Appendix B: Sample ORM model and XMI output

Utilizing the ORM MOF metamodel definition as guidance, software was developed to *transform ORM models to ORM XMI*, as proof-of-concept. Figure 1 shows the model diagram of a test model. The sample input ORM model is small, but includes a reasonable variety of the available language elements in ORM. This and several other source models were used to test the XMI production capability.
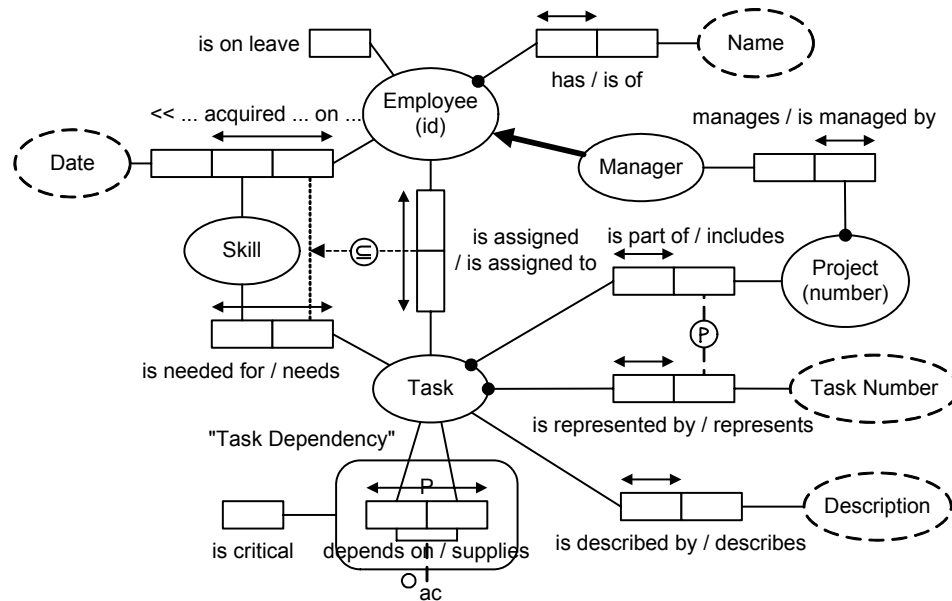

Figure 1　　　　Test ORM model for proof-of-concept.

A portion of the *XMI output* from the sample model follows. Two XMI excerpts each of Object Types, Fact Types (including Readings), and Constraints are provided. The XMI was validated with an ORM-extended version of the published DTD for UML 1.4 (OMG UML RTF, 2001), and with the full XML Schema excerpted above.

Two Object Types:

```
<ORM:ValueType xmi.id="_1048" name="Task Number" type="_DT_16">
  <UML:ModelElement.taggedValue>
    <UML:TaggedValue xmi.id="_ID12" name="documentation" modelElement="_1048">
      <UML:TaggedValue.dataValue>An identifier for a specific task within a project.
    </UML:TaggedValue.dataValue>
    </UML:TaggedValue>
  </UML:ModelElement.taggedValue>
</ORM:ValueType>
<ORM:EntityType xmi.id="_1006" name="Task">
  <UML:ModelElement.taggedValue>
```

```
        <UML:TaggedValue xmi.id="_ID13" name="documentation" modelElement="_1006">
          <UML:TaggedValue.dataValue>A unit of work within a project.</UML:TaggedValue.dataValue>
        </UML:TaggedValue>
      </UML:ModelElement.taggedValue>
    </ORM:EntityType>
```

