

A Warehouse with Many Floors and Many Doors

Data Warehousing and Data Mining at the Iowa Department of Revenue



Paper Prepared for
Federation of Tax Administrators Revenue Estimating
and Tax Research Conference
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IDR Information Platforms

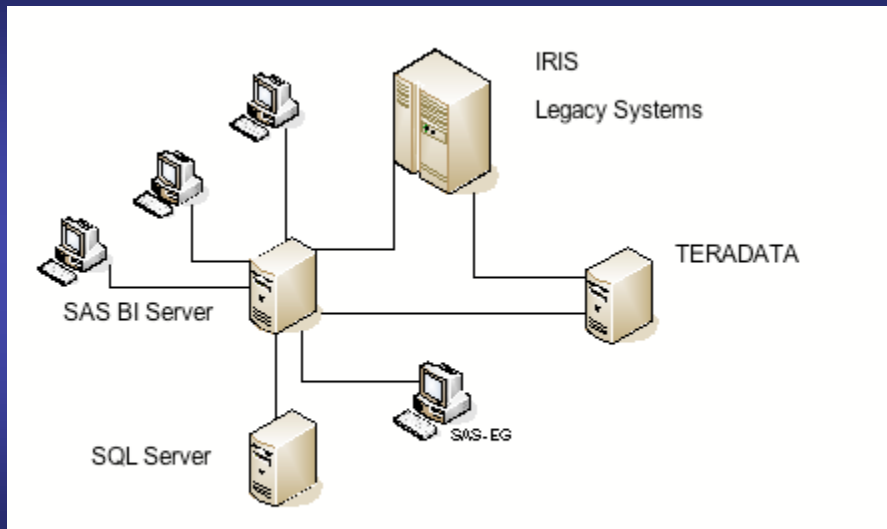
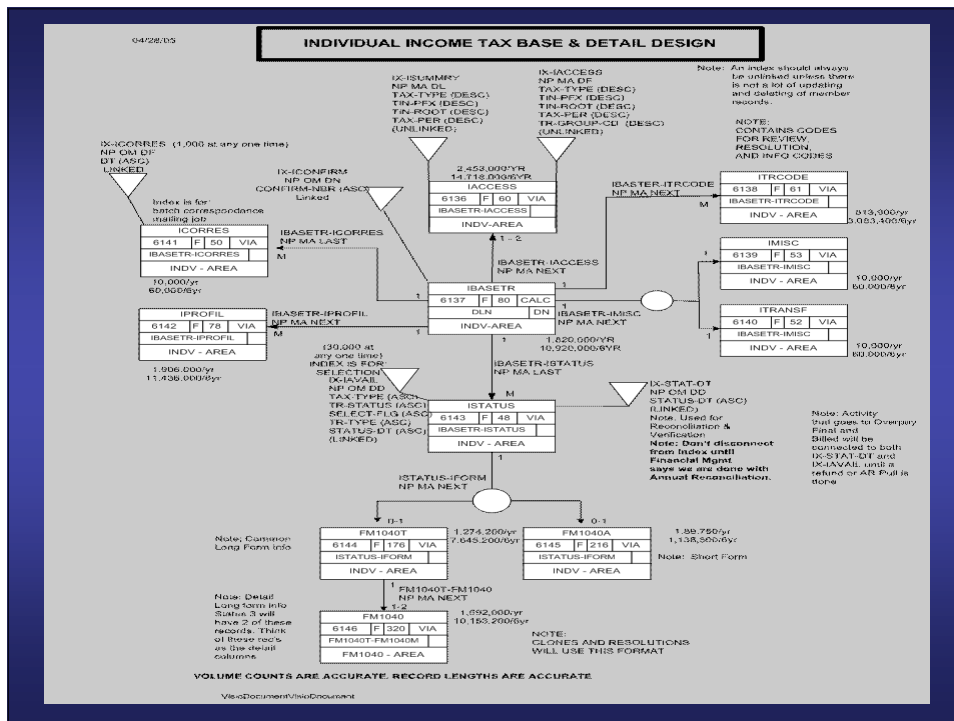


