# **Open Digital Twin**

Release 0.1

**Jiping Xin** 

Jun 09, 2022

# **CONTENTS**

1	FENGSim				
	.1 Cosmic Cube集成开发环境				
	1.1.1 命令获取				
	.2 Airfoil Benchmark CAX架构				
	1.2.1 前后处理				
	1.2.2 求解器				
2	OpenCAE+				
	.Î OpenCAEPoro				
	2.2 FASP				
3	GCGE				
	.1 GCGE				
4	ODT .				
	Class Hierarchy				
	.2 File Hierarchy				
	.3 Full API				
	4.3.1 Namespaces				
	4.3.2 Classes and Structs				
5	Indices and tables				
In	X X				

欢迎使用开源数字孪生项目!ODT由FENGSim、OpenCAE+和GCGE构成,其中FENGSim包括Cosmic Cube集成开发环境和Airfoil Benchmark架构,Airfoil架构包括FEniCS教程中文版本。OpenCAE+包括OpenCAEPoro和FASP。OpenCAE+和GCGE分别由中国科学院计算数学所张晨松副研究员和谢和虎研究员主持开发。

CONTENTS 1

2 CONTENTS

**CHAPTER** 

## **ONE**

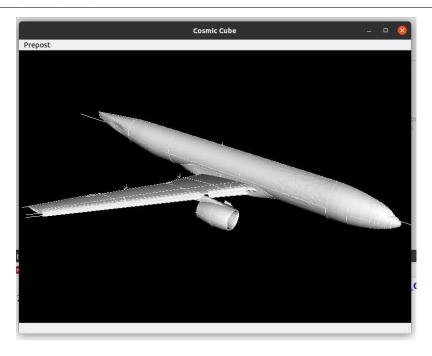
# **FENGSIM**

# 1.1 Cosmic Cube集成开发环境

### 1.1.1 命令获取

>>> /bin/bash -c "\$(curl https://raw.githubusercontent.com/OpenDigitalTwin-Dev/

-OpenDigitalTwin/main/cube)"



# 1.2 Airfoil Benchmark CAX架构

# 1.2.1 前后处理

ODT\_模块名称\_函数名称

#### 图形用户界面设计

#### 主界面设计

- 1. 模仿GIMP
- 2. 通过菜单和工具栏进入CAD建模、定义物理模型、网格剖分、求解器、可视化五个模块
  - 梳理菜单和工具栏对应的action
  - 梳理和action connection的函数名称和功能
- 3. 主要操作通过浮动工具栏实现

#### CAD建模浮动工具栏设计

定义物理模型浮动工具栏设计

网格剖分浮动工具栏设计

求解器浮动工具栏设计

可视化浮动工具栏设计

#### 1.2.2 求解器

M++

**FEniCS** 

# CHAPTER

# **TWO**

# **OPENCAE+**

- 2.1 OpenCAEPoro
- **2.2 FASP**

**CHAPTER** 

**THREE** 

**GCGE** 

# **3.1 GCGE**

谢和虎

8 Chapter 3. GCGE

#### **CHAPTER**

# **FOUR**

## **ODT**

# 4.1 Class Hierarchy

# 4.2 File Hierarchy

## 4.3 Full API

## 4.3.1 Namespaces

Namespace Ui

#### Contents

• Classes

#### **Classes**

- Class AboutDialog
- Class AdditiveManufacturingDockWidget
- Class CADDockWidget
- Class FEMDockWidget
- Class MachiningDockWidget
- Class MainWindow
- Class MeasureDockWidget
- Class MeshDockWidget
- Class SPCDockWidget
- Class TransportDockWidget
- Class VTKDockWidget

#### 4.3.2 Classes and Structs

#### **Class test**

• Defined in file\_include\_test.h

#### **Class Documentation**

class test

#### **Public Functions**

test()

#### **Class AboutDialog**

• Defined in file\_include\_ui\_AboutDialog.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_AboutDialog (Class Ui\_AboutDialog)

#### **Class Documentation**

class AboutDialog: public  $Ui\_AboutDialog$ 

#### Class AdditiveManufacturingDockWidget

• Defined in file\_include\_ui\_AdditiveManufacturingDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

 $\bullet \ public \ Ui\_Additive Manufacturing Dock Widget \ ({\it Class Ui\_Additive Manufacturing Dock Widget}) \\$ 

#### **Class Documentation**

 ${\bf class}~{\bf Additive Manufacturing Dock Widget}: ~public~{\it Ui\_Additive Manufacturing Dock Widget}$ 

#### Class CADDockWidget

• Defined in file\_include\_ui\_CADDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_CADDockWidget (Class Ui\_CADDockWidget)

#### **Class Documentation**

 ${\tt class}~ \textbf{CADDockWidget}: {\tt public}~ \textit{Ui\_CADDockWidget}$ 

### **Class FEMDockWidget**

• Defined in file\_include\_ui\_FEMDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_FEMDockWidget (Class Ui\_FEMDockWidget)

#### **Class Documentation**

class FEMDockWidget: public Ui\_FEMDockWidget

#### **Class MachiningDockWidget**

 $\bullet \ Defined \ in \ file\_include\_ui\_MachiningDockWidget.h$ 

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_MachiningDockWidget (Class Ui\_MachiningDockWidget)

#### **Class Documentation**

class MachiningDockWidget: public Ui\_MachiningDockWidget

#### **Class MainWindow**

• Defined in file\_include\_ui\_MainWindow.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_MainWindow (Class Ui\_MainWindow)

#### **Class Documentation**

class MainWindow: public Ui\_MainWindow

#### **Class MeasureDockWidget**

• Defined in file\_include\_ui\_MeasureDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_MeasureDockWidget (Class Ui\_MeasureDockWidget)

#### **Class Documentation**

class MeasureDockWidget: public Ui\_MeasureDockWidget

#### Class MeshDockWidget

• Defined in file\_include\_ui\_MeshDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_MeshDockWidget (Class Ui\_MeshDockWidget)

#### **Class Documentation**

 $class \ \textbf{MeshDockWidget}: public \ \textit{Ui\_MeshDockWidget}$ 

#### **Class SPCDockWidget**

• Defined in file\_include\_ui\_SPCDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_SPCDockWidget (Class Ui\_SPCDockWidget)

#### **Class Documentation**

 ${\tt class} \ \textbf{SPCDockWidget} : {\tt public} \ \textit{Ui\_SPCDockWidget}$ 

#### **Class TransportDockWidget**

• Defined in file\_include\_ui\_TransportDockWidget.h

#### **Inheritance Relationships**

### **Base Type**

• public Ui\_TransportDockWidget (Class Ui\_TransportDockWidget)

#### **Class Documentation**

```
class \ \textbf{TransportDockWidget}: public \ \textit{Ui\_TransportDockWidget}
```

#### Class VTKDockWidget

• Defined in file\_include\_ui\_VTKDockWidget.h

#### **Inheritance Relationships**

#### **Base Type**

• public Ui\_VTKDockWidget (Class Ui\_VTKDockWidget)

#### **Class Documentation**

```
class VTKDockWidget: public Ui\_VTKDockWidget
```

#### Class Ui\_AboutDialog

• Defined in file\_include\_ui\_AboutDialog.h

#### **Inheritance Relationships**

#### **Derived Type**

• public Ui::AboutDialog (Class AboutDialog)

#### **Class Documentation**

#### class Ui\_AboutDialog

```
Subclassed by Ui::AboutDialog
```

#### **Public Functions**

```
in line\ void\ \textbf{setupUi}\ (QDialog\ *AboutDialog)
```

inline void retranslateUi(QDialog \*AboutDialog)

#### **Public Members**

```
QHBoxLayout~ \hbox{\tt *horizontalLayout}
```

ClickedLabel \*label

#### Class Ui\_AdditiveManufacturingDockWidget

• Defined in file\_include\_ui\_AdditiveManufacturingDockWidget.h

#### **Inheritance Relationships**

#### **Derived Type**

public Ui::AdditiveManufacturingDockWidget (Class AdditiveManufacturingDockWidget)

#### **Class Documentation**

#### class Ui\_AdditiveManufacturingDockWidget

Subclassed by Ui::AdditiveManufacturingDockWidget

#### **Public Functions**

```
inline void setupUi(QWidget *AdditiveManufacturingDockWidget)
inline void retranslateUi(QWidget *AdditiveManufacturingDockWidget)
```

