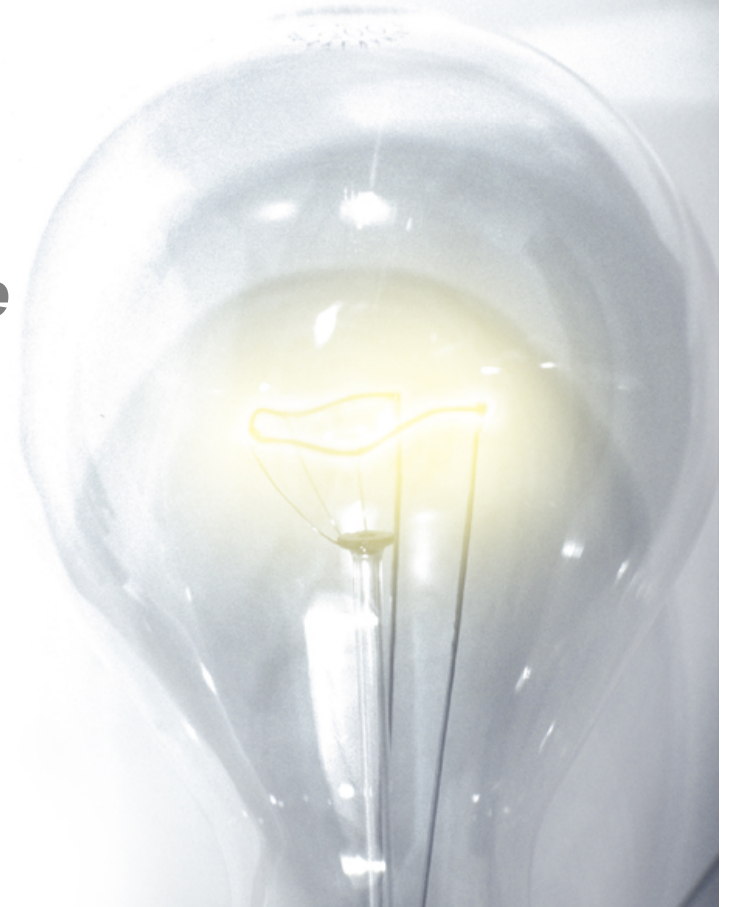# INGENIX®

DSOWeb

Innovation in ETL
Transforming Raw Data into the Building Blocks of Intelligence

April 4, 2007

About Ingenix - Data Services Organization (DSO)

The Ingenix Data Services Organization (DSO) annually processes and integrates millions of service lines and other claim-related data from more than 500 diverse health and productivity related data sources for more than 125 large employers and hundreds of small employers. This translates to:

- 4250 feeds processed in 2005
- 8964 feeds processed in 2006
- 18,000+/- feeds processed in 2007

About Ingenix - DSO Processes

- Data is received across several media types related to eligibility, medical claim (includes vision and mental health), pharmacy claim, workers compensation, short-term disability, long-term disability, FMLA, lab results, disease management, health risk appraisal, payroll information, etc.

- Implementation is the design phase focusing on data layout, client account structure, initial data quality plan, conversion rules and successful completion of the first cycle.

- Update cycle is the periodic receipt of data from carriers/clients, focusing on data review, investigation/resolution of inconsistencies to ensure clean data, and loading onto analytical environment
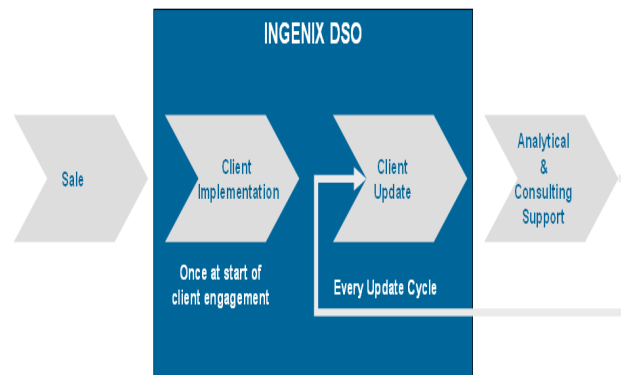
Business and Operational Challenges

- Long turnaround time for data delivery
- Need for a cost effective data management solution
- Absence of streamlined data quality assessment and investigation process
- Absence of company-wide standardized data intake process
- Quality review process that is manual and subjective leading to errors, rework and decreased confidence in results
- High maintenance costs

Business Needs

- Increase customer satisfaction through faster turnaround time and higher data quality

