Example of a Sustainability Requirement Pattern:

**Communicating Resource Consumption**

**Summary**

Pattern Domain:
This pattern can be used for various types of resources within several different domains such as, packaging in e-commerce systems, personal home resource tracking systems, and so on.

Frequency:
This pattern can be used to create an unlimited number of requirements.

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**Applicability**

This pattern should be used to specify a way in which a system should communicate resource consumption to a user. This may include resource consumption of the system itself or resource consumption affected by the use of the system. This pattern should not be used to incentivize a user to reduce resource consumption. Although communication can be a form of incentive, the “incentivizing minimal resource consumption” pattern should be used instead.

This pattern is meant to address the problem of users being unaware of resource consumption. By making users aware of this, they begin to understand the impact they or the system they are using are having on the environment in a tangible way. This allows them to then adjust their consumption and consider new ways to perform tasks that use less of a particular resource based on patterns they see in the observed consumption. For example, if the user can see that they save X amount of electricity when they power off their laptop while sleeping, they will understand the direct impact they can have on the environment. To encourage the user to continue a task that reduces their resources consumption, please refer to the “incentivizing minimal resource consumption” pattern.

**Content**

Requirements derived from this pattern may contain the following:

1. The resource to be communicated. For example, energy/electricity, packaging materials, water, gas, etc.
2. Motivation behind why that requirement is important to the system, the user, or the environment.
3. In what way the system shall communicate the amount of consumption. This may be through charts and graphs, raw numbers and tables, percentages, comparison of other users, etc.
4. When this information should be displayed. The following questions should be considered: Should it be displayed as a notification when a certain amount of a resource is consumed? Is it an option the user has to select to be able to see or is it always on display for the user to see?

**Archetype**

The following is a generalized requirement from which more detailed instances can be derived and tailored:

“The system shall communicate information to the user about the amount of each resource consumed by the system or resource consumption affected by use of the system.”
Examples

- The system shall provide a notification to the user when their resource consumption is approaching the maximum benchmark for that resource.
- The system shall display the average and minimum amounts for each type of resource consumed by other users.
- The system shall display the amount of resource consumption in a way that the user will understand.
- The system shall provide options for ways in which the information is displayed.

Discussion

To properly use this pattern, a way to measure consumption within the system will have to be established. We are currently working on developing widgets that will do most of this work for you and the pattern will be updated once they are completed. A set of benchmarks may also need to be created to decide when a user is being wasteful/conservative in their amount of consumption. Some sample benchmarks for this are also in progress.

Related Patterns

- Incentivizing Minimal Resource Consumption
- Tracking Resource Consumption