Overview and Features

September 2014

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1 Futrix Health Product Overview

Futrix Health is a healthcare-specific solution focused on the business challenges and information needs of the healthcare industry. Futrix Health combines an advanced self-service business intelligence solution with a powerful suite of unique analytic capabilities designed to meet the needs of healthcare organizations worldwide. Futrix Health efficiently delivers industry specific, actionable information in a secure, easy to use web environment that can be rapidly deployed to any number of users ranging from high-level executives to detail analysts within an organization.

The benefits of Futrix Health include:

- Healthcare industry functionality specifically designed to meet the information requirements of health organizations:
  - Out-of-the-box healthcare measures (PMPM, provider/patient utilization, outcomes).
  - Ability to easily incorporate disparate health data sources (e.g. clinical, disease management, claims, membership, pharmaceutical and demographic).
- Monitor and track healthcare initiatives and trends in real-time:
  - Understand profit and loss by segment.
  - Monitor the effectiveness of medical management and wellness programs.
  - Understand spikes in costs.
  - Make changes to your business processes based on the most current information.
- Designed to be a flexible, user-friendly solution, which minimizes the time required for users to become empowered and productive in a self-service environment.
- Futrix Health quickly answers business questions by transforming data to valuable information for critical decision-making with drill-anywhere capabilities at the click of a mouse.
- Designed to handle processing of large data volumes.
- Leverages the strengths of the SAS analytic software platform while providing a streamlined and simplified deployment strategy.
- Comprehensive privacy protection and data confidentiality.

2 Futrix Health Self-Service Business Intelligence

Drill Anywhere

Users can immediately answer questions because they have the freedom to explore data in ways that meet their business requirements and not be constrained by the way the data was designed, with rigid hierarchies and cube structures for example. Different users and departments need to discover relevant information from the oceans of data in very different and concise ways. Futrix Health allows them to surface meaningful information on demand in the form that they need it.

Intuitive Visualization Environment

Users can explore Viewpoints of information using any combination of interactive tables, charts, dials, and maps that allow users to drill into or expand the information to gain further understanding. Traffic-lighting, commentary and email alerting ensures that users are focused on what is important. Geographic maps can easily be created to explore information in a spatial context with a simple mouse click.

Self-Service Utilization

A user friendly interface allows knowledge workers and decision makers to understand issues early and deliver proactive recommendations. Users are no longer confined to the limitations of pre-defined reports and cube structures. Futrix Health opens up the full potential of the data to generate actionable information without having to involve IT specialists for assistance. Users can create their own analysis streams and deliverables based on the needs of their organizations.

User Defined Dashboards

Users can explore individual Viewpoints of information, or combine them to create Dashboards that can be saved for private use, or shared with other users or groups of authorized users.

Export and Share Information

Targeted data extracts and static reporting are available as interactive or batch process options. Individual or multiple Viewpoints can also be exported to a range of document types including HTML, Microsoft Word, Excel, and PDF. Data extracts allow for output options that include; CSV, Excel or SAS datasets.

Security

Futrix Health provides comprehensive functionality to ensure privacy protection and data confidentiality. In addition to table, column, row and functional restrictions, Futrix's Privacy Drill Control enables thresholds to be set to govern access to lower levels of aggregate information, to prevent identification of members through triangulation of attributes of those members.

Analytic Data Mart

When performance tuning is required, Futrix Health will generate analytic data marts, minimizing IT effort and cost by removing the need to manually build and maintain data structures. Futrix Health manages the creation of any performance structures or analytic data mart that may be needed. It does not require cube structures to be created but Futrix Health can utilize cubes if preferred.

If a high performance MPP (Massively Parallel Processing) database like Teradata or Netezza is available, Futrix can use its own “in database” processing to optimize performance.

Self-Optimization and Tracking

Futrix Health is self-optimizing based on tracking data gathered from actual user interaction with the data and associated Viewpoints. The system will also automatically highlight areas of peak usage and provide recommended data structures for improved performance tuning.

