

The Open Source Java™ Solution for FIXatdl™

High-level Overview

As of: November 29, 2010

Core developers: Scott Atwell, John Shields

Founding developers: Danilo Tuler, Renato Gallart

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Overview of atdl4j Project

Overview

- atdl4j is an open source and not-for-profit JavaTM implementation of FIXatdlSM, the FIX ProtocolSM Algorithmic Trading Definition Language standard developed by FIX Protocol Limited (FPL).
- atdl4j is a collaboration between Buy-side and Sell-side innovators within the Electronic Trading industry, and is integrated within the trading systems of several major investment banks and FIX providers. The atdl4j project is intended to promote open source standards within finance, and to increase the adoption rate of the FIXatdl standard itself.
- While the atdl4j open source effort encourages the use of and implementation of the FIXatdl standard, it is an independent effort and not directly affiliated with the FIX Protocol Limited organization.

Features

- Displays algo input screens based on the latest industry-standard FIXatdl 1.1 XML schema
- Reads and generates algorithm-specific FIX message content
- Can be integrated into a trading system, or run as a standalone testing/validation tool.
- Supports the full set of UI widgets defined in FIXatdl 1.1
- Support for message validation and widget state rules (such as show/hide and enable/disable.)
- Supports strategy filtering, customizable settings, and context-specific views (for example Cancel/Replace mode)
- Written in the Java language using standard libraries
- Source code can be modified to support in-house FIXatdl schema extensions

Open Source License

- atdl4j is licensed under the MIT License.
- The MIT License permits reuse within proprietary software on the condition that the license is distributed with that software, making it ideal for use within the legal guidelines of most financial firms.
- Please consult the Legal and Compliance department at your firm before adopting atdl4j or other open source software.

Key Contributors

- Scott Atwell, <u>American Century</u>
- John Shields, Nomura
- Danilo Tuler, <u>Investtools</u>
- Renato Gallart, <u>Investtools</u>

Community

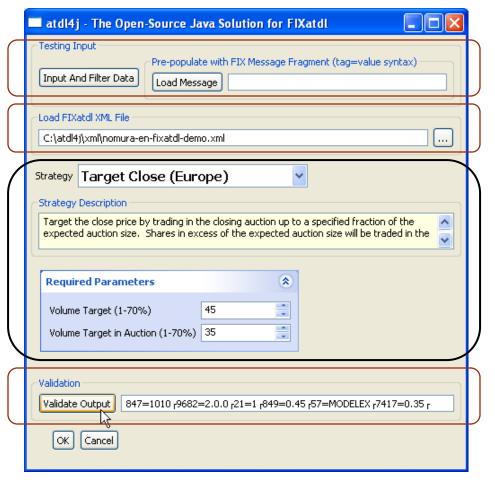
- We kindly ask that those who do get value from the atdl4j platform contribute back to the community.
- If you wish to contribute code to atdl4j, please fork the atdl4j project on <u>GitHub</u>.

Can Serve Two Functions

- Standalone Testing Tool
- Embedded "Pop-Up" within an OMS

Standalone Testing Tool

SWTAtdl4jTesterApp



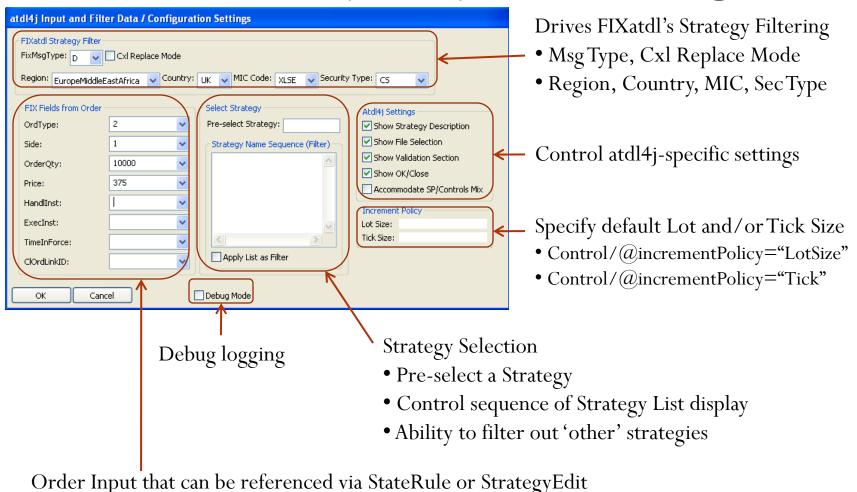
Simulate OMS order-specific input Populate with FIX msg fragment

