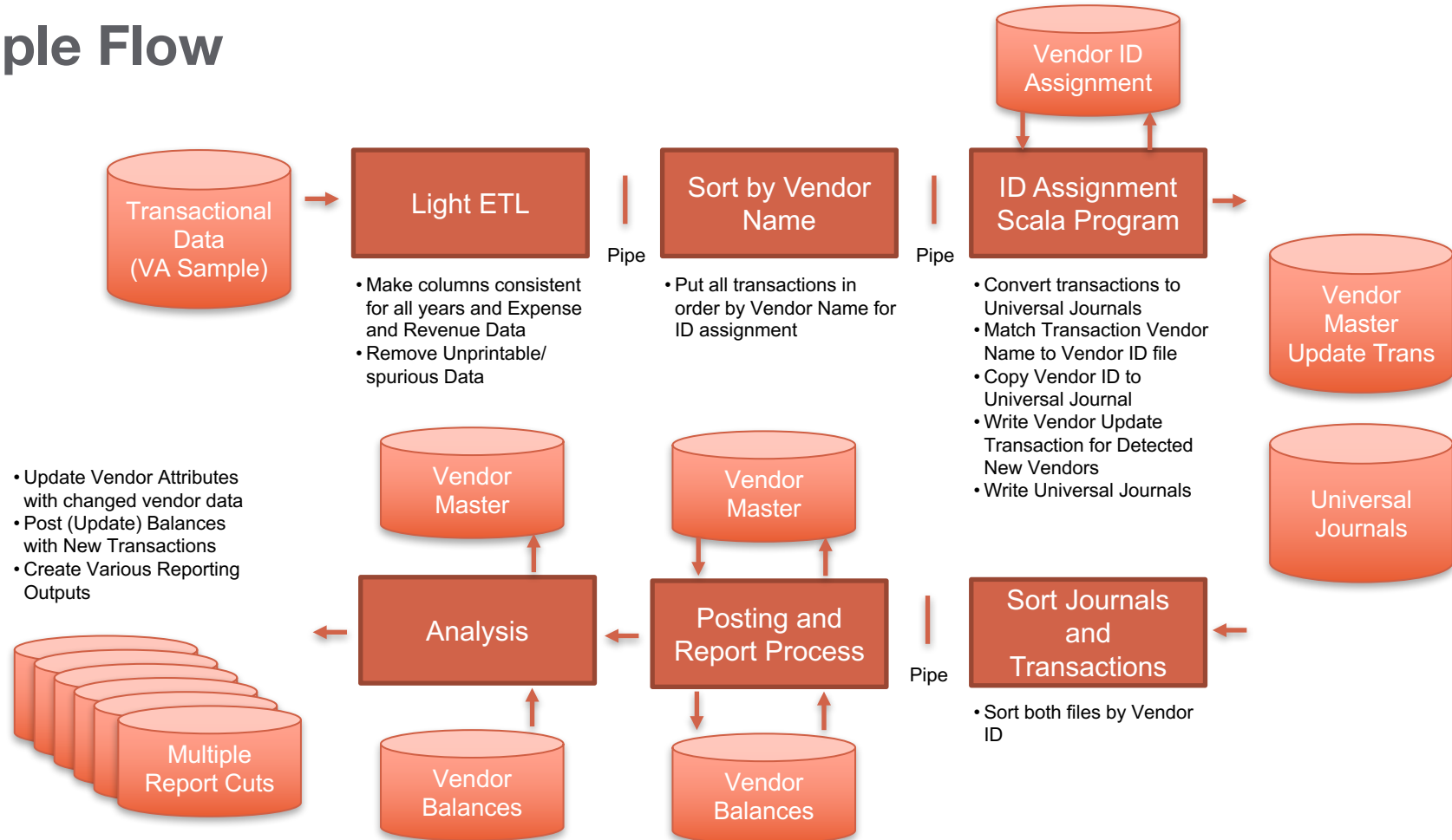# Really Simple Commerce Demo System

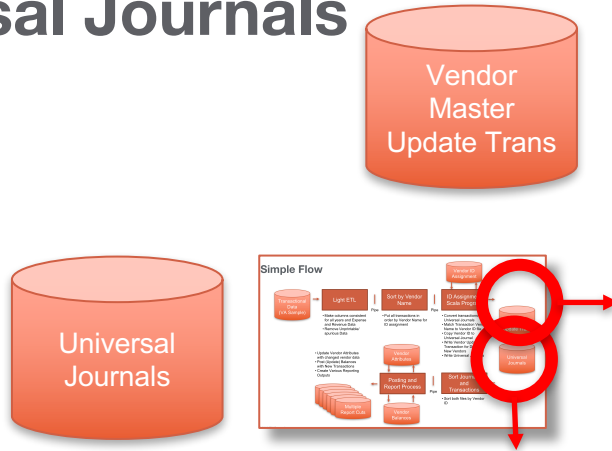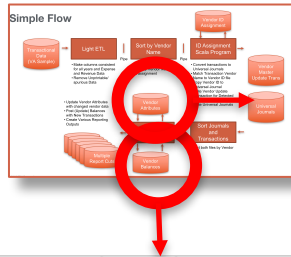| Simple User Interface B 2 C Example	Posting Process To a Universal Ledger	Analysis Process Including Financial Analytics

Simple Flow

Transactional Data (VA Sample) →

Light ETL
- Make columns consistent for all years and Expense and Revenue Data
- Remove Unprintable/ spurious Data

Pipe

Sort by Vendor Name
- Put all transactions in order by Vendor Name for ID assignment

Pipe

Vendor ID Assignment

ID Assignment Scala Program
- Convert transactions to Universal Journals
- Match Transaction Vendor Name to Vendor ID file
- Copy Vendor ID to Universal Journal
- Write Vendor Update Transaction for Detected New Vendors
- Write Universal Journals

Vendor Master Update Trans

Universal Journals

- Update Vendor Attributes with changed vendor data
- Post (Update) Balances with New Transactions
- Create Various Reporting Outputs

Vendor Master

Vendor Master

Analysis ←

Posting and Report Process ←

Pipe

Sort Journals and Transactions
- Sort both files by Vendor ID

Multiple Report Cuts

Vendor Balances

Vendor Balances

