Balanced Services Rationale of the Universal Taxonomy of Customer Services and Product Performance Outcomes

A bi-corporal stochastic method of customer service interactions and product performance outcomes.

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Analyst's Steering Notes

As if marching not only in lockstep, but in apparent synchrony, the seed players of repute within the very young CGM metrics industry have all entered the virgin sector as brand service aspirants. Such an obvious strategy seems logical on its face, but upon further examination, fails in thought and deed. As explained in the accompanying report, the brand services industry is well established, provides repeatable metrics, and is the province and preference of internal brand managers. Although classical brand services are certainly not barred from extending CGM services to their proven sampling sets, and may be doing so, the performance of the early sector leaders has hardly made a dent in current practices.

The balanced services offering for CGM seeks to redress the major flaws of current CGM practice by providing a bridge between Business Intelligence mined from call centers, warranty, support systems, and surveys, against in-the-wild metrics from the public corpora. By reconciling the topic chains between these two data sources, we are able to create a more rationally scored set, and derive (over time), modular ontological chains that remove the very ambiguities found in the current state of CSA. Further expansion of the metrics beyond sentiment (the weakest and most subjective of the variables), will enhance the evolving accuracy of the product's output.

In the industry's short history, there have been hints of a developing interest in cross verified linguistic metrics. Some of these early methods are purely statistically based, while others are based on the wide body of research using monolithic ontological models; applying any research, either adapted from academic research or one that is wholly original will be a non-trivial undertaking, as the final offering must deliver an actionable service across the value chain from the top brand owners, through the mid-market, and even to the smallest dealers in a product network. Catering to the mutually overlapping desires of the entire value chain is an application well suited to modular ontological models, and the hybrid statistical verification of multiple sources.

Fancy words aside, the problems faced by early sector entrants have been manifold, in regard to the extension of the measurement model, metrics, and especially, reconciliation against corporate BI data warehouses. As most of the visible leaders are venture backed, they have had to 'stick to the knitting', making CSA pay no matter how weak or unsustainable the model. But this missive is not a competitive or sector commentary, it is a rationale - however, it is important to point out that the evolution of a balanced services model is a resource intensive undertaking, requiring fairly extensive test regimes that employ CS and CRM system mining, as well as sophisticated linguistic modeling. Such a research prerogative is the domain of the well-resourced, not venture backed entities with a time to harvest bias.

Telco's and media conglomerates are entities well suited to evolving the balanced model; the size of the company, services portfolios, and global relationships open the door for a full vetting of the concepts of reconciliation, concomitants, and the evolution of modular Ontologies for cross value chain issue detection. Such a product offering is deep, expansive, and could sweep the sector as the normative method of providing real-time, actionable market intelligence.
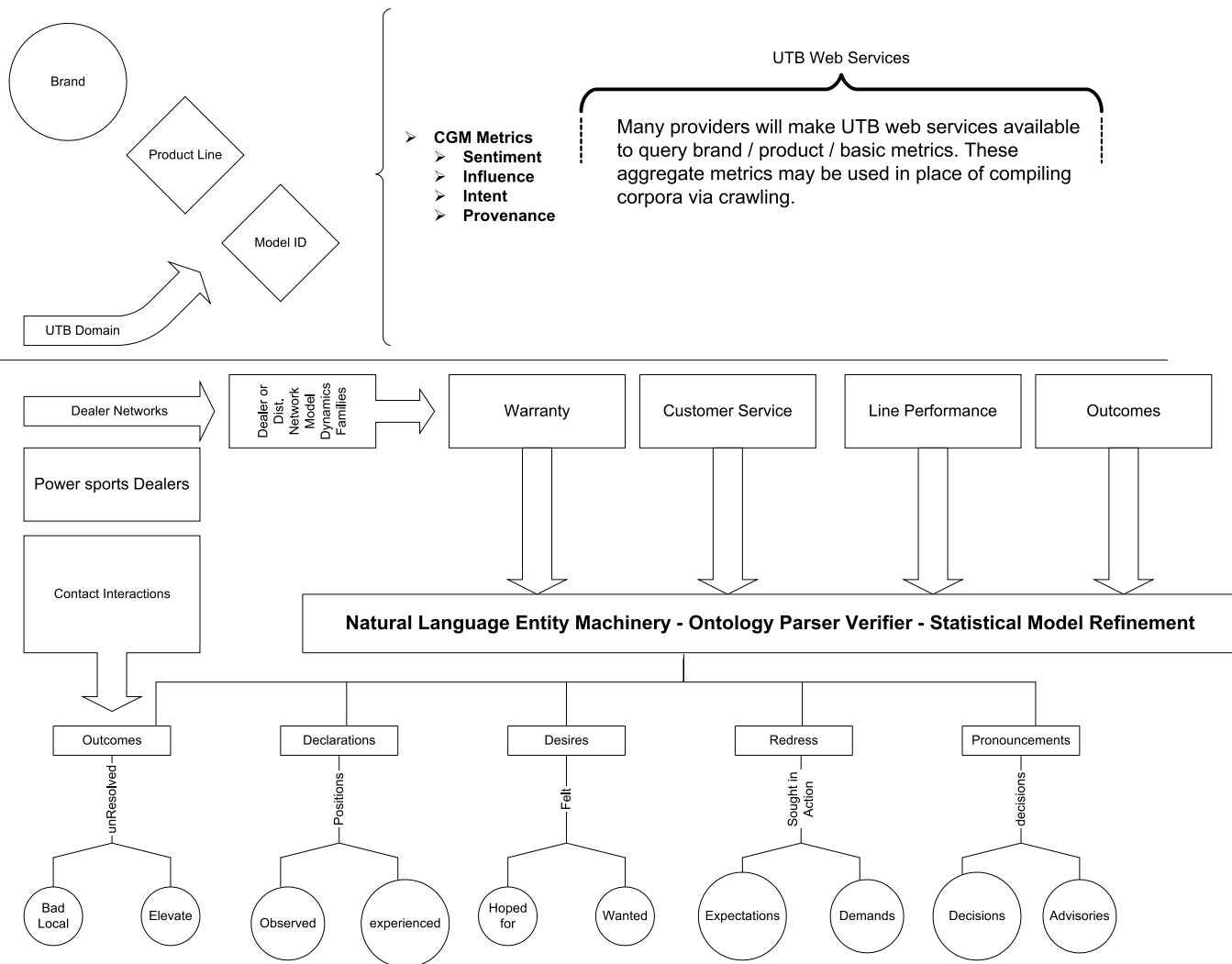
Research Areas