Two Fact Types:

```
<ORM:FactType xmi.id="_1023" sentence="Task is part of Project" name="Task is part of Project">
  <UML:ModelElement.taggedValue>
    <UML:TaggedValue xmi.id="_ID77" name="documentation" modelElement="_1023">
      <UML:TaggedValue.dataValue>Identifies the tasks within a project.</UML:TaggedValue.dataValue>
    </UML:TaggedValue>
  </UML:ModelElement.taggedValue>
  <UML:Classifier.feature>
  <ORM:Role xmi.id="_1023.0" name="task" type="_1006" reading="is part of"/>
    <ORM:Role xmi.id="_1023.1" name="project" type="_1004" reading="includes"/>
  </UML:Classifier.feature>
  <UML:Namespace.ownedElement>
    <ORM:Reading xmi.id="_1023r0" name="[Task] is part of [Project]">
      <UML:Classifier.feature>
        <ORM:PlaceHolder xmi.id="_ID78" name="task" role="_1023.0"/>
        <ORM:Phrase xmi.id="_ID79" name="is part of"/>
        <ORM:PlaceHolder xmi.id="_ID80" name="project" role="_1023.1"/>
      </UML:Classifier.feature>
    </ORM:Reading>
    <ORM:Reading xmi.id="_1023r1" name="[Project] includes [Task]">
      <UML:Classifier.feature>
        <ORM:PlaceHolder xmi.id="_ID82" name="project" role="_1023.1"/>
        <ORM:Phrase xmi.id="_ID83" name="includes"/>
        <ORM:PlaceHolder xmi.id="_ID84" name="task" role="_1023.0"/>
      </UML:Classifier.feature>
    </ORM:Reading>
  </UML:Namespace.ownedElement>
</ORM:FactType>
<ORM:FactType xmi.id="_1045" sentence="Task is represented by Task Number" name="Task is
represented by Task Number">
  <UML:ModelElement.taggedValue>
    <UML:TaggedValue xmi.id="_ID86" name="documentation" modelElement="_1045">
      <UML:TaggedValue.dataValue>Assigns a task number to a task.</UML:TaggedValue.dataValue>
    </UML:TaggedValue>
  </UML:ModelElement.taggedValue>
  <UML:Classifier.feature>
    <ORM:Role xmi.id="_1045.0" name="task" type="_1006" reading="is represented by"/>
    <ORM:Role xmi.id="_1045.1" name="number" type="_1048" reading="represents"/>
  </UML:Classifier.feature>
  <UML:Namespace.ownedElement>
    <ORM:Reading xmi.id="_1045r0" name="[Task] is represented by [Task Number]">
      <UML:Classifier.feature>
        <ORM:PlaceHolder xmi.id="_ID87" name="task" role="_1045.0"/>
        <ORM:Phrase xmi.id="_ID88" name="is represented by"/>
```

```
      <ORM:PlaceHolder xmi.id="_ID89" name="number" role="_1045.1"/>
    </UML:Classifier.feature>
   </ORM:Reading>
   <ORM:Reading xmi.id="_1045r1" name="[Task Number] represents [Task]">
    <UML:Classifier.feature>
      <ORM:PlaceHolder xmi.id="_ID91" name="number" role="_1045.1"/>
      <ORM:Phrase xmi.id="_ID92" name="represents"/>
      <ORM:PlaceHolder xmi.id="_ID93" name="task" role="_1045.0"/>
    </UML:Classifier.feature>
   </ORM:Reading>
  </UML:Namespace.ownedElement>
</ORM:FactType>
```

Two Constraints:

```
<ORM:MandatoryConstraint xmi.id="_1055" namespace="_1045">
 <UML:ModelElement.taggedValue>
   <UML:TaggedValue xmi.id="_ID142" name="documentation" modelElement="_1055">
    <UML:TaggedValue.dataValue>Each Task is represented by some Task
Number.</UML:TaggedValue.dataValue>
   </UML:TaggedValue>
 </UML:ModelElement.taggedValue>
 <UML:Constraint.constrainedElement>
   <UML:ModelElement xmi.idref="_1045.0"/>
 </UML:Constraint.constrainedElement>
</ORM:MandatoryConstraint>
<ORM:UniqueConstraint xmi.id="_1053" namespace="_1023" isPrimary="true">
 <UML:ModelElement.taggedValue>
   <UML:TaggedValue xmi.id="_ID143" name="documentation" modelElement="_1053">
    <UML:TaggedValue.dataValue>For each Project p and Task Number t
 there is at most one Task that is part of Project p and is represented by Task Number t.  Task is primarily
identified by this unique combination.</UML:TaggedValue.dataValue>
   </UML:TaggedValue>
 </UML:ModelElement.taggedValue>
 <UML:Constraint.constrainedElement>
   <UML:ModelElement xmi.idref="_1023.1"/>
   <UML:ModelElement xmi.idref="_1045.1"/>
 </UML:Constraint.constrainedElement>
</ORM:UniqueConstraint>
```