Competencies 1.0
(Measurable Characteristics)

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Abstract

This document describes HR-XML's competencies schema. The competencies schema allows the capture of information about evidence used to substantiate a competency and ratings and weights that can be used to rank, compare, and otherwise evaluate of the sufficiency or desirability of a competency.

This schema is intended as a fragment or module that would be incorporated within broader process-specific schema. The competencies schema is particularly relevant to processes involving the rating, measuring, comparing, or matching an asserted competency (for example, a skill claimed in a resume) against one that is demanded (for example, a skill required in a job description or requisition).

Status of this Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119.

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1 Overview

1.1 Objective

The objective of this project is the creation of an XML Schema that provides trading partners a standardized and practical means to exchange information about competencies within a variety of business contexts. The competency schema delivered by this workgroup is intended as a fragment that will be used within broader, process-specific schema developed by the HR-XML Consortium and other organizations. For example, the HR-XML competencies schema is intended to be part of a future version of HR-XML's Staffing Exchange Protocol.

1.1.1 Terminology

One of the challenges in creating a standard schema for the exchange of competency information is the many ways that the term "competency" has been used by different people at different points in time within disciplines such as human resource management, organizational theory, behavioral science, industrial psychology, and education.

One of the HR-XML Competency Workgroup's important design goals was the development of a competency schema that would be relatively simple and sufficiently flexible to be useful within a variety of business contexts. Towards this end, HR-XML's Competency Workgroup wanted to avoid binding its schema to a definition of competency that would require difficult distinctions, such as the differences between "innate" and "learned" characteristics. Likewise, the workgroup did not want to bind the schema to a definition of competency that would limit the schema's usefulness in capturing and exchanging information about behaviorally revealed competencies versus those competencies evidenced by assessments, certificates, or degrees.

In exploring the appropriate scope for the competencies schema, one of the concepts considered by the workgroup was "KASOCs," as defined in Bloom & Wallace's *HRM Business Model "Starter Kit."* KASOC is an acronym for Knowledge, Skills, Abilities, and Other Characteristics. The concept of KASOC was specifically developed as a generalized and flexible descriptor for the type of measurable, performance-related characteristics that are important to numerous HR management processes. The KASOC concept was the basis for the following definition of competency adopted by the Workgroup:

> **Competency.** A specific, identifiable, definable, and measurable knowledge, skill, ability and/or other deployment-related characteristic (e.g. attitude, behavior, physical ability) which a human resource may possess and which is necessary for, or material to, the performance of an activity within a specific business context.

Additional elaboration is required to understand some portions of this definition:

- Competencies are measurable. The competencies schema is intended to capture information about measurable characteristics. Some competencies may measurable, but nevertheless difficult to quantify. In some cases, the measure may be simply whether the characteristics exists or does not exist. Some competencies can be objectively measured, whereas others may only be subjectively recognized. **Example**: In the context of HR-XML's competency schema, education would be considered a competency when it can be quantified or when it is used a measure for a given business purpose. An educational degree may be evidence of a competency. Descriptive information about an educational degree – e.g., the location of the school or institution granting the degree – is not a competency.
- Competencies are related to performing an activity. Competencies can be thought of as a level of ability or characteristic useful or necessary to performing an activity.
- Competencies are attributes of a human resource. However, the model developed by the Competency Workgroup is generalized enough so that it might be applied to other entities, such as organizations.
- Competencies may include deployment-related characteristics such as "willing to relocate," "non-smoker," etc., but generally would not include purely demographic characteristics, such sex, race, or religion.
- Competencies can be recursive. A competency may include other competencies. One competency might be decomposed into several component competencies, each of which might be separately measurable.

NOTE: While the workgroup's definition of competencies is based on the concept of KASOCs, the term competency was chosen over KASOCs because it was deemed to be more meaningful to a wider audience. Moreover, the acronym KASOC was not considered be appropriate based on the element naming conventions outlined in the HR-XML Consortium's Schema Design Guidelines.

1.1.2 Domain Issues

The concept of competency pervades HR management processes. Competencies are not merely descriptors of an employee, position, organizational work unit, or training resource; they are the glue that holds together major HR management activities. It is difficult to discuss any major HR management process without the concept of competencies.[1]

The HR-XML Consortium's competencies schema is designed as a reusable schema fragment that might be applicable to a wide range of business processes. Generally speaking, the schema could potentially be useful in any process involving the comparison, matching, weighting, or rating of a competency demanded against an actual available competency. While competencies have immediate relevancy to HR management processes, they also are relevant to certain business process outside the HR domain.

Examples of some of the principal HR management activities in which a standard for the exchange of competencies information could be valuable are described below.