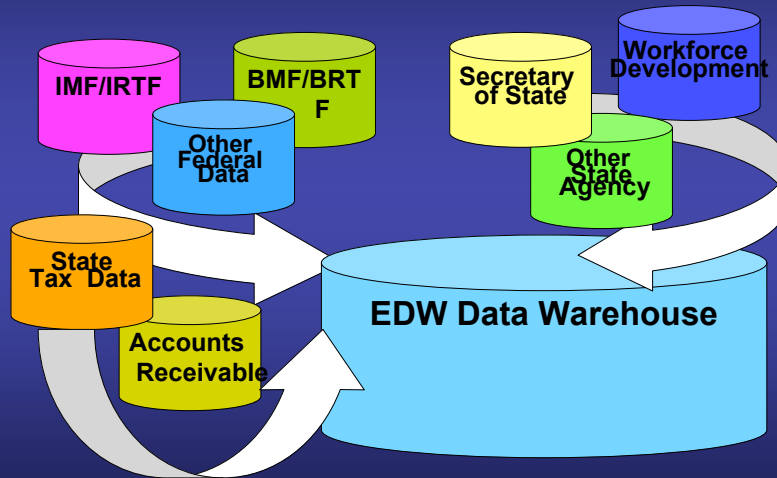
Figure 1

Evolution of IDR Information Systems

- Integrated Revenue Information System (IRIS)
 - Registration Component (1992 – 1995)
 - Transactions Component (1995 – 2004)
 - o Corporate Income Tax (1995)
 - o Motor Vehicle Fuel Tax (1996)
 - o Individual Income Tax (1997)
 - o Sales and Use Taxes (2002)
 - o Withholding Tax (2004)
- Tax Gap Enterprise Data Warehouse (1999)
- Tax Research Data Warehouse (2006)



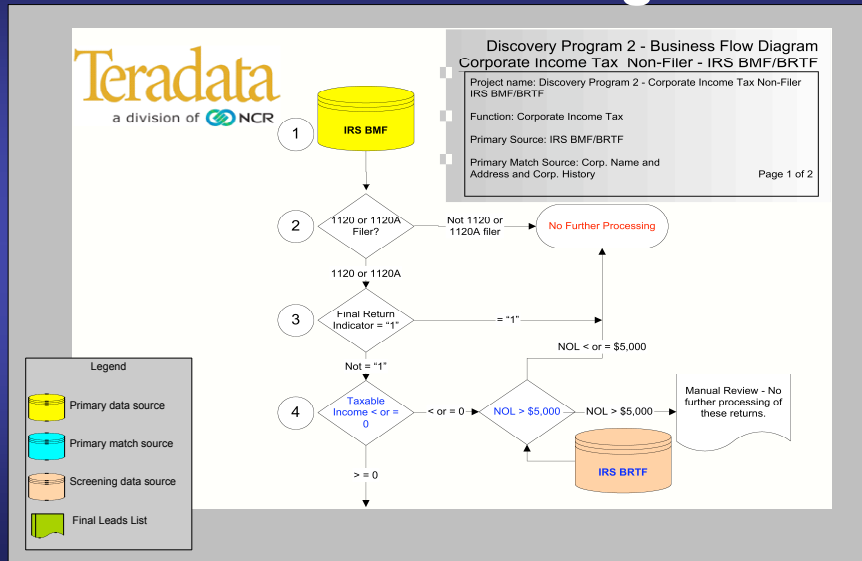
Tax Gap Enterprise Data Warehouse



Tax Gap EDW Supported Programs

- Lead Generation
- Audit Component Application
- Value Added Application

Business Flow Diagram



Leads Menu

Audit Component
Iowa Department of Revenue & Finance

Leads ▾ Audits ▾ Admin ▾ Reports ▾

Create Lead
Open
Find
Create Subset
Assign

Reminders

Time Frame 15 ▾

Reminder Selection

	Due Date	Taxpayer	Description	From	Delete
0 rows					

Save Cancel New

Tax Research Server & Client Software

- Business Intelligence Server Tier

Base SAS	SAS Access for PCFF
SAS Graph	SAS Access for ODBC
SAS Stat	SAS Connect
SAS ETS	Stored Process Server
Metadata Server	Integrated Technologies Server

- Client Tier
 - Enterprise Guide
 - Add-In for MS Office
 - Information Map Studio
 - Management Console

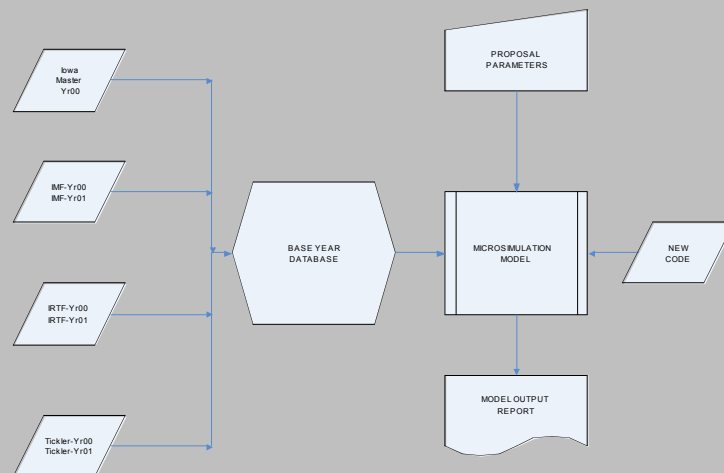
Reasons for a Separate Tax Research Data Warehouse