Select and Load FIXatdl XML file

Main Content Pane (embeddable within OMS) Atdl4jCompositePanel

Perform Validation and View Resulting FIX tag=value message

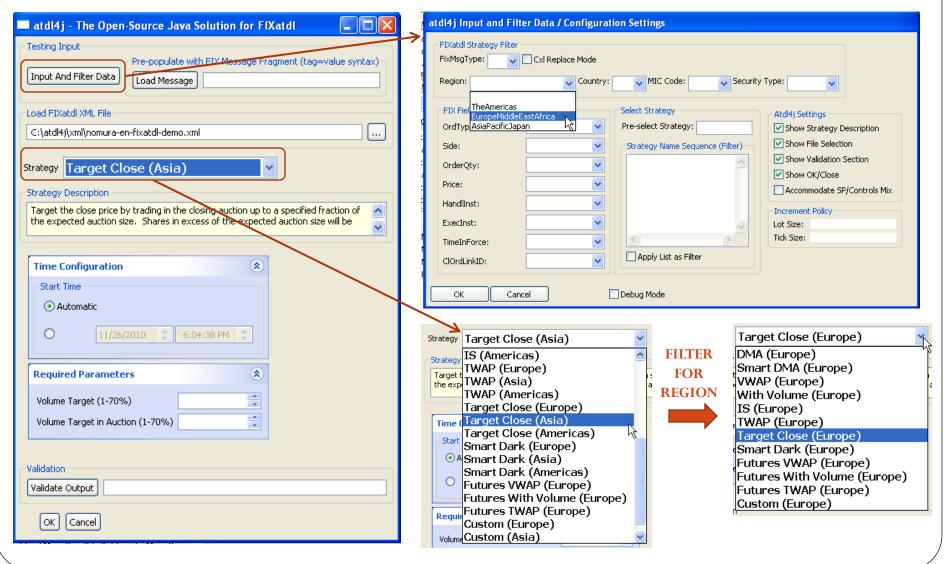
Simulate OMS order-specific input and control configuration



• as "FIX_OrdType", "FIX_Side", "FIX_OrderQty", "FIX_Price", etc.

• eg, Buy 10,000 Limit of 375

Simulate OMS order-specific input – Strategy Filtering



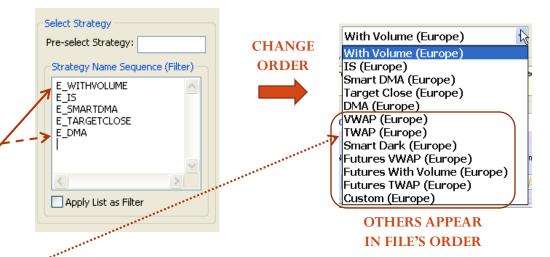
Externally Configure Strategy List Display Sequence