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[1] Competency-Centric Human Resource Management, Prepared by Naomi Lee Bloom, Bloom & Wallace, HR-XML Consortium Quarterly Meeting, Pleasanton, California, October 16-17, 2000

Staffing the organization. Differing skill definitions and the use of widely varying skill taxonomies pose a barrier to efficient data interchange in many recruiting and staffing processes. Some employers have developed their own internal taxonomies of describing skills and competencies. Some of these taxonomies may be formal, whereas others may have developed informally over time. Other employers make use of third-party skills taxonomies. Job boards, staffing firms, and other recruiting and staffing venues also might have their own way of classifying positions by skill and/or industry and they also make use of internal as well as third-party skills taxonomies. Because of differing skill taxonomies, an employer might need to map its internal descriptors or taxonomies to those used by each of its recruiting and staffing vendors. Adding a new job board or vendor may require the creation of a new set of mappings.

A standard schema for competencies will make it easier to create mapping between different taxonomies.

Staffing data exchanges typically would take place between human resource management systems (HRMS) and recruiting systems and the systems of recruiting venues such as job boards and temporary staffing firms.

Developing the Workforce. A standard model for the exchange of competency information could have many uses in skills evaluation, gap analysis, and training. For example, a standard for competency information could enable gap analysis of a person's current competency levels compared to the requirements of that person's current position. Similarly, the standard could enable gap analysis between a person's current competency level and that required by a target, or an aspired to, job or position. Gap analysis could be useful in determining available training to meet gap requirements and in forecasting training requirements across an organization or department.

The data exchanges might take place between HRMS, training development systems, and systems of vendors offering training programs.

Managing the Organizational Structure. This might involve reviewing the needs of an organization without considering personnel with existing positions. This process might involve a hierarchical breakdown of work and an assessment of competencies rated with relative weight at the optimal level by job. Once this is completed, one may create a model to support:
- Forecasting for re-organizations or acquisitions;
- Mapping competencies between the jobs and personnel; and
- Conducting analyses of gaps between competencies required and those currently available.

The data exchange might be between an organizational planning system and the human resource system.

Administering Compensation. A standard means for the exchange of competency information would have many uses in compensation administration:
- A standard for the exchange of competency information could be useful in conducting job evaluations aimed at determining the rank or worth of jobs.
- A standard for competencies also could be useful in supporting performance management systems by enabling the tracking of changes in competencies that may be pertinent to decisions regarding rewards.
- A standard for competencies could be useful in mapping equivalent skills across differing taxonomies. This might be useful in applying wage survey data to job pay structures.
- Competency standards could be useful in administering competency-based pay programs.

Data exchanges would be between HRMS, performance management and appraisal systems, and a variety of compensation planning and administration systems.

1.1.3 Business Reasons

A standard schema for the exchange of competency data has the potential to improve communication across many HR activities and to enhance business intelligence. A standard competencies schema has the potential to greatly simplify data transfer processes, thereby helping HR organizations save time and money. Many more cross-disciplinary transfers of business intelligence will be possible.

Job and position postings provide one of the clearest examples of data-exchange barriers and their associated costs. There is tremendous diversity in the way job boards classify the way jobs are advertised. Consequently, there is not an easy way to map between different classification systems. Because creating and maintaining mappings between an employer's internal taxonomy and the ones used by job boards is difficult, many employers use third-party services to manage the mappings as well as handle the different formats required by different recruiting instruments. The use of a standard way of exchanging competency information within the HR-XML Consortium's Staffing Exchange Protocol's would make it much easier to create and maintain mappings and eliminate the extra expense of a posting middleman.

1.2 Design Requirements

HR-XML competencies schema is designed to fulfill the following requirements:

- The competency schema is simple and sufficiently flexible and generalized so that it is useful within a variety of business contexts.

- The schema provides structure to enable competencies to be easily compared, ranked, and evaluated.

- The schema is capable of referencing competency taxonomies from which competency descriptions were taken or used.

- The competency schema is relatively simple and compact so that it does not add to the complexity of the process-specific schemas within which it is used. For instance, the competencies schema would likely be used as an alternative or replacement for the "Skill" element within the HR-XML Consortium's Staffing Exchange Protocol. Thus, the Competency element is as compact and as simple as possible, while still meeting the other design goals listed above.

1.3 Scope

1.3.1 Major Components

The initial deliverable will be a single schema for competencies. Other related or supporting schemas may be developed with future versions of the competencies schema. For instance, a generalized schema describing taxonomies, or a schema describing measurement scales, are examples of supporting schema that could be developed in conjunction with a future version of the HR-XML competencies specification.

1.3.2 Items Outside of Design Scope

- **Taxonomies.** The ability to reference taxonomies from which particular competency descriptions were taken or derived is a design requirement. However, the development of specific competency taxonomies is outside the design scope. A generalized framework for describing taxonomies also is outside of the scope of the initial version of the competencies schema. However, a generalized schema for describing taxonomies has been identified by the HR-XML Competencies Workgroup as a possibility for future development.

