl.cc:fileMgr:773] FileMar...
105 | i | [ApplicationImpl.cc:start:146] Application Def...
106 | i | PERFORMANCE ANALYSIS COMPLETED. STAT...
107 | i | - Packet Type: Double
108 | i | - Total number of packets received: 100
109 | i | - Packet size: 1024
110 | i | - Total test time: 2447 useconds.
111 | i | - Average packet roundtrip time: 24 useconds.
    
```

A blue callout box highlights the text: **Decrease in component communication latency by deploying two communicating components using a Component Factory**. A blue arrow points from this callout to the diagram.

# Deployment using Process Collocation

The screenshot shows the Eclipse IDE with the eCo Inspector workspace. The main window displays a component diagram for 'platformPerformanceAnalysisApplication'. The diagram includes the following components and relationships:

- PerformanceAnalysisController** (Application Controller) depends on **PacketMetricComponentControl**.
- PacketMetricComponentControl** depends on **PacketMetricComponent** (Portable Component).
- PacketMetricComponent** depends on **CosLwLogPort** (Log Producer).
- PacketMetricComponent** has a **DoubleOut** port connected to a **PerformancePassThroughDevice** (Domain Finder) via a **DoubleIn** port.
- PerformancePassThroughDevice** has a **DoubleOut** port connected to an **IdmEventChannel**.

The Properties window shows the configuration for **PerformancePassThroughDevice**:

Property	Value
Name	PerformancePassThroughDevice
Profile	/PassThroughDevice.spd.xml
Provides Port	DoubleIn
Target Id	LinuxAudioNodeExecutableDevice
Process Id	5348
Thread Id	13986
Process Collocation	P1

The Log View shows the following messages:

Log Message	Producer Name	Date	Log Level
108 i - Total number of packets received: 100			
109 i - Packet size: 1024			
110 i - Total test time: 2447 useconds.			
111 i - Average packet roundtrip time: 24 useconds.			
112 i [ApplicationImpl.cc:stop:183] Application Default Performance			
113 i [ApplicationImpl.cc:releaseObject:268] Application Default Per			
114 i Application platformPerformanceAnalysisApplication of type f			
115 i [DomainManagerImpl.cc:fileMgr:773] FileManager obtained b			
118 i - Packet Type: Double			
119 i - Total number of packets received: 100			
120 i - Packet size: 1024			
121 i - Total test time: 2444 useconds.			
122 i - Average packet roundtrip time: 24 useconds.			