<Strategy name="E_DMA" u Rep="DMA (Europe)" <5trategy name="A_DMA" diRep="DMA (Asia)" wi <Strategy name="U_DMA" uiRep="DMA (Americas); <Strategy name="E_SMARTDMA" uiRep="Smart Df. <Strategy name="A_SMARTDMA" uiRep=/Smart DI <Strategy name="E_VWAP" uiRep="VWAP (Europe <Strategy name="A_VWAP" uiRep="VWAP (Asia)". Strategy name="U_VWAP" uiRep="VWAP (Americ <Strategy name="E_WITHVOLUME" uiRep="With V <Strategy name="A_WITHVOLUME" uiRep="With V <Strategy name="U_WITHVOLUME" uiRep="With V <Strategy name="E_IS" uiRep="IS (Europe)" wire∜ <Strategy name="A_IS" uiRep="IS (Asia)" wireValu <Strategy name="U_IS" uiRep="IS (Americas)" wire <Strategy name="E_TWAP" LiiRep="TWAP (Europe <Strategy name="A TWAP" uiRep="TWAP (Asia)" <Strategy name="U_TWAP" uiRep="TWAP (Americ <Strategy name="E_TARGETCLOSE" uiRep="Targe <Strategy name="A TARGETCLOSE" uiRep="Targe <Strategy name="U_TARGETCLOSE" uiRep="Targe <Strategy name="E_SMARTDARK" uiRep="Smart D <Strategy name="A SMARTDARK" uiRep="Smart E <Strategy name="U_SMARTDARK" uiRep="Smart E_ <Strategy name="E_FUTURESVWAP" uiRep="Futur <Strategy name="E_FUTURESWITHVOLUME" uiRec <Strategy name="E_FUTURESTWAP" uiRep="Futur <Strategy name="E_CUSTOM" uiRep="Custom (Eu-<Strategy name="A_CUSTOM" uiRep="Custom (As

<Strategy name="U_CUSTOM" uiRep="Custom (An

OMS could make these file/broker-specific config settings (without altering the broker-provided FIXatdl file)



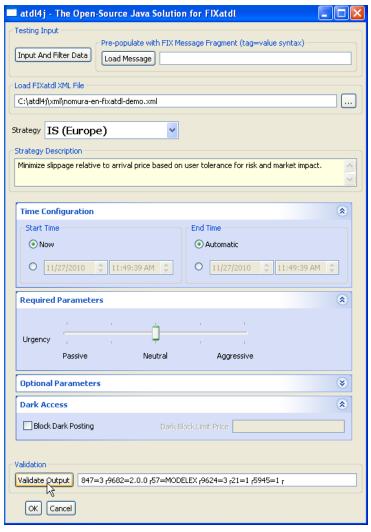


'AS FILTER'
EXCLUDES
OTHERS

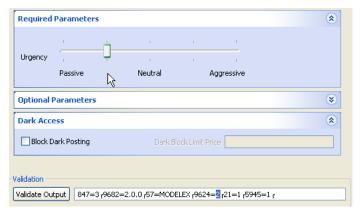


With Volume (Europe)
With Volume (Europe)
IS (Europe)
Smart DMA (Europe)
Target Close (Europe)
DMA (Europe)