- **Mapping between taxonomies.** The competencies schema will enable the capture of competency metadata that may be useful in creating mappings between different taxonomies. However, the schema's design scope does not consider the specific means by which such mappings are created.

- **Measurement scales.** The initial version of the Competencies schema allows for the capture of measurement values as well as an identifier that could be used to relate a value to a particular measurement system or scale (for example, a grade point average on a 4.0 scale). However, a generalized framework for describing measurement systems or scales is outside the scope of the first version of the competencies schema.

- **Capture of descriptive detail.** Certain business processes may require the capture of supporting information that goes beyond what is captured by the competencies schema. As explained in Section 1.1.1, Terminology, the HR-XML Consortium competencies schema focuses on broad array of "measurable characteristics." The competencies schema allows the capture of information about evidence used to substantiate a competency and ratings and weights that can be used to rank, compare, and otherwise evaluate of the sufficiency or desirability of a competency. However, a business process might require additional information. For instance, a hiring process might require the capture of contact information (telephone, address, etc.) for a school or institution from which a degree or certificate is claimed. Descriptive detail for specific types of competencies or competency evidence is beyond the immediate scope of this project.

  NOTE: While the competencies project does not consider descriptive detail for specific types of competencies or competency evidence, other specifications produced by the HR-XML Consortium as well as by other standards groups may be useful in this regard. For instance, Staffing Exchange Protocol Version 1.1 includes useful structures for capturing location and contact detail for schools and institutions. SEP also includes detail for capturing information about employment references as well as reports from those references. Note also that the IMS Global Learning Project has developed a Reusable Competency Definitions Information Model, which may be useful in capturing definitional and descriptive information about competencies. For further information, see http://www.imsproject.org/rcd/rcdinfo01.html

2 Supported Business Processes

The Competencies schema is intended to be a fragment that can be incorporated within a wide-variety of process-specific schemas. Among the range of processes the competencies schema may help support are:

- 360º Feedback (Evaluation by Peers)
- Other performance measurement instruments that measure competencies
- Competency Modeling (an expert service)
- Individual performance development planning and goal setting
- Performance monitoring & reporting
- Training curricula and individual courses that build competencies
- Career development systems
- Inventories of workforce competence (taxonomies for general and specialized uses)
- Selection procedures that assess competencies
- Succession planning systems
- Pay-for-competencies compensation systems
- Automated job descriptions
- Core competencies for strategic planning
- Psychometric (Personality) testing
- Recruiting