System Audit Metrics

Leveraging the usage tracking data, the system provides visibility to audit activity metrics for questions such as what information is used, when it is used, and who is using it. This information can also be used to improve capacity planning and highlight potential user training needs.

Customization

The Futrix Health user interface can be easily modified and re-branded to adopt customer logos and web or export styles, enabling it to adapt to every client delivery environment. The Futrix Health analytical environment can also be customized to be compatible with source data structures and create advanced analytics and reports to meet rapidly changing business needs.

Software-as-a-Service (SaaS)

Futrix Health allows for easy adoption and access to external clients for interactive reporting and analysis of their specific health data. Futrix has the ability to support custom fields that are customer specific as well as the ability for any field to conditionally exist for a specific customer, providing an exceptionally rich data analysis and reporting experience. Futrix also provides extensive centralized security and access controls to the system for different customer requirements.

Futrix Data Driver

The Futrix Health analytic engine can be securely accessed through any ODBC or JDBC compliant applications, including Excel, SAS applications, and other BI environments. This opens up tremendous possibilities to access the power of Futrix while leveraging existing investments across the organization.

Integration with the SAS Framework

Futrix Health strategically leverages the SAS Analytic Framework, including flexible processing power, analytic strength and direct data access to any database engine. The architecture of Futrix allows for custom SAS code and algorithms to be integrated within the deliverables and seamlessly utilized by any Futrix user.

3 Futrix Health Unique Analytic Capabilities

Futrix Health has revolutionary technology that allows users to incorporate completely different data sources and create virtually any kind of measure, grouping, or viewpoint and then freely analyze across **all** other relevant data sources. These capabilities are based on the unique underlying architecture of the Futrix Analytic Engine. The system automatically manages the integrity of the results.

3.1 Linked Measures (merging disparate sources)

The Futrix Health Linked Measure functionality provides the basis for the easy creation and use of key health-related measurements such as Per Member Per Month (PMPM) values and utilization measurements. This is because Linked Measures provide the ability to use measures from other data sources.

Linked Measures allow analysis across many data sources such as clinical patient data, disease management, processed claims, financial and membership information quickly, easily and accurately. All the appropriate filters that are relevant to the other data sources will be applied seamlessly. The linked measure is aggregated and merged between sources based on common and uncommon dimensional values being utilized for analysis.

Examples:

- Per Member Per Month for classic Claims/Enrollment merging. Dynamically calculate PMPM while drilling into the data in a direction and focus on the PMPM calculations specific to your area of expertise.
- Claims/enrollment ratios (e.g. PCPM, Admits/1000). Securely and flexibly drill into patient data and physician data to analyze patient and physician utilization.
- Member/roster analysis to pull claims for member(s).
- While using a data source of generic population information by state, county, gender, etc., Futrix Health allows inclusion of those population values in any analysis of customers, pulling in the overall population numbers as needed.
- Create Single Stream of Data (SSD) analytics by linking measures in Claim, Premium, Membership, Medical Management, etc. Any user can create analytics which compare the correlation between attributes from different data sources.

3.2 Cohort Analysis Groups

Analysis Groups provide the ability to create subset populations of individuals or categories from any source of information and analyze that group against any other related source of information. This empowers users to focus on cohort groups for various types of analysis in different subject areas throughout the organization. Analysis Groups allow for multi-dimensional filtering as well as the use of aggregate level filtering (such as Top X type filters) in order to create a specific focused subset population of interest for analysis. This results in a dimension that has two values: those included within the Analysis Group; and those not in the Analysis Group.

The Analysis Group can then be used across different data sources, even where the filters that the Analysis Group is based on are not available. Cohort Analysis Groups can be used to create your own categorical dimensions to analyze wellness, medical management, and member segment groups based on the specifications of interest.