Repetitive Unit Testing - Output



847=3 9682=2.0.0 57=MODELEX 9624=3 21=1 5945=1



847=3 9682=2.0.0 57=MODELEX 9624=2 21=1 5945=1

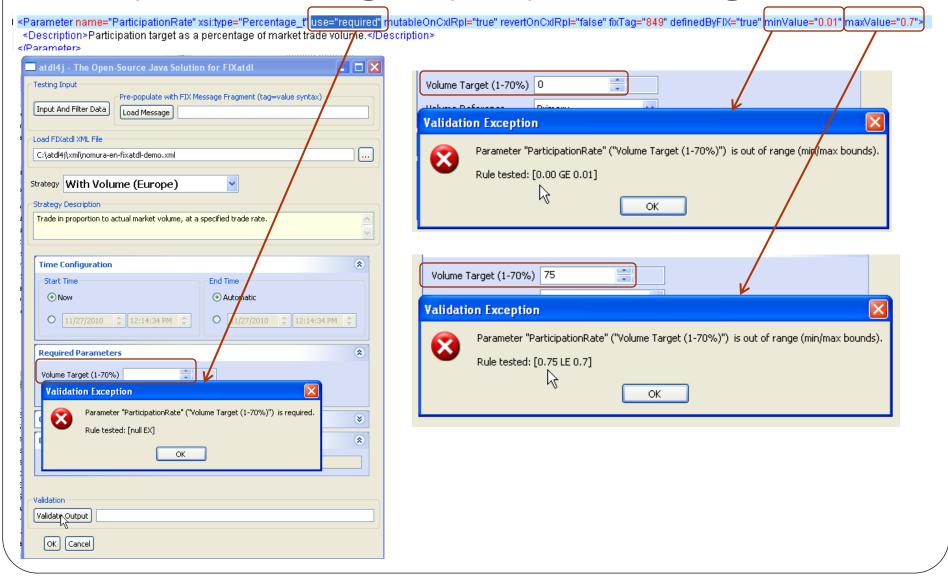


847=3 9682=2.0.0 **9616=W** 57=MODELEX 9624=2 21=1 5945=1

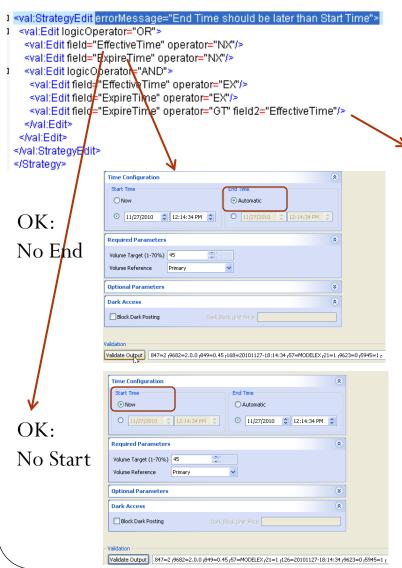
	Dark Access		(2)
	✓ Block Dark Posting	Dark Block Limit Price	280 7
			Limit Price effective when acce
Validation Validate Output 847=3 r9682=2.0.0 r9616=W r57=MODELEX r9624=2 r21=1 r5956=280 r5945=1 r			
Validate Output 847=3 r9682=2.0.0 r9616=W r57=MODELEX r9624=2 r21=1 r5956=280 r5945=			

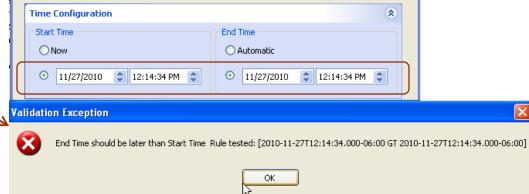
847=3 9682=2.0.0 9616=W 57=MODELEX 9624=2 21=1 **5956=280** 5945=1

Repetitive Unit Testing - Required parameters, ranges, etc



Repetitive Unit Testing – Validation Rules (StrategyEdit)





OK: End > Start

Time Configuration		®
Start Time Now	End Time Automatic	
○ 11/27/2010	○ 11/27/2010	
Required Parameters	(*
Volume Target (1-70%) 45 Volume Reference Primary	v	
Optional Parameters		*
Dark Access		â
Block Dark Posting Dark I	Block Limit Price	
slidation		

Test StateRule execution

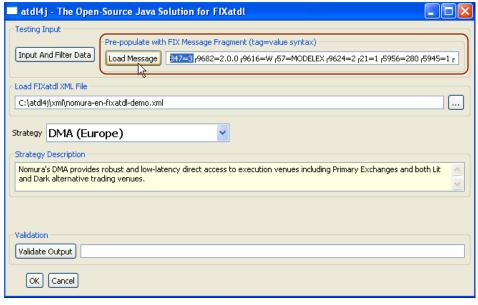
Instruction to post all untraded shares into dark liquidity venues.