3 DTD/Schema Design

3.1.1 Schema Diagram
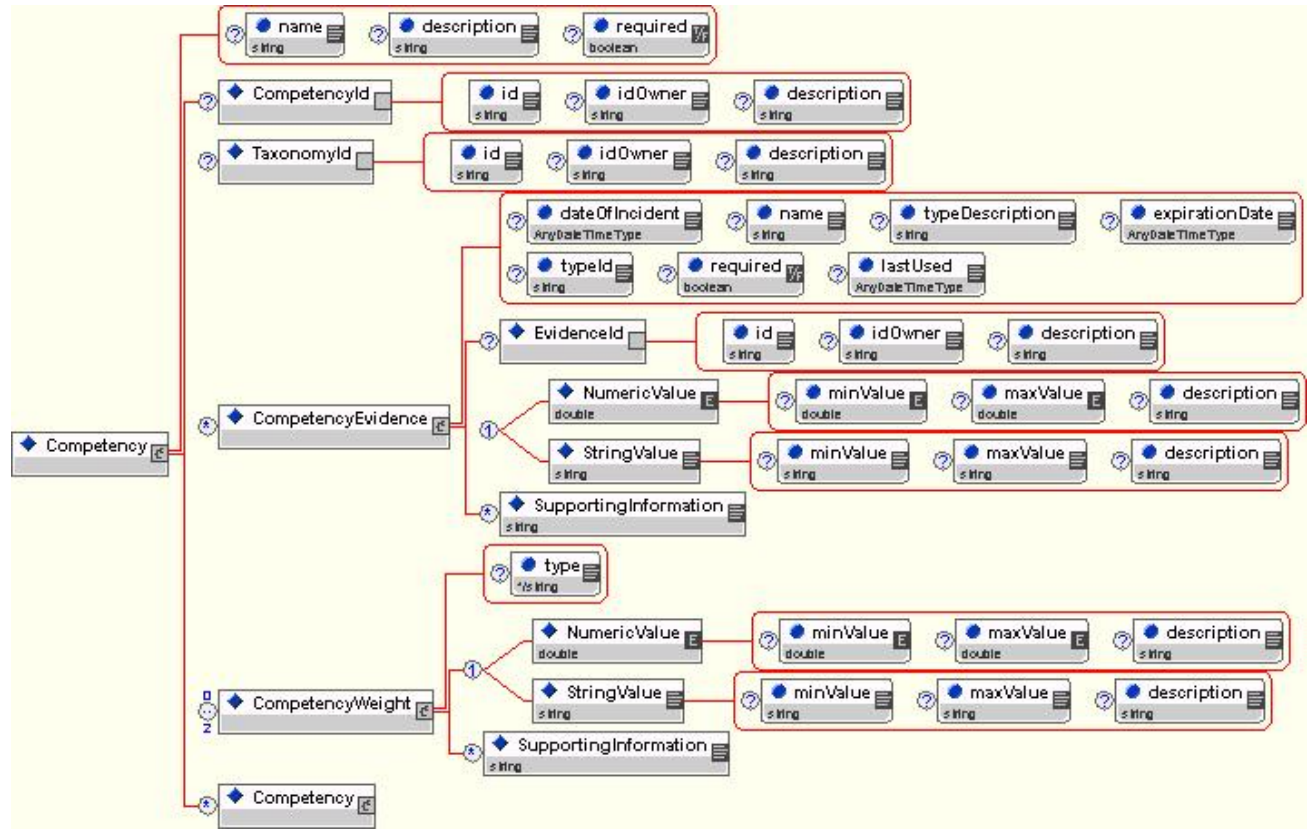
3.1.2   Schema/DTD Elements Explained

Competency

Definition	A specific, identifiable, definable, and measurable knowledge, skill, ability and/or other deployment-related characteristic (e.g. attitude, behavior, physical ability) which a human resource may possess and which is necessary for, or material to, the performance of an activity within a specific business context.
SchemaDiagram	
Attributes	• **name** -- The name of the Competency. For instance, "Java Programming," "Persuasive Speaking", "Leadership Ability", or "Adaptability". • **description** -- A brief description of the competency. • **required** -- Used to indicate whether the competency is a required or "mandatory" competency (xsd:boolean).
BusinessRules	• A Competency exists with a broader business context. The Competency schema would not typically be used on its own, but as a Cross-Process Object within another schema. • A Competency can be recursive. That is, a Competency can be comprised of other competencies.

CompetencyEvidence

Definition	CompetencyEvidence is used to capture information to substantiate the existence, sufficiency, or level of a Competency. CompetencyEvidence might include test results, reports, performance appraisals, evaluations, certificates, licenses, or a record of direct observation, such as a report given by a former supervisor or other employment reference.
SchemaDiagram	
Attributes	• **dateOfIncident** -- The date on which the CompetenceEvidence first establishes the existence of the Competency. • **name** -- The name or designation given to the CompetencyEvidence. For example, "Multistate Bar Examination". • **typeDescription** -- A description of the type of CompetencyEvidence. • **expirationDate** -- The identification of any applicable expiration date, such as the date that a license or certification expires. • **typeId** -- A code identifying the type of CompetencyEvidence. • **required** -- Used to indicate whether the CompetencyEvidence is a required or "mandatory" (xsd:boolean). • **lastUsed** -- A requirement or assertion for the date on which the Competency was last used.

CompetencyId

Definition	An identification code assigned to identify or classify the Competency. A taxonomy might include an identification code for each Competency or identification codes might be agreed upon by trading partners.
SchemaDiagram	
Attributes	• **id** -- The value for CompetencyId goes in the id attribute. (Note CompetencyId is an EMPTY element. The value of the CompetencyId is put in an id attribute to allow for implementations to be designed that might enforce id values.) • **idOwner** -- This optional attribute identifies the owner of the Id. • **description** -- This optional attribute is available to provide additional information about the Id.

CompetencyWeight

Definition	CompetencyWeight allows the capture of information on the relative importance of the Competency or the sufficiency required.
SchemaDiagram	

Attributes	• **type** -- Identifies the type of CompetencyWeight.
	  Enumerations:
	  levelOfInterest -- A level of interest asserted or required for the competency.
	  skillLevel -- A level of skill asserted or required for the competency.

EvidenceId

Definition	A code that identifies the CompetencyEvidence.
SchemaDiagram	
Attributes	• **id** -- The value for EvidenceId goes in the id attribute. (Note EvidenceId is an EMPTY element. The value of the EvidenceId is put in an id attribute to allow for implementations to be designed that might enforce id values.) • **idOwner** -- This optional attribute identifies the owner of the Id. • **description** -- This optional attribute is available to provide additional information about the Id.

