Chapter 11

Reputation Stable Analysis Patterns

“You can’t build a reputation on what you are going to do.”

— Henry Ford

Reputation is the opinion (more technically, a social evaluation) of the public towards a person, a group of people, or an organization. In other words, reputation is the general estimation that the public has for a person or an institution. It is an important factor in many fields, like business, online communities or social status. It is also a subject of study in social, management and technological sciences. Its influence may range from competitive settings like markets to cooperative ones like firms, organizations, institutions and communities. Furthermore, reputation also acts on different levels of agency, individual and supra-individual. At the supra-individual level, it concerns groups, communities, collectives and abstract social entities (such as firms, corporations, organizations, countries, cultures and even civilizations). It affects phenomena of different scale, from everyday life to relationships between nations. Reputation is a fundamental instrument of social order, based upon distributed, spontaneous social control.

The Reputation pattern has been developed in the past by using the principles of Stability model. This chapter provides the general Reputation stable analysis pattern without any IO’s connected to it. Additionally it also provides two scenarios in which the pattern can be used.

11.1 Introduction

The idea of reputation is commonly used in social life and economy, and there exists a common opinion on its general meaning. When it comes to a person, reputation is described as "a characteristic or attribute ascribed to one person (organization, community, etc.) by another person (or community)". On the other hand, the reputation of say, a service provider, can be formed by means of a collection of ratings by different users; each such rating is intuitively equivalent to user satisfaction. Higher the rating from a user higher will be the reputation of the service provider.

Reputation is considered to be very relevant to systems, where there is information asymmetry about quality and trust, due to the large number of players involved. Reputation can also be seen as a state variable that gives evidence about the missing information; thus, reputation offers numerous incentives to providers and consumers to behave properly. Reputation provides a suitable mechanism to consumers to identify quality service providers/sellers. A reputation mechanism is quite successful, when a steady-state market situation can be achieved and maintained.
The last decade has witnessed an explosive growth in Internet connections around the globe. Online communities are gaining more popularity, as they neither limit nor restrict human interactions by insisting on geographic constraints; instead, they bring together people of varied backgrounds, ethnicities and nationalities. EBay, the largest person-to-person auction site, is an excellent example of such a grand community. Selling a product through such a community and becoming very successful entrepreneur depends largely on the Reputation of a person or an organization.

Reputation is a must in all types of businesses including online and e-commerce ventures. For example Apple acquired considerably good Reputation by selling a high quality music player called ‘IPod’ which eventually helped them in gaining an eventful entry to the global cell phone market, when they introduced the iconic ‘IPhone’.

Traditional approaches to software design and development may not yield a stable and reusable model for gaining Reputation. However, by using the Software Stability Model [1, 2, 3, 4], it can be represented in any context by using a single model. The Software stability model requires creation of knowledge map, by identifying underlying Enduring Business Themes (EBT) and Business Objects (BO). By hooking Industrial Objects (IO), that is specific to each application, the model can be applied to any application domain. The resulting Reputation pattern is quite stable, reusable, extendable and highly adaptable. Thus, any number of applications can be built by using this common model. The Reputation analysis pattern attempts to capture the core knowledge of Reputation which is common to all application scenarios that are listed above to emerge with a stable pattern. The overall objective is to conceive and design a stability model for Reputation by creating the knowledge map of Reputation. This knowledge map or core knowledge can then serve as building block for modeling different applications in diverse domains.

11.2 Reputation Analysis Pattern Document

Pattern Name: Reputation Stable Analysis pattern

Reputation is the opinion of public towards a person, a group of people, or an organization. In other words, reputation is the general estimation that the public has for a person or in institutions. Reputation is very important in every field, be it politics or business or selling anything, ranging from a coffee to a digital camera. The reputation a person/organization has built in its life time determines the quality of its business and sustainability in today’s scenario of fierce competition. The overall objective of pattern is to generalize the idea of reputation, so that it can be used as foundation for managing day to day activities of business.

The Reputation analysis pattern abstracts this concept that can be applied to any party based on the any mechanisms. The reputation can be of any type and kind. This pattern also depicts the effect of reputation on the user. It is based on the principles of Enduring Business Theme of Reputation and is thus stable. It can be used to model any related scenario and is thus not
restricted to any one scenario or situation. Hence, the name Reputation is a stable analysis pattern.