Examples:

- Use a "Diabetics with Hypertension" filter set to identify membership in this category where these values are only available within a DxCG data model. Once those members have been identified with an Analysis Group, the user can use this new Analysis Group dimension against the claims data (which may not have the dimensions associated with this clinical condition).
- Use a "High risk of chronic conditions" filter set based on historical claims data to create a new dimension that can be used on membership data.
- Create a "Most costly 10 providers this year" Analysis Group, based on filtering that identifies these 10 Providers, and then use this new dimension on any data source that has the Provider dimension available.
- Provider profiles that measure similar peer groups can be easily established to monitor and evaluate physician practice patterns, clinical outcomes, and patient experience.
- Utilize DRG comparisons to not only better predict the cost of hospitalization, but also to explore clinical data in the associated outpatient, physician office, rehab, and pharmaceutical experience.

3.3 Event Based Analysis Groups

This type of Segmentation Dimension allows users to specify a select population based on two independent events occurring within (or beyond) some timing criteria such as days, weeks, months etc. These two events may be defined on a single data source or they could be from two entirely different data sources. As with other segmentation dimension, these groups can also incorporate subset filtering options and the resulting population can be applied and analyzed against any other associated data source.

Examples:

- Users can identify a subset patient population of Re-Admit activity that originally checked into a clinic or ER from an Outpatient source with a certain clinical condition then subsequently within 30 days checked into the Hospital identified from an Inpatient source. They can analyze all aspects of their medical condition, demographic distribution and treatment activity. This type of re-admit analysis is critical to both patient care and cost containment.
- Clinical analysts can identify at-risk patients who have gaps in their conditional prescribed medications in relation to their initial diagnosis or post-surgical procedures within a reasonable timeframe. It is critical that heart patients stay on their medication for the prescribed time period or be at risk for further complications.

3.4 Aggregate Statistical Banding

Expanding on Analysis Groups, users can segment/stratify a cohort group into value bands for different levels of severity. These same group/population bands can then be analyzed across all other data sources, even where the data elements for the filters and the segment bands are not even available. This empowers users to further analyze cohort groups by stratifying them across different levels of severity or value.

Banding can be created on Value, Standard Deviations, Percentiles or Segment of Total providing for different types of analysis based on the statistical approach desired by the user and their business requirements to identify different levels of importance and impact of the various selected groups.

Examples:

- Users can analyze the cost and clinical effectiveness of managed care programs by creating custom bands identifying High Cost members stratifying their total overall claim activity and analyzing the members managed care participation and activity levels.
- Organizations can stratify High Cost providers and create segmentation analysis targeting the overall comparisons based on costs being driven by various groups of providers across multiple-source touch points.
- Clinical Care analysts can stratify patients based on disease severity levels or risk scores to conduct trimmed analysis for certain outliers from the standard deviation of the norms. They can then explore aspects of lab results, prescription drug treatments and overall care activity for these populations.

3.5 Complex Calculations

Futrix provides for enhanced calculations that allow advanced formula to be used across dimensional and measure boundaries, including the use of conditional “If-Then-Else” logic. Users have an ability to define Calculated Measures that can make use of values from any other Dimensional cells relative to the current one or even conditionally define alternate calculations or text values within measure cells.

Examples of Measure Types Include:

- Rolling Averages
- Positive Contributions
- Cross Dimensional Calculations
- Time Series and Lag Analysis
- Relative and Cumulative Values

3.6 Dynamic Grouping Dimensions

Dynamic Grouping enables tremendous flexibility for categorizing information in unique and different ways outside of traditional groupings, freeing the user from being dependent on predefined groupings and values within the source data. This functionality provides dynamic clustering of dimension values to create new groupings based on an analyst-driven selection process. The user can create any clustering of values already available to make their own higher level groupings.

The user can also choose to create a default group for "all other values" that haven’t specifically been linked to particular groups. This allows users to creatively and dynamically summarize information in ways that are not handled by standard coding structures or predefined groupings within a data source.

Examples:

- DRG codes can be easily grouped together to identify specific areas of clinical procedures to be analyzed and then view by age group or gender to determine which procedures are most prominent.
- Group all hospitals within a 5 mile radius of a specific location to enable provider access analysis.
- Group certain procedure codes to gain insight into the efficacy of targeted managed care initiatives.
- Create provider outcome analytics by grouping procedure and episode measures to calculate re-admissions and recidivism.
- Analyze and compare specific segments of members such as “Union-Toledo-PPO Level 3” to another member segment by defining a new categorical Dimension by grouping user defined values.

