Decision Support with Text
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Ubiquiti Technology Overview

Ubiquiti technologies provide the means to analyze and use the information contained within data available online. In particular, Ubiquiti handles, together with categorical and numeric data, the plain text data that often has crucial information. This implies that the unstructured text data can be utilized in a structured manner. The basic approach is, first, to assign descriptors to individual records from a reference, often domain-specific, ontology (which Ubiquiti develops and provides). Thereafter, using suitable software utilities, users can analyze and utilize the information, which would otherwise require tedious manual effort and time. Importantly, Ubiquiti solutions are very well-regarded (customers are our references, and all customers are satisfied), and essentially all development effort can be undertaken by Ubiquiti (and customers get pre-configured solutions).

Ubiquiti software generates descriptors automatically for each record within a dataset, and these descriptors serve as surrogates for the record for analysis or for indexing. As may be expected, the descriptors for each record aim to represent, concisely and accurately, the record contents. (Note that even if every record does not get precisely accurate descriptors assigned, the overall set of records still provides a statistically accurate ensemble for various important analysis tasks.) The descriptors are taken from a reference "ontology" (i.e., a set of words, phrases, terms and concepts that are interlinked to represent semantic associations) that is configured in advance (usually by Ubiquiti, based on customer-supplied raw data). Ubiquiti software "understands" the content of each record in a dataset, and then assigns the appropriate descriptors to the record. This activity can include the assignment of appropriate standardized "codes" as well. Obviously, Ubiquiti does require some information from each customer to configure the software correctly, and the needed information is described in the "Ubiquiti Enablement" document.

Example:

In the automotive sector, Ubiquiti is used to organize and analyze warranty claims, repair records, problem resolution logs, and field reports. The information from these data sources is extracted, and thereafter (with Ubiquiti-supplied or existing analysis tools), our customers examine their data in order to leverage the otherwise latent information. The analysis finds the important trends, helps to focus efforts in areas that require attention, and helps to leverage collective knowledge in solving problems as is available in organizations.

Our customers report success in the early identification of issues by analyzing their large datasets (e.g., warranty claims, safety data, and in-house problem logs). Issues are identified, root causes are determined, and corrective actions are taken – all of which happens rapidly. This has resulted in direct, verifiable cost savings; and our customers report significant returns on investment within the first few months of use of Ubiquiti technologies.

In the particular case of warranty data analysis, Ubiquiti customers are able to identify problems much faster and with greater accuracy – in particular, because technician text narratives provide good clues as to the root cause for problems arising in the field. Since Ubiquiti software enables rapid examination of text narratives for use with the extracted information in analysis, customers are able to hasten the implementation of the corrective actions (instead of expending time in the identification of the problems).

An example text narrative by a technician (from an automotive warranty claim):

Original Text Narrative

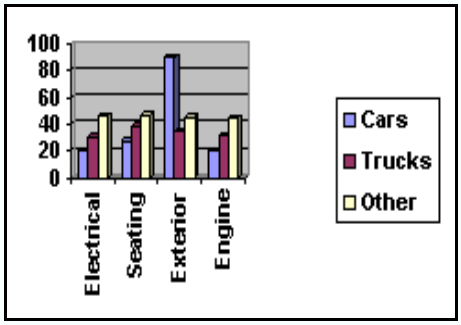
"5 DE57 BASC 1548 CK OUT AC INOP PREFORM PID CK CK PCM PID ACC CK OK OPERATING ON AND OFF PREFORM POWER AND GRONED CK AT COMPRESOR FONED NO GRONED PREFORM PINPONT DIAG AND TRACE GRONED FONED BADCO NECTION AT X775 REPAIR AND RETEST OK CK AC OPERATION"

Simple Ubiquiti Corrected

5 DE57 Basic 1548 Check Out Air Conditioner Inoperable Perform PID Check Check Power Control Module PID Accessory Check OK Operating On And Off Perform Power And Ground Check At Compressor Found No Ground Perform Pinpoint Diagnosis And Trace Ground Found Bad Connection At Splice 775 Repair And Retest OK Check Air Conditioner Operation.