NumericValue

Definition	NumericValue is the required or desired level for the competency. The content of NumericValue is a rating value. The minValue, maxValue, and name attributes of NumericValue provide information about the rating scale that is being used, so that the rating value can be interpreted. StringValue is used instead when the rating scale would not have a data type of "double."
SchemaDiagram	
Attributes	**minValue** -- The minimum value of the rating scale. **maxValue** -- The maximum value of the rating scale. **description** -- The name of the rating scale or a description of it. For example, "Grade Point Average" or "Test Score".

StringValue

Definition	StringValue is the required or desired level for the competency. The content of StringValue is a rating value. The minValue, maxValue, and name attributes of StringValue provide information about the rating scale that is being used, so that the rating value can be interpreted. StringValue is used when the rating scale would not have a data type of "double."
SchemaDiagram	
Attributes	**minValue** -- The minimum value of the rating scale. **maxValue** -- The maximum value of the rating scale. **description** -- The name of the rating scale or a description of it. For example, "Grade Point Average" or "Test Score".

SupportingInformation

Definition	Contains descriptive text that substantiates or clarifies a rating, measure, value, etc.
Uses	- SupportingInformation can be used to provide additional substantiation or explanation for CompetencyEvidence that consists of a supervisor's observation or other evaluation or rating. - SupportingInformation can be used to provide additional substantiation or explanation for the weight assigned to a particular Competency.

TaxonomyId

ComponentId	TaxonomyId
Definition	A code that identifies the taxonomy.
SchemaDiagram	
Attributes	**id** -- The value for TaxonomyId goes in the id attribute. (Note TaxonomyId is an EMPTY element. The value of the TaxonomyId is put in an id attribute to allow for implementations to be designed that might enforce id values.) **idOwner** -- This optional attribute identifies the owner of the Id. **description** -- This optional attribute is available to provide additional information about the Id.

3.1.3   Competencies-1_0.xsd

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
elementFormDefault="unqualified" xsi:schemaLocation="http://www.w3.org/2001/XMLSchema
 http://www.w3.org/2001/XMLSchema.xsd">
    <xsd:include schemaLocation="http://ns.hr-xml.org/CPO/Dating-1_1/cpoDateTimeTypes-1_1.xsd"/>
    <xsd:attributeGroup name="id">
        <xsd:attribute name="id" type="xsd:string" use="required"/>
        <xsd:attribute name="idOwner" type="xsd:string"/>
        <xsd:attribute name="description" type="xsd:string"/>
    </xsd:attributeGroup>
    <xsd:element name="Competency">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element name="CompetencyId" minOccurs="0">
                    <xsd:complexType>
                        <xsd:attributeGroup ref="id"/>
                    </xsd:complexType>
                </xsd:element>
                <xsd:element name="TaxonomyId" minOccurs="0">
                    <xsd:complexType>
                        <xsd:attributeGroup ref="id"/>
                    </xsd:complexType>
                </xsd:element>
                <xsd:element name="CompetencyEvidence" minOccurs="0" maxOccurs="unbounded">
                    <xsd:complexType>
                        <xsd:sequence>
                            <xsd:element name="EvidenceId" minOccurs="0">
                                <xsd:complexType>
                                    <xsd:attributeGroup ref="id"/>
                                </xsd:complexType>
                            </xsd:element>
                            <xsd:choice>
                                <xsd:element ref="NumericValue"/>
                                <xsd:element ref="StringValue"/>
                            </xsd:choice>
                            <xsd:element ref="SupportingInformation" minOccurs="0" maxOccurs="unbounded"/>
                        </xsd:sequence>
                        <xsd:attribute name="dateOfIncident" type="AnyDateTimeType"/>
                        <xsd:attribute name="name" type="xsd:string"/>
                        <xsd:attribute name="typeDescription" type="xsd:string"/>
                        <xsd:attribute name="expirationDate" type="AnyDateTimeType"/>
                        <xsd:attribute name="typeId" type="xsd:string"/>
                        <xsd:attribute name="required" type="xsd:boolean" default="false"/>
                        <xsd:attribute name="lastUsed" type="AnyDateTimeType"/>
                    </xsd:complexType>
                </xsd:element>
                <xsd:element name="CompetencyWeight" minOccurs="0" maxOccurs="2">
                    <xsd:complexType>
                        <xsd:sequence>
                            <xsd:choice>
                                <xsd:element ref="NumericValue"/>
                                <xsd:element ref="StringValue"/>
                            </xsd:choice>
                            <xsd:element ref="SupportingInformation" minOccurs="0" maxOccurs="unbounded"/>
                        </xsd:sequence>
                        <xsd:attribute name="type" default="skillLevel">
                            <xsd:simpleType>
                                <xsd:restriction base="xsd:string">
                                    <xsd:enumeration value="levelOfInterest"/>
                                    <xsd:enumeration value="skillLevel"/>
```

