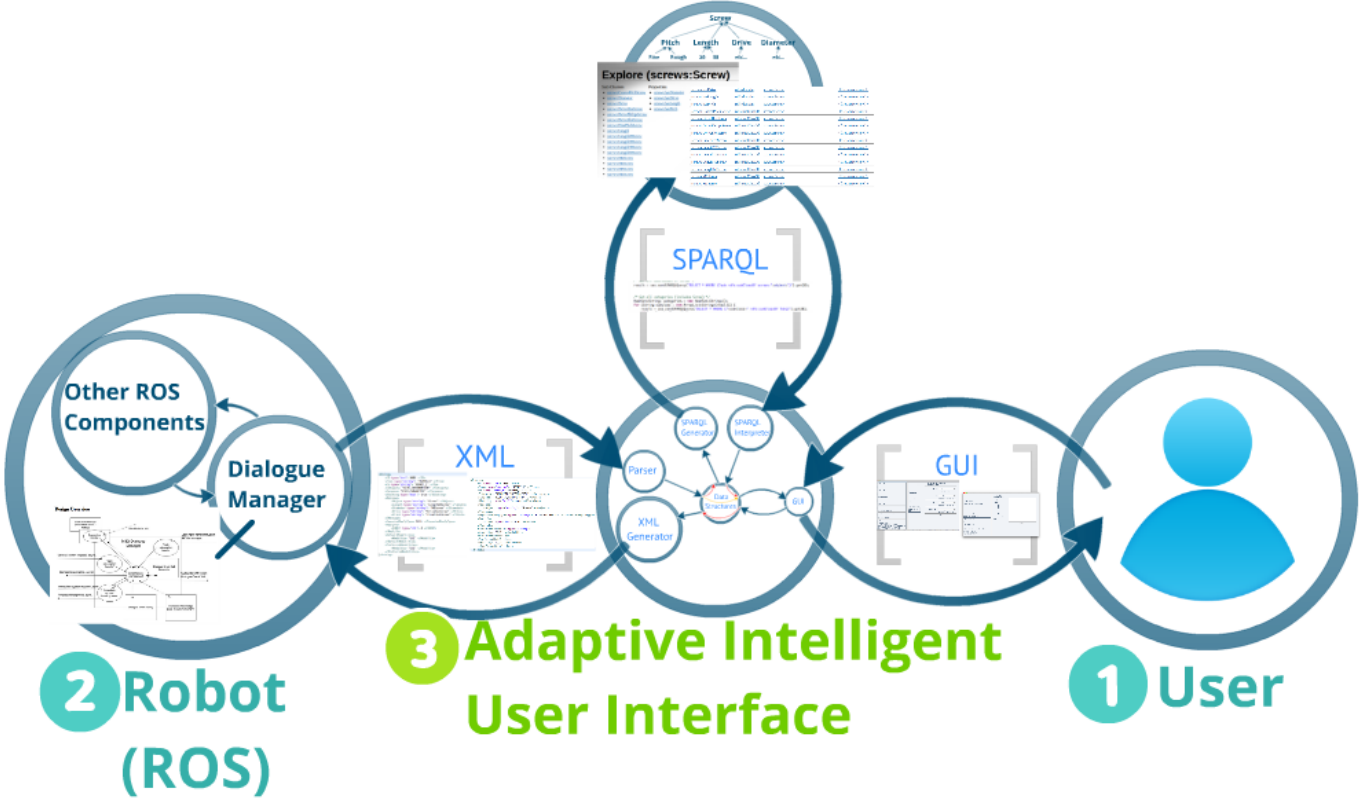
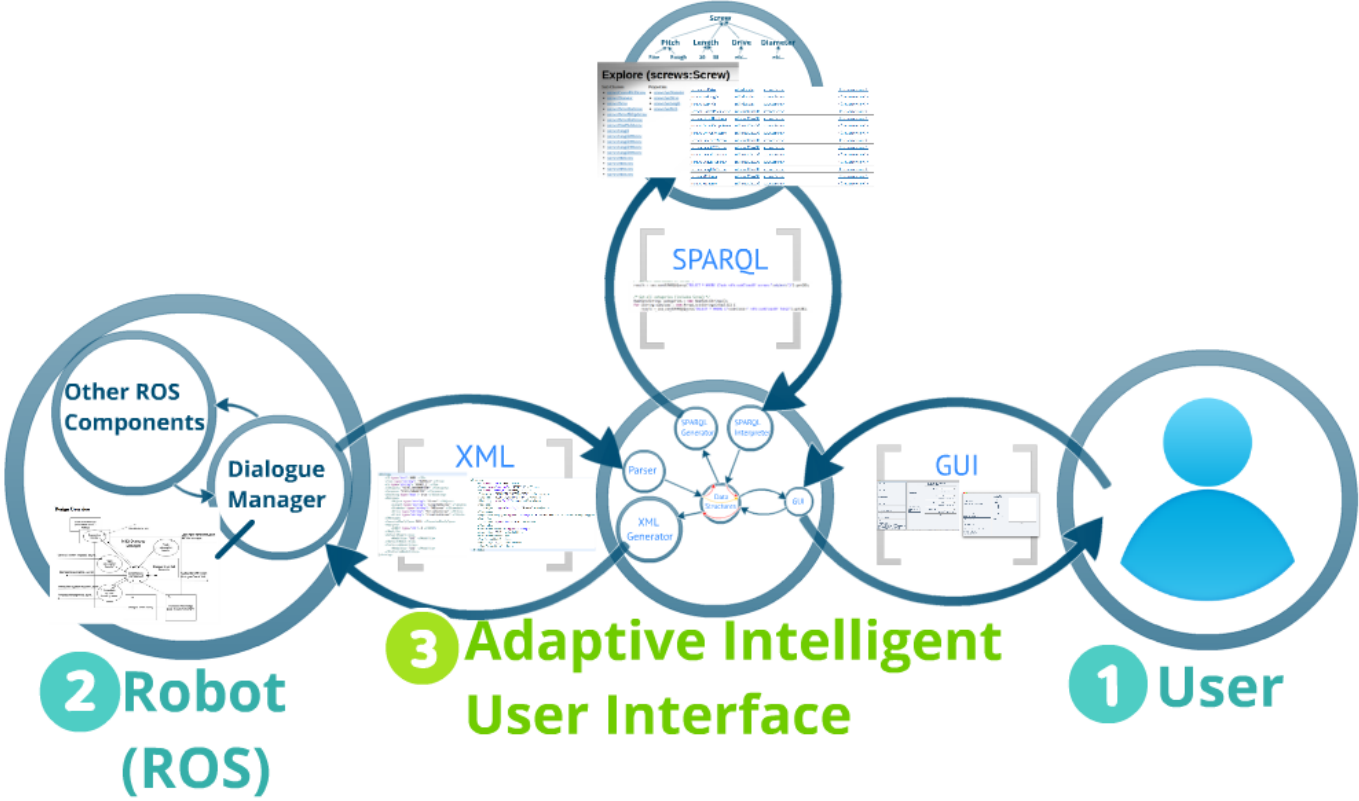