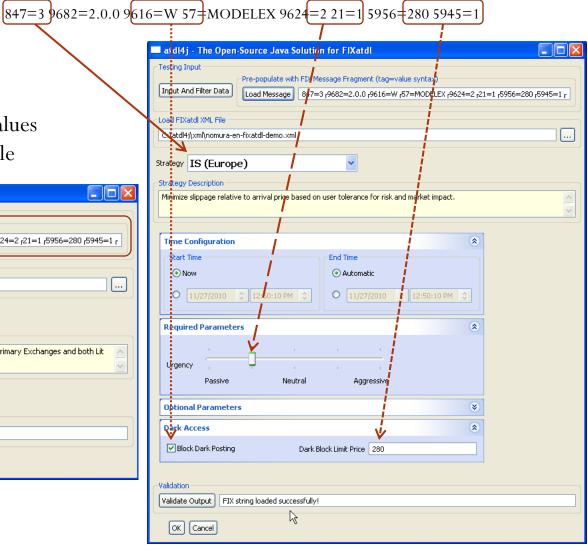
- <lay:StrategyPanel orientation="VERTICAL" border="Line" title="Dark Access" collapsible="true"> - <lay:StrategyPanel orientation="HORIZONTAL" border="None" collapsible="false"> <lav:Control ID="c ATSAccessType" xsi:type="lay:CheckBox t" parameterRef="ATSAccessType" label="Block Dark Posting"</pre> tooltip="Instruction to post all untraded shares into dark liquidity venues." checkedEnumRef="e IWould" uncheckedEnumRef="e None"/> - <lay:Control ID="c_DarkBlockLimitPrice" xsi:type="lay:TextField_t" parameterRef="DarkBlockLimitPrice" label="Dark Block Limit Price" tooltip="Limit Price effective when accessing dark liquidity. If specified, the more conservative of this value and the order Limit Price is used."> - <flow:StateRule enabled="false"> <val:Edit field="c_ATSAccessType" operator="EQ" value="false" /> </flow:StateRule> </lav:Control> </lav:StrategyPanel> </lay:StrategyPanel> Dark Access ٨ Unchecked: Disabled Block Dark Posting Instruction to post all untraded shares into dark liquidity venues. Dark Access ٠ Checked: Enabled ✓ Block Dark Posting Dark Block Limit Price

Simulate Re-loading screen (eg for Cancel/Replace)

Load Message button:

- Selects appropriate strategy
- Populates controls with parameter values
- And fires StateRule events if applicable





Embedded "Pop-Up" within an OMS

Embedded "Pop-up" within an OMS

Atdl4jCompositePanel

FIXatdI schema:

-org.atdl4j.fixatdl.core JAX	B-generated classes for FIXatdl spec's core schema
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-org.atdl4j.fixatdl.flow JAXB-generated classes for FIXatdl spec's flow schema

-org.atdl4j.fixatdl.layout JAXB-generated classes for FIXatdl spec's layout schema

-org.atdl4j.fixatdl.regions JAXB-generated classes for FIXatdl spec's regions schema

-org.atdl4j.fixatdl.timezones JAXB-generated classes for FIXatdl spec's timezones schema

-org.atdl4j.fixatdl.validation JAXB-generated classes for FIXatdl spec's validation schema

Data/Validation Rule handling:

-or g.atdl4j.data	ValidationRule interface, ControlTypeConverter <e>, ParameterTypeConverter<e>. StrategyRuleset, etc</e></e>
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-org.atdl4j.data.exception ValidationException

-org.atdl4j.data.fix PlainFIXMessageBuilder, Tag959Helper

-org.atdl4j.data.validation ValidationRuleFactory, Length, Logical, Parameter, Pattern, Value, etc Rule classes

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 $Atdl4jConfiguration\ interface, Atdl4jConfig\ (contains\ static\ Atdl4jConfiguration), AbstractAtdl4jConfiguration, and the static Atdl4jConfiguration interface, Atdl4jConfiguration, and the static Atdl4jConfiguration interface, and the static Atdl4jConfiguration interface in the static Atdl4jConfiguration in the static Atdl4jConf$