Input Data

Transaction Data

Reference Data

Provided by
Commonwealth of Virginia

AGENCY KEY	FUND DETAIL KEY	OBJECT KEY	SUB PROGRAM KEY	VENDOR NAME	AMOUNT
267	1552	56	2701	BLACKWELLS BOOK SERVICES	271.93
267	1552	105	2447	ELIZABETH*HORNING	150
267	1552	105	2447	HOLLY*HAINES BUCHHOLZ	150
267	1552	105	2447	JOURNAL ENTRY	2544
174	1552	315	2489	COBB OFFICE TECHNOLOGIES INC	190.5
174	1552	105	2447	LAUREN*LINEWEAVER	150
174	1552	105	2447	MARY HELEN*SHERIFF	150
174	1552	105	2447	MAUREEN*KUEHNER	150
174	1552	315	2489	JOURNAL ENTRY	237.33
118	1552	315	2650	PITNEY BOWES INC	204
118	1552	315	2650	XEROX CORP	56
205	492	343	3694	PAYROLL	1335.89
210	1401	279	3818	FUEL OILS	1238.47
140	8724	133	1977	ALEXANDRIA CITY DIR OF FINANCE	18031.1

AGENCY KEY	AGENCY Description
267	Virginia Commonwealth University - Academic Division
174	Central Appropriations - Capital Outlay
118	Virginia Commission on Youth
FUND KEY	**FUND Description**
1532	ENTERPRISE
1392	HIGHER EDUCATION OPERATING
1341	HIGHWAY MAINTENANCE AND OPERATING
OBJECT KEY	**OBJECT Description**
57	EQUIPMENT
105	TRANSFER PAYMENTS
315	CONTINUOUS CHARGES
OBJECT KEY	**OBJECT Description**
2447	EDUCATION
3694	INDIVIDUAL AND FAMILY SERVICES

