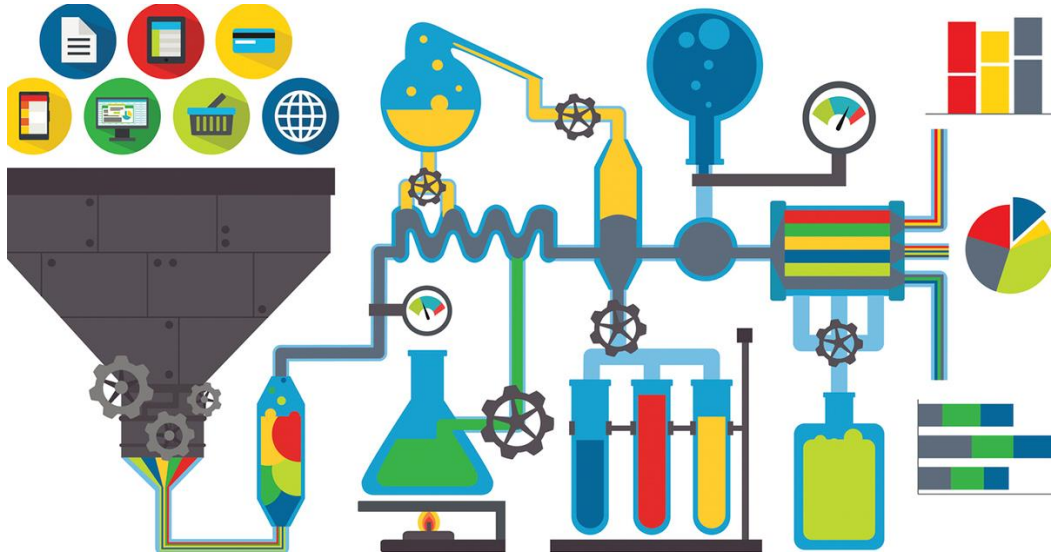
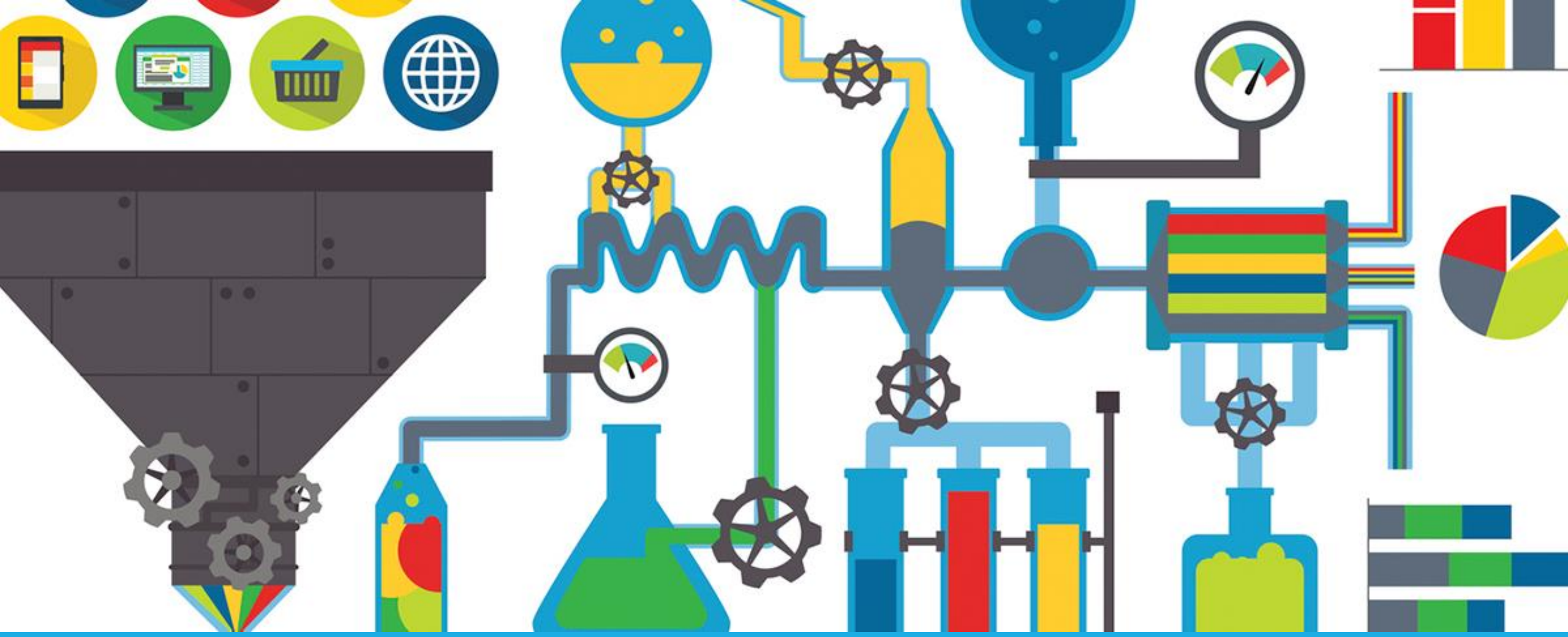


# Data Warehouse and Data Analysis Trend in the ICT Industry

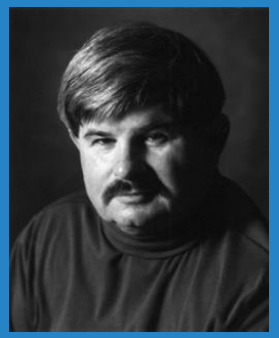
Case Study: CIF Monitoring Bank BPRKS Bandung

Daud Rusyad Nurdin
David Andriansyah

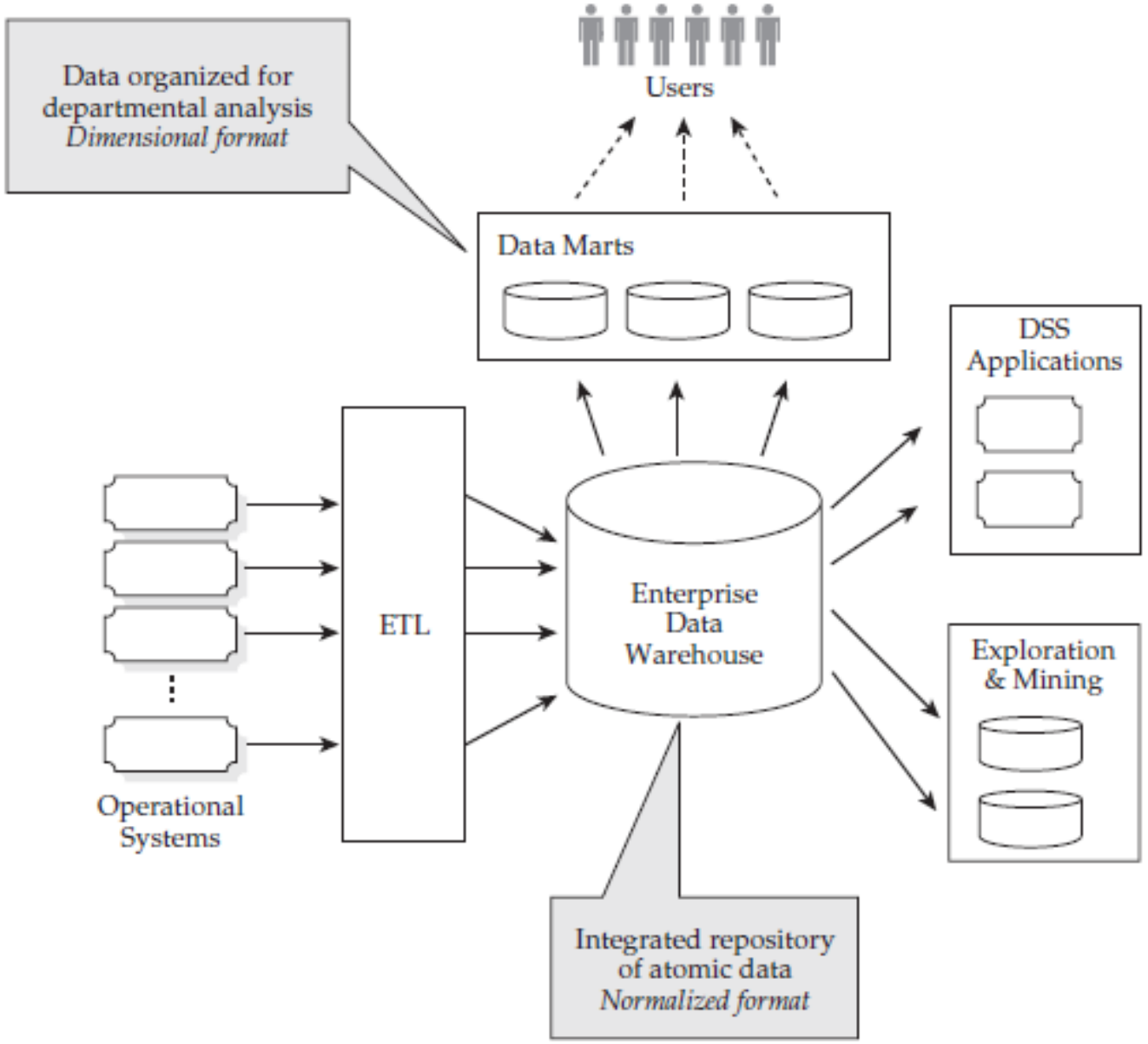


# Data Warehouse Architecture

# Data Warehouse Architecture **Inmon** Corporate Information Factory (CIF)