```xml
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
    </xsd:complexType>
</xsd:element>
<xsd:element ref="Competency" minOccurs="0" maxOccurs="unbounded"/>
        </xsd:sequence>
        <xsd:attribute name="name" type="xsd:string"/>
        <xsd:attribute name="description" type="xsd:string"/>
        <xsd:attribute name="required" type="xsd:boolean" default="false"/>
    </xsd:complexType>
</xsd:element>
<xsd:element name="NumericValue">
    <xsd:complexType>
        <xsd:simpleContent>
            <xsd:extension base="xsd:double">
                <xsd:attribute name="minValue" type="xsd:double"/>
                <xsd:attribute name="maxValue" type="xsd:double"/>
                <xsd:attribute name="description" type="xsd:string"/>
            </xsd:extension>
        </xsd:simpleContent>
    </xsd:complexType>
</xsd:element>
<xsd:element name="StringValue">
    <xsd:complexType>
        <xsd:simpleContent>
            <xsd:extension base="xsd:string">
                <xsd:attribute name="minValue" type="xsd:string"/>
                <xsd:attribute name="maxValue" type="xsd:string"/>
                <xsd:attribute name="description" type="xsd:string"/>
            </xsd:extension>
        </xsd:simpleContent>
    </xsd:complexType>
</xsd:element>
<xsd:element name="SupportingInformation" type="xsd:string"/>
</xsd:schema>
```

4   Implementation Considerations

4.1   Recursion

Competencies can have relationships to one another. One way that the Competencies schema allows these relationships to be expressed is through the recursive nesting of one competency inside another. Below are a few issues implementers should consider when using the schema's recursive features:

- Is recursion necessary to accurately capture or transfer information about the competency? Consider for instance, that each competency has a CompetencyId, which usually would be taken from an outside taxonomy. In some cases, it may be unnecessary to express a relationship between two competencies in the data transfer if the relationship is already clear within the outside taxonomy.

- Does the extent of recursion impose undue complexity? The Competencies schema does not constrain the extent of recursion. However, there are likely to be limits to what is useful and practical. Nesting competencies beyond one or two levels generally is not advisable.

- Is the relationship between the nested competencies clear?

   In the process of developing the schema, the HR-XML Competencies workgroup discussed the desirability of being able to express relationships between competencies in an explicit manner. Developing a taxonomy describing those relationships was one idea that was explored. For instance, it might be desirable to express that a child competency is related to a parent competency by stating that the child "is a type of" the parent competency. Or it might be desirable to express that a particular competency "has a" particular component competency. The development this type of taxonomy is outside the immediate scope of the initial version of the Competencies schema (See 1.3.2, Items Outside of Design Scope).

   In the absence of an explicit way to express the relationship between a parent and child competency, recursion should only be used where the relationship between parent and child competencies is known by trading partners or otherwise can be easily inferred. The Competency element has a description attribute, which might be used to provide useful information about the relationship between parent and child competencies.

5   Issues List

Issue	Description	Disposition
RangeValue/MeasuredValue	RangeValue is not descriptive. MeasuredValue is better.	Changed to MeasuredValue.
RangeValue/MeasuredValue Required versus optional	If one merely wanted to capture Years of Experience or lastUsed information, MeasuredValue would	Made MeasuredValue optional

	seem to be immaterial.	
How to capture years of experience. Introduce explicit attribute?	Include an explicit yearsOfExperience attribute or an explicit yearsOfExperience element at the level of CompetencyEvidence.	No change. Treat like any other CompetencyEvidence.
Weight/lastUsed	The lastUsed on the Weight element seems misplaced: 1. lastUsed seems more like CompetencyEvidence than a Weight 2. Weight requires a MeasuredValue (formerly known as RangeValue), which seems immaterial if all you want to do is to associate "lastUsed" information with a Competency.	Removed lastUsed from Weight and added it as an attribute of CompetencyEvidence
CompetencyId required	CompetencyId was required. One of our use cases was using this schema within SEP. In the context of an SEP implementation, there would also certainly be situations where Competencies there would be no CompetencyId.	Made CompetencyId optional.
TaxonomyId	TaxonomyId was set up so it could contain a string. It also had an 'id' attribute.	keep all ids (taxonomy, competency, evidence) as empty content models with the existing (same) attributes – the id, description, and idOwner
Dates	Do we need to specify datatypes?	Open. Evaluating datatypes to include.

DateOfIncident	Change to DateOfIncident	Leave as DateOfIncident
Non-numeric MeasuredValues	How to support non-numeric MeasuredValues. For instance, certain 'GPA-equivalents', pass/fail etc.	Substituted NumericValue and StringValue for MeasuredValue. NumericValue has a double for a datatype.
Weight	The name "Weight" could cause name collisions.	Changed to CompetencyWeight
required	required attribute of Competency uses a yes/no enumeration.	Changed to Boolean datatype per CPO recommendation
xsd:date	Usage does not conform with CPO Date/Time recommendations	Changed to CPO-approved AnyDateTimeType
Implementation guidance: recursiveness	Competencies schema is recursive. CPO asked for spec to address implementation guidance/clarify how recursive features should be used.	Added implementation guidance.

6   Appendix A - Document Version History

Version	Date	Description
	2001-07-31	First Draft
	2001-08-21	Added issues list, updated diagram.
	2001-08-29	Added Reference Examples
	2001-08-30	Add SupportingInformation element and description. Candidate recommendation of schema.
	2001-09-04	Changed MeasuredValue to a choice of NumericValue and StringValue. Made numerous typographical changes. Clarified that the description of measurement systems/scales is outside of the initial project scope. Changed "Psychometric (Personality) testing" to Psychometric testing.
	2001-09-17	Made changes per CPO review: Weight to CompetencyWeight; added implementation guidance on recursiveness; added bullet on measurement scales (outside of scope); changed xsd:data to AnyDateTime Type; changed required attribute to

Boolean from yes/no enumeration.

| 1.0 | 2001-Oct-16 | Approved Recommendation by HR-XML Consortium |

7 Appendix B – Related Documents

Reference	Link
Competency-Centric Human Resource Management, Copyright Naomi Lee Bloom, Bloom & Wallace	http://docs.hr-xml.org/docs/HR-XML_KSAOCS101200.PDF
IMS Reusable Competency Definitions Information Model	http://www.imsproject.org/rcd/rcdinfo01.html
OMG Competency Management Facility RFP	http://cgi.omg.org/cgi-bin/doc?cem/01-04-03

8 Appendix C – Reference Examples

8.1 Competency with Years of Experience and Test Score

This example shows an employee who has Java as a competency. Acme Company, using their standard Java test, tested this employee. The candidate's test score was 89 on that test. In addition, it's recorded that the employee has 4 years of experience using Java and on a scale from 1-100, has a score of 90 for their level of interest.