**Context:**

Individuals or any organization tries to build a good reputation, because of numerous corporate and business needs. A good reputation differentiates them from other organization and creates more business to them. Further, an individual sees immense pride in attaining a good reputation. A bad reputation may also be fatal. For example, the bad reputation attained by ENRON made them losing their business eventually leading to filing bankruptcy. Hence, reputation is as crucial and important factor for any business.

Reputation may relate to various organizations and institutions; Web portals like eBay(shopping), Google(search engine), or personalities like Roger Federer (tennis), George W Bush, or companies like Apple computers, CISCO, and countries like Switzerland(for banking), Middle east(for oil) are some of the well-known examples.

Below listed are some of the contexts where reputation is used:

- In online business portals like eBay, where a Seller builds a reputation via the feedback mechanism provided by the buyer and portal. The reputation a seller has gained in the past is displayed in the form of a rating list, which helps a buyer to gain confidence about a seller and cajoles him or her to buy a product from a particular seller eventually increasing the sellers’ business.
- In politics, President Bush has gained a bad reputation by waging a long and never ending war with Iraq.
- By selling a MP3 player like ‘IPod’, when there was a Market demand, Apple computers has gained a very good reputation for selling high quality music players.
- American Energy Corporation gained a bad reputation for creatively planning an accounting fraud.
- Swiss tennis professional Roger Federer gained a good reputation by being world no 1 tennis player for a very long time.

As illustrated above, Reputation analysis pattern can be applied to numerous scenarios and in diverse disciplines. In later sections, application scenarios to illustrate the applicability of Reputation pattern are shown in full detail. Reputation concept is illustrated in two distinct scenarios like a seller building a good reputation by selling a product through eBay and Apple computers establishing a good reputation by selling IPod’s.

**Problem:**

Today, global competition has already increased enormously. Right from selling a small paper clip to selling an airplane, there are numerous players competing with each other to sell their
products. In such a scenario, it is very much required that a person/organization set a Reputation for them in order to compete effectively with others. This can be done in a variety of different ways, right from selling quality, low cost products to developing the skills that others like to possess. In an online business, there are numerous ways to develop this reputation like the online feedback and rating mechanism. Building a generic pattern which covers all such cases of reputation development is a challenging and humongous task.

Reputation can be applied to different domains like politics, business and to different parties like an individual or an organization or a country. Hence, it is very much essential to model a generic pattern. Following criteria must be satisfied before developing a generic Reputation pattern.

- The pattern must be so generic and should be reusable to model any Reputation application/scenario.
- A thorough understanding of the core concepts of Reputation is absolutely essential, so that the core knowledge can be properly captured.

Since Reputation is used in different context and in different domains, building a generic model without lose of functionality is uniquely challenging. By using software stability Model, this problem is solved and a generic model is modeled for different domains. This model is illustrated and described in the solution section.

Solution:

The solution shown here utilizes Software Stability Model to explain the concept of Reputation. Figure 11.1 depicts the class diagram for Personalization pattern.

Figure 11.1: Class diagram for Reputation Analysis Pattern [Fayad, Nov. 2007]

Pattern Structure and Participants

Following are the participants of the Reputation pattern.

Classes:

Reputation: This class represents the reputation. It is an Enduring Business Theme, which presents the enduring and business knowledge that discloses relevant information based on the attributes of the user.

Patterns:

AnyParty: This class represents any person or individual or an organization or group for whom the reputation is associated with.
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*AnyFactor*: This class denotes the factors, which affect the reputation of a particular individual or organization.

*AnyEntity*: This class denotes the characteristic or the product for which an individual or organization is reputed for.

*AnyMechanism*: This class denotes the methodology through which the individual or the organization achieves the reputation.

*AnyState*: This class denotes the position achieved by any individual or an organization by applying the mechanism.

*AnyRate*: This class represents the status that was achieved by applying the mechanism and which was impacted by the state.

*AnyType*: This class represents the nature of reputation achieved by any individual or an organization.

**Class Diagram Description**

The class diagram provides visual illustration of all the classes in the model, along with their relationships with other classes. Description of the class diagram is as below.