- Data must be structured in different way to support different uses
- EDW users need only “thin” client/ Tax Research staff need “fat” client
- Tax Research staff require sophisticated statistical analysis and model development capability
- Requests received by Tax Research staff require fast turnaround
- Desire for better data management and application portability

Major Tax Research Activities Supported by the Data Warehouse

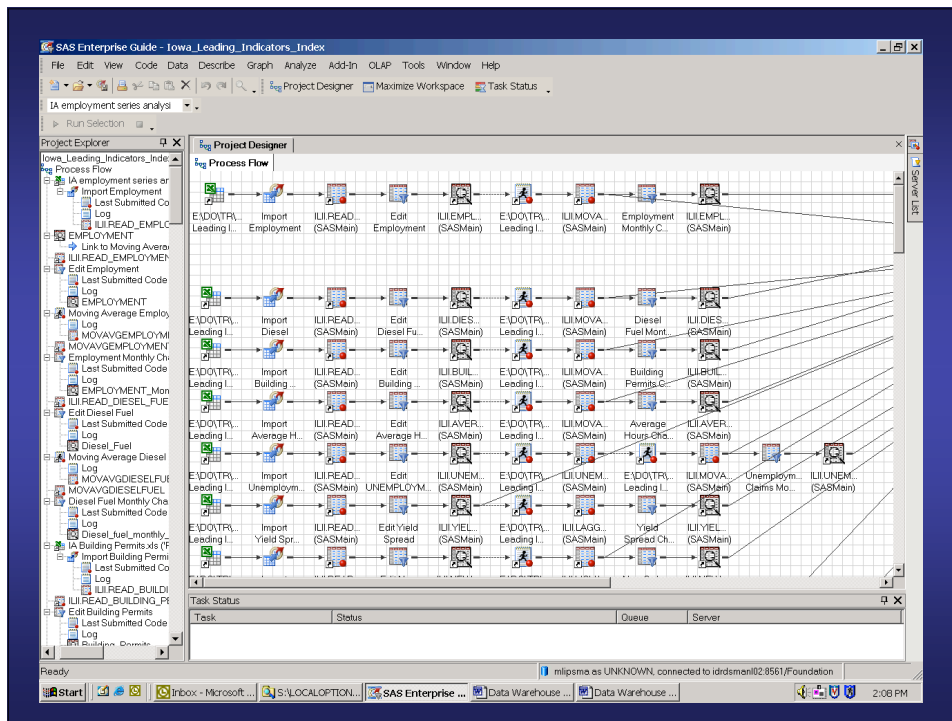
- Fiscal impact estimates
- Economic and revenue forecasts
- Statistical reports
- Ad hoc information requests

FIGURE 3: INDIVIDUAL INCOME TAX MICRO-SIMULATION MODEL



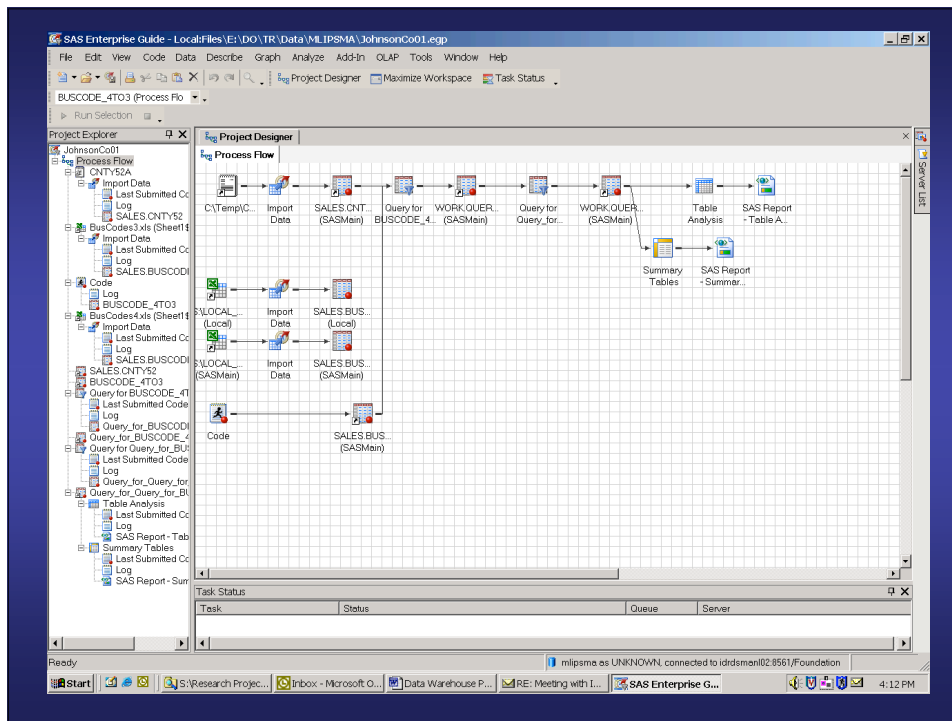
Advantages of BI Server/ EG Software

- Access to data on different platforms
- Point-and-click programming
- Improvement project management
- Project documentation
- Improved report generation and delivery
- Greater self-sufficiency
- Quicker response times



