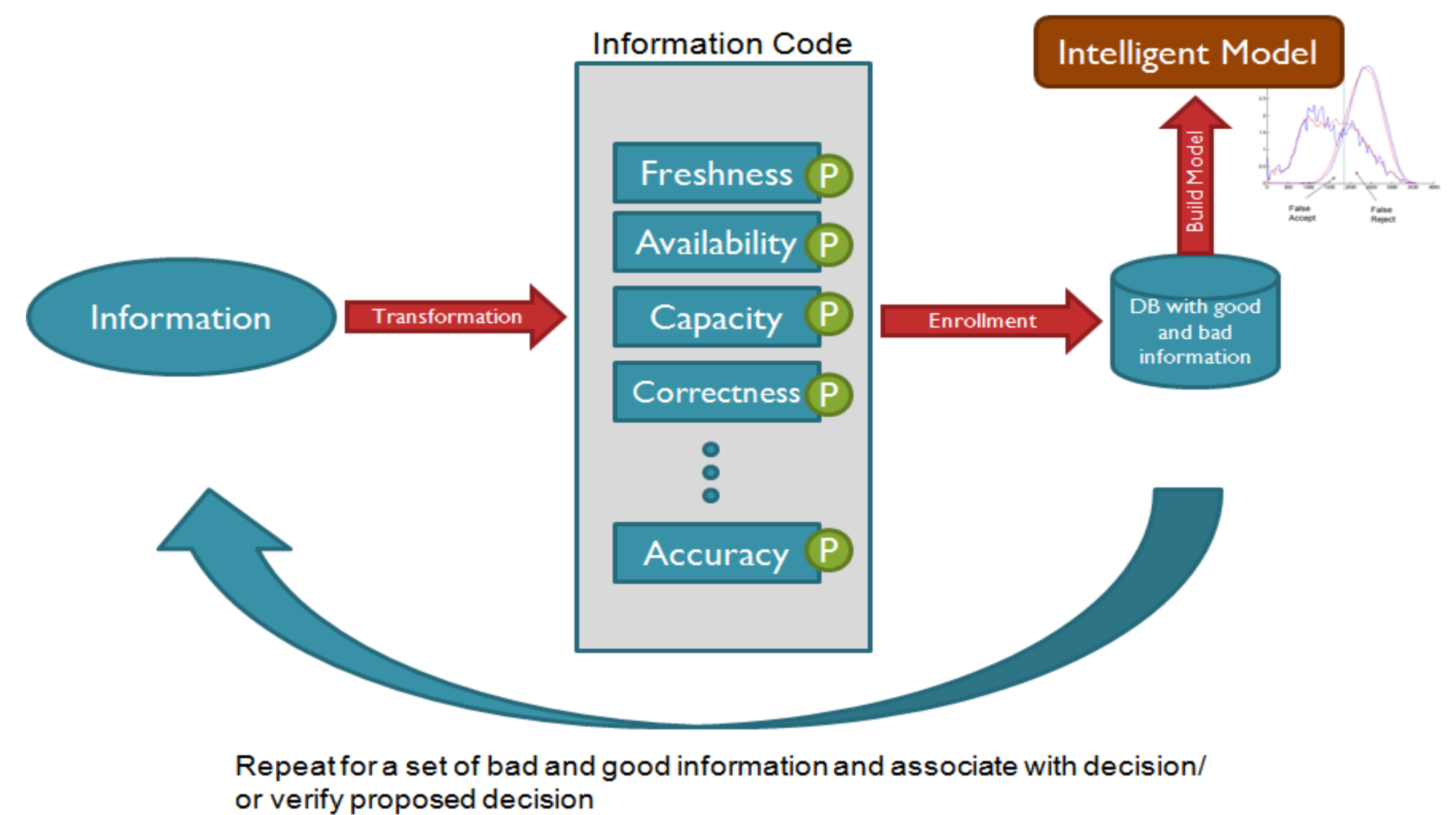


Quality of information recently draws the attention of decision makers. A study done by The Data Warehousing Institute (TDWI) in 2002 shows that the cost of poor quality information is \$600 billion per year [The Data Warehousing Institute]. The major contribution of quality of information frameworks is to provide decision makers with a tool to assess the degree of usefulness of a specific piece of information. This idea has a wide spread application that utilizes the model in order to save their resources by handling the useful information and ignore less quality information.

Motivation

The main objective of this model is to build a system capable of filtering the information flow in a certain media based on quality measures. These quality measures are adaptive measures that adapt by time and shared among a set of nodes. The information can be a stream, file, message, packet or any other information container that might exist in military networks.

This model will help the recipient of information to identify the relevant information to his interest (quality measures values). By this we help to reduce the problem of information overload.



Overview

- QoI can be defined as :
Is a composite, multi-dimensional model that quantitatively and qualitatively identifies the degree of usefulness of a data delivered to a process in a specific channel (media) based on a well-defined set of metrics.
- The model should allow the user to define new measures based on the level of expertise and domain of quality.
- Each measure should be associated with a user specified weight (priority) and threshold. Furthermore, the model shall allow collaborative building of quality model based on sharing information about quality threshold.
- QoI has contextual and intrinsic attributes. Example of these measures includes: Freshness, Timeliness, Conciseness, Accuracy, Completeness, ..., etc.
- In order to put the proposed model in action first we need to study the information system that will handle the information flow such as the type of information container, information channel, and system constraints. Second, we need to deeply characterize the information flow.
- We expect to find that under certain assumptions and constraints, an optimal quality decision can be made based on the information flow in a network.

Implementation

- QoI is useful in making decision such as content capacity model, information filtering, network utilization.
- QoI need to be assigned a set of attributes based on the information type.
- QoI will apply a scientific formula of correlation between attributes to optimize the overall quality of the information flow.
- QoI can be distributed or localized service, where the information can be sent to single node to take a decision or each node can be independent peer.
- QoI is application dependent and context dependent.

Application

A concrete example: to implement a QoI system that works with face recognition system. First, the system objective is to minimize the traffic between a face recognition server and stations distributed in a field sending images of suspected criminals or targets. For instance, decide whether sending a compressed image, cropped image or a full raw image is optimum for the traffic without affecting the accuracy of recognition. The system can be further enhanced by extracting even more detailed evidence from the current raw by extracting the iris from the face or sending the coded trait to the server instead of the image format.