3.7 Dynamic Benchmarking

Futrix Health benchmarks can be dynamically created from any source data and compared to national, regional and local benchmarks, or to compare a single member, provider etc. to all others. Futrix has the ability to create benchmarks which mirror the defined attributes of the control data such as similar industry, time period, geography, etc., and compare those benchmarked metrics to the control group data as it is created, resulting in continuously updated normative data synonymous with the segment measured.

3.7.1 Benchmarking Dimensions

Benchmarking Dimensions make it possible to choose a specific dimension value of any dimension (or a set of them) and then isolate, creating a new dimension which has only the isolated values and "All Others". This "All Others" is the benchmark set which does not include the selected values. This cohort measurement allows for comparative analysis of one small group to the rest of the entire population.

Examples:

- Select a single provider and isolate it, creating a benchmark set of all other providers. This allows for direct comparisons between one provider and all others in similar peer groups to see what areas they are performing well in and where they are not. The user can define the peer group rules and apply them to the benchmark sample; thereby, comparing providers with similar patients.
- Calculated values such as PMPM for one provider group can be compared to the PMPM calculations for all other providers to determine what is the cost of service for one provider group when compared to a benchmark of all other provider groups.

3.7.2 Benchmarking Measures

Benchmarking Measures enable the creation of a measure that can include values outside of the dimension values being analyzed, by including values that span another dimension.

Examples:

- Evaluate the price-per-service of each provider compared to the average price-per-service across all counties where the provider operates. For different providers, create Benchmarking Measures that span the "County" dimension. This provides the measure value for the total of all counties where that provider has a presence, thereby only comparing them to the other providers with similar geographic coverage.
- Evaluate the chronic care compliance of patients compared across all provider organizations. Useful for measure of Accountable Care Organizations and Patient Center Medical Home report cards.

By creating Calculated Measures within Futrix to compare the standard measures with the Benchmarking Measures, it is possible to create ratios between the two (and optionally removing the values of interest from the benchmark).

3.8 Privacy Drill Control

Futrix Health provides comprehensive functionality to ensure privacy protection and data confidentiality. In addition to all the other types of security restrictions within Futrix (table, column, row, functional levels), it is also possible to set thresholds to prevent some users from getting too close to the detail level of data where it may be possible to identify specific members, clinical conditions, providers, etc., or divulge sensitive information. Users can have different levels of access thresholds (low, medium, high, or unlimited) per Measure.

No data is removed in this process, thereby retaining referential integrity. All standard functionality is still available to the users. It is also important that where a specific output contains a mix of higher-level values and also some values that fall below the user's access level, they are still presented with the higher-level values, so that the totals add up correctly but any identifiable dimension values have been masked.

Examples:

While drilling and filtering into a source of information, if there were just a few rows of a displayed table which had very little contributing source data, but every other row was above the privacy threshold, then users will still be given a report, but the data that fell below the threshold will be clustered and made anonymous before being provided to the user. e.g. values relating to age, location, job title, ethnicity, conditions, etc. may be masked and clustered together to prevent information being inferred from the results.

- Set drill levels based on user or user role to ensure HIPAA (Health Insurance Portability and Accountability Act) PHI (Protected Health Information) compliance. Create data governance based on the user's permissions to view PHI.
  - If a user is not permitted to view PHI, then the Futrix drill permissions would not allow that user to view a cell of information with less than a defined number of members in de-identified data, for example less than ten members in a cell of data will be blocked for that user. A user who may have permission to view the total population of data may be restricted from seeing a segment of employees contained within the information.
  - A business analyst may be permitted to view the details of their division, but may not view details from another division. Privacy Drill Control can set the business rules to not permit the business analyst from viewing restricted data.
- Privacy Drill Control can manage permissions of those users who can view Summary Health Information (SHI) and for those indicated as Group Health Plan Designees (GHP) who are permitted to view PHI information. Futrix view can govern data access based on the role of the user, thereby ensuring confidentiality and HIPAA PHI compliance of Minimum Necessary Rules.