```
<Competency description="Java is an object oriented computer language" name="Java"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-
1_0.xsd">
        <CompetencyId description="Competency id is based on Acme internal taxonomy"
                        id="574"
                        idOwner="Acme Company"/>
     <TaxonomyId description="My ids are based on Acme Company Taxonomy"
                        idOwner="Acme Company" id="1"></TaxonomyId>
        <CompetencyEvidence dateOfIncident="2001-08-23"
                        name="Test Score"
                        typeDescription="Test Score from internal test"
                        typeId="54">
            <EvidenceId description="Java Test from internally administered test"
                        id="547" idOwner="Acme Company"/>
            <NumericValue description="100 point scale"
                        maxValue="100"
                        minValue="0">89</NumericValue>
     </CompetencyEvidence>
     <CompetencyEvidence dateOfIncident="2001-08-23"
                        name="Years of Experience"
                        typeDescription="Years of Experience"
                        typeId="7">
```

```
                    <EvidenceId description="Years of Experience in Competency"
                                id="7"
                                idOwner="Acme Company"/>
                    <NumericValue description="Range in years for experience">4</NumericValue>
            </CompetencyEvidence>
            <CompetencyWeight type="levelOfInterest">
                    <NumericValue description="Acme Company Scale 100 point"
                                maxValue="100"
                                minValue="0">90</NumericValue>
            </CompetencyWeight>
</Competency>
```

8.2   License as Competency Evidence

This example shows a candidate's competency to drive a car. The evidence used in this example
is a valid drivers license that was obtained on 12/23/1986. The measured value in this case is
simply 0 or 1 (1 meaning that the candidate has it, 0 meaning they don't).

```
<Competency description="Licensed to drive"
        name="Drivers License"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-
1_0.xsd">
                <CompetencyId description="Competency id is based on Acme internal
                            taxonomy" id="233"
                            idOwner="Acme Company"/>
                <TaxonomyId description="My ids are based on Acme Company Taxonomy"
                            idOwner="Acme Company" id="1"></TaxonomyId>
                <CompetencyEvidence dateOfIncident="1986-12-23"
                                name="License"
                                typeDescription="Drivers License"
                                typeId="231">
                    <EvidenceId description="Valid Minnesota Drivers License"
                                id="W9D X8S8"
                                idOwner="Minnesota DMV"/>
                    <NumericValue description="Scale of 0 or 1"
                                maxValue="1"
                                minValue="0">1</NumericValue>
                </CompetencyEvidence>
</Competency>
```

8.3   Education as Competency Evidence

This example shows a candidate's competency fulfilling a requirement for Bachelors Degree. The
evidence used in this example is the Bachelors Degree itself, which was obtained on 05/21/1992.
The measured value in this case is simply 0 or 1 (1 meaning that the candidate has it, 0 meaning
they don't). For additional evidence, the Grade Point average for the degree is presented as
additional evidence. In this case, the grade point average is 3.76.