A callout box highlights the log message: "New SCAv4.1 Feature: Process Collocation. Deploying an Application Component in the same address space as a Device Component". A blue arrow points from this callout to the "Process Collocation" property in the Properties window, which is set to "P1".

# Outline

**Development of an Application Component**

**Host Colocation for Device and Application Components**

**WInnF SCA Transceiver v2.0 Implementation**

# First Implementation of WinnF Transceiver v2.0

**New WinnF Transceiver v2.0 Device Implementation**

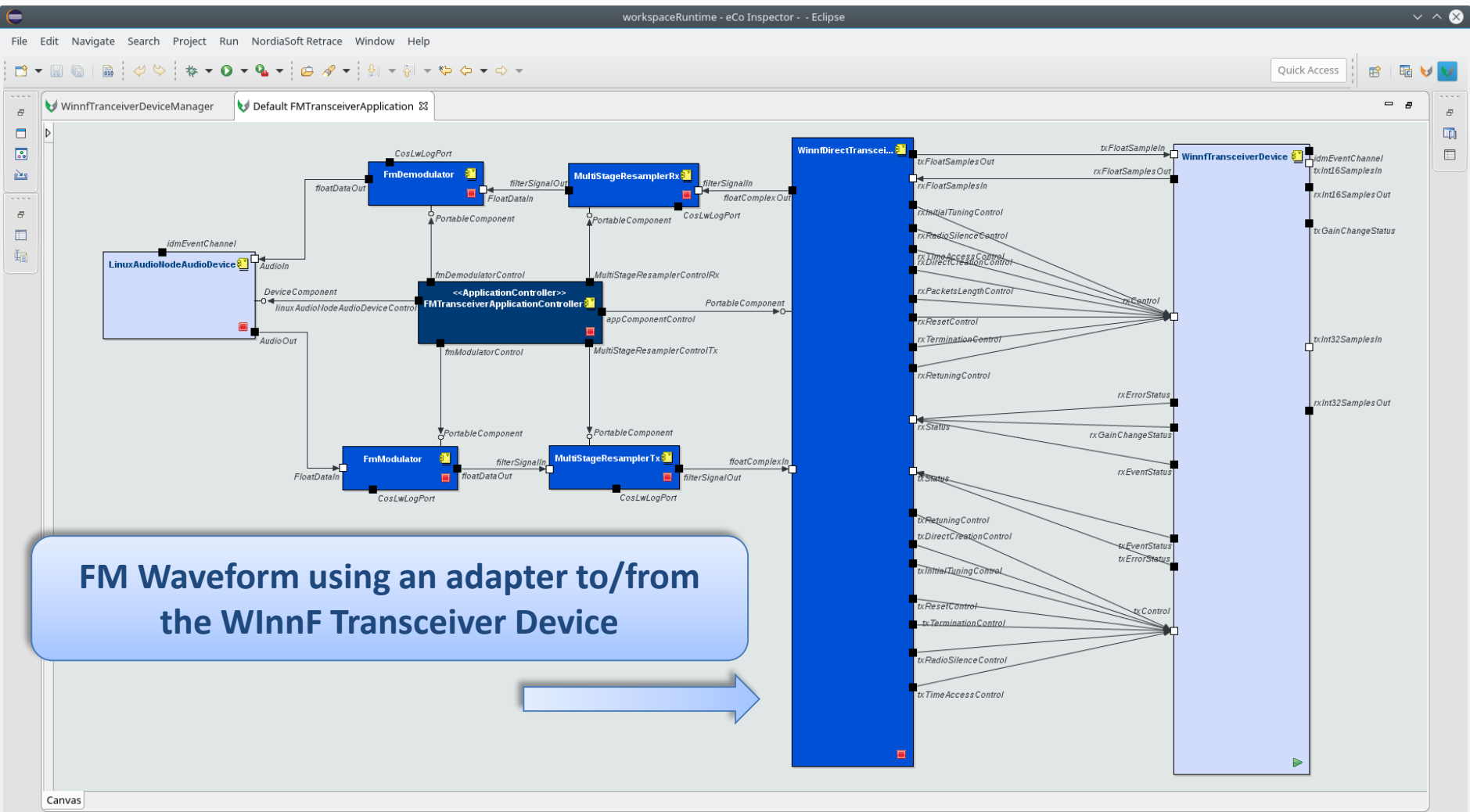
The diagram illustrates the architecture of the WinnFrnceiverDeviceManager, which is composed of several sub-components:

- WinnFrnceiverDevice**: The main device component, which includes various control and status interfaces such as rxControl, txControl, rxInt16SamplesOut, txInt16SamplesIn, rxInt32SamplesOut, txInt32SamplesIn, rxFloatSamplesOut, txFloatSamplesIn, rxGainChangeStatus, txGainChangeStatus, rxErrorStatus, txErrorStatus, rxEventStatus, and txEventStatus.
- ArmExecutableDevice**: A component to be deployed, which is connected to the main device via an idmEventChannel.
- ArmLogger**: A service component of type log, which is connected to the main device via a Log interface.
- IDM\_Channel**: A domain finder component of type eventchannel, which is connected to the ArmExecutableDevice via a PushConsumer interface.

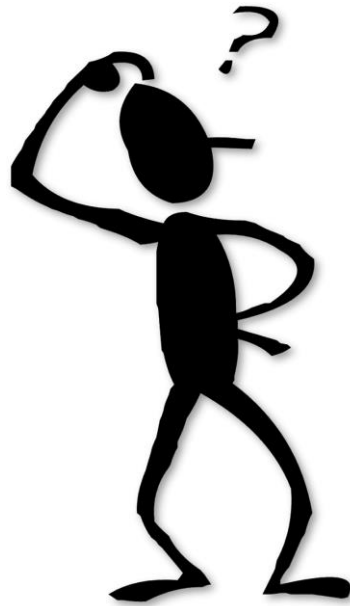
The log view at the bottom shows the following messages:

Log Message	Producer Name	Date	Log Level
129   - Total test time: 3771 useconds.	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)
130   - Average packet roundtrip time: 37 useconds.	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)
131   [ApplicationImpl.cc:stop:183] Application platformPerformanceAnalysisApplication is stopped	platformPerformanceA...	Mon Nov 12 12:18...	Administrative Event (8)
132   [ApplicationImpl.cc:start:146] Application platformPerformanceAnalysisApplication is started	platformPerformanceA...	Mon Nov 12 12:18...	Administrative Event (8)
133   PERFORMANCE ANALYSIS COMPLETED. STATISTICS REPORT:	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)
134   - Packet Type: Double	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)
135   - Total number of packets received: 100	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)
136   - Packet size: 1024	PacketMetricCompone...	Mon Nov 12 12:18...	Statistic Report (9)

# A Component Adapter to/from WinnF Transceiver







# Questions?