

776 responsibilities and so on; usually in a temporary fashion. For example, when a  
777 company president delegates the responsibility of ensuring that the company accounts  
778 are correct to the chief engineer, this does not imply that the chief engineer is adopting  
779 the full **role** of the company accountant.

## 780 **Role Player**

781 A **role player** is an **actor** that adopts a **role**. I.e., his actions and/or stance with  
782 respect to other **participants** is consistent with the **role**.

783 In order for a person to act on behalf of some other person or on behalf of some legal  
784 entity, it is required that they have the **right** to do so and the **authority** to do so.

## 785 **Right**

786 A **right** is a predetermined **permission** that permits an **actor** to perform some  
787 **action** or adopt a **role** in relation to the **social structure**.

788 **Rights** often are associated with additional constraints. For example, in most  
789 circumstances, sellers have a right to refuse service to potential customers; but often  
790 may only do so based on certain criteria.

## 791 **Authority**

792 **Authority** is the **right** to act as agent on behalf of an organization or another  
793 person.

794 Usually, **authority** is constrained in terms of the kinds of actions that are authorized,  
795 and in terms of the necessary skills and qualifications of the persons invoking the  
796 **authority**.

797 An entity may authorize or be assigned another entity to act as its **delegate**. Often the  
798 actions that are so authorized are restricted in some sense. In the case of human  
799 organizations, the only way that they can act is via an agent.

800 **Rights**, authorities, responsibilities and **roles** form the foundation for the security  
801 architecture of the Reference Architecture. **Rights** and responsibilities have similar  
802 structure to permissive and obligation policies; except that the focus is from the  
803 perspective of the constrained **participant** rather than the constrained actions.

## 804 **Responsibility**

805 A **responsibility** is an **obligation** on a **role player** to perform some **action** or to  
806 adopt a stance in relation to other **role players**.

## 807 **3.1.3 Ascribing Meaning in a Social Structure**

808 There are several areas within this Reference Architecture where we focus on what an  
809 **actor** knows or intends. For example, we refer to the **actor's goals** and **objectives**. We  
810 also refer to the **policies** that the **actor** may promulgate.

811 In general we can characterize such **assertions** in terms of the content of the **assertion**  
812 and a **stance**. The content of an assertion typically takes the form of a **proposition** –  
813 i.e., an expression that may be expressed with a varying degree of formality. The  
814 **stance** characterizes the *relationship(s)* between the **proposition** and some **actor** or  
815 **actors**. Typically we also give specific names to particular combinations of **proposition**  
816 and **stance**.

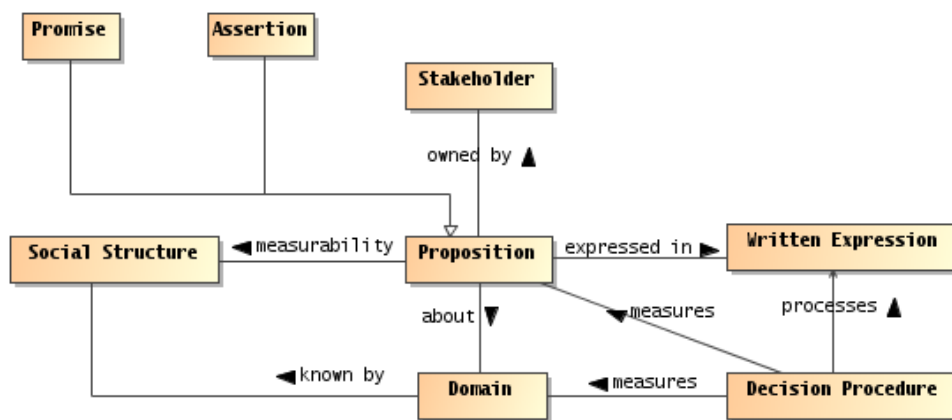
### 817 3.1.3.1 Propositions

#### 818 Proposition

819 A **proposition** is an expression, normally in a language that has a well-defined  
820 written form, that denotes some property of the world from the perspective of a  
821 **stakeholder**.

822 The key properties of **propositions** are that they are expressions – i.e., they have a  
823 particular ‘form’ – and that the truth of a **proposition** is verifiable – using a **decision**  
824 **procedure**. Minimally, verification of a **proposition** is achieved by checking that the  
825 **proposition** and the world are consistent with each other.<sup>12</sup>

826 The requirements for the written form of **propositions** will vary with the application.  
827 Some highly structured and formalized systems of include various forms of logic.



828  
829 *Figure 8 Propositions*

#### 830 Decision Procedure

831 A **decision procedure** is a process for determining whether a **proposition** is  
832 true, or is satisfied, in the world.

833 Decision procedures are algorithms, programs that can measure the world against a  
834 **proposition**'s expression and answer the question whether the world corresponds to  
835 the description. If the truth of a **proposition** is indeterminable, then a **decision**  
836 **procedure** does not exist, and the logic is un-decidable.

837 Each system of logic has at least one **decision procedure** – by definition. Much of the  
838 art in designing a system of expressions and semantics is arranging for there to be a  
839 **decision procedure** and to ensure that there is at least one tractable **decision**  
840 **procedure**. This issue is especially important in designing **policy frameworks**.

#### 841 Domain

842 A **domain** is a ‘world’ that is used as the basis for the truth of a **proposition**.

---

<sup>12</sup> We exclude here the special case of proposition known as a tautology. Tautologies are important in the study of logic; the kinds of propositions that we are primarily interested in are those which pertain to the world; and as such are only *contingently* true.