4 Knowledge Database



4 Knowledge Database

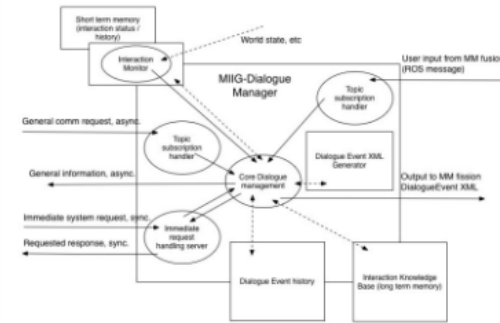


Other ROS Components

Dialogue Manager

XML

Design Overview



```
<dialog id="int" type="int" ID="0003" />
<from type="string" "HUMAN_1" />
<to type="string" "ROBOT_1" />
<category "GIVE_INFORMATION" />
<purpose "GIVE_PARAMETER" />
<blocking type="bool" true />
<message>
  <object type="string" "Screen" />
  <length type="string" "LengthScreen" />
  <diameter type="string" "Diameter" />
  <drive type="string" "DriveScreen" />
  <fish type="string" "FishScreen" />
</message>
<expectReply type="MILL" />
<reply type="int" 2 />
<IDREF type="int" 2 />
</dialog>

<dialog id="int" type="int" ID="0002" />
<from type="string" "HUMAN_1" />
<to type="string" "ROBOT_1" />
<category "REQUEST_INFORMATION" />
<purpose "REQUEST_PARAMETER" />
<blocking type="bool" true />
<message>
  <object type="string" />
</message>
<expectReply type="MILL" />
<reply type="int" 1 />
<IDREF type="int" 1 />
</dialog>
```

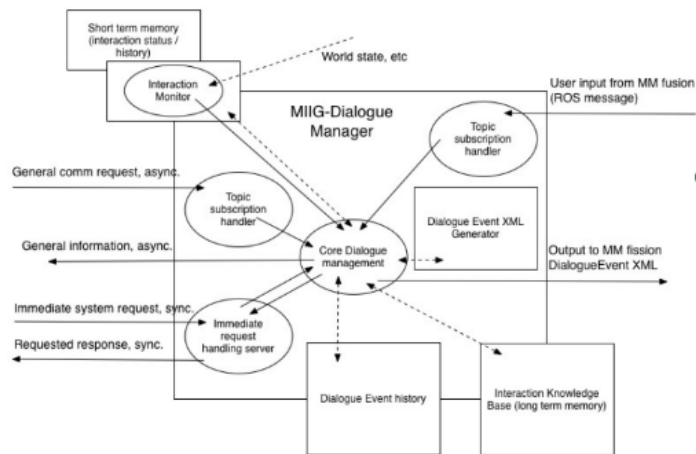
2 Robot (ROS)

3 Action Users

Other ROS Components

Dialogue Manager

Design Overview



```
<Dialog>
  <ID type="int"> 0003 </ID>
  <From type="string"> "HUMAN_1"
  <To type="string"> "ROBOT_1"
  <Category> "GIVE_INFORMATION"
  <Purpose> "GIVE_PARAMETER"
  <Blocking type="bool"> true
  <Message>
    <Object type="string"> "S"
    <Length type="string"> "L"
    <Diameter type="string"> "D"
    <Drive type="string"> "Dr"
    <Pitch type="string"> "Fi"
  </Message>
  <ExpectedReplyType> NULL
  <ReplyTo>
    <IDREF type="int"> 2
  </ReplyTo>
  <DefaultModalities>
    <Modality> "GUI"
  </DefaultModalities>
  <PreferredModalities>
    <Modality> "GUI"
  </PreferredModalities>
</Dialog>
```