InputAndFilterData, StrategyFilterInputData

Base UI Infrastructure:

-org.atdl4j.config

-org.atdl4j.ui FIXatdl Layout interfaces: StrategiesUI, StrategyUI, Atdl4jWidget<E>, etc

-org.atdl4j.ui.impl Base/Abstract UI classes implementing interfaces

Interfaces: Atdl4jTesterPanel, Atdl4jCompositePanel, StrategySelectionPanel, etc plus

erg.atdl4j.ui.app Listeners

-org.atdl4j.ui.app.impl Abstract UI classes implementing interfaces

SWT-specific UI:

-erg.atdl4j.ui.swt.widget

-org.atdl4j.ui.swt.config
SWTAtdl4jConfiguration

org.atdl4j.ui.swt SWTWidget<E> interface

-org.atdl4j.ui.swt.impl SWTStrategiesUI, SWTStrategyUI, etc

-org.atdl4j.ui.swt app.impl SWTAtdl4jTesterApp, SWTAtdl4jCompositePanel, etc

FIXatdl's Control: AbstractSWTWidget<E>, SWTTextFieldWidget, SWTClockWidget,

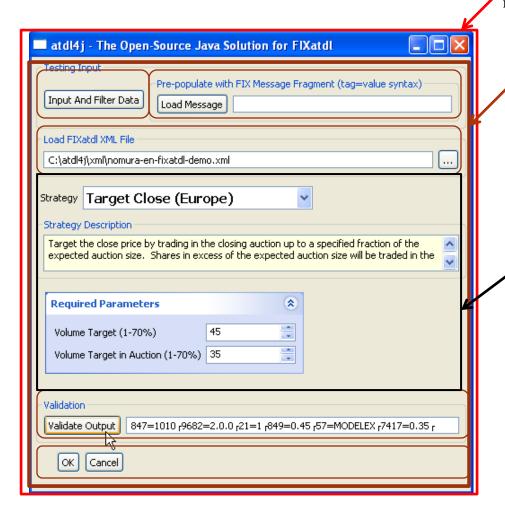
SWTDropDownListWidget, SWTSliderWidget, etc

-org.atdl4j.ui.swt.util SWTMenuHelper, SWTNullableSpinner, SWTNumberFormatVerifyListener,

<u>org.atdl4j.ui.swt.test</u> SWTParameterListenerWrapper, SWTDebugMouseTrackListener, SWTSideListener

Interfaces	Base/Abstract	GUI system-specific
org.atdl4j.config		arg.atdl4j.swt.config
org.atdl4j.ui	org.atdl4j.ui.impl	org.atdl4j.ui.swt.impl org.atdl4j.ui.swt.widget
org.atdl4j.app	org.atdl4j.app.impl	org.atdl4j.swt.app.impl

Nesting - Overall



SWTAtdl4jTesterApp
main()

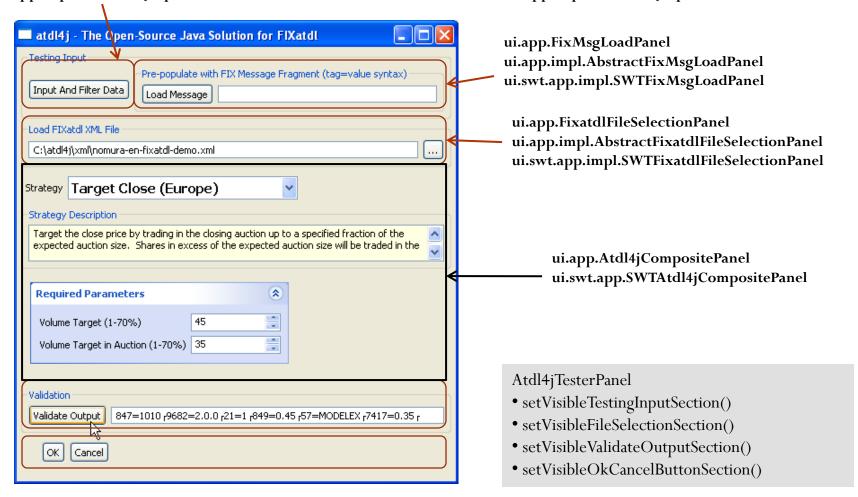
Atdl4jTesterAppPanel SWTAtdl4jTesterAppPanel