```
<Competency description="College Degree" name="College Degree"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-
1_0.xsd">
        <CompetencyId description="Competency id is based on Acme internal taxonomy"
                    id="233"
```

```
                            idOwner="Acme Company"/>
            <TaxonomyId description="My ids are based on Acme Company Taxonomy"
                            idOwner="Acme Company" id="1"></TaxonomyId>
            <CompetencyEvidence dateOfIncident="1992-05-21"
                                name="Degree"
                                typeDescription="College Degree"
                                typeId="231">
                <EvidenceId description="Bachelor's degree from accredited school"
                                id="100"
                                idOwner="University of Wisconsin"/>
                <NumericValue description="Scale of 0 or 1"
                                maxValue="1"
                                minValue="0">1</NumericValue>
            </CompetencyEvidence>
            <CompetencyEvidence dateOfIncident="1992-05-21"
                                name="GPA"
                                typeDescription="Grade Point Average for Degree"
                                typeId="101">
                <EvidenceId description="GPA"
                                id="101"
                                idOwner="University of Wisconsin"/>
                <NumericValue description="Scale of 0 or 4"
                                maxValue="4"
                                minValue="0">3.76</NumericValue>
            </CompetencyEvidence>
        </Competency>
</Competency>
```

8.4   Recursive Competencies: Communication Skills

Communication skills can be made up of two skills: written and oral communication skills. Written and oral communication skills are the measurable and observable skills to which an employee/applicant will be measured. In order to assess whether a person has Communication Skills, it is necessary to evaluate the person's written and oral communication skills (the measurable and observable skills). This example weights oral communication skills higher (65 percent) than written communication skills (35 percent).

```
<Competency name="Communication Skills"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-
1_0.xsd">
    <Competency name="Written Communication Skills">
        <CompetencyEvidence name="WRITTENTEST1-A"
                                dateOfIncident="1995-01-01"
                                lastUsed="2000-01-01">
        <NumericValue minValue="3"
                        maxValue="5"
                        description="SEP-equivalent Skill-Level Range">5</NumericValue>
        </CompetencyEvidence>
        <CompetencyWeight>
        <NumericValue minValue="0" maxValue="100">35</NumericValue>
        </CompetencyWeight>
    </Competency>
    <Competency name="Oral Communication Skills">
        <CompetencyEvidence name="ManagerObservation"
                                dateOfIncident="1996-01-01"
                                lastUsed="2000-01-01">
        <NumericValue minValue="1"
                        maxValue="5"
                        description="Company XYZ Skill Range">5</NumericValue>
```

```
      </CompetencyEvidence>
       <CompetencyWeight>
       <NumericValue minValue="0" maxValue="100">65</NumericValue>
       </CompetencyWeight>
     </Competency>
</Competency>
```

8.5   Describing Language Skills

One type of skill that is important for many jobs is that of language. It is not sufficient to say that someone is "fluent" in a language. It is important, especially when looking at what an employee is required to do for a particular job, to look at how the language skill is being used. It may be very important for the individual to know how to read a particular language but there may not be any need to be able to write or to speak it. In other jobs, it may be important to be able to speak a particular language but there may not be any need to be able to write or read in that language.

```
<Competency name="Speaking Spanish"
     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
     xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-1_0.xsd">
          <CompetencyEvidence name="Spanish Language Oral Proficiency Interview"
                              dateOfIncident="1995-01-01"
                              lastUsed="2000-01-01">
               <NumericValue minValue="1"
                              maxValue="5"
                              description="oral proficiency interview rating">5</NumericValue>
          </CompetencyEvidence>
</Competency>
```

8.6   Direct Observation as Competency Evidence

There are certain skills that need to be assessed, evaluated and evidenced through direct observation. One example of this would be customer service. A manager may observe an employee dealing with customers and notice how the employee treats the customers. It may be difficult to test for customer service and it may be difficult to assess customer service based only on customer feedback.

```
<Competency name="Customer Service"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:noNamespaceSchemaLocation="http://ns.hr-xml.org/Competencies/Competencies-1_0/Competencies-
1_0.xsd">
             <CompetencyEvidence name="ManagerObservation"
                              dateOfIncident="1995-01-01"
                              lastUsed="2000-01-01">
                  <NumericValue minValue="4"
                              maxValue="5"
                              description="Company ABC Skill Level Range">5</NumericValue>
             </CompetencyEvidence>
</Competency>
```