Reconciliation and Correlation

Cross corpora reconciliation verifies the bi-corporeal mention of a model construct synthesis (there are many), such as brand~product~dealer~issue~outcome, within the data-set. The statistical model is derived from historical compilations of query terms found wild vs. internal, with the significance attached as the data set expands. Lopsided bi-corporeal return sets are a marker of significance, as are suspiciously balanced returns. There is a predictor to be found in reconciliation.

Correlation is the time relationship found between the bi-corporeal data. In its most simplistic form, numerous mentions'

appearing in both sets closely time correlated are actionable - and free from the ambiguity of sentiment, while retaining the full potential for post linguistic analysis. More complex derivations are created from the numerous models that are synthesized from the evolving schema.

Models (modular Ontologies)

UTB Web Services

Many providers will make UTB web services available to query brand / product / basic metrics. These aggregate metrics may be used in place of compiling corpora via crawling.

- ➢ **CGM Metrics**
  - ➢ **Sentiment**
  - ➢ **Influence**
  - ➢ **Intent**
  - ➢ **Provenance**

Models are based on parse trees (term of linguistic art: cuts), that are significant chains of language elements that are related to the outcomes and performance criteria of the UTCSPPO schema. An example of a model is dealer~service~grievance~redress. With this ontological tree we can mine terms from the corpora and determine the lexical scope to a greater degree of certainty than in today's common sentiment scoring. Once this model fires, and is proven to be a reliable construct, it can be employed to mine in-the wild metrics for reconciliation and correlations.

Models are destined to become almost a mini-industry once the discipline matures; the evolution of modular Ontologies will also foster the process of ongoing refinement within any organization engaging in the regular practice of adopting new industry and product profiles into the business practice.

Dynamics

Each item of the UTCSPPO schema (still only in conceptual embryo), is a candidate for becoming a modular dynamic used to detect issues within conversations. Dynamics fall into several families of outcomes, redress, advice, and later, pronouncements. These technical methods are adapted from the discipline of conversational speech recognition. Positive outcomes and satisfaction are almost never statistically significant, whereas the negative outcomes are all important. Chains of interactions and language that are common to customer services and product performance outcomes can be detected through reoccurring modular topic chains, such as: brand, product, dealer, interaction, outcome, grievance, redress, advice, pronouncements.