Information Extracted by Ubiquiti

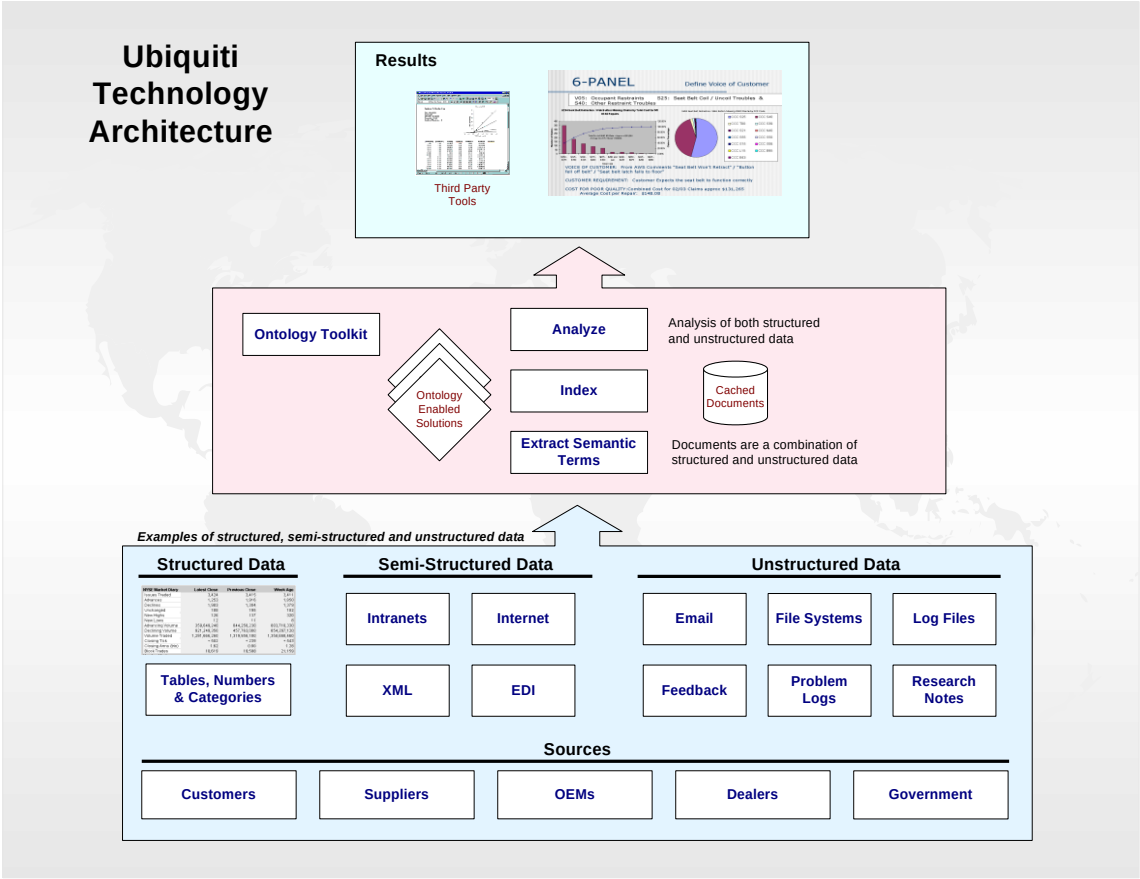
Descriptor	Value
Primary Group:	Electrical
Subgroup:	Climate Control
Part:	Splice X775
Problem:	Bad Connection
Repair:	Reconnect
Location:	Engine Compartment



A key to Ubiquiti solutions is the ability to extract useful information from data (including text) using unique technologies which are largely independent of the style and structure (e.g., text may have poor grammar, misspellings, use of jargon etc.) or the source of the data. Our analysis tools enable processing to be performed quickly, accurately, and automatically – with results often being more consistent as compared to manual analysis. Ubiquiti solutions have a real-world proven track record: every analysis customer has verified the value of our solutions.

Ubiquiti technologies are used in leveraging the information from different sources of data and domain areas, and for different end-purposes. Uses include early warning systems, root cause identification, online diagnostics, rapid search etc. Several available case studies help exemplify the approach and benefits of using Ubiquiti technologies.

As explained, the information extraction (or equivalently, the descriptors assignment in Ubiquiti), may be regarded as a conversion from the original, perhaps unstructured, dataset – into a new structured dataset. As such, after the conversion has been done, the datasets become amenable to the typical processing and analysis as is available for structured datasets. In other words, one may apply the many available, well-established techniques to identify important events, problems, opportunities and trends – and do so even with other available software systems.



Ubiquiti software is based on a unique blend of several technologies and applied mathematics – including probability and statistics, natural language processing, quantitative machine learning, cognitive sciences, database management etc. There are a number of ways to categorize the basic algorithms within Ubiquiti software – for example, the descriptors assignment itself may be regarded as a classification problem, standard indexing, or even text extraction. The particular terminology or categorization of Ubiquiti algorithms is less important than the fact that it works, and works well. Currently, the datasets which can be analyzed include numeric, categorical and text data; other forms of data may be represented, but are not targeted for analysis.

Ubiquiti Inc., in business since year 2000, provides high-value solutions for information analysis, with special emphasis on text and large datasets. Our solutions cover the lifecycle of analysis including requirements gathering, design, implementation, and on-going support. Ubiquiti has a current presence in the transportation, healthcare, and related industries. Our customers include Autoliv NA, AGC Automotive, Bridgestone Americas, Cooper Standard Auto, Continental Corp., Dura Automotive, Freudenberg-NOK, Lear Corp., Magna Int'l, Meritor, Yazaki NA and more.