80 Million Rows
in 70 Files
1/Quarter + 1/Year
2003 - 2016

13 Thousand
Rows in 5 Files

VENDOR/ TAXING AGENCY NAME	ASSIGNED ID
FORESTIERE- JOSEPH MD	1651464
FORESTIEREJOSEPH MD	117954
FORESTINE D VERNON	1530640
FORESTRY COMMUNICATIONS GROUP	296506
HOTELS.COM	509043
HOTELS/FLIGHTS/VIDEOS/MMBSHIP	814817
HOTELY COACH SHAVER AMEX	669991
HOTEZ- PETER	1577409
HOTFELDER- AARON	1769830
HOTH- DAVID R	122118
ONCOLOGY CENTER OF VIRGINIA	67174
ONCOLOGY DATA SYSTEMS	329828
ONCOLOGY GROUP- LLC	867631
ONCOLOGY HEMATOGOGY OF SWVA	561986

2.1 Million Rows
For all years

Universal Journals

Vendor Master Update Trans

Universal Journals

Simple Flow

	NEWLY ASSIGNED ID	NEWLY IDENTIFIED VENDOR/ TAXING AGENCY NAME	VENOR OR TAX AGENCY TYPE	EFFECTIVE START DATE
	14	1101 KING STREET LLC	EXP	1/1/03
	15	12TH AND CARY ASSOCIATES	EXP	1/1/03
	16	1301 HUGUENOT ASSOCIATES	EXP	1/1/03
	17	1400 WEST MARSHALL ASSOC LLC	EXP	1/1/03
	18	14TH DIST CSU PETTY CASH FUND	EXP	1/1/03
	19	168 REAL ESTATE TRUST	EXP	1/1/03
	20	1708 GALLERY	EXP	1/1/03
	21	17TH STREET PAPER PLUS	EXP	1/1/03
	22	17TH STREET PHOTO	EXP	1/1/03
	23	1890 LIBRARY DIRECTORS ASSOC	EXP	1/1/03
	24	1OFFICER DTDF	EXP	1/1/03
	25	1ST CHOICE TECHNOLOGIES INC	EXP	1/1/03

2.1 Million Transactions in 70 files For all years

Instrument ID	Business Event / Journal ID	Jrnl Line No	Journal / Event Description	Ledger	Jrnl Type	Book-code / Basis	Legal Entity (CO. / Owner)	Center ID	Project ID	Product / Material ID	Nominal Account	Curr. Code Source	Currency Type Code Source	Curr. Code Target	Currency Type Code Target	Transaction Amount	Fiscal Period	Acctg. Date	Transaction Date
75711	JEEXP2003/01/01-812848	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	8580	3486	0	EXP370	USD	TXN	USD	BASE-LE	284.27	2003/01	1/1/03	1/1/03
75711	JEEXP2003/01/01-812849	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	8580	3486	0	EXP370	USD	TXN	USD	BASE-LE	284.27	2003/01	1/1/03	1/1/03
75712	JEEXP2003/01/01-812850	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	6712	3283	0	EXP230	USD	TXN	USD	BASE-LE	65.44	2003/01	1/1/03	1/1/03
75712	JEEXP2003/01/01-812851	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	6712	3283	0	EXP239	USD	TXN	USD	BASE-LE	7.09	2003/01	1/1/03	1/1/03
75713	JEEXP2003/01/01-812852	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	349	2514	0	EXP124	USD	TXN	USD	BASE-LE	87	2003/01	1/1/03	1/1/03
75714	JEEXP2003/01/01-812853	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	3641	3853	0	EXP132	USD	TXN	USD	BASE-LE	7.5	2003/01	1/1/03	1/1/03
75714	JEEXP2003/01/01-812854	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	986	3853	0	EXP132	USD	TXN	USD	BASE-LE	7.5	2003/01	1/1/03	1/1/03
75715	JEEXP2003/01/01-812855	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	399	3899	0	EXP230	USD	TXN	USD	BASE-LE	124.83	2003/01	1/1/03	1/1/03
75715	JEEXP2003/01/01-812856	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	399	3899	0	EXP230	USD	TXN	USD	BASE-LE	140.43	2003/01	1/1/03	1/1/03
75715	JEEXP2003/01/01-812857	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	399	3899	0	EXP230	USD	TXN	USD	BASE-LE	152.13	2003/01	1/1/03	1/1/03
75716	JEEXP2003/01/01-812858	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	9104	3950	0	EXP459	USD	TXN	USD	BASE-LE	4074.8	2003/01	1/1/03	1/1/03
75716	JEEXP2003/01/01-812859	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	9104	3950	0	EXP459	USD	TXN	USD	BASE-LE	847.5	2003/01	1/1/03	1/1/03
75717	JEEXP2003/01/01-812860	1	Orig. Trans. from EXP 2003/01 file	ACTUALS	FIN	SHRD-3RD-PARTY	0	201	2196	0	EXP93	USD	TXN	USD	BASE-LE	262.5	2003/01	1/1/03	1/1/03