Ad Hoc Information Requests

- How many taxpayers claimed a given tax credit each of the past five years and how much was claimed?
- How many taxpayers earned over \$1 million last tax year?
- So far this processing season how do wage, interest, dividend, and farm income compare to last year for taxpayers that filed returns both years?
- What has been the amount of taxable sales for a given type of business in a five county area each of the past four quarters?
- How much have consumers spent on motor fuel purchases each month for the past three years?



Quarterly and Annual Taxable Sales

for Businesses Located in Johnson County

Business Code	Business Group	Calendar Year 2005				Total
		Mar Qtr	Jun Qtr	Sep Qtr	Dec Qtr	
100	Agriculture	\$ 205,936	\$ 1,352,490	\$ 811,646	\$ 730,868	\$ 3,100,940
211	Mining	S	S	S	S	S
221	Utilities	16,526,512	13,538,628	14,536,161	15,274,091	59,875,392
233	Construction	8,321,251	12,046,066	11,529,058	10,734,570	42,630,945
300	Manufacturing	1,992,757	2,381,191	2,064,454	1,975,414	8,413,816
420	Wholesaling	11,696,697	13,604,687	13,903,479	13,600,339	52,805,202
441	Automotive_Retail	8,548,157	11,490,712	9,704,949	9,714,177	39,457,995
442	Home_Furnishing_Retail	57,447,704	59,869,154	62,403,994	64,849,763	244,570,615
444	Building_Materials_Retail	23,517,114	37,568,423	35,428,632	31,187,754	127,701,923
445	Grocery, Liquor & Drug Store	23,053,003	25,310,927	26,464,960	26,757,416	101,586,306
447	Convenience_Store_Retail	2,845,948	3,345,311	4,303,709	4,422,854	14,917,822
448	Apparel_&_Shoes_Retail	10,895,739	12,674,437	13,097,089	17,020,885	53,688,150
449	Specialty_Retail	25,365,576	27,077,724	29,795,301	37,722,224	119,960,825
450	Other_Fuel_&_Ice_Retail	S	S	S	S	S
452	Department_&_Discounts_Stores	52,438,921	56,623,648	57,010,045	71,532,218	237,604,832
454	Direct Sales, Mail Order & Vending	1,175,800	1,456,927	1,389,487	1,592,238	5,614,452
481	Transportation_&_Warehousing	1,186,319	1,105,412	1,189,513	1,040,374	4,521,618
511	Information_Services	7,163,166	9,221,742	6,703,149	7,301,512	30,389,569
522	Finance_&_Insurance	974,506	1,071,834	1,091,459	1,198,257	4,336,056
531	Real_Estate	1,995,185	2,164,723	2,645,736	1,650,659	8,456,303
541	Professional_&_Technical_Svcs	5,168,478	5,772,599	5,492,775	6,704,041	23,137,893
561	Administrative_&_Support_Svcs	4,988,262	8,363,036	7,024,291	6,680,982	27,056,571
611	Education_Svcs	824,880	675,696	757,681	481,430	2,739,687
621	Health_Care_&_Social_Svcs	588,233	626,716	639,456	683,937	2,538,342
711	Arts_Entertainment_&_Recreation	3,088,220	15,952,418	6,104,626	5,072,485	30,217,749
721	Lodging_&_Camp_Grounds	6,966,873	9,440,330	10,164,228	8,644,444	35,215,875
722	Restaurants_&_Bars	45,972,580	45,761,137	50,316,081	47,074,049	189,123,847
811	Auto_Related_Svcs	9,059,202	9,632,037	9,232,011	9,715,984	37,639,234
812	Personal_&_Household_Svcs	5,482,508	6,108,777	5,658,320	6,326,101	23,575,706
813	Other_Repair_Svcs	1,799,414	2,214,938	2,580,548	2,008,413	8,603,313
814	Religious_&_Civic_Orgs	541,876	706,290	740,827	778,039	2,767,032
999	Other_or_Unclassified	S	S	S	S	S
Total	All Business Groups	\$ 340,785,492	\$ 399,257,077	\$ 394,898,297	\$ 413,490,378	\$ 1,548,431,244

Challenges

- Training and mastery of the software
- Organizing, documenting and managing the data
- Identifying how to better meet the information needs of customers

Future Directions

- Streamline work processes
- Incorporate GIS capability
- Explore new options for information delivery to customers
- Expand research support for compliance programs

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