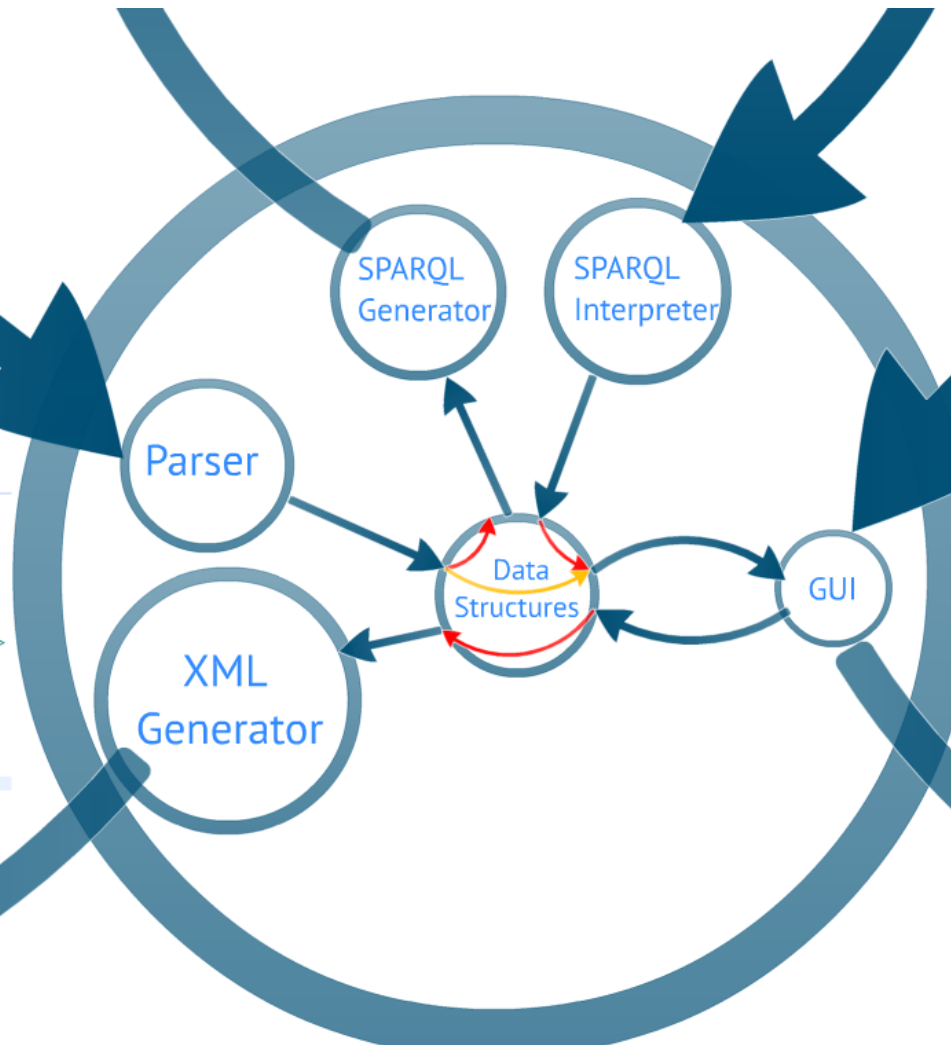
XML

```
<Dialog>
  <ID type="int"> 0003 </ID>
  <From type="string"> "HUMAN_1" </From>
  <To type="string"> "ROBOT_1" </To>
  <Category> "GIVE_INFORMATION" </Category>
  <Purpose> "GIVE_PARAMETER" </Purpose>
  <Blocking type="bool"> true </Blocking>
  <Message>
    <Object type="string"> "Screw" </Object>
    <Length type="string"> "Length20Screw" </Length>
    <Diameter type="string"> "M3Screw" </Diameter>
    <Drive type="string"> "DriveHexScrew" </Drive>
    <Pitch type="string"> "FinePitchScrew" </Pitch>
  </Message>
  <ExpectedReplyType> NULL </ExpectedReplyType>
  <ReplyTo>
    <IDREF type="int"> 2 </IDREF>
  </ReplyTo>
  <DefaultModalities>
    <Modality> "GUI" </Modality>
  </DefaultModalities>
  <PreferredModalities>
    <Modality> "GUI" </Modality>
  </PreferredModalities>
</Dialog>
```

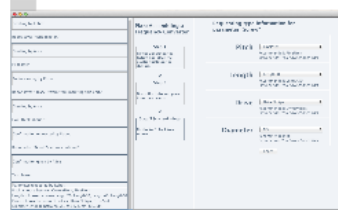
```
<Dialog>
  <ID type="int"> 0002 </ID>
  <From type="string"> "ROBOT_1" </From>
  <To type="string"> "HUMAN_1" </To>
  <Category> "REQUEST_INFORMATION" </Category>
  <Purpose> "REQUEST_PARAMETER" </Purpose>
  <Blocking type="bool"> true </Blocking>
  <Message>
    <Object type="string"> "Screw" </Object>
  </Message>
  <ExpectedReplyType type="String"> "GIVE_PARAMETER" </ExpectedReplyType>
  <ReplyTo>
    <IDREF type="int"> NULL </IDREF>
  </ReplyTo>
  <DefaultModalities type="string">
    <Modality> "GUI" </Modality>
  </DefaultModalities>
  <PreferredModalities>
    <Modality> "GUI" </Modality>
  </PreferredModalities>
</Dialog>
```