Modular Ontologies are ideal for these interactions due to their tight scope when used in conjunction with a statistical

model extended by other metrics. Originally designed for telephony systems, these algorithms are very common in modern call flow systems. The post entity extraction process passes model validation candidates up the processing chain to an engine that uses these Ontologies to verify the conversation topic chain prior to metrics scoring. If you read any tech support forum, or a tech forum, you will see that each thread has a readily identified model that is a virtual clone of all others like it. These are the pragmatic semantic categories of conversation all users engage in. All of these models can be used in a predictive stochastic model that operates somewhat like a futures market for potential problems of product perception and potential outcomes. Certain markers fit interactions that are product based, while others deal with interaction outcomes.

Model dynamics based on modular Ontologies can be aided by statistical techniques to not only organize the conversation, but can improve the accuracy of identifying models. Bayesian scores may be calculated and applied across different Ontologies to optimize the firing of dynamics detection. In this system, metrics scoring is an additional value. These future systems still have to deal with problems like poly-senemny - words having two or more possible meanings. However, these systems are not totally dependent on scoring, i.e., for models that are redress based, we are less interested in the metrics score than simple existence and appearances in the private and public domains.

Such systems are conceptually superior to brand taxonomy services that are soon to be debuted by blog hosting companies. These services focus specifically on in-the-wild metrics, while the only truly significant criteria are measurements that show up in both private and wild systems. Without the computational ratios of reconciliation and time correlation, there can be no predictive models, and no true sense made of recommendations, predictive outcomes, validity, etc.

Prior Art

There is some prior art tangentially related to some parts of this system, including patents in the speech recognition field, which describes a process for imparting personality into a dialog, and the detection of communication protocols people use when engaging in conversational speech. There are a few elements and models of personality, as well as systems specialized in capturing particular kinds of replies. Such systems make use of a large taxonomy of about 2000 nodes. These very adaptive techniques are not the ideal method for a balanced service offering based on BI-CGM fusion, as this proposal focuses on fixed ontological models that are rather invariable. Furthermore, the result of an inaccurate detection of a model or dynamic is not as critical as in a real-time system - results are more quantitative, oriented towards statistics, generating reports, and semi-real-time reporting. In other words, if a model is misidentified, no harm done - mostly.

Performance

Up to an estimated. 75%+ of the time, most constructs are unambiguous. The proposed system only requires common NLP tools to extract post entities, and a method of measuring the proximity of query terms. An engine to pass these cuts to an ontological modeling system will be required. Accuracy can be enhanced with statistical techniques. Dictionaries will need to be incrementally developed via an internal linguistic research staff, or by fostering alliances with academic labs and departments. Each node in the master schema UTCSPPO needs to be validated with real data, and then models will need to be tested.

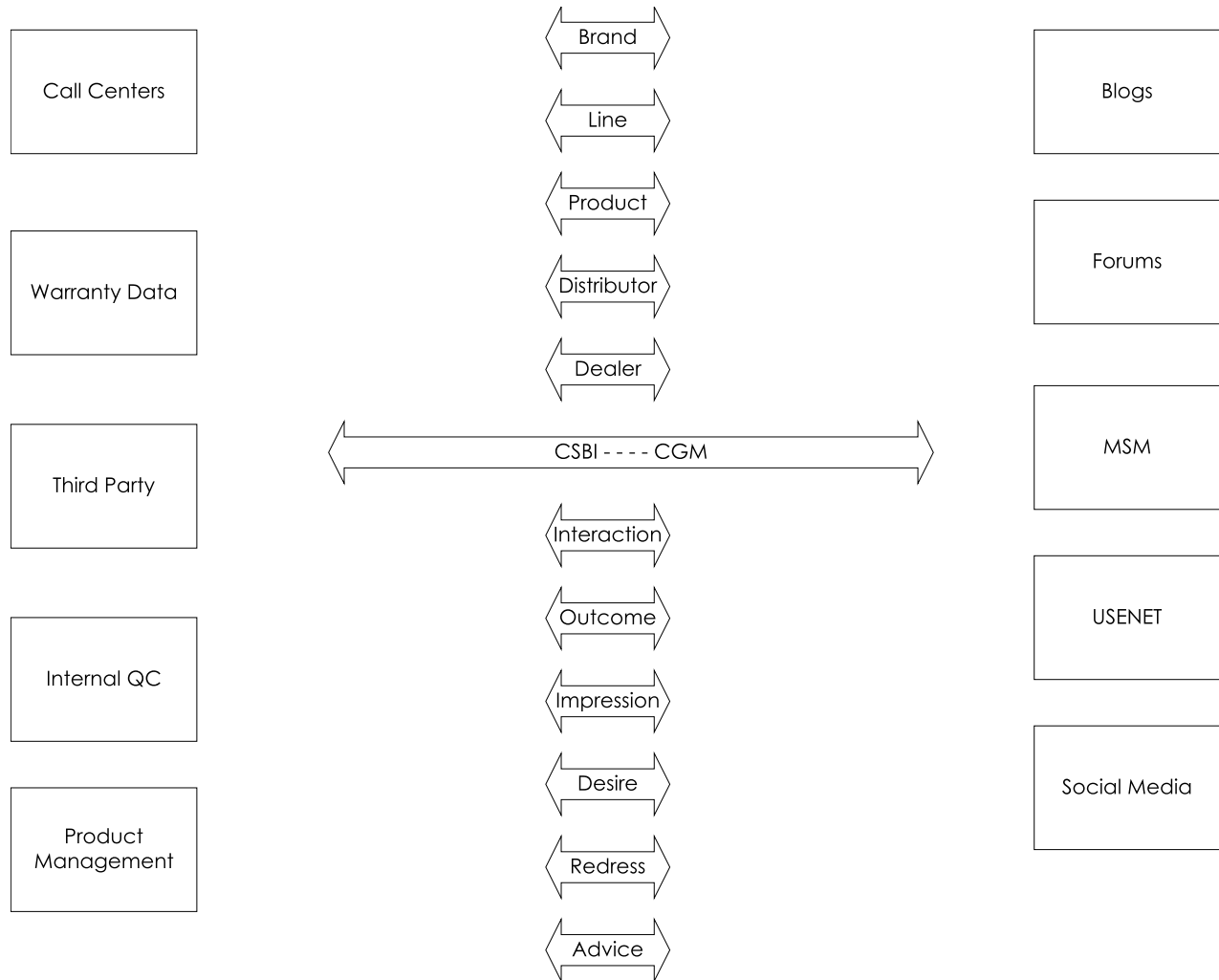**A non-trivial but important product concept**