- Higher productivity through faster learning curve

- Elimination of manual intervention and continuous inspection of data

- Continually increasing automation

- Meet growing demand for faster data delivery and higher level of data quality

- Efficient data profiling and data management

- Flawless data delivery to analytical environments

- Ability to leverage transformed data across multiple Ingenix products

DSOWeb – Innovative ETL & DQ Solution

- Standardized data processing by data types – eligibility, medical, drug, disability, WC, FMLA, HRA, lab and disease management
- Standardized incoming data into common format by data type
- Automated data quality checks
- Automated data trending
- Automated file processing and job monitoring
- User 'friendly' interface
- Data quality and trending failure analyses
- Transformation and mapping functionalities
- Integrated data quality investigation functionalities
- Validated client and carrier details from profiles such as:
    - Employee status, employee type and types of coverage
    - Number of covered lives and products
- Operational and data quality metrics

DSOWeb - Express eVal – UI Driven Mapping Functionality
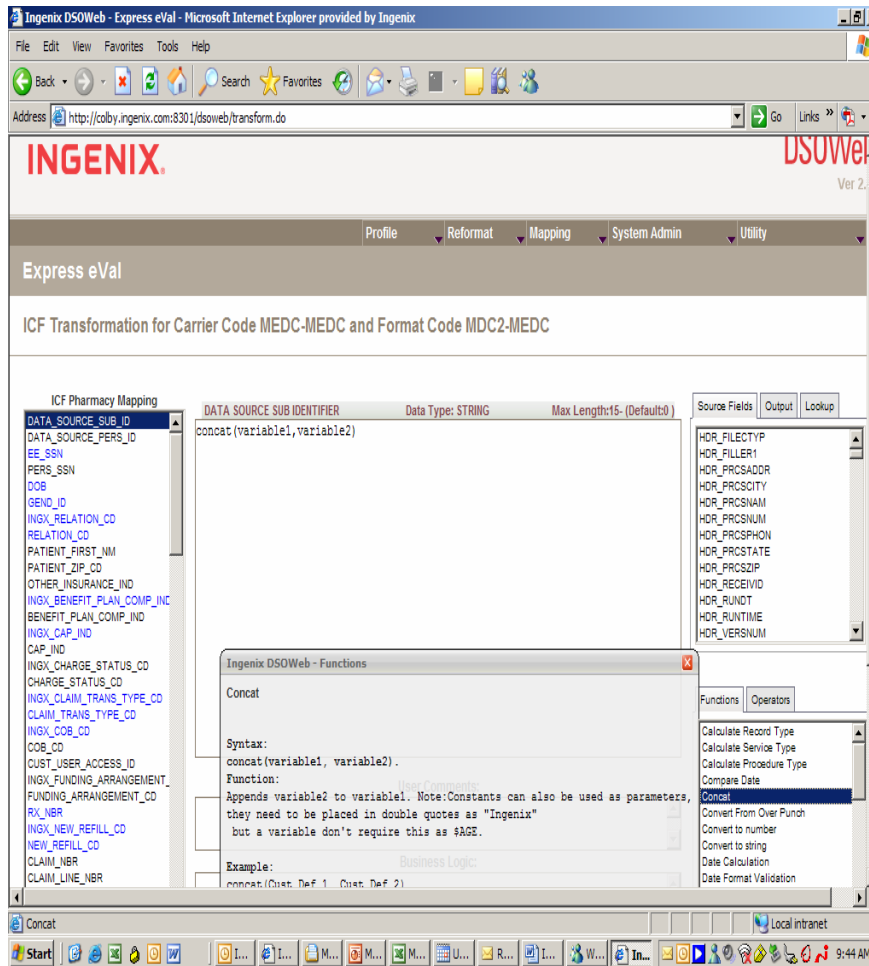
- Enables users to create source to common data mapping

- Point and click functionality; functions, operators and attribute selection easily added to transformation box

- Dynamic Help; displays syntax and example for each function

- On-screen listing of source attributes, mapped attributes and look-ups for transformations

- Text box to capture business logic for each transformation

- All transformations are stored in meta data tables and available for hard copy documentation and searches

DSOWeb – Data Quality

- Data Quality Rule engine systematically compares data results to rule thresholds and only flags exceptions for DSOWeb user intervention

- Metadata Driven Rules Engine - Quick turnaround for adding, deleting or modifying rules

- More than 7,000 data quality rules tailored to each data type

- Different rule types for column property enforcement, structure enforcement and business rules enforcement

- Formulated from verified client claims, eligibility, lab results, HRA and workforce productivity data experience

- Based on record distribution and benefits paid threshold

DSOWeb – Trending

- Flags unexpected trends in data. Two levels are:
    - Month-to-date trending with the previous month's data
    - Year-to-date trending with the previous year's data.
        - For year-to-date, the trending is done up to the month the data is being processed
        - **Example**: If the plan begins in January and the current processing month is June, then trending is performed between received year's January-June and data for January-June of the previous year.
- Metadata driven trending rules engine; quick turn around for adding, deleting or modifying rules
- Configurable tolerance ranges for trending rules
- Examples of tolerable ranges