1. Reputation is the EBT of this pattern and is associated to AnyParty(BO).
2. Reputation(EBT) which has AnyType(BO) is achieved through AnyMechanism(BO).
3. AnyMechanism(BO) uses AnyEntity(BO) to achieve Reputation(EBT).
4. AnyParty(BO) chooses AnyMechanism(BO), because of the influence created by AnyFactor(BO).
5. AnyMechanism(BO) forms AnyState(BO) and leads to AnyRate(BO).
6. AnyFactor(BO) affects AnyParty(BO) leading to Reputation (EBT).

**Applicability with Illustrated Example:**

In this section, illustrate the use of reputation analysis pattern are depicted, by using the use case description and behavior model like sequence diagram.

**1.0 Application: Build a good reputation by selling a product through eBay.**

In context of eBay, selling a product online and obtaining a good opinion from the buyers by using the eBay feedback system is called Reputation building. The eBay website allows users to enter their ratings on various categories.

**Model**

The model for this application is shown below in Figure 11.2.
Figure 11.2: Class Diagram for Building Reputation through eBay auction

Class Diagram Description:

The class diagram provides a visual illustration of all the classes in the model, along with their relationships with other classes. Description of the class diagram is as below.

1. AnyParty(Seller) sells AnyEntity(Product) through AnyMechanism(eBay).
2. AnyMechanism(eBay) is surfed by AnyParty(Buyer), who finds the AnyEntity(Product), sold by AnyParty(Seller) suitable for him.
3. AnyParty(Buyer) buys AnyEntity(Product).
4. AnyParty(Buyer) likes the AnyEntity(Product), which creates AnyFactor(Satisfaction) in AnyParty(Buyer).
5. AnyParty(Buyer) through AnyMechanism(Feedback) provided in the eBay website records his AnyState(Opinion).
6. AnyState(Opinion) impacts AnyRate(PositiveRating) given to AnyParty(Seller).
7. AnyRate(PositiveRating) causes good Reputation to AnyParty(Seller).

Use Case No: 1

Use Case Title: Build a good Reputation by selling a product through eBay.

<table>
<thead>
<tr>
<th>Actors</th>
<th>Roles</th>
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<tbody>
<tr>
<td>AnyParty (H)</td>
<td>Seller</td>
</tr>
<tr>
<td>AnyParty (H)</td>
<td>Buyer</td>
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<table>
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<tr>
<th>Class Name</th>
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<th>Attributes</th>
<th>Operations</th>
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<td>• estimation</td>
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<td></td>
<td></td>
<td>• contactInformation</td>
<td>• desireRecognition()</td>
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<td>• authenticity</td>
<td>• interact()</td>
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<td>• sellProduct()</td>
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<td>• sellHistory</td>
<td>• influenceBuyer()</td>
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<td>• contactInformation</td>
<td>• useSellingTricks()</td>
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<td></td>
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<td>• reputation</td>
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<tr>
<td></td>
<td></td>
<td>• type</td>
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<td>• investigateProduct()</td>
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<td><strong>execute()</strong>&lt;br&gt;<strong>build()</strong>&lt;br&gt;<strong>affect()</strong></td>
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<td><strong>assistShopping()</strong>&lt;br&gt;<strong>authenticateUser()</strong>&lt;br&gt;<strong>help()</strong></td>
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<td><strong>level()</strong>&lt;br&gt;<strong>reportBuyer()</strong>&lt;br&gt;<strong>capture()</strong></td>
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<tr>
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<td><strong>belief</strong>&lt;br&gt;• estimate&lt;br&gt;• credibility&lt;br&gt;• reason&lt;br&gt;• affect</td>
<td><strong>expressView()</strong>&lt;br&gt;<strong>rate()</strong>&lt;br&gt;<strong>influence()</strong></td>
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<tr>
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<td><strong>degreeOfSpeed()</strong>&lt;br&gt;<strong>relativeCondition()</strong>&lt;br&gt;<strong>facilitate()</strong></td>
<td></td>
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<table>
<thead>
<tr>
<th>PositiveRating</th>
<th>IO</th>
<th>• base • impact</th>
<th>• classify() • affect() • helpCustomer()</th>
</tr>
</thead>
</table>