XML

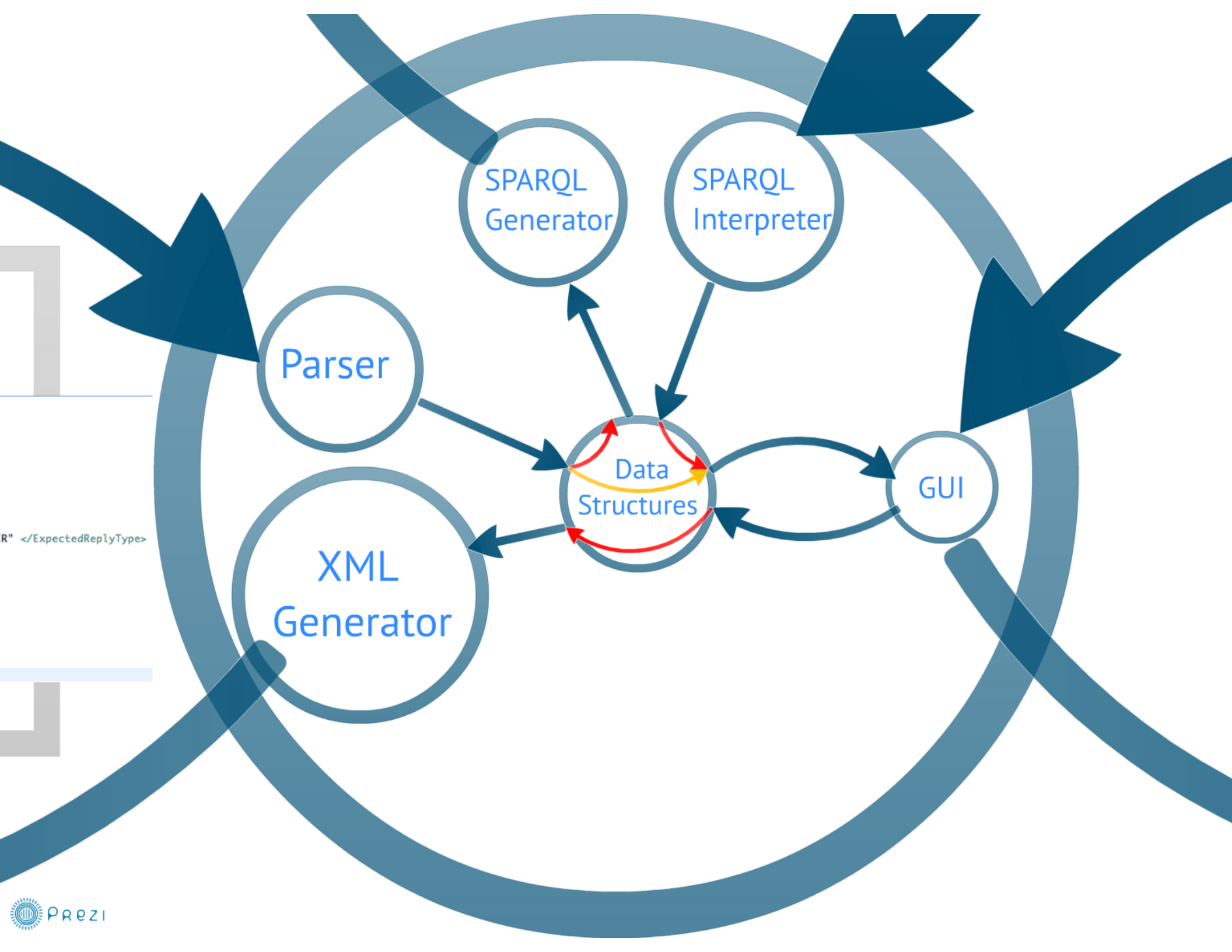
```
<Dialog>  
  <ID type="int"> 0002 </ID>  
  <From type="string"> "ROBOT_1" </From>  
  <To type="string"> "HUMAN_1" </To>  
  <Category> "REQUEST_INFORMATION" </Category>  
  <Purpose> "REQUEST_PARAMETER" </Purpose>  
  <Blocking type="bool"> true </Blocking>  
  <Message>  
    <Object type="string"> "Screw" </Object>  
  </Message>  
  <ExpectedReplyType type="string"> "GIVE_PARAMETER" </ExpectedReplyType>  
  <ReplyTo>  
    <IDREF type="int"> NULL </IDREF>  
  </ReplyTo>  
  <DefaultModalities type="string">  
    <Modality> "GUI" </Modality>  
  </DefaultModalities>  
  <PreferredModalities>  
    <Modality> "GUI" </Modality>  
  </PreferredModalities>  
</Dialog>
```



GUI



Adaptive Intelligence User Interface



R" </ExpectedReplyType>

SPARQL

```
Get all subclasses of screw */
```

```
result = ses.sendSPARQLQuery("SELECT * WHERE {?sub rdfs:subClassOf screws:"+object+"}").get
```

```
Get all categories (includes Screw) */
```

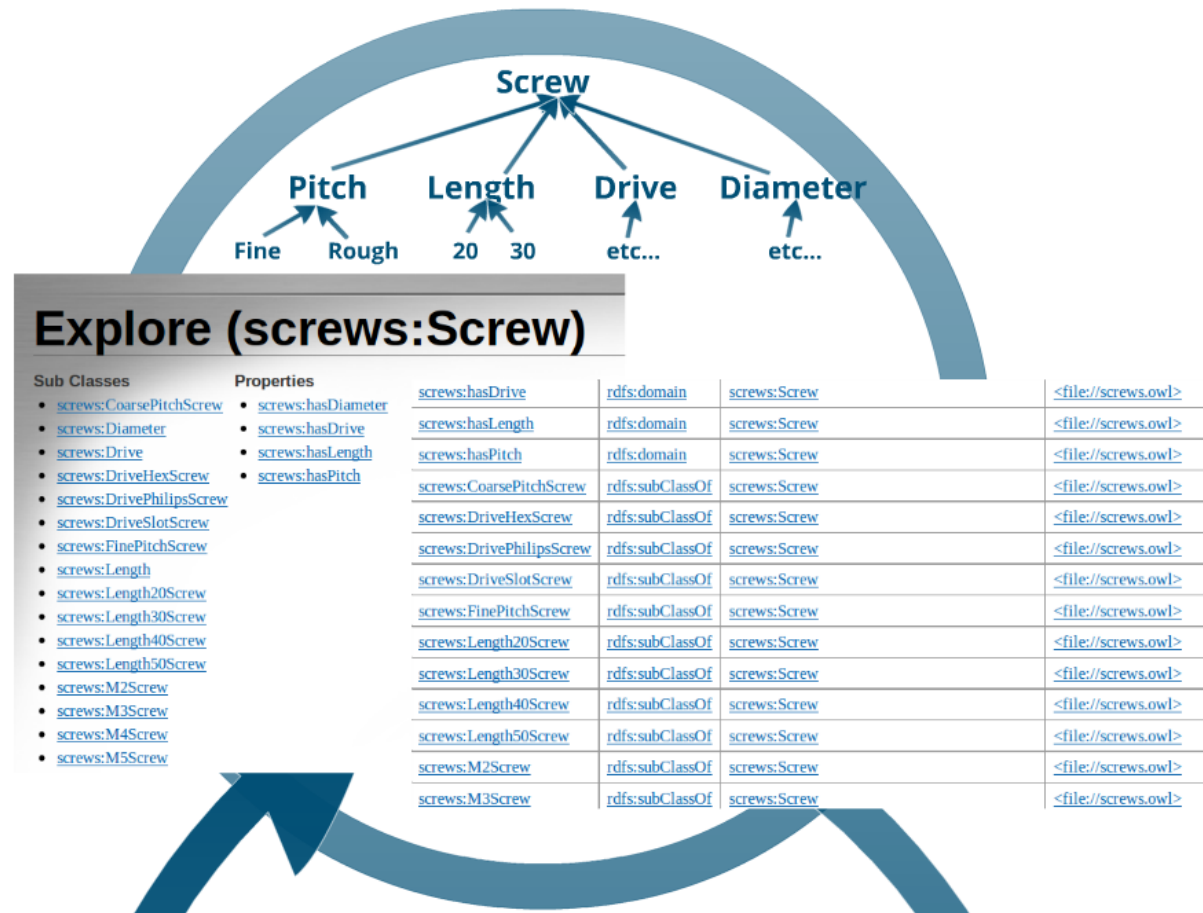
```
HashSet<String> categories = new HashSet<String>();
```

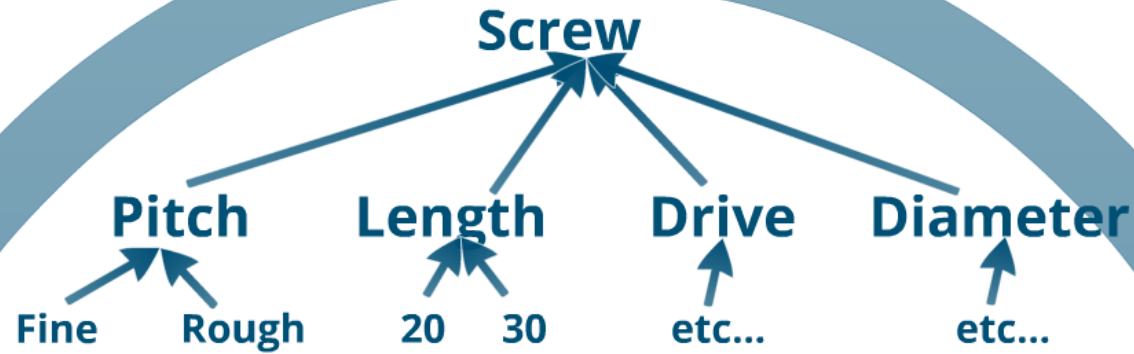
```
(String subclass : new ArrayList<String>(result)) {
```

```
result = ses.sendSPARQLQuery("SELECT * WHERE {"+subclass+" rdfs:subClassOf ?obj}").get
```

4

Knowledge Database





Explore (screws:Screw)

Sub Classes

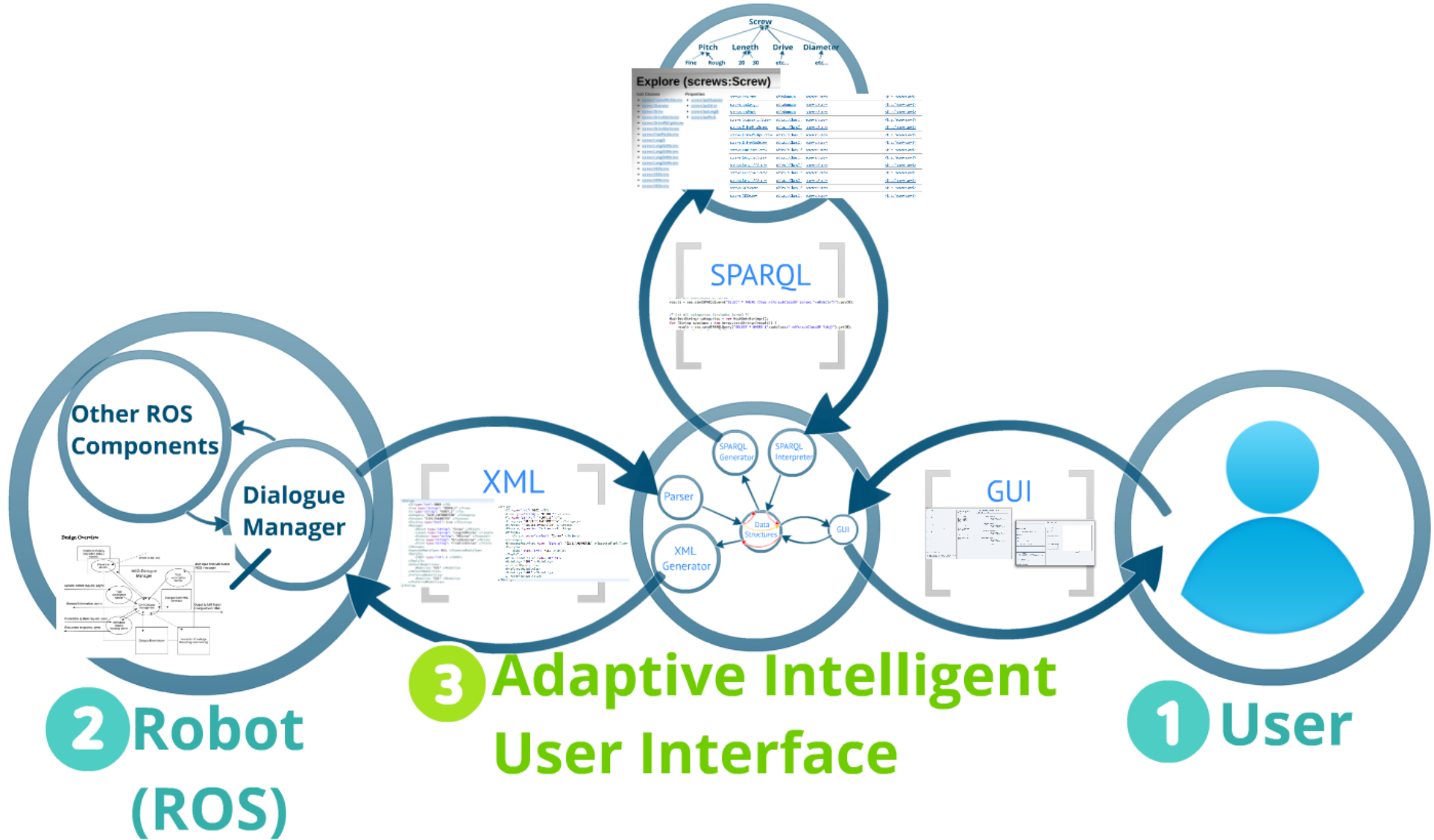
- [screws:CoarsePitchScrew](#)
- [screws:Diameter](#)
- [screws:Drive](#)
- [screws:DriveHexScrew](#)
- [screws:DrivePhilipsScrew](#)
- [screws:DriveSlotScrew](#)
- [screws:FinePitchScrew](#)
- [screws:Length](#)
- [screws:Length20Screw](#)
- [screws:Length30Screw](#)
- [screws:Length40Screw](#)
- [screws:Length50Screw](#)
- [screws:M2Screw](#)
- [screws:M3Screw](#)
- [screws:M4Screw](#)
- [screws:M5Screw](#)