Record Count	Passing Range
Less Than 10000	5% to +5%
10001 -25000	-3% to +3%
Greater Than 25000	-1% to +1%

DSOWeb – Job and File Processing Dashboard

DSOWeb – UI Driven DQ Failure Analysis and Decision Making

Data Quality Overrides

RunId	6749	File Name	Abc_car1_car2_F20051001_T20051231_VEL6447.txt
Client	**ABC Client**	Carrier E	Car1
Recieved Date	2006-10-04	Sub Period	Oct 2005 To Dec 2005

Rule Level: [Claims Before Merge ▼]   Rule Type: [1 Way Frequency ▼] [Apply Filter] [Back]

Rule Id	Override Type	Rule Type	Rule Level	ICF Variable(Condition)	Upper Limit	Lower Limit	Actual(%)	Actual Count	Override Level	Reason For Override
5025	Permanent ▼	1 Way Frequency	Claims Before Merge	INGENIX RELATION CODE = 3	21.0	11.0	22.15	19913	Data Feed ▼	OK for Client X - Just outside of norm
5037	Permanent ▼	1 Way Frequency	Claims Before Merge	INGENIX CLAIM TRANSACTION TYPE CODE = 2	4.5	1.0	0.0	0	Carrier-Format ▼	Carrier Y does not send adjustments, only
5041	Current Run ▼	1 Way Frequency	Claims Before Merge	INGENIX COB CODE = 2	95.0	80.0	98.06	88171	-Select- ▼	Slightly higher than norm. Will moniter
5046	Permanent ▼	1 Way Frequency	Claims Before Merge	INGENIX DETAIL CATEGORY CODE = 10	0.75	0.01	0.0	2	Data Feed ▼	OK - expected to have little or no experience
5046	-Select- ▼	1 Way Frequency	Claims Before Merge	INGENIX DETAIL CATEGORY CODE = 45	0.75	0.01	4.44	3992	-Select- ▼	
5046	-Select- ▼	1 Way Frequency	Claims Before	INGENIX DETAIL CATEGORY CODE = 51	0.75	0.01	0.0	0	-Select- ▼	

DSOWeb – Integrated DQ Investigation Tool
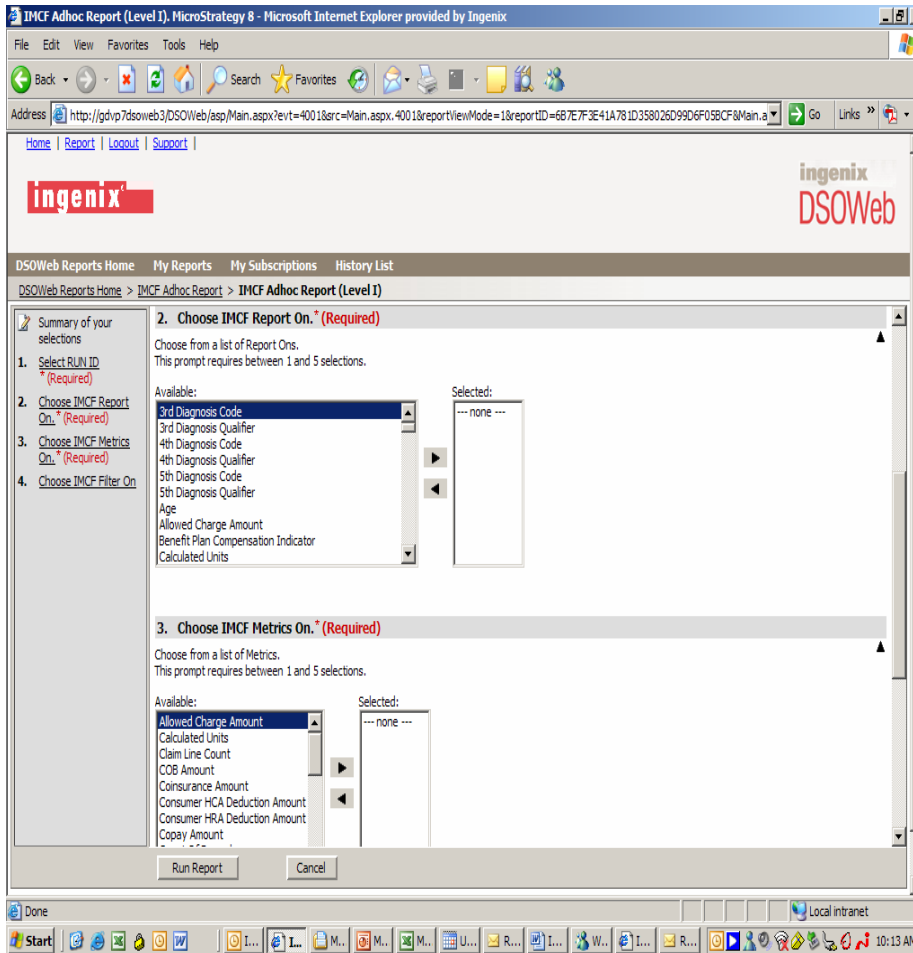
- Data investigations and validation environment integrated within application
- Uses BI tool allowing users to query converted data without needing to understand the data structure or a query language
- Ad-hoc and standard reports by data type
- Automatically schedules and creates standard reports with each production update