#### **Public Members**

QLabel \*label

```
QVBoxLayout *verticalLayout

QTabWidget *tabWidget

QWidget *tab

QVBoxLayout *verticalLayout_7

QHBoxLayout *horizontalLayout_6
```

QSpacerItem \*horizontalSpacer\_7

QPushButton \*pushButton\_4 QPushButton \*pushButton\_10 QHBoxLayout \*horizontalLayout\_8 QLabel \*label\_2 QSpacerItem \*horizontalSpacer\_8 QPushButton \*pushButton\_14 QPushButton \*pushButton\_17 QHBoxLayout \*horizontalLayout\_9 QLabel \*label\_3 QSpacerItem \*horizontalSpacer\_9 QPushButton \*pushButton\_18 QPushButton \*pushButton\_19 QGridLayout \*gridLayout QDoubleSpinBox \*doubleSpinBox QSpacerItem \*horizontalSpacer\_11 QDoubleSpinBox \*doubleSpinBox\_2 QLabel \*label\_7 QSpacerItem \*horizontalSpacer\_12 QLabel \*label\_6 QHBoxLayout \*horizontalLayout\_10 QLabel \*label\_4

QSpacerItem \*horizontalSpacer\_10

QPushButton \*pushButton\_20

QPushButton \*pushButton\_21

QHBoxLayout \*horizontalLayout\_12

QLabel \*label\_8

QSpacerItem \*horizontalSpacer\_13

QComboBox \*comboBox

QGridLayout \*gridLayout\_2

QLabel \*label\_10

QPushButton \*pushButton\_24

QLabel \*label\_9

QPushButton \*pushButton\_25

QSpacerItem \*horizontalSpacer\_15

QSpacerItem \*horizontalSpacer\_16

QHBoxLayout \*horizontalLayout\_14

QLabel \*label\_11

QSpacerItem \*horizontalSpacer\_14

QDoubleSpinBox \*doubleSpinBox\_3

QHBoxLayout \*horizontalLayout\_13

QSpacerItem \*horizontalSpacer\_17

QSpacerItem \*verticalSpacer\_8

```
QWidget *tab_2
QVBoxLayout *verticalLayout_8
QHBoxLayout *horizontalLayout_11
QLabel *label_5
QHBoxLayout *horizontalLayout_15
QLineEdit *lineEdit_2
QSpacerItem *horizontalSpacer_18
QPushButton *pushButton_22
QPushButton *pushButton_23
QHBoxLayout *horizontalLayout_16
QLabel *label_12
QTableWidget *tableWidget
QGridLayout *gridLayout_4
QLabel *label_15
QDoubleSpinBox *doubleSpinBox_5
QLabel *label_17
QDoubleSpinBox *doubleSpinBox_6
QLabel *label_13
QLabel *label_16
QLabel *label_18
QLabel *label_14
```

QDoubleSpinBox \*doubleSpinBox\_7 QDoubleSpinBox \*doubleSpinBox\_8 QDoubleSpinBox \*doubleSpinBox\_4 QSpinBox \*spinBox QHBoxLayout \*horizontalLayout\_18 QProgressBar \*progressBar QSpacerItem \*horizontalSpacer\_19 QPushButton \*pushButton\_26 QPushButton \*pushButton\_27 QSpacerItem \*verticalSpacer\_9 QHBoxLayout \*horizontalLayout\_17 QPushButton \*pushButton\_28 QSlider \*horizontalSlider QToolBox \*toolBox QWidget \*page\_5 QVBoxLayout \*verticalLayout\_2 QHBoxLayout \*horizontalLayout QSpacerItem \*horizontalSpacer\_5 QPushButton \*pushButton QPushButton \*pushButton\_3

QSpacerItem \*verticalSpacer

```
QWidget *page_6
QVBoxLayout *verticalLayout_3
QHBoxLayout *horizontalLayout_2
QSpacerItem *horizontalSpacer_6
QPushButton *pushButton_7
QPushButton *pushButton_2
QPushButton *pushButton_9
QSpacerItem *verticalSpacer_2
QWidget *page_7
QVBoxLayout *verticalLayout_4
QHBoxLayout *horizontalLayout_3
QSpacerItem *horizontalSpacer_2
QPushButton *pushButton_13
QPushButton *pushButton_5
QPushButton *pushButton_12
QSpacerItem *verticalSpacer_3
QWidget *page_3
QVBoxLayout *verticalLayout_5
QHBoxLayout *horizontalLayout_4
QSpacerItem *horizontalSpacer_3
QPushButton *pushButton_15
```

```
QPushButton *pushButton_8
QPushButton *pushButton_11
QHBoxLayout *horizontalLayout_5
QSpacerItem *horizontalSpacer
QLineEdit *lineEdit
QSpacerItem *verticalSpacer_4
QWidget *page_4
QVBoxLayout *verticalLayout_6
QHBoxLayout *horizontalLayout_7
QSpacerItem *horizontalSpacer_4
QPushButton *pushButton_6
QPushButton *pushButton_16
QSpacerItem *verticalSpacer_5
QSpacerItem *verticalSpacer_6
```

#### Class Ui\_CADDockWidget

• Defined in file\_include\_ui\_CADDockWidget.h

#### **Inheritance Relationships**

#### **Derived Type**

• public Ui::CADDockWidget (Class CADDockWidget)

#### **Class Documentation**

#### $class \ \textbf{Ui\_CADDockWidget}$

Subclassed by Ui::CADDockWidget

#### **Public Functions**

```
in line\ void\ \textbf{setupUi}\ (QWidget\ ^*CADDockWidget)
```

inline void retranslateUi(QWidget \*CADDockWidget)

#### **Public Members**

QAction \*actionSphere

QAction \*actionCube

QAction \*actionTorus

QAction \*actionCone

QAction \*actionCylinder

QAction \*actionPoint

QAction \*actionLine

QAction \*actionSquare

QAction \*actionUnion

QAction \*actionSection

QAction \*actionCut

QAction \*actionSweep

QAction \*actionExtrude

 $QAction ~ \hbox{$^*$actionMirror}$ 

QAction \*actionSelectFace

QAction \*actionSelectDomain QAction \*actionPart1 QAction \*actionPart2 QVBoxLayout \*verticalLayout\_5 QGridLayout \*gridLayout QPushButton \*pushButton\_4 QSpacerItem \*horizontalSpacer\_2 QSpacerItem \*horizontalSpacer QPushButton \*pushButton\_9 QPushButton \*pushButton QPushButton \*pushButton\_2 QPushButton \*pushButton\_3 QPushButton \*pushButton\_7 QPushButton \*pushButton\_6 QPushButton \*pushButton\_5 QPushButton \*pushButton\_13 QPushButton \*pushButton\_0 QSpacerItem \*verticalSpacer\_4 QTabWidget \*tabWidget QWidget \*tab QVBoxLayout \*verticalLayout\_2

QGridLayout \*gridLayout\_3 QPushButton \*pushButton\_33 QComboBox \*comboBox\_2 QLabel \*label\_4 QGridLayout \*gridLayout\_4 QLabel \*label QDoubleSpinBox \*doubleSpinBox\_4 QLabel \*label\_3 QDoubleSpinBox \*doubleSpinBox\_5 QDoubleSpinBox \*doubleSpinBox\_6 QLabel \*label\_2 QVBoxLayout \*verticalLayout QSpacerItem \*verticalSpacer QSpacerItem \*verticalSpacer\_3 QWidget \*tab\_3 QVBoxLayout \*verticalLayout\_3 QGridLayout \*gridLayout\_5 QVBoxLayout \*verticalLayout\_4 QSpacerItem \*verticalSpacer\_6 QGridLayout \*gridLayout\_11 QLabel \*label\_7

QLabel \*label\_8 QDoubleSpinBox \*doubleSpinBox\_2 QDoubleSpinBox \*doubleSpinBox\_3 QDoubleSpinBox \*doubleSpinBox QLabel \*label\_6 QPushButton \*pushButton\_36 QLabel \*label\_5 QComboBox \*comboBox QSpacerItem \*verticalSpacer\_5 QWidget \*tab\_2 QVBoxLayout \*verticalLayout\_6 QHBoxLayout \*horizontalLayout QComboBox \*comboBox\_4 QPushButton \*pushButton\_10 QPushButton \*pushButton\_11 QGridLayout \*gridLayout\_2 QDoubleSpinBox \*doubleSpinBox\_8 QDoubleSpinBox \*doubleSpinBox\_7 QPushButton \*pushButton\_8 QComboBox \*comboBox\_3

QLabel \*label\_9

```
QLabel *label_10
     QDoubleSpinBox *doubleSpinBox_9
     QSpacerItem *verticalSpacer_2
Class Ui_FEMDockWidget
   • Defined in file_include_ui_FEMDockWidget.h
Inheritance Relationships
Derived Type
   • public Ui::FEMDockWidget (Class FEMDockWidget)
Class Documentation
class \ \textbf{Ui\_FEMDockWidget}
     Subclassed by Ui::FEMDockWidget
     Public Functions
     inline void setupUi(QWidget *FEMDockWidget)
     inline void retranslateUi(QWidget *FEMDockWidget)
     Public Members
     QVBoxLayout *verticalLayout
     QGridLayout *gridLayout_2
     QLabel *label_4
     QComboBox *comboBox_4
```

QPushButton \*pushButton\_2

QComboBox \*comboBox

 $QPushButton \ *\textbf{pushButton}$ 

```
QLabel *label
     QGridLayout *gridLayout
     QComboBox *comboBox_2
     QComboBox *comboBox_3
     QLineEdit *lineEdit
     QSpacerItem *verticalSpacer
Class Ui_MachiningDockWidget
   • Defined in file_include_ui_MachiningDockWidget.h
Inheritance Relationships
Derived Type
   • public Ui::MachiningDockWidget (Class MachiningDockWidget)
Class Documentation
class Ui_MachiningDockWidget
     Subclassed by Ui::MachiningDockWidget
     Public Functions
     inline void setupUi(QWidget *MachiningDockWidget)
     inline void retranslateUi(QWidget *MachiningDockWidget)
     Public Members
     QVBoxLayout *verticalLayout
     QTabWidget *tabWidget
     QWidget *tab
```

QVBoxLayout \*verticalLayout\_2

```
QHBoxLayout *horizontalLayout_5
QComboBox *comboBox_5
QPushButton *pushButton_7
QGridLayout *gridLayout
QPushButton *pushButton
QLineEdit *lineEdit
QComboBox *comboBox
QComboBox *comboBox_2
QLineEdit *lineEdit_2
QPushButton *pushButton_2
QHBoxLayout *horizontalLayout_9
QLabel *label_3
QSpacerItem *horizontalSpacer_4
QPushButton *pushButton_11
QHBoxLayout *horizontalLayout_2
QComboBox *comboBox_3
QPushButton *pushButton_3
QHBoxLayout *horizontalLayout_8
QLabel *label
QSpacerItem *horizontalSpacer_3
QPushButton *pushButton_10
```

QHBoxLayout \*horizontalLayout\_3 QComboBox \*comboBox\_4 QPushButton \*pushButton\_4 QHBoxLayout \*horizontalLayout\_4 QLabel \*label\_2 QSpacerItem \*horizontalSpacer QDoubleSpinBox \*doubleSpinBox QPushButton \*pushButton\_5 QHBoxLayout \*horizontalLayout\_6 QLabel \*label\_4 QSpacerItem \*horizontalSpacer\_2 QComboBox \*comboBox\_6 QPushButton \*pushButton\_8 QHBoxLayout \*horizontalLayout QLabel \*label\_5 QSpacerItem \*horizontalSpacer\_6 QSpinBox \*spinBox QSpacerItem \*horizontalSpacer\_5 QHBoxLayout \*horizontalLayout\_7 QProgressBar \*progressBar

QPushButton \*pushButton\_9

```
QPushButton *pushButton_12

QSpacerItem *verticalSpacer

QWidget *tab_2

Class Ui_MainWindow

• Defined in file_include_ui_MainWindow.h

Inheritance Relationships

Derived Type

• public Ui::MainWindow (Class MainWindow)

Class Documentation
```

### class Ui\_MainWindow

Subclassed by *Ui::MainWindow* 

#### **Public Functions**

```
inline void setupUi(QMainWindow *MainWindow)
inline void retranslateUi(QMainWindow *MainWindow)
```

#### **Public Members**

```
QAction *actionCAD
```

QAction \*actionMesh

QAction \*actionFEM

QAction \*actionVisual

QAction \*actionAbout

QAction \*actionSave

QAction \*actionOpen

QAction *actionSPC
QAction *actionAxo
QAction *actionFront
QAction *actionBack
QAction *actionLeft
QAction *actionRight
QAction *actionTop
QAction *actionBottom
QAction *actionFit
QAction *actionNew
QAction *actionMeasure
QAction *actionSystem
QAction *actionAdditiveManufacturing
QAction *actionViewRotationH
QAction *actionViewRotationV
QAction *actionMachining
QAction *actionTransport
OCCWidget *centralWidget
QVBoxLayout *verticalLayout
QMdiArea *mdiArea

4.3. Full API 31

QMenuBar \*menuBar

```
QMenu *menuFile

QMenu *menuView

QMenu *menuAbout

QStatusBar *statusBar

QToolBar *toolBarFENGSim

QDockWidget *dockWidget

QWidget *dockWidgetContents

QVBoxLayout *verticalLayout_2

QPushButton *pushButton
```

#### Class Ui\_MeasureDockWidget

 $\bullet \ Defined \ in \ file\_include\_ui\_MeasureDockWidget.h$ 

#### **Inheritance Relationships**

#### **Derived Type**

• public Ui::MeasureDockWidget (Class MeasureDockWidget)

#### **Class Documentation**

#### $class \ {\bf Ui\_MeasureDockWidget}$

Subclassed by Ui::MeasureDockWidget

#### **Public Functions**

```
inline void setupUi(QWidget *MeasureDockWidget)
inline void retranslateUi(QWidget *MeasureDockWidget)
Public Members
QAction *actionStraightness
QAction *actionFlatness
QAction *actionSurface
QAction *actionLine
QAction *actionCircularity
QAction *actionCylindricity
QAction *actionLineProfile
QAction *actionSurfaceProfile
QVBoxLayout *verticalLayout
QHBoxLayout *horizontalLayout_3
QLabel *label
QSpacerItem *horizontalSpacer_8
QPushButton *pushButton_3
QPushButton *pushButton_6
QHBoxLayout *horizontalLayout_7
QLabel *label_4
```

QSpacerItem \*horizontalSpacer\_3

QHBoxLayout \*horizontalLayout\_4

QPushButton \*pushButton QPushButton \*pushButton\_2 QSpacerItem \*horizontalSpacer\_4 QDoubleSpinBox \*doubleSpinBox QSpacerItem \*horizontalSpacer\_9 QPushButton \*pushButton\_5 QScrollBar \*horizontalScrollBar QVBoxLayout \*verticalLayout\_2 QLabel \*label\_9 QHBoxLayout \*horizontalLayout\_12 QLabel \*label\_8 QDoubleSpinBox \*doubleSpinBox\_2 QSpacerItem \*horizontalSpacer\_5 QPushButton \*pushButton\_4 QPushButton \*pushButton\_7 QHBoxLayout \*horizontalLayout\_10 QLabel \*label\_5 QSpacerItem \*horizontalSpacer QPushButton \*pushButton\_8 QPushButton \*pushButton\_9 QHBoxLayout \*horizontalLayout\_11

```
QLabel *label_6
QSpacerItem *horizontalSpacer_6
QHBoxLayout *horizontalLayout_8
QLabel *label_11
QDoubleSpinBox *doubleSpinBox_3
QSpacerItem *horizontalSpacer_2
QPushButton *pushButton_19
QPushButton *pushButton_11
QProgressBar *progressBar
QHBoxLayout *horizontalLayout
QLabel *label_2
QPushButton *pushButton_10
QPushButton *pushButton_13
QProgressBar_2
QSpacerItem *verticalSpacer
```

#### Class Ui MeshDockWidget

• Defined in file\_include\_ui\_MeshDockWidget.h

#### **Inheritance Relationships**

#### **Derived Type**

• public Ui::MeshDockWidget (Class MeshDockWidget)

#### **Class Documentation**

### $class \ {\bf Ui\_MeshDockWidget}$

```
Subclassed by Ui::MeshDockWidget
```

#### **Public Functions**

```
inline void setupUi(QWidget *MeshDockWidget)
inline void retranslateUi(QWidget *MeshDockWidget)
```

#### **Public Members**

```
QVBoxLayout *verticalLayout
```

```
QTabWidget *tabWidget
```

QWidget \*tab

QVBoxLayout \*verticalLayout\_3

QGridLayout \*gridLayout\_2

QDoubleSpinBox \*doubleSpinBox

QLabel \*label

QPushButton ~\*pushButton

QSpacerItem \*verticalSpacer

#### Class Ui\_SPCDockWidget

 $\bullet \ \ Defined \ in \ file\_include\_ui\_SPCDockWidget.h$ 

#### **Inheritance Relationships**

### **Derived Type**

• public Ui::SPCDockWidget (Class SPCDockWidget)

#### **Class Documentation**

#### $class \ \textbf{Ui\_SPCDockWidget}$

Subclassed by Ui::SPCDockWidget

#### **Public Functions**

```
inline void setupUi(QWidget *SPCDockWidget)
inline void retranslateUi(QWidget *SPCDockWidget)
```

#### **Public Members**

```
QHBoxLayout~ \hbox{\tt *horizontalLayout}
```

QTreeWidget \*treeWidget

### Class Ui\_TransportDockWidget

• Defined in file\_include\_ui\_TransportDockWidget.h

## **Inheritance Relationships**

#### **Derived Type**

• public Ui::TransportDockWidget (Class TransportDockWidget)

#### **Class Documentation**

#### class Ui\_TransportDockWidget

Subclassed by Ui::TransportDockWidget

#### **Public Functions**

```
inline void setupUi(QWidget *TransportDockWidget)
```

inline void retranslateUi(QWidget \*TransportDockWidget)

#### **Public Members**

```
QVBoxLayout *verticalLayout
QTabWidget *tabWidget
QWidget *tab
QVBoxLayout *verticalLayout_3
QVBoxLayout *verticalLayout_2
QTableWidget *tableWidget
QHBoxLayout *horizontalLayout_2
QSpacerItem *horizontalSpacer
QPushButton *pushButton
QPushButton *pushButton_2
QPushButton *pushButton_3
QSpacerItem *verticalSpacer
QWidget *tab_2
QVBoxLayout *verticalLayout_4
QHBoxLayout *horizontalLayout_11
QLabel *label
QPushButton *pushButton_10
QHBoxLayout *horizontalLayout_9
QLabel *label_2
```

QDoubleSpinBox \*doubleSpinBox

```
QHBoxLayout *horizontalLayout_10
QLabel *label_5
QDoubleSpinBox *doubleSpinBox_2
QHBoxLayout *horizontalLayout
QLabel *label_3
QPushButton *pushButton_5
QHBoxLayout *horizontalLayout_4
QLabel *label_4
QPushButton *pushButton_7
QHBoxLayout *horizontalLayout_7
QLabel *label_6
QPushButton *pushButton_11
QHBoxLayout *horizontalLayout_12
QLabel *label_7
QDoubleSpinBox *doubleSpinBox_3
QHBoxLayout *horizontalLayout_5
QLabel *label_8
QPushButton *pushButton_8
QHBoxLayout *horizontalLayout_6
QLabel *label_9
QPushButton *pushButton_9
```

```
QHBoxLayout *horizontalLayout_3

QSpacerItem *horizontalSpacer_3

QPushButton *pushButton_6

QComboBox *comboBox

QPushButton *pushButton_4

QSpacerItem *verticalSpacer_2

QWidget *tab_3

QVBoxLayout *verticalLayout_5

QTableWidget *tableWidget_2

QSpacerItem *verticalSpacer_3
```

#### Class Ui\_VTKDockWidget

• Defined in file\_include\_ui\_VTKDockWidget.h

#### **Inheritance Relationships**

#### **Derived Type**

• public Ui::VTKDockWidget (Class VTKDockWidget)

#### **Class Documentation**

#### $class \ \textbf{Ui\_VTKDockWidget}$

Subclassed by Ui::VTKDockWidget

#### **Public Functions**

```
inline void setupUi(QWidget *VTKDockWidget)
inline void retranslateUi(QWidget *VTKDockWidget)
```

#### **Public Members**

QVBoxLayout \*verticalLayout

QGridLayout \*gridLayout

QLabel \*label

QLineEdit \*lineEdit

QPushButton \*pushButton

QVBoxLayout \*verticalLayout\_2

QHBoxLayout \*horizontalLayout

QLabel \*label\_2

QPushButton \*pushButton\_2

QSpacerItem \*verticalSpacer

# CHAPTER

# **FIVE**

# **INDICES AND TABLES**

- genindex
- search

# **INDEX**

T	<pre>Ui_AdditiveManufacturingDockWidget::doubleSpinBox_8</pre>
test $(C++ class)$ , 10	(C++ member), 19
test::test(C++function), 10	<pre>Ui_AdditiveManufacturingDockWidget::gridLayout</pre>
U	<pre>Ui_AdditiveManufacturingDockWidget::gridLayout_2</pre>
Ui::AboutDialog ( $C++$ class), 10	
Ui::AdditiveManufacturingDockWidget (C++	<pre>Ui_AdditiveManufacturingDockWidget::gridLayout_4</pre>
class), 11	(C++ member), 18
Ui::CADDockWidget (C++ class), 11	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout</pre>
Ui::FEMDockWidget (C++ class), 11	(C++ member), 19
Ui::MachiningDockWidget (C++ class), 12	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_10</pre>
Ui::MainWindow (C++ class), 12	(C++ member), 16
Ui::MeasureDockWidget (C++ class), 12	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_11</pre>
Ui::MeshDockWidget (C++ class), 13	(C++ member), 18
Ui::SPCDockWidget (C++ class), 13	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_12</pre>
Ui::TransportDockWidget (C++ class), 14	(C++ member), 17
Ui::VTKDockWidget (C++ class), 14	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_13</pre>
Ui_AboutDialog (C++ class), 14	(C++ member), 17
Ui_AboutDialog::horizontalLayout (C++ mem-	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_14</pre>
ber), 15	(C++ member), 17
<pre>Ui_AboutDialog::label (C++ member), 15</pre>	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_15</pre>
Ui_AboutDialog::retranslateUi(C++function), 14	(C++ member), 18
Ui_AboutDialog::setupUi (C++ function), 14	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_16</pre>
Ui_AdditiveManufacturingDockWidget (C++	(C++ member), 18
class), 15	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_17</pre>
Ui_AdditiveManufacturingDockWidget::comboBox	(C++ member), 19
(C++ member) 17	<pre>Ui_AdditiveManufacturingDockWidget::horizontalLayout_18</pre>
IIi AdditiveManufacturingDockWidget::doubleSni	(C++ member), 19
(C++ member), 16	nBox (C++ member), 19 Ui_AdditiveManufacturingDockWidget::horizontalLayout_2
<pre>Hi AdditiveManufacturingDockWidget::doubleSni</pre>	nBox_2 (C++ member), 20 Ui_AdditiveManufacturingDockWidget::horizontalLayout_3
(C++ member), 16	
<pre>Hi AdditiveManufacturingDockWidget::doubleSni</pre>	nRox 3 $(C++ member), 20$
(C++ member), 17	nBox_3 (C++ member), 20 Ui_AdditiveManufacturingDockWidget::horizontalLayout_4
<pre>Hi AdditiveManufacturingDockWidget::doubleSni</pre>	(C++ member), 20
(C++ member) 19	nBox 4 (C++ member), 20 Ui_AdditiveManufacturingDockWidget::horizontalLayout_5
<pre>Hi AdditiveManufacturingDockWidget::doubleSni</pre>	nRox 5 (C++ member), 21
(C++ member), 18	nBox_5 (C++ member),21 Ui_AdditiveManufacturingDockWidget::horizontalLayout_6
IIi AdditiveManufacturingDockWidget::doubleSni	(C++ member), 15
	nBox_6 (C++ member), 15 Ui_AdditiveManufacturingDockWidget::horizontalLayout_7
IIi AdditiveManufacturingDockWidget··doubleSni	nRox 7 (C++ member), 21
(C++ member), 18	nBox 7 (C++ member), 21 Ui_AdditiveManufacturingDockWidget::horizontalLayout_8
(C)   member ), 10	(C++ member), 16

<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 16	(C++ member), 18
	llSil_iAbbdritiveManufacturingDockWidget::label_16
(C++ member), 19	(C++ member), 18
	llSpakokdritiveManufacturingDockWidget::label_17
(C++ member), 21	(C++ member), 18
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 16	(C++ member), 18
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	<pre>IlSpaNdditilveManufacturingDockWidget::label_2     (C++ member), 16</pre>
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 16	(C++ member), 16
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 17	(C++ member), 16
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 17	(C++ member), 18
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 17	(C++ member), 16
Ui_AdditiveManufacturingDockWidget::horizonta	
(C++ member), 17	(C++ member), 16
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 17	(C++ member), 17
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 18	(C++ member), 17
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 19	(C++ member), 21
	<pre>IlSipaAddri 2iveManufacturingDockWidget::lineEdit_2</pre>
(C++ member), 20	(C++ member), 18
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 20	(C++ member), 20
Ui_AdditiveManufacturingDockWidget::horizonta	
(C++ member), 21	(C++ member), 21
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 19	(C++ member), 19
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	
(C++ member), 20	(C++ member), 19
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	llSpakddi_TiveManufacturingDockWidget::page_7
(C++ member), 15	(C++ member), 20
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	llSpaNuddi_BiveManufacturingDockWidget::progressBar
(C++ member), 16	(C++ member), 19
<pre>Ui_AdditiveManufacturingDockWidget::horizonta</pre>	lßpakddigiveManufacturingDockWidget::pushButton
(C++ member), 16	(C++ member), 19
<pre>Ui_AdditiveManufacturingDockWidget::label</pre>	<pre>Ui_AdditiveManufacturingDockWidget::pushButton_10</pre>
(C++ member), 15	(C++ member), 16
<pre>Ui_AdditiveManufacturingDockWidget::label_10</pre>	<pre>Ui_AdditiveManufacturingDockWidget::pushButton_11</pre>
(C++ member), 17	(C++ member), 21
<pre>Ui_AdditiveManufacturingDockWidget::label_11</pre>	<pre>Ui_AdditiveManufacturingDockWidget::pushButton_12</pre>
(C++ member), 17	(C++ member), 20
<pre>Ui_AdditiveManufacturingDockWidget::label_12</pre>	
(C++ member), 18	(C++ member), 20
<pre>Ui_AdditiveManufacturingDockWidget::label_13</pre>	
(C++ member), 18	(C++ member), 16
	Ui_AdditiveManufacturingDockWidget::pushButton_15
(C++ member), 18	(C++ member), 20
(0   1	(0.1.1 1100110001), 20

```
Ui_AdditiveManufacturingDockWidget::pushButtonUil6AdditiveManufacturingDockWidget::tabWidget
        (C++ member), 21
                                                       (C++ member), 15
Ui_AdditiveManufacturingDockWidget::pushButtonUilZAdditiveManufacturingDockWidget::toolBox
                                                       (C++ member), 19
        (C++ member), 16
Ui_AdditiveManufacturingDockWidget::pushButtorUil&AdditiveManufacturingDockWidget::verticalLayout
       (C++ member), 16
                                                       (C++ member), 15
Ui_AdditiveManufacturingDockWidget::pushButtorUil9AdditiveManufacturingDockWidget::verticalLayout_2
        (C++ member), 16
                                                       (C++ member), 19
Ui_AdditiveManufacturingDockWidget::pushButtonU之_AdditiveManufacturingDockWidget::verticalLayout_3
       (C++ member), 20
                                                       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorU比MdditiveManufacturingDockWidget::verticalLayout_4
        (C++ member), 17
                                                       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorUP_1AdditiveManufacturingDockWidget::verticalLayout_5
       (C++ member), 17
                                                       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorU比2AdditiveManufacturingDockWidget::verticalLayout_6
        (C++ member), 18
                                                       (C++ member), 21
Ui_AdditiveManufacturingDockWidget::pushButtorUt23AdditiveManufacturingDockWidget::verticalLayout_7
       (C++ member), 18
                                                       (C++ member), 15
Ui_AdditiveManufacturingDockWidget::pushButtorUt24AdditiveManufacturingDockWidget::verticalLayout_8
        (C++ member), 17
                                                       (C++ member), 18
Ui_AdditiveManufacturingDockWidget::pushButtonU比5AdditiveManufacturingDockWidget::verticalSpacer
        (C++ member), 17
                                                       (C++ member), 19
Ui_AdditiveManufacturingDockWidget::pushButtorU比6AdditiveManufacturingDockWidget::verticalSpacer_2
        (C++ member), 19
                                                       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtonU比7AdditiveManufacturingDockWidget::verticalSpacer_3
       (C++ member), 19
                                                       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorU比&AdditiveManufacturingDockWidget::verticalSpacer_4
        (C++ member), 19
                                                       (C++ member), 21
Ui_AdditiveManufacturingDockWidget::pushButtorUB_AdditiveManufacturingDockWidget::verticalSpacer_5
        (C++ member), 19
                                                       (C++ member), 21
Ui_AdditiveManufacturingDockWidget::pushButtorUi_AdditiveManufacturingDockWidget::verticalSpacer_6
        (C++ member), 15
                                                       (C++ member), 21
Ui_AdditiveManufacturingDockWidget::pushButtorUb_AdditiveManufacturingDockWidget::verticalSpacer_8
                                                       (C++ member), 17
       (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorU6_AdditiveManufacturingDockWidget::verticalSpacer_9
       (C++ member), 21
                                                       (C++ member), 19
Ui_AdditiveManufacturingDockWidget::pushButtonUiZ_CADDockWidget(C++ class), 22
        (C++ member), 20
                                               Ui_CADDockWidget::actionCone (C++ member), 22
Ui_AdditiveManufacturingDockWidget::pushButtonLB_CADDockWidget::actionCube(C++ member), 22
                                               Ui_CADDockWidget::actionCut(C++ member), 22
        (C++ member), 20
Ui_AdditiveManufacturingDockWidget::pushButtorUb_CADDockWidget::actionCylinder (C++ mem-
        (C++ member), 20
                                                       ber), 22
Ui_AdditiveManufacturingDockWidget::retranslatdeUjCADDockWidget::actionExtrude(C++ member),
       (C++ function), 15
                                                       22
Ui_AdditiveManufacturingDockWidget::setupUi
                                               Ui_CADDockWidget::actionLine (C++ member), 22
                                               Ui_CADDockWidget::actionMirror (C++ member),
        (C++ function), 15
Ui_AdditiveManufacturingDockWidget::spinBox
       (C++ member), 19
                                               Ui_CADDockWidget::actionPart1(C++ member), 23
Ui_AdditiveManufacturingDockWidget::tab
                                               Ui_CADDockWidget::actionPart2(C++ member), 23
        (C++ member), 15
                                               Ui_CADDockWidget::actionPoint(C++ member), 22
Ui_AdditiveManufacturingDockWidget::tab_2
                                               Ui_CADDockWidget::actionSection(C++ member),
        (C++ member), 17
Ui_AdditiveManufacturingDockWidget::tableWidgeti_CADDockWidget::actionSelectDomain
                                                                                        (C++
        (C++ member), 18
                                                       member), 22
```

```
Ui_CADDockWidget::actionSelectFace (C++ mem- Ui_CADDockWidget::label_6 (C++ member), 25
                                               Ui_CADDockWidget::label_7 (C++ member), 24
       ber), 22
Ui_CADDockWidget::actionSphere (C++ member),
                                               Ui_CADDockWidget::label_8 (C++ member), 24
                                               Ui_CADDockWidget::label_9 (C++ member), 25
Ui_CADDockWidget::actionSquare (C++ member),
                                               Ui_CADDockWidget::pushButton(C++ member), 23
                                               Ui_CADDockWidget::pushButton_0 (C++ member),
Ui\_CADDockWidget::actionSweep(C++member), 22
Ui_CADDockWidget::actionTorus(C++ member), 22
                                               Ui_CADDockWidget::pushButton_10 (C++ member),
Ui_CADDockWidget::actionUnion(C++ member), 22
Ui_CADDockWidget::comboBox (C++ member), 25
                                               Ui_CADDockWidget::pushButton_11 (C++ member),
Ui_CADDockWidget::comboBox_2 (C++ member), 24
Ui_CADDockWidget::comboBox_3 (C++ member), 25
                                               Ui_CADDockWidget::pushButton_13 (C++ member),
Ui_CADDockWidget::comboBox_4 (C++ member), 25
Ui_CADDockWidget::doubleSpinBox (C++ member),
                                               Ui_CADDockWidget::pushButton_2 (C++ member),
Ui_CADDockWidget::doubleSpinBox_2 (C++ mem-
                                               Ui_CADDockWidget::pushButton_3 (C++ member),
                                               Ui_CADDockWidget::pushButton_33 (C++ member),
Ui_CADDockWidget::doubleSpinBox_3 (C++ mem-
       ber), 25
                                               Ui_CADDockWidget::pushButton_36 (C++ member),
Ui_CADDockWidget::doubleSpinBox_4 (C++ mem-
       ber), 24
Ui_CADDockWidget::doubleSpinBox_5 (C++ mem-
                                               Ui_CADDockWidget::pushButton_4 (C++ member),
        ber), 24
Ui_CADDockWidget::doubleSpinBox_6 (C++ mem-
                                               Ui_CADDockWidget::pushButton_5 (C++ member),
       ber), 24
                                                       23
Ui_CADDockWidget::doubleSpinBox_7 (C++ mem-
                                               Ui_CADDockWidget::pushButton_6 (C++ member),
        ber), 25
Ui_CADDockWidget::doubleSpinBox_8 (C++ mem-
                                               Ui_CADDockWidget::pushButton_7 (C++ member),
       ber), 25
Ui_CADDockWidget::doubleSpinBox_9 (C++ mem-
                                               Ui_CADDockWidget::pushButton_8 (C++ member),
        ber), 26
Ui_CADDockWidget::gridLayout (C++ member), 23
                                               Ui_CADDockWidget::pushButton_9 (C++ member),
Ui_CADDockWidget::gridLayout_11(C++ member),
                                               Ui_CADDockWidget::retranslateUi(C++ function),
Ui_CADDockWidget::gridLayout_2 (C++ member),
                                               Ui_CADDockWidget::setupUi (C++ function), 22
Ui_CADDockWidget::gridLayout_3 (C++ member),
                                               Ui_CADDockWidget::tab (C++ member), 23
                                               Ui_CADDockWidget::tab_2 (C++ member), 25
Ui_CADDockWidget::gridLayout_4 (C++ member),
                                               Ui_CADDockWidget::tab_3 (C++ member), 24
                                               Ui_CADDockWidget::tabWidget(C++ member), 23
Ui_CADDockWidget::gridLayout_5 (C++ member),
                                               Ui_CADDockWidget::verticalLayout (C++ mem-
                                                       ber), 24
Ui_CADDockWidget::horizontalLayout (C++ mem-
                                               Ui_CADDockWidget::verticalLayout_2 (C++ mem-
       ber), 25
                                                       ber), 23
Ui_CADDockWidget::horizontalSpacer (C++ mem-
                                               Ui_CADDockWidget::verticalLayout_3 (C++ mem-
        ber), 23
                                                       ber), 24
Ui_CADDockWidget::horizontalSpacer_2
                                        (C++ Ui_CADDockWidget::verticalLayout_4 (C++ mem-
       member), 23
                                                       ber), 24
Ui_CADDockWidget::label (C++ member), 24
                                               Ui_CADDockWidget::verticalLayout_5 (C++ mem-
Ui_CADDockWidget::label_10 (C++ member), 25
                                                       ber), 23
Ui_CADDockWidget::label_2 (C++ member), 24
                                               Ui_CADDockWidget::verticalLayout_6 (C++ mem-
Ui_CADDockWidget::label_3 (C++ member), 24
                                                       ber), 25
Ui_CADDockWidget::label_4 (C++ member), 24
                                               Ui_CADDockWidget::verticalSpacer (C++ mem-
Ui_CADDockWidget::label_5 (C++ member), 25
                                                       ber), 24
```

(C++

(C++

(C++

(C++

(C++

(C++

(C++

(C++

Ui\_CADDockWidget::verticalSpacer\_2 (C++ mem- Ui\_MachiningDockWidget::horizontalLayout\_4 (C++ member), 29ber), 26 Ui\_MachiningDockWidget::horizontalLayout\_5 Ui\_CADDockWidget::verticalSpacer\_3 (C++ member), 24 (C++ member), 27 Ui\_CADDockWidget::verticalSpacer\_4 (C++ mem-Ui\_MachiningDockWidget::horizontalLayout\_6 ber), 23 (C++ member), 29Ui\_CADDockWidget::verticalSpacer\_5 (C++ mem-Ui\_MachiningDockWidget::horizontalLayout\_7 ber), 25 (C++ member), 29Ui\_CADDockWidget::verticalSpacer\_6 (C++ mem-Ui\_MachiningDockWidget::horizontalLayout\_8 (C++ member), 28ber), 24 Ui\_FEMDockWidget (C++ class), 26 Ui\_MachiningDockWidget::horizontalLayout\_9 Ui\_FEMDockWidget::comboBox (C++ member), 26 (C++ member), 28Ui\_FEMDockWidget::comboBox\_2 (C++ member), 27 Ui\_MachiningDockWidget::horizontalSpacer Ui\_FEMDockWidget::comboBox\_3 (C++ member), 27 (C++ member), 29Ui\_FEMDockWidget::comboBox\_4 (C++ member), 26 Ui\_MachiningDockWidget::horizontalSpacer\_2 Ui\_FEMDockWidget::gridLayout (C++ member), 27 (C++ member), 29Ui\_FEMDockWidget::gridLayout\_2 (C++ member), Ui\_MachiningDockWidget::horizontalSpacer\_3 (C++ member), 28Ui\_FEMDockWidget::label (C++ member), 26 Ui\_MachiningDockWidget::horizontalSpacer\_4 Ui\_FEMDockWidget::label\_4 (C++ member), 26 (C++ member), 28Ui\_FEMDockWidget::lineEdit (C++ member), 27 Ui\_MachiningDockWidget::horizontalSpacer\_5 Ui\_FEMDockWidget::pushButton(C++ member), 26 (C++ member), 29Ui\_MachiningDockWidget::horizontalSpacer\_6 Ui\_FEMDockWidget::pushButton\_2 (C++ member), (C++ member), 29Ui\_FEMDockWidget::retranslateUi (C++ function), Ui\_MachiningDockWidget::label(C++ member), 28 Ui\_MachiningDockWidget::label\_2 (C++ member), Ui\_FEMDockWidget::setupUi (C++ function), 26 Ui\_FEMDockWidget::verticalLayout (C++ mem-Ui\_MachiningDockWidget::label\_3 (C++ member), ber), 26 Ui\_FEMDockWidget::verticalSpacer (C++ mem-Ui\_MachiningDockWidget::label\_4 (C++ member), ber), 27 Ui\_MachiningDockWidget (C++ class), 27 Ui\_MachiningDockWidget::label\_5 (C++ member), Ui\_MachiningDockWidget::comboBox (C++ mem- ${\tt Ui\_MachiningDockWidget::lineEdit}$  (C++ member), 28 Ui\_MachiningDockWidget::comboBox\_2 (C++ member), 28 Ui\_MachiningDockWidget::lineEdit\_2 (C++ member), 28 Ui\_MachiningDockWidget::comboBox\_3 (C++ member), 28 ber), 28 Ui\_MachiningDockWidget::progressBar Ui\_MachiningDockWidget::comboBox\_4 (C++ memmember), 29 ber), 29 Ui\_MachiningDockWidget::pushButton(C++ mem-Ui\_MachiningDockWidget::comboBox\_5 (C++ member), 28 Ui\_MachiningDockWidget::pushButton\_10 Ui\_MachiningDockWidget::comboBox\_6 (C++ memmember), 28 Ui\_MachiningDockWidget::pushButton\_11 ber), 29  ${\tt Ui\_MachiningDockWidget::doubleSpinBox} \ \ (C++$ member), 28member), 29Ui\_MachiningDockWidget::pushButton\_12 Ui\_MachiningDockWidget::gridLayout (C++ memmember), 29 Ui\_MachiningDockWidget::pushButton\_2 Ui\_MachiningDockWidget::horizontalLayout member), 28Ui\_MachiningDockWidget::pushButton\_3 (C++ member), 29Ui\_MachiningDockWidget::horizontalLayout\_2 member), 28Ui\_MachiningDockWidget::pushButton\_4 (C++ member), 28

Ui\_MachiningDockWidget::horizontalLayout\_3

(C++ member), 28

Index 49

member), 29

Ui\_MachiningDockWidget::pushButton\_5

<pre>member), 29 Ui_MachiningDockWidget::pushButton_7 (C++</pre>	<pre>Ui_MainWindow::dockWidget(C++ member), 32 Ui_MainWindow::dockWidgetContents (C++ mem-</pre>	
member), 28	ber), 32	
<pre>Ui_MachiningDockWidget::pushButton_8 (C++</pre>	<pre>Ui_MainWindow::mdiArea(C++ member), 31 Ui_MainWindow::menuAbout(C++ member), 32</pre>	
<pre>Ui_MachiningDockWidget::pushButton_9 (C++)</pre>	Ui_MainWindow::menuBar(C++ member), 31	
member), 29	<pre>Ui_MainWindow::menuFENGSim(C++ member), 32</pre>	
$ ext{Ui\_MachiningDockWidget::retranslateUi}  (C++$	<pre>Ui_MainWindow::menuFile(C++ member), 31</pre>	
function), 27	<pre>Ui_MainWindow::menuView(C++ member), 32</pre>	
<pre>Ui_MachiningDockWidget::setupUi(C++ function),</pre>	Ui_MainWindow::pushButton(C++ member), 32	
Ui_MachiningDockWidget::spinBox(C++ member),	Ui_MainWindow::retranslateUi (C++ function), 30 Ui_MainWindow::setupUi (C++ function), 30	
or_nachiningbockwrugetspinbox(C++ member),	Ui_MainWindow::statusBar(C++ member), 32	
Ui_MachiningDockWidget::tab(C++ member),27	Ui_MainWindow::toolBarFENGSim(C++ member), 32	
Ui_MachiningDockWidget::tab_2(C++ member), 30	Ui_MainWindow::verticalLayout(C++ member), 31	
<pre>Ui_MachiningDockWidget::tabWidget (C++ mem-</pre>	<pre>Ui_MainWindow::verticalLayout_2 (C++ member);</pre>	
ber), 27	32	
extstyle  ext	<pre>Ui_MeasureDockWidget (C++ class), 32</pre>	
member), 27	<pre>Ui_MeasureDockWidget::actionCircularity</pre>	
<pre>Ui_MachiningDockWidget::verticalLayout_2</pre>	(C++ member), 33	
(C++ member), 27	Ui_MeasureDockWidget::actionCylindricity	
<pre>Ui_MachiningDockWidget::verticalSpacer (C++</pre>	(C++ member), 33	
member), 30	<pre>Ui_MeasureDockWidget::actionFlatness (C++</pre>	
<pre>Ui_MainWindow(C++ class), 30 Ui_MainWindow::actionAbout(C++ member), 30</pre>	<pre>member), 33 Ui_MeasureDockWidget::actionLine (C++ mem-</pre>	
Ui_MainWindow::actionAdditiveManufacturing	ber), 33	
(C++ member), 31	Ui_MeasureDockWidget::actionLineProfile	
<pre>Ui_MainWindow::actionAxo (C++ member), 31</pre>	(C++ member), 33	
Ui_MainWindow::actionBack(C++ member), 31	Ui_MeasureDockWidget::actionStraightness	
<pre>Ui_MainWindow::actionBottom(C++ member), 31</pre>	(C++ member), 33	
<pre>Ui_MainWindow::actionCAD (C++ member), 30</pre>	$\label{limits} \mbox{Ui\_MeasureDockWidget::actionSurface} \qquad (C++$	
$Ui\_MainWindow::actionFEM(C++ member), 30$	member), 33	
<pre>Ui_MainWindow::actionFit(C++ member), 31</pre>	<pre>Ui_MeasureDockWidget::actionSurfaceProfile</pre>	
Ui_MainWindow::actionFront(C++ member), 31	(C++ member), 33	
Ui_MainWindow::actionLeft(C++ member), 31	<pre>Ui_MeasureDockWidget::doubleSpinBox (C++</pre>	
<pre>Ui_MainWindow::actionMachining (C++ member), 31</pre>	<pre>member), 34 Ui_MeasureDockWidget::doubleSpinBox_2 (C++</pre>	
<pre>Ui_MainWindow::actionMeasure(C++ member), 31</pre>	member), 34	
Ui_MainWindow::actionMesh(C++ member), 30	<pre>Ui_MeasureDockWidget::doubleSpinBox_3 (C++</pre>	
<pre>Ui_MainWindow::actionNew(C++ member), 31</pre>	member), 35	
<pre>Ui_MainWindow::actionOpen(C++ member), 30</pre>	<pre>Ui_MeasureDockWidget::horizontalLayout (C++</pre>	
<pre>Ui_MainWindow::actionRight(C++ member), 31</pre>	member), 35	
<pre>Ui_MainWindow::actionSave(C++ member), 30</pre>	<pre>Ui_MeasureDockWidget::horizontalLayout_10</pre>	
<pre>Ui_MainWindow::actionSPC(C++ member), 30</pre>	(C++ member), 34	
Ui_MainWindow::actionSystem(C++ member), 31	<pre>Ui_MeasureDockWidget::horizontalLayout_11</pre>	
Ui_MainWindow::actionTop(C++ member), 31	(C++ member), 34	
<pre>Ui_MainWindow::actionTransport (C++ member), 31</pre>	<pre>Ui_MeasureDockWidget::horizontalLayout_12</pre>	
Ui_MainWindow::actionViewRotationH(C++ mem-	Ui_MeasureDockWidget::horizontalLayout_3	
ber), 31	(C++ member), 33	
<pre>Ui_MainWindow::actionViewRotationV (C++ mem-</pre>	<pre>Ui_MeasureDockWidget::horizontalLayout_4</pre>	
ber), 31	(C++ member), 33	
<pre>Ui_MainWindow::actionVisual(C++ member), 30</pre>	<pre>Ui_MeasureDockWidget::horizontalLayout_7</pre>	
<pre>Ui_MainWindow::centralWidget(C++ member), 31</pre>	(C++ member), 33	

Ui\_MeasureDockWidget::horizontalLayout\_8 ber), 34 Ui\_MeasureDockWidget::pushButton\_8 (C++ mem-(C++ member), 35Ui\_MeasureDockWidget::horizontalScrollBar ber), 34 (C++ member), 34 Ui\_MeasureDockWidget::pushButton\_9 (C++ mem-Ui\_MeasureDockWidget::horizontalSpacer (C++ ber), 34 member), 34 Ui\_MeasureDockWidget::retranslateUi (C++Ui\_MeasureDockWidget::horizontalSpacer\_2 function), 33 (C++ member), 35Ui\_MeasureDockWidget::setupUi(C++function), 33 Ui\_MeasureDockWidget::horizontalSpacer\_3 Ui\_MeasureDockWidget::verticalLayout (C++(C++ member), 33 member), 33Ui\_MeasureDockWidget::horizontalSpacer\_4  ${\tt Ui\_MeasureDockWidget::verticalLayout\_2}$  (C++ member), 34 (C++ member), 34Ui\_MeasureDockWidget::horizontalSpacer\_5 Ui\_MeasureDockWidget::verticalSpacer (C++(C++ member), 34 member), 35Ui\_MeshDockWidget (C++ class), 36 Ui\_MeasureDockWidget::horizontalSpacer\_6 (C++ member), 35Ui\_MeshDockWidget::doubleSpinBox (C++ mem-Ui\_MeasureDockWidget::horizontalSpacer\_8 ber), 36 Ui\_MeshDockWidget::gridLayout\_2 (C++ member), (C++ member), 33 Ui\_MeasureDockWidget::horizontalSpacer\_9 Ui\_MeshDockWidget::label(C++ member), 36 (C++ member), 34Ui\_MeasureDockWidget::label(C++ member), 33 Ui\_MeshDockWidget::pushButton(C++ member), 36 Ui\_MeasureDockWidget::label\_11 (C++ member), Ui\_MeshDockWidget::retranslateUi (C++ function), 36 Ui\_MeasureDockWidget::label\_2(C++ member), 35 Ui\_MeshDockWidget::setupUi (C++ function), 36 Ui\_MeasureDockWidget::label\_4(C++ member), 33 Ui\_MeshDockWidget::tab(C++ member), 36 Ui\_MeasureDockWidget::label\_5(C++ member), 34 Ui\_MeshDockWidget::tabWidget(C++ member), 36 Ui\_MeasureDockWidget::label\_6(C++ member), 34 Ui\_MeshDockWidget::verticalLayout (C++ mem-Ui\_MeasureDockWidget::label\_8(C++ member), 34 ber), 36 Ui\_MeasureDockWidget::label\_9(C++ member), 34 Ui\_MeshDockWidget::verticalLayout\_3 (C++Ui\_MeasureDockWidget::progressBar (C++ memmember), 36 ber), 35 Ui\_MeshDockWidget::verticalSpacer (C++ mem-Ui\_MeasureDockWidget::progressBar\_2 (C++ber), 36 Ui\_SPCDockWidget (C++ class), 37 member), 35Ui\_MeasureDockWidget::pushButton (C++ mem-Ui\_SPCDockWidget::horizontalLayout (C++ member), 33 ber), 37 (C++ Ui\_SPCDockWidget::retranslateUi(C++ function), Ui\_MeasureDockWidget::pushButton\_10 member), 35 37 Ui\_MeasureDockWidget::pushButton\_11 (C++ Ui\_SPCDockWidget::setupUi(C++ function), 37 Ui\_SPCDockWidget::treeWidget(C++ member), 37 member), 35Ui\_MeasureDockWidget::pushButton\_13 (C++ Ui\_TransportDockWidget (C++ class), 37 member), 35Ui\_TransportDockWidget::comboBox (C++ mem-Ui\_MeasureDockWidget::pushButton\_19 (C++ber), 40 member), 35 $Ui\_TransportDockWidget::doubleSpinBox$  (C++ Ui\_MeasureDockWidget::pushButton\_2 (C++ memmember), 38Ui\_TransportDockWidget::doubleSpinBox\_2 ber), 34 Ui\_MeasureDockWidget::pushButton\_3 (C++ mem-(C++ member), 39Ui\_TransportDockWidget::doubleSpinBox\_3 ber), 33 Ui\_MeasureDockWidget::pushButton\_4 (C++ mem-(C++ member), 39 Ui\_TransportDockWidget::horizontalLayout ber), 34 Ui\_MeasureDockWidget::pushButton\_5 (C++ mem-(C++ member), 39 ber), 34 Ui\_TransportDockWidget::horizontalLayout\_10 Ui\_MeasureDockWidget::pushButton\_6 (C++ mem-(C++ member), 38ber), 33 Ui\_TransportDockWidget::horizontalLayout\_11 Ui\_MeasureDockWidget::pushButton\_7 (C++ mem-(C++ member), 38

Ui_TransportDockWidget::horizontalLayo	ut_12	member), 39		
(C++ member), 39		<pre>Ui_TransportDockWidget::pushButton_8</pre>	(C++	
Ui_TransportDockWidget::horizontalLayo	ut_2	member), 39		
(C++ member), 38		<pre>Ui_TransportDockWidget::pushButton_9</pre>	(C++	
Ui_TransportDockWidget::horizontalLayo	ut_3	member), 39		
(C++ member), 39		<pre>Ui_TransportDockWidget::retranslateUi</pre>	(C++	
Ui_TransportDockWidget::horizontalLayo	ut_4	function), 37	· ·	
(C++ member), 39		<pre>Ui_TransportDockWidget::setupUi(C++ fur</pre>	iction),	
Ui_TransportDockWidget::horizontalLayo	ut 5	37	,,	
(C++ member), 39		<pre>Ui_TransportDockWidget::tab (C++ member</pre>	). 38	
Ui_TransportDockWidget::horizontalLayo	ut 6	<pre>Ui_TransportDockWidget::tab_2(C++ memb</pre>		
(C++ member), 39		<pre>Ui_TransportDockWidget::tab_3(C++ memb</pre>		
Ui_TransportDockWidget::horizontalLayo	ut 7	Ui_TransportDockWidget::tableWidget	(C++	
(C++ member), 39		member), 38	(011	
Ui_TransportDockWidget::horizontalLayo	11† 9	<pre>Ui_TransportDockWidget::tableWidget_2</pre>	(C++	
(C++ member), 38	u c_5	member), 40	(011	
Ui_TransportDockWidget::horizontalSpace	er	<pre>Ui_TransportDockWidget::tabWidget (C++</pre>	mem-	
(C++ member), 38	<b>C1</b>	ber), 38	mem	
Ui_TransportDockWidget::horizontalSpace	er 3	<pre>Ui_TransportDockWidget::verticalLayout</pre>	(C++	
(C++ member), 40	CI_5	member), 38	(011	
$(C++member)$ , +0 Ui_TransportDockWidget::label( $C++member)$	her) 38	<pre>Ui_TransportDockWidget::verticalLayout_</pre>	2	
Ui_TransportDockWidget::label_2 (C++ member),		(C++ member), 38		
38		<pre>Ui_TransportDockWidget::verticalLayout_3</pre>		
$\tt Ui\_TransportDockWidget::label\_3$ ( $C++$ $max_{t}$	ombor)	(C++ member), 38	_5	
39		Ui_TransportDockWidget::verticalLayout_	1	
		(C++ member), 38	_4	
<pre>Ui_TransportDockWidget::label_4 (C++ member), 39</pre>		Ui_TransportDockWidget::verticalLayout_	5	
Ui_TransportDockWidget::label_5(C++ member),		(C++ member), 40	_3	
39	inoci),	<pre>Ui_TransportDockWidget::verticalSpacer</pre>	(C++	
Ui_TransportDockWidget::label_6(C++ ma	omhor)	member), 38	(011	
39	inoci),	<pre>Ui_TransportDockWidget::verticalSpacer_</pre>	2	
Ui_TransportDockWidget::label_7(C++ ma	ember)	(C++ member), 40		
39	inoci),	<pre>Ui_TransportDockWidget::verticalSpacer_</pre>	3	
Ui_TransportDockWidget::label_8( <i>C</i> ++ <i>ma</i>	omhor)	(C++ member), 40	_5	
39	inoci),	Ui_VTKDockWidget (C++ class), 40		
$Ui\_TransportDockWidget::label\_9$ ( $C++$ $me$	ember)	Ui_VTKDockWidget::gridLayout (C++ membe	er) 41	
39	inoci),	Ui_VTKDockWidget::horizontalLayout (C++		
Ui_TransportDockWidget::pushButton ( $C+$ -	+ mem-	ber), 41	mem	
ber), 38	, mem	<pre>Ui_VTKDockWidget::label (C++ member), 41</pre>		
Ui_TransportDockWidget::pushButton_10	(C++	Ui_VTKDockWidget::label_2 (C++ member),	41	
member), 38	(011	<pre>Ui_VTKDockWidget::lineEdit(C++ member)</pre>		
Ui_TransportDockWidget::pushButton_11	(C++	Ui_VTKDockWidget::pushButton(C++ member)		
member), 39	(011	Ui_VTKDockWidget::pushButton_2 (C++ me		
Ui_TransportDockWidget::pushButton_2	(C++	41	moer ),	
member), 38	(011	<pre>Ui_VTKDockWidget::retranslateUi(C++ fur</pre>	action)	
Ui_TransportDockWidget::pushButton_3	(C++	41	,,,	
member), 38	(011	<pre>Ui_VTKDockWidget::setupUi (C++ function),</pre>	41	
Ui_TransportDockWidget::pushButton_4	(C++	Ui_VTKDockWidget::verticalLayout (C++		
member), 40	(011	ber), 41	mem	
Wi_TransportDockWidget::pushButton_5	(C++	Ui_VTKDockWidget::verticalLayout_2 (C++	⊢ mem-	
member), 39	(011	ber), 41	, ment	
Wi_TransportDockWidget::pushButton_6	(C++	Ui_VTKDockWidget::verticalSpacer (C++	mem-	
member), 40	(011	ber), 41		
Ui_TransportDockWidget::pushButton_7	( <i>C</i> ++	00.7, 11		
and of the contrader i hadinactor_/	(~ 1 1			