Properties

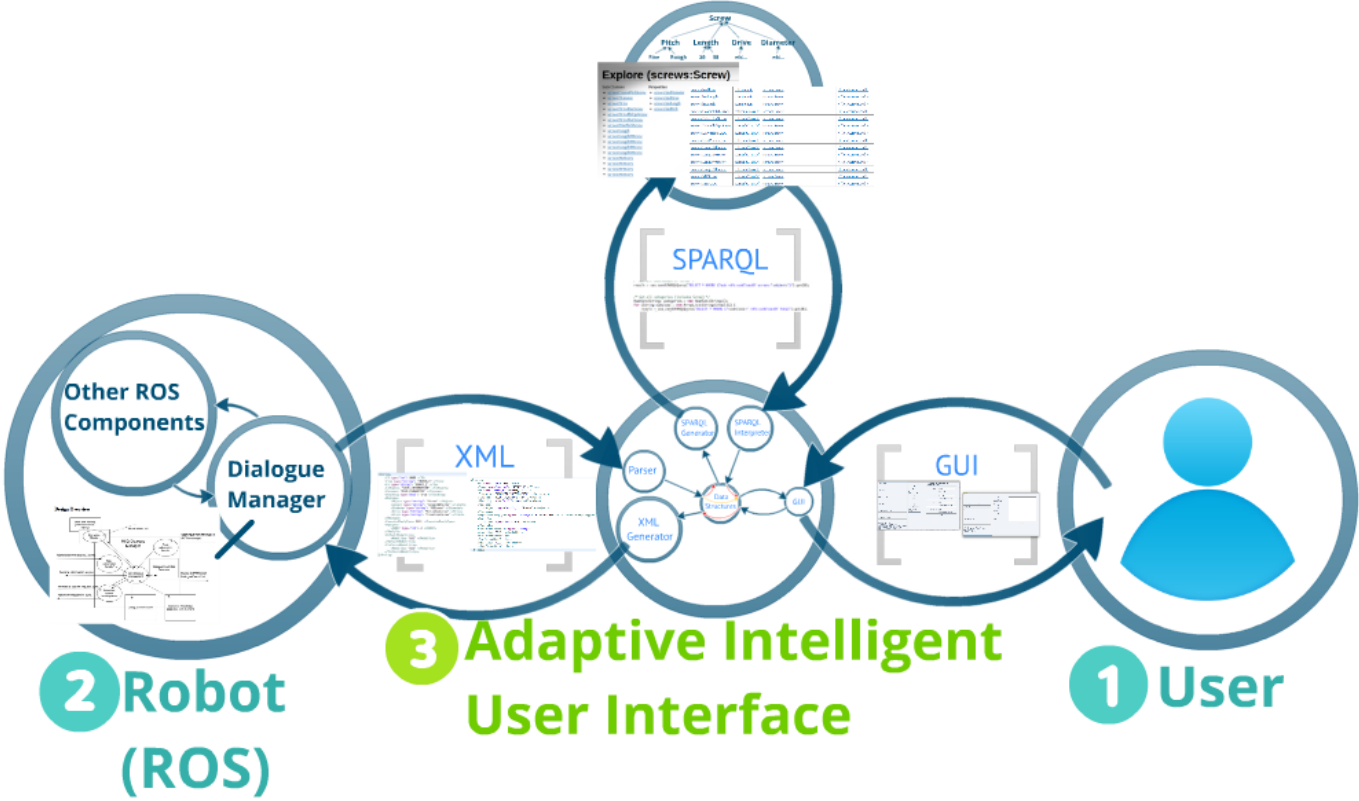
- [screws:hasDiameter](#)
- [screws:hasDrive](#)
- [screws:hasLength](#)
- [screws:hasPitch](#)

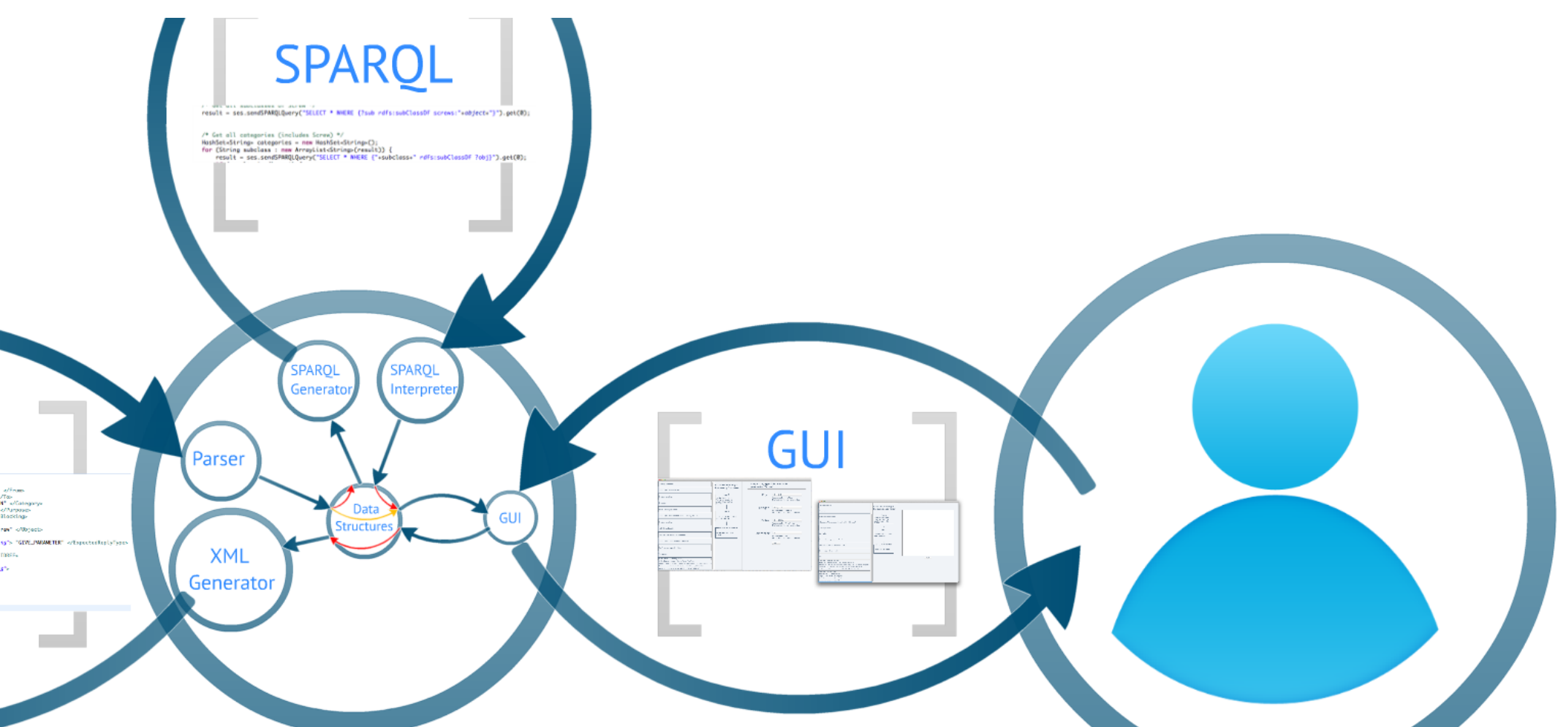
screws:hasDrive	rdfs:domain	screws:Screw	<file://screws
screws:hasLength	rdfs:domain	screws:Screw	<file://screws
screws:hasPitch	rdfs:domain	screws:Screw	<file://screws
screws:CoarsePitchScrew	rdfs:subClassOf	screws:Screw	<file://screws
screws:DriveHexScrew	rdfs:subClassOf	screws:Screw	<file://screws
screws:DrivePhilipsScrew	rdfs:subClassOf	screws:Screw	<file://screws
screws:DriveSlotScrew	rdfs:subClassOf	screws:Screw	<file://screws
screws:FinePitchScrew	rdfs:subClassOf	screws:Screw	<file://screws
screws:Length20Screw	rdfs:subClassOf	screws:Screw	<file://screws
screws:Length30Screw	rdfs:subClassOf	screws:Screw	<file://screws
screws:Length40Screw	rdfs:subClassOf	screws:Screw	<file://screws
screws:Length50Screw	rdfs:subClassOf	screws:Screw	<file://screws
screws:M2Screw	rdfs:subClassOf	screws:Screw	<file://screws
screws:M3Screw	rdfs:subClassOf	screws:Screw	<file://screws

4 Knowledge Database



4 Knowledge Database





Adaptive Intelligent User Interface

1 User

GUI

This screenshot shows a GUI window with three main sections:

- Chat Log:** A vertical list of messages including "Greeting by Robot", "Robot says: 'Hello master.'", "Greeting by Alice", "Hi toaster", "Polite warning by Robot", "Robot says: 'Please refrain from insulting this unit.'", "Greeting by Alice", "I will think about it.", "Confirmation requested by Robot", "Robot asks: 'Good. Shall we continue?'", "Confirmation given by Alice", "Yes please", and "Parameter requested by Robot".
- Plan: Assembling a Frequency Converter:** A flowchart with three steps:
 - Step 1:** Fix the chassis in the fixture and place the plastic shield on the chassis.
 - Step 2:** Grasp the trafo and place it on the chassis.
 - Step 3 (current step):** Fix the trafo by 2 torx screws.
- Requesting type information for parameter "Screw":** A form with four dropdown menus:
 - Pitch:** FinePitch (Recommended: FinePitch, Explanation: You have chosen this)
 - Length:** Length30 (Recommended: Length30, Explanation: You have chosen this)
 - Drive:** DrivePhilips (Recommended: DrivePhilips, Explanation: You have chosen this)
 - Diameter:** M3 (Recommended: M3, Explanation: You have chosen this)A "Reply" button is located below the form.

This screenshot shows a GUI window with three main sections:

- Chat Log:** A vertical list of messages including "Greeting by Alice", "Hi toaster", "Polite warning by Robot", "Robot says: 'Please refrain from insulting this unit.'", "Greeting by Alice", "Fine I will.", "Confirmation requested by Robot", "Robot asks: 'Good. Shall we continue?'", "Confirmation given by Alice", "Yes.", and "Parameter requested by Robot".
- Plan: Assembling a Frequency Converter:** A flowchart with three steps:
 - Step 1:** Fix the chassis in the fixture and place the plastic shield on the chassis.
 - Step 2:** Grasp the trafo and place it on the chassis.
 - Step 3 (current step):** Fix the trafo by 2 torx screws.
- Parameter requested by Robot:** A text area containing the following information:
 - For Pitch: Choose between: CoarsePitch, FinePitch
 - For Length: Choose between: Length20, Length30, Length40, Length50
 - For Drive: Choose between: DriveHex, DrivePhilips, DriveSlot
 - For Diameter: Choose between: M2, M3, M4, M5, M6, M8
- Parameter given by Alice:** A text area containing the following information:
 - Pitch should be set to FinePitch
 - Length should be set to Length50
 - Drive should be set to DriveSlot
 - Diameter should be set to M5
- Reply:** A button located at the bottom right of the window.

4 Knowledge Database



SPARQL

XML

GUI

Other ROS Components

Dialogue Manager

2 Robot (ROS)

3 Adaptive Intelligent User Interface

1 User