DSOWeb – Raw Data Analysis Tool
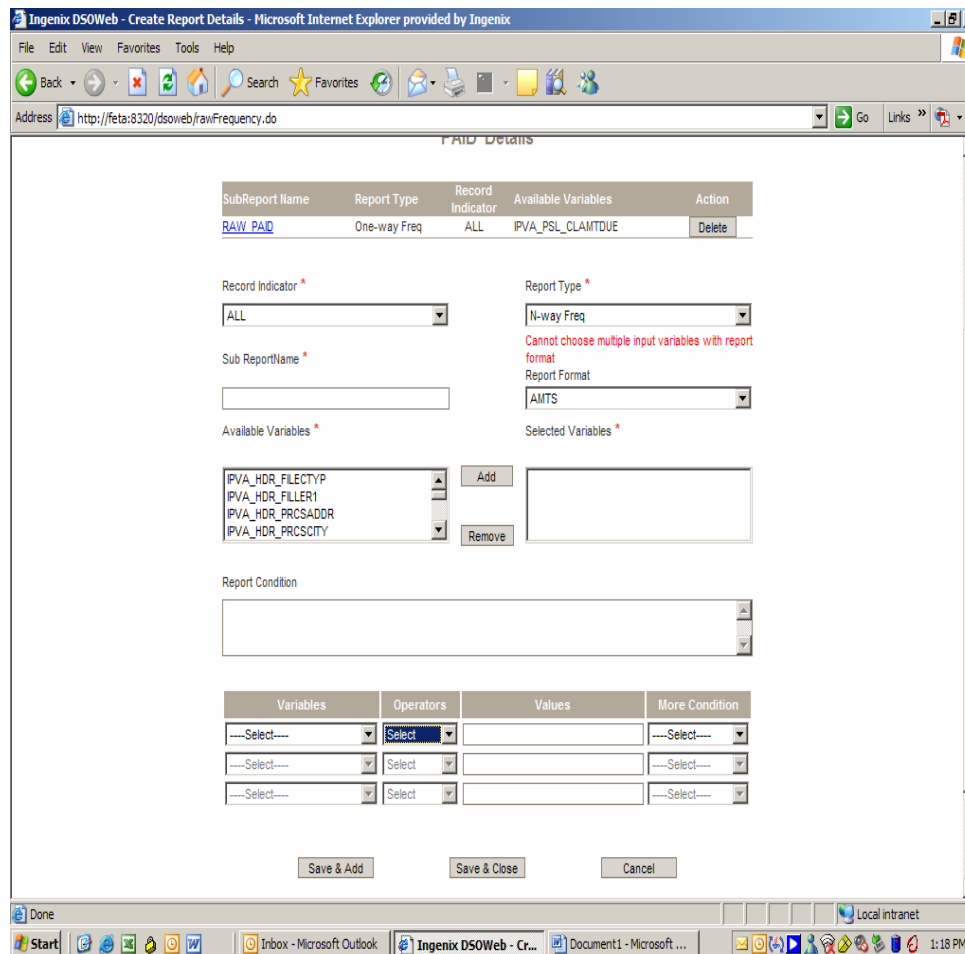
- Raw data investigation tool integrated within application

- Uses home grown tool that generates SAS queries without the need to understand SAS

- Ability to save queries for re-use

- Automatically emails formatted results to end user for printing or sharing

DSOWeb – Benefits

- Cost-effective data management solution

- Facilitates timely data investigation

- Faster turnaround time for data delivery

- Automated process eliminates human errors

- Streamlined process ensures scalability

- Metadata based DQ engine; ease of rules maintenance

- Human intervention only targeted at exception cases; increases productivity and maximizes quality output

- Timely issue resolution

- Metrics on data quality and operational processes can be reported as needed with current data

- Reduces dependency on technologists in transformation process

Ingenix - DSOWeb

- Thank You