Use Case Description

1. AnyParty(Seller) builds a good Reputation by selling AnyEntity(Product) through AnyMechanism(eBay). Is AnyEntity(Product) sufficient to build a good Reputation?
2. This AnyEntity(Product) creates AnyFactor(Satisfaction) in AnyParty(Buyer). In what way does AnyEntity(Product) create AnyFactor(Satisfaction) to AnyParty(Buyer)?
3. AnyParty(Buyer) develops AnyState(Opinion) about the AnyEntity(Product). Did conduct AnyParty(Buyer) sufficient analysis on AnyEntity(Product) to come up with AnyState(Opinion)?
4. The AnyState(Opinion) is recorded through AnyMechanism(Feedback). Is AnyMechanism(Feedback) useful to record AnyState(Opinion)?
5. AnyMechanism(Feedback) impacts AnyRate(PositiveRating) given to AnyParty(Seller). In what way does AnyMechanism(Feedback) impact AnyRate(PositiveRating)?
6. AnyRate(PositiveRating) increase the Reputation of AnyParty(Seller).

Alternatives:

1. AnyParty(Buyer) is not satisfied with the product he bought via eBay.
Figure 11.3: Sequence Diagram for Building Reputation through eBay auction

Sequence Diagram Description

1. Reputation is EBT AnyParty(Seller) sells AnyEntity(Product) through AnyMechanism(eBay).
2. AnyMechanism(eBay) is surfed by AnyParty(Buyer), who finds the AnyEntity(Product) sold by AnyParty(Seller) suitable for him.
3. AnyParty(Buyer) buys AnyEntity(Product).
4. AnyParty(Buyer) likes the AnyEntity(Product), which creates AnyFactor(Satisfaction) in AnyParty(Buyer).
5. AnyParty(Buyer) through AnyMechanism(Feedback) provided in the eBay website records his AnyState(Opinion).
6. AnyState(Opinion) impacts AnyRate(PositiveRating) given to AnyParty(Seller).
7. AnyRate(PositiveRating) causes good Reputation.

11.3 Summary:

The Reputation pattern proposed here is based on the principles of stable analysis pattern. The pattern is explained with two applications that perform well based on this model. The depth of this reputation pattern depends on the availability of Any Party’s attributes for personalizing the particular application. Each object in the reputation pattern has its own role and play, which is independent of any applications, where this pattern will be applied. More than one mechanism exists to carry out the reputation. Care should be taken, while choosing the appropriate mechanism by utilizing the attributes properly.

One difficult part for modeling reputation problem was finding a good class diagram description. Making the description as clear and accurate as possible, so that it is beneficial in drawing the sequence diagram, is the key for getting good model. The process of creating the sequence then gets much simpler and flexible, as it is just the translation of the class diagram.

Though building a stable design pattern for reputation that can be reused and reapplied across diverse domain is difficult, and that requires complete understanding of the problem, it is worth the effort, money and time. Modeling reputation pattern by using Software Stability Model (SSM) results in reusable, extensible and stable pattern.

This pattern is so flexible that it can be applied to any type of scenario. The industrial objects can be hooked to the Business objects to make it more meaningful to the scenario where it is applied. However, the correct identification of Enduring Business Theme (EBT) and Business Objects (BO’s) for reputation is the most challenging task and requires some prior experience. Once EBT and BO’s are correctly identified, next challenge is to determine the relationship between EBT and BO’s, so that reputation pattern can hold true in any context of usage for reputation. Once this is ascertained,
depending on the application, the Industrial Objects (IO’s) are attached to the hooks, so provided by BO’s. Thus, by using reputation pattern as a foundation, infinite number of applications can be built, just by plugging the application specific IO’s to the pattern. This results in reduced cost, effort and a stable solution. Hence, reputation design pattern is very useful and beneficial to developers as well as users.

11.4 Open & Research Issues

1. **e-Reputation:** Utilize the software stability model (SSM) or knowledge map methodology as a way for developing e-Reputation Engine. Building this engine by using traditional development approaches is not an easy exercise, specifically when several factors can undermine their quality success, such as cost, time, and lack of systematic approaches.

11.5 References:


