CHARACTERISTIC LEVELING PROCESS

May 2006

Overview

It is common for consumer credit grantors to spread their credit file requests across more than one of the three major credit reporting companies (CRCs): Equifax, Experian and TransUnion. Independent of the company from which the credit information originated, it is desirable that grantors have the ability to make uniform credit decisions.

Credit characteristics are a major foundation of consumer credit decisioning. Inconsistent or inequitable definitions in characteristics across the three CRCs result in vastly different risk perspectives when decisioning. This is the case for the majority of consumers whose credit file is housed by more than one of the three CRCs.

Characteristic normalization (or leveling) is the process that yields consistent and equitable characteristic definitions across multiple sources of information. Simply put, this leveling ensures that when the same data is present for multiple sources it is interpreted in the same manner. So if the same data is reported from more than one CRC, it will be interpreted the same. There may, however, be differences in the data reported by each of the three CRCs.

Traditional Characteristic Normalization

Typically a CRC defines characteristics independently to take advantage of its own credit reporting structure. If required, the CRC then takes the characteristic definitions and makes the best attempt to fit data from another CRC to those definitions. Since the characteristics are written to maximize use of the information from the CRC's own data structure, it may prove challenging (or even impossible) to apply the definitions to another CRC's data. Further, while one CRC may have peripheral knowledge of the others' data, the CRC does not have access to all the detailed knowledge that an insider at the other organization would have. This detailed knowledge includes past updates (with timing) to the reporting structure, plans for changes to the reporting structure, detailed definitions and intended uses for data elements.

True Characteristic Normalization

Several major credit grantors have, on occasion, requested true characteristic normalization, which is a process that involves a cooperative effort by credit data experts from each of the involved CRCs. These experts begin by understanding the customer's objectives and underlying philosophies for the desired set of characteristics. Using their collective knowledge, the experts then build a set of characteristics that most align the definitions for all the CRCs to reflect the philosophical concepts agreed upon by all, including the customer.

Phase 1 – Specification Creation
This first phase of the process, the creation of an initial set of characteristic specifications, requires detailed communications between the customer and the credit data experts from each involved CRC. The customer determines the desired set of characteristics and defines a clear objective for the set, such as use with their prescreen criteria, account management criteria, credit risk modeling, etc. The credit data experts from each CRC then review the characteristic list with the primary goal of understanding the customer's intent and objective. Both of these factors have a major influence on how they formulate the characteristic definitions. As part of this initial review, items needing clarification by the customer are highlighted. After each CRC has reviewed the characteristic list, the customer and CRCs jointly participate in a round of discussions for questions and comments. At that time, the credit data experts point out any concepts that may prove extremely challenging or even impossible to level across all CRCs. Concepts and characteristics may be scrapped or marked as pending further review.

With the list of characteristics as their starting point and the customer's intent clarified, the individual CRCs compose a set of characteristic definitions based on the data elements available for their respective organizations. After sharing definitions with the other CRCs, the credit data experts work with the customer, who directs them on how to resolve definitional or philosophical differences. It is imperative that the customer drives the decision-making process, because the characteristics will be a reflection

of the customer's own credit policy. Based on the customer's input, the credit data experts then modify their own set of characteristic specifications, repeating the process until the characteristic definitions satisfy the customer's objective and are as leveled as possible.

Phase 2 – Programming and Auditing

The characteristic specifications must be programmed (or coded) and audited before the characteristic set can be approved as production-ready. The goals of the audit are to verify that the characteristics have been coded accurately and that the characteristics have been leveled as best as possible without compromising the overall objectives for the set. Because this approval must come from both the credit data experts and the customer, they work together to develop an exhaustive audit plan. Typically, the audit entails each CRC pulling credit files in an anonymous manner for a selected sample of consumers, applying their respective characteristic definitions to those files, and performing a quality audit on the characteristic values.

When discussing the audit process, it is helpful to understand that the characteristics are composed of a set of building blocks (or filters) that define basic concepts used in credit decisioning. These concepts include such concepts as industry types (e.g., banking, finance, retail), payment behavior (e.g., 30-day rating, presence of bankruptcy, satisfactory rating), and credit inquiries initiated by the consumer. Characteristics are then defined using these building blocks (or filters). For example, a characteristic "Total Number of 30-Day Ratings on Retail Accounts" would use the retail and 30-day rating filters.

For the audit, the values for both the individual filters and the characteristics for individual consumer profiles are compared between the CRCs. Since the filters summarize a consumer's credit data at a component level, rather than an overall profile level, additional statistics are needed to audit at the consumer level. Each CRC generates summary characteristic statistics (e.g., minimum, maximum, mean, median, and quantile values) to assist in completing this portion of the audit.

Based on the results of the filter and characteristic comparison between CRCs, the characteristic specifications may be edited to accommodate scenarios that are present in the data but not addressed by the original set of specifications. More importantly, the specifications may be modified to further minimize differences between the CRCs, while maintaining the agreement in credit perspectives. Whenever significant modifications are made to the specifications, summary filter and characteristic statistics are generated for the new batch of specifications and those statistics are compared to the previous batch of statistics. The CRCs and customer confirm the observed differences are a result of the modifications, and that they are in alignment with any expectations.

Depending on corrections for quality and the differences between the CRCs, the programming and auditing may require several iterations before a final set of characteristic specifications and programming are approved. Any outstanding differences are noted as necessary, with supporting documentation for irresolution.

Figure 1 below pictorially represents the characteristic normalization process flow.

Figure 1. Characteristic Normalization Process Flow
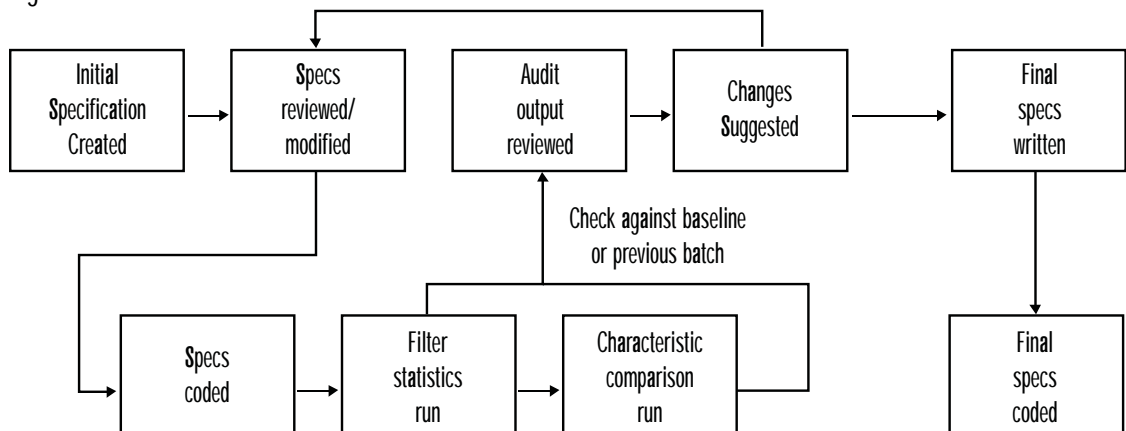
Figure 1: Characteristic Normalization Process Flow

During the entire process, the credit data experts communicate extensively among themselves and with the customer to construct a normalized set of characteristics. These experts have access to the resources within their respective organizations and can supply important information, including reporting practices, intent and use of specific data elements, and changes to reporting structure. One CRC operating independently to apply definitions to another CRC's data will not have access to this in-depth knowledge, which can result in the data not being optimally used or even being used erroneously.

A Case Study – The New VantageScore℠

In the case of the new VantageScore, the customer was a group of model developers representing each of the three CRCs. The developers compiled a comprehensive list of characteristics to build a credit data risk model that could be implemented at all three CRCs. The characteristics, and hence the score, would need to be as consistent as possible for an individual consumer regardless of which CRC provided the consumer's credit file. The characteristics also had to maintain the credit risk philosophies approved by all three CRCs. Further, every effort would be made to avoid any single CRC's characteristic definitions being handicapped due to true data differences.

Characteristic list in hand, the credit file experts began constructing a level set of filter definitions.

As an example of this process, it was determined that a filter for "trade" was needed since many of the characteristics calculate values on the trade set of the credit file. Since the credit data experts know that there are differences between them in their display of "trade" it was agreed that normalization must occur. The difference is that one CRC displays their external collections as trades while the other two CRCs display them in a segment separate from trade. To normalize the trade definition, the decision was made by the credit data experts to exclude external collections in the trade definition for <u>all</u> CRCs.

Also, philosophically the CRCs agreed that factoring company data should be included as external collections and thus excluded from the trade definition. The result of this normalization process for the trade filter are the following definitions that contain codes unique to each CRC but provides a consistent end result across them.

	Definition for CRC A	Definition for CRC B	Definition for CRC C
TRADE Excludes external collection trades and factoring company trades	TR-PT and (Exclude IND-TYPE = FY, YA, YC)	Id = 07 and Status > 01 and (Exclude KOB = YA, YC, YL, YZ, ZY Or Enhanced Type = 48, 0C)	TR-TR and (Exclude IND-CODE = Y or Loan Type FC)

After several iterations of definitions and some initial coding and auditing using a common data sample, the credit data experts and the team of developers agreed upon the filter definitions. Building from these filter definitions, the credit data experts then assembled characteristic definitions.

For example, the following characteristic (age, in months, of oldest trade) uses a trade filter that has been normalized. All other aspects of the characteristic definition, the logic used, the length of the field, the default logic handling, etc., are consistent between the CRCs so that the characteristics yield equitable results when implemented, barring differences in the core data on the credit profile at each CRC.

Age, in months, of oldest trade SAS Label: AGE OF OLDEST TRADE Logic: TRADE and (OPEN or CLOSED or STATIC) and MONTHS-OPEN < = 9998	
Computation: MAX Length: 4 Default1: 9999 Default2: Default3:	Operand1: MONTHS-OPEN Operand 2: Default1 Condition : TR6001 = 0 and TR0102 = 0 Default2 Condition: Default3 Condition:

After more iterations of definitions, coding and auditing, the credit data experts and model developers finally agreed to a characteristic set that was production-ready. The developers then took this set of characteristic definitions to build the model that could be implemented at all three CRCs with consistent results.

It is important to note that documenting irresolvable differences was vital as the developers built the scoring system. Having this documentation allowed the developers to make important decisions regarding the use of certain characteristics or concepts from their characteristic list. At any point in the process, when statistically and logically possible, a conscious effort was made to identify and replace characteristics that had underlying irresolvable data differences. This minimized the opportunity for conflicting results when the score was returned.

During the development of VantageScore, the credit data experts remained heavily involved with the team of developers by providing additional information or investigating differences. Further, both the credit data experts and developers served as resources for their teams during the production implementation process.

Benefits of Characteristic Normalization

For consumer credit grantors, using normalized characteristics allows them to have a more consistent picture of a consumer's credit payment behavior, regardless of which CRC's data is being used. Credit grantors can have more confidence that they are making a consistent credit decision when applying the same characteristics to different sets of data. Normalized characteristics are also beneficial in helping credit grantors avoid large investments to maintain different credit decisioning policies for each CRC. For example, if a credit grantor were to retain different credit policies based on the CRC supplying the profile, it would need to invest resources in programming, maintaining, and training personnel on the different policies.

For consumers seeking credit, they can be assured of receiving uniform representations of their credit history, no matter which company provides their credit history. This is very important in a time when educated consumers are conscientiously making inquiries to all three CRCs for copies of their credit files and comparing the reported information.

The "New Art" of Characteristic Normalization

With ever-increasing consumer awareness of credit scoring, it is important that steps be taken to make consistent credit decisions. Simply put, the new art of characteristic normalization produces more equitable and consistent characteristic definitions, which creates a more equitable and consistent score and characteristic results for the same consumer. Although characteristic leveling is an involved process that might take several months to complete, followed by additional time needed for programming and auditing, the benefits of being able to make more consistent credit decisions are significant.

5/08/2006