80 Million Rows in 70 Files 1/Quarter + 1/Year 2003 - 2016
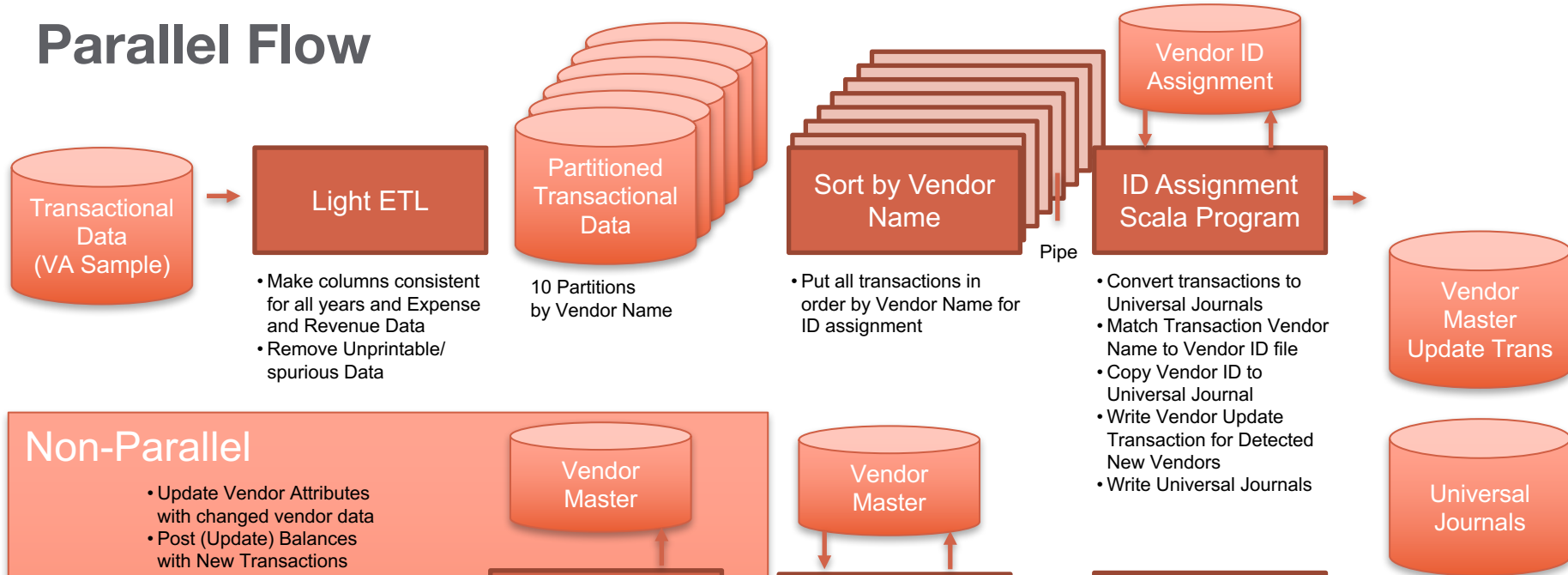
Universal Balances

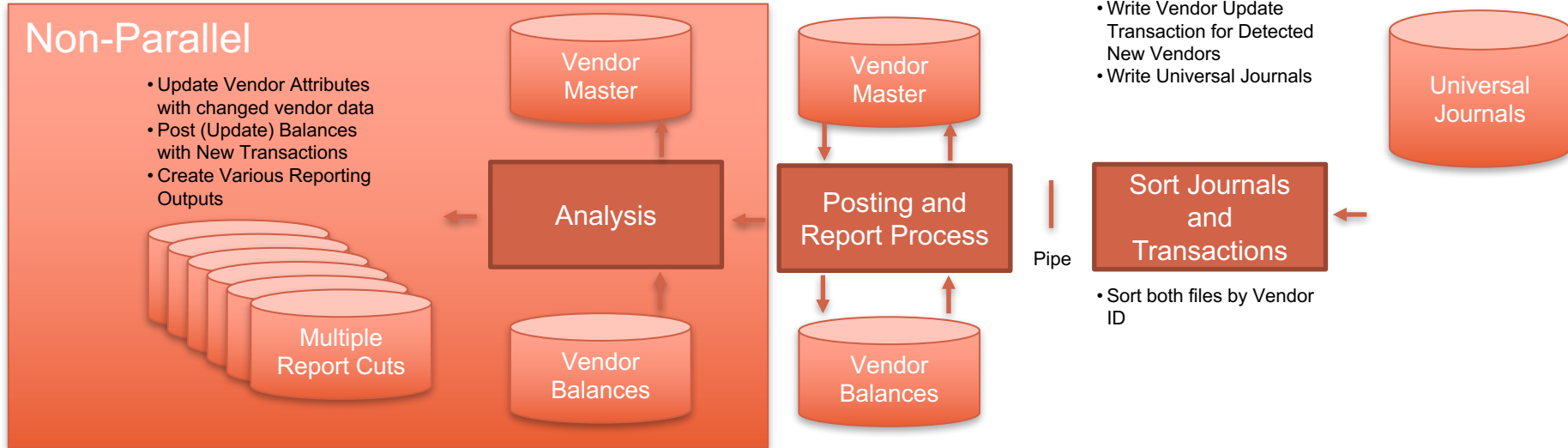| Assigned Instrument ID	Effective Starte Date	Effectiive Start Time	Effective End Date	Effective End Time	Vendor/Taxing Agency Name	Instrument Type	Audit Trail
26	1/1/03	0	9999/99/99	9	1ST CHOICE TECHNOLOGIES	EXP	0
27	1/1/03	0	9999/99/99	9	1ST QUALITY ELECTRONICS INC	EXP	0
28	1/1/03	0	9999/99/99	9	1ST QUALITY PARKING	EXP	0
29	1/1/03	0	9999/99/99	9	1STBOOKS LIBRARY	EXP	0
30	1/1/03	0	9999/99/99	9	2 YEAR TECHNOLOGY SCHOLARSHIP	EXP	0
31	1/1/03	0	9999/99/99	9	2001 HYDROGEN CORROSION CONFERENCE	EXP	0
32	1/1/03	0	9999/99/99	9	2002 SACS COC ANNUAL MEETING	EXP	0
33	1/1/03	0	9999/99/99	9	2002 SACS/COC ANNUAL MEETING	EXP	0
34	1/1/03	0	9999/99/99	9	2003 NCAA WRESTLING	EXP	0
35	1/1/03	0	9999/99/99	9	202 IRON ROCK COURT	EXP	0
36	1/1/03	0	9999/99/99	9	206 WASH LLC	EXP	0
37	1/1/03	0	9999/99/99	9	21ST CENTURY ENSEMBLE	EXP	0
38	1/1/03	0	9999/99/99	9	21ST CENTURY MD PHOTODISC	EXP	0
39	1/1/03	0	9999/99/99	9	226-90-2281 WHELAN PR311 M&R	EXP	0