843 When we say 'world', we are not restricted to the physical world. The criterion is an  
844 ability to discover facts about it. In our case governmental, commercial and **social**  
845 **structures** that form the backdrop for SOA-based systems are important examples of  
846 modeled worlds.

### 847 **Written Expression**

848 The **written expression** of a **fact** is a formula written in a systematic system of  
849 marks.

850 Note that not all 'systems of marks' have a **decision procedure**. However, for the uses  
851 to which we put the concept of **fact: policies, service descriptions**, and so on, we  
852 require that the language used to write **policy** and other propositions have a **decision**  
853 **procedure**.

### 854 **3.1.3.2 Stance**

855 A critically important characteristic of a **proposition** is its meaning to the **actors** in the  
856 SOA ecosystem. What a **proposition** means to an **actor** depends on the **actor's**  
857 **stance** to the **proposition**.

### 858 **Stance**

859 **Stance** is the relationship that an **actor** (or group of **actors**) has to a  
860 **proposition**.

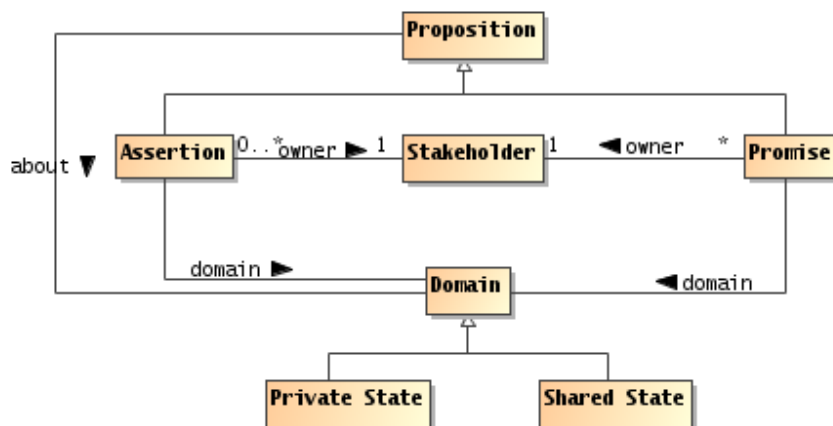
861 The primary kinds of **stance** that are possible reflect the primary ways that an **actor** can  
862 relate to a **proposition**: the **proposition** may be something that the **actor** knows (or  
863 believes), the **actor** may desire that the **proposition** is satisfied, the **actor** may be  
864 actively engaged in satisfying the **proposition** with some planned **action**; or the **actor**  
865 may view the **proposition** as a **policy** that is to be enforced.

### 866 **Fact**

867 A **fact** is a **proposition** that can be known by an **actor**.

868 In the case of **facts** that are shared the primary requirement is that expression of facts  
869 must be communicable between **actors**.

870



871

872 *Figure 9 Assertions and Promises*

## 873 **Promise**

874 A **promise** is a **proposition** regarding the future state of the world by a  
875 **stakeholder**. In particular, it represents a commitment by the **stakeholder** to  
876 ensure the truth of the proposition.

877 For example, an airline may report its record in on-time departures for its various flights.  
878 This is a claim made by the airline which is, in principle, verifiable. The same airline may  
879 promise that some percentage of its flights depart within 5 minutes of their scheduled  
880 departure. The truth of this promise depends on the effectiveness of the airline in  
881 meeting its commitments.

## 882 **Goal**

883 A **goal** is a **proposition** that an **actor** is seeking to establish or maintain.

884 In the Reference Model a **goal** is known as a **need**.

885 In general, there is a *subsumption* relationship between **actors'** **goals** and their  
886 **objectives**: an **objective** can be considered to be *consistent* with one of more **goals**.  
887 Generally, a **goal** is a long term state of the world that may be, in practice, difficult to  
888 measure. On the other hand, an **objective** is a directly measurable and preferably  
889 predictable outcome of a particular **action** or set of **actions**.

## 890 **Objective**

891 An **objective** is a **real world effect** that an **actor** uses an **action** or set of  
892 **actions** to achieve.

893 Objectives are like **goals** in that an **actor** wishes to satisfy them; but an **objective** is  
894 directly linked to the **action** or **actions** that will satisfy the **objective**.

## 895 **Purpose**

896 A **purpose** is a **proposition** ascribed to a thing or to an **action**.

897 By their nature, **purposes** are *external* to the purposed entities, whereas goals are  
898 *internal* to the entity.

## 899 **Policy**

900 A **policy** is a **proposition** that is promulgated by a **stakeholder** in such a way as  
901 to enforce the **proposition**.

902 Where a **goal** represents some condition that an **actor** wishes to achieve, a **policy** is a  
903 condition that a **stakeholder** is actively promulgating and requiring other **actors** to be  
904 constrained by.

## 905 **3.1.4 Shared State and Social Facts**

906 Many of the actions performed by people and most of the important aspects of a  
907 person's state are inherently social in nature. The social context of an **action** is what  
908 gives it much of its meaning. We call actions in society social actions and, those facts  
909 that are understood in a society, **social facts**. It is often the case that social actions give  
910 rise to **social facts**.

911 Compared to facts about the natural world, **social facts** are inherently abstract: they  
912 only have meaning in the context of a **social structure**.