> Atdl4jCompositePanel SWTAtdl4jCompositePanel

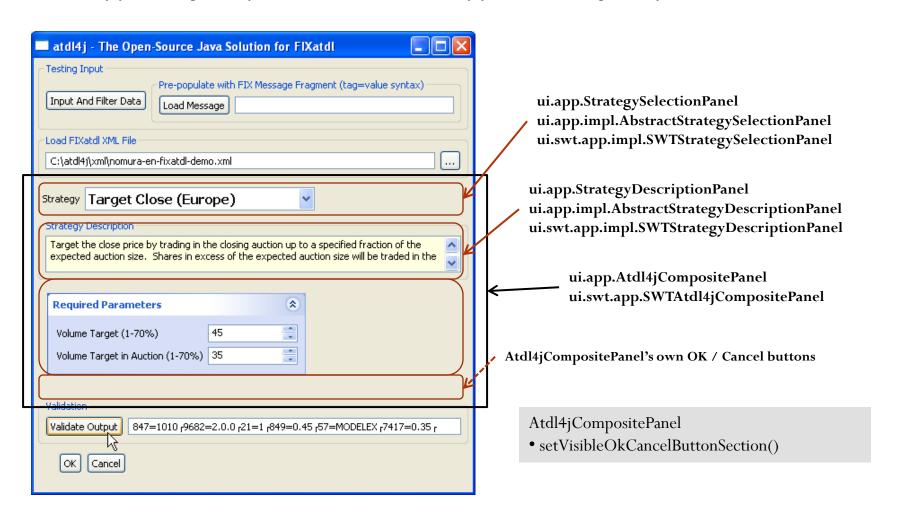
ui.app.Atdl4jTesterAppPanel, ui.swt.app.SWTAtdl4jTesterAppPanel

 $ui. Atdl4j Input And Filter Data Selection Panel\\ ui. app.impl. Abstract Atdl4j Input And Filter Data Selection Panel\\ ui. swt. app.impl. SWTAtdl4j Input And Filter Data Selection Panel$

ui.Atdl4jInputAndFilterDataPanel ui.app.impl.AbstractAtdl4jInputAndFilterDataPanel ui.swt.app.impl.SWTAtdl4jInputAndFilterDataPanel



ui.app.Atdl4jCompositePanel, ui.swt.app.SWTAtdl4jCompositePanel



Listeners

Listeners

Listener	Methods
ui.app.Atdl4jTesterPanelListener	okButtonSelected() cancelButtonSelected()
ui.app.Atdl4jCompositePanelListener	okButtonSelected() cancelButtonSelected()
ui.app.StrategiesUIListener	strategySelected()
ui.app.FixatdlFileSelectionPanelListener	fixatdlFileSelected()
ui.app.FixMsgLoadPanelListener	fixMsgLoadSelected()
ui.app.StrategySelectionPanelListener	strategySelected()
ui.app.StrategyEventListener	strategyNotValidated() strategySelected() strategyValidated() strategyValidationFailed()
ui. app. Atdl 4j Input And Filter Data Panel Listener	inputAndFilterDataSpecified()

Atdl4jConfiguration – static / global settings

- Interface config. Atdl4jConfiguration
 - getClassNameAtdl4jWidgetFor___()
 - is/setDebugLoggingLevel()
 - is/setCatchAll___Exceptions()
 - is/setShow___()
- config. Atdl4jConfig static data member/methods
 - Atdl4jConfiguration get/setConfig()
 - createAtdl4jCompositePanel()
 - createAtdl4jTesterPanel()

SWTAtdl4jConfiguration - SWT-specific class names

```
ui.swt.config.SWTAtdl4jConfiguration extends AbstractAtdl4jConfiguration
    private static String PACKAGE_PATH_ORG_ATDL4J_UI_SWT = "org.atdl4j.ui.swt.";
    protected String getDefaultClassNameAtdl4jTesterPanel() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "app.impl.SWTAtdl4jTesterPanel"; }
    protected String getDefaultClassNameAtdl4jCompositePanel() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "app.impl.SWTAtdl4jCompositePanel"; }
    protected String getDefaultClassNameStrategiesUI() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "impl.SWTStrategiesUI"; }
    protected String getDefaultClassNameStrategyUI() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "impl.SWTStrategyUI";}
    protected String getDefaultClassNameStrategySelectionPanel() {
        return PACKAGE_PATH_ORG_ATDL4]_UI_SWT + "app.impl.SWTStrategySelectionPanel"; }
    protected String getDefaultClassNameAtdl4jInputAndFilterDataPanel() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "app.impl.SWTAtdl4jInputAndFilterDataPanel"; }
    protected String getDefaultClassNameAtdl4jUserMessageHandler() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "app.impl.SWTAtdl4jUserMessageHandler"; }
    protected String getDefaultClassNameAtdl4jWidgetForCheckBoxListT() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "widget.SWTCheckBoxListWidget"; }
    protected String getDefaultClassNameAtdl4jWidgetForClockT() {
        return PACKAGE_PATH_ORG_ATDL4J_UI_SWT + "widget.SWTClockWidget"; }
```

Atdl4jOptions - Non-static input and behavior overrides

- config.Atdl4jOptions
 - config.InputAndFilterData
 - get/setStrategyListUsingInputStrategyNameListFilter(List<StrategyT>)
 - Spinner-specific behavior
 - get/setDefaultDigitsForSpinner___()
 - get/setDefault___IncrementValue()
 - Clock-specific behavior
 - get/setClockControlStart / EndTimeIDValueFragmentList()
 - get/setClockStart / EndTimeSetFIXValueWithPastTimeRule()
 - get/setClock____PastTimeSetFIXValueRule()
 - get/setClockUnknownSetFIXValueWithPastTimeRule()
 - is/setClockControlStart / EndTime()
 - Behavior overrides
 - is/setAccommodateMixOfStrategyPanelsAndControls()
 - is/setRestoreLastNonNullStateControlValueBehavior()
 - is/setShowEnabledCheckboxOnOptionalClockControl()
 - is/setTreatControl___FalseAsNull()

InputAndFilterData - broker file/order-centric settings

- config.InputAndFilterData
 - List<StrategyFilterInputData>
 - eg multiple orders to be assigned same algo settings
 - Strategy name list / filter control
 - get/setInputStrategyNameList()
 - get/setApplyInputStrategyNameListAsFilter()
 - Cancel/Replace
 - get/setInputCxlReplaceMode()
 - get/setInputSelectStrategyName()
 - is/setStrategySupported()
 - Input Hidden Field Map
 - addMapToInputHiddenFieldNameValueMap()
 - get/setInputHiddenFieldNameValueMap()
 - getInputHiddenFieldValue()
 - Increment Policy size
 - get/setInputIncrementPolicy_LotSize()
 - get/setInputIncrementPolicy_Tick()

StrategyFilterInputData - order-specific data for filter

- config.StrategyFilterInputData
 - get/setRegion_name()
 - get/setCountry_CountryCode()
 - get/setMarket_MICCode()
 - get/setSecurityType_name()
 - get/setFixMsgType()
 - isFixMsgTypeSupportedForStrategy()
 - isMarketSupportedForStrategy()
 - isRegionCountrySupportedForStrategy()
 - isSecurityTypeSupportedForStrategy()
 - isStrategySupported()