2.1 Million Transactions in 1 File for all years

Instrument ID	Balance ID	Ledger	Bal Type	Book-code / Basis	Legal Entity (CO. / Owner)	Center ID	Project ID	Product / Material ID	Nominal Account	Curr. Code Source	Currency Type Code Source	Curr. Code Target	Currency Type Code Target	Fiscal Year	Transaction Amount
1229771	6472788	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6741	2816	0	EXP202	USD	TXN	USD	BASE-LE	2011	275
1229775	6605631	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	1552	2816	0	EXP243	USD	TXN	USD	BASE-LE	2011	10412.09
1229775	6472789	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	1552	2816	0	EXP73	USD	TXN	USD	BASE-LE	2011	4553.58
1229781	6472790	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6904	3048	0	EXP231	USD	TXN	USD	BASE-LE	2011	310.8
1229781	6472791	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6904	3048	0	EXP239	USD	TXN	USD	BASE-LE	2011	132.92
1229784	6472792	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6885	2816	0	EXP124	USD	TXN	USD	BASE-LE	2011	32.76
1229786	6765319	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	8727	4137	0	EXP53	USD	TXN	USD	BASE-LE	2011	105.72
1229791	6472793	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	2243	2254	0	EXP230	USD	TXN	USD	BASE-LE	2011	188.42
1229791	6765320	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	2243	2254	0	EXP239	USD	TXN	USD	BASE-LE	2011	193.1
1229792	6472794	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	9098	3950	0	EXP458	USD	TXN	USD	BASE-LE	2011	236
1229793	6313072	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	1400	2719	0	EXP310	USD	TXN	USD	BASE-LE	2011	2564.15
1229798	6313073	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6741	2816	0	EXP230	USD	TXN	USD	BASE-LE	2011	171
1229798	6313074	ACTUALS	FIN	SHRD-3RD-PARTY	STATE-OF-VA	6741	2816	0	EXP245	USD	TXN	USD	BASE-LE	2011	213

12 Million Rows in 14 Files, 1/Year 2003 - 2016

Parallel Flow

Transactional Data (VA Sample) → **Light ETL**
- Make columns consistent for all years and Expense and Revenue Data
- Remove Unprintable/ spurious Data

Partitioned Transactional Data
10 Partitions by Vendor Name

Sort by Vendor Name
- Put all transactions in order by Vendor Name for ID assignment

Pipe

Vendor ID Assignment

ID Assignment Scala Program
- Convert transactions to Universal Journals
- Match Transaction Vendor Name to Vendor ID file
- Copy Vendor ID to Universal Journal
- Write Vendor Update Transaction for Detected New Vendors
- Write Universal Journals

Vendor Master Update Trans

Universal Journals

Non-Parallel
- Update Vendor Attributes with changed vendor data
- Post (Update) Balances with New Transactions
- Create Various Reporting Outputs

Vendor Master

Analysis

Multiple Report Cuts

Vendor Balances

Vendor Master

Posting and Report Process

Vendor Balances

Pipe

Sort Journals and Transactions
- Sort both files by Vendor ID

- It will open three files;
  - the instrument ID assignment file which used to assign Instrument IDs based upon the vendor name.
    - is in sorted order by vendor name,
    - has a second field which is the vendor ID, a serially assigned number
  - the sorted transactions just made
  - the max vendor id file, a single record with the latest assigned vendor ID
- It will produce the following files
  - An update input file (a) with new instrument IDs inserted for new vendors found
  - Updated transactions file (b) with
    - Instrument IDs assigned
    - Other attributes assigned for the primary/direct transaction
    - Initial offset transactions, performing some simple ARE functions
  - Updated input file (c) with the new max ID assigned.

- As it reads input files (a) and (b)., it matches the vendor name and:
  - If a new vendor/instrument ID is found on the input transaction file (b) it
    - Increments input file (c)
    - It creates a new input file (a) record for the vendor and assigns this ID to it
  - If a matching vendor/instrument ID is found it
    - Assigns the vendor/ID from input file (a) to it
    - The vendor record is (a) passed to the output file (a)
  - If no matching transaction record in file (b) is found for a vendor in file (a)
    - The vendor record is (a) passed to the output file (a)
  - Tests should compare input transaction keys (b) to output vendor files (a) to keep from making duplicate vendor master records—or something like this
- It should then duplicate transactions records (b) to make new offset transactions, and format completed records.