Although sentiment scoring is an important concept in the current market sector, models are a more enduring subject of product development and research. Properly validated models and dynamics can be scored within a bi-corporal model, however, the reverse cannot be posited; mono-corporal data with metrics scoring cannot offer a predictive model for services that offer strong guidance to mid-market companies for predictive outcomes and a wide range of services. Scoring is almost beside the point, but **can** provide value-added insight to improve the human intuitive interface.

People are predictable within limited customer service and product redress interactions. When a brands, products, service interactions, bad outcomes, or redress is sought, one can model an almost perfect extraction for it mechanistically, i.e., "if we can model it, we can measure it". Unlike speech recognition, this method of detection need not be perfect, just statistically sound. **The key to success is to know how to build the initial models.**

Providing for the reconciliation of bi-corporal data may lead to ASP systems optimized for the delivery of differential predictors of customer service outcomes. Such a system can advise companies as to what products to order, what lines to carry, and how to address product performance. By correlating the appearances of model triggers and detected dynamics over time, looking back 9 months, 6 months, 3 months, predictions can be tested and refined. Any issues of redress in an internal system, scrubbed for personal data and sanitized, will be correlated with detections within the blogosphere. Or the opposite may be posited, were detection is initiated within the CGM corpora, and triggers a scrub for internal CS data. At any rate, such a system will be completely unified and its operation transparent to the users.

If a system can predict what will appear in the blogosphere based on internal data, and provide scoring, statistics, etc.,

balancing and correlating the models provide validity. Whereas today's CSA is completely fluff and nonsense, the

Call Centers		Brand		Blogs
Warranty Data		Line		Forums
		Product		
		Distributor		
Third Party		Dealer		MSM
		CSBI - - - - CGM		
		Interaction		USENET
Internal QC		Outcome		
		Impression		Social Media
Product Management		Desire		
		Redress		
		Advice		

correlation of two time series and the expansion of metrics beyond sentiment add to the gravitas of the product offering. This is a serious service based on sound concepts of operations research methods.

Early Conclusions:

The authors are recommending the analysis of two seemingly interdependent stochastic systems, and a method of detecting a time and linguistic correlation. This is a technique well known in the mathematics for economic modeling; in the economic parlance, this is called co-integration. Like a futures market, we are creating a method to understand the correlation between historical and implied volatility of product and interaction outcomes. Using these co-integrated stochastic processes, based upon bi-corporal data, we create a method of measuring and acting upon customer service interactions and product performance outcomes, ultimately making an implied connection to market pricing for advertising, product re-marketing, and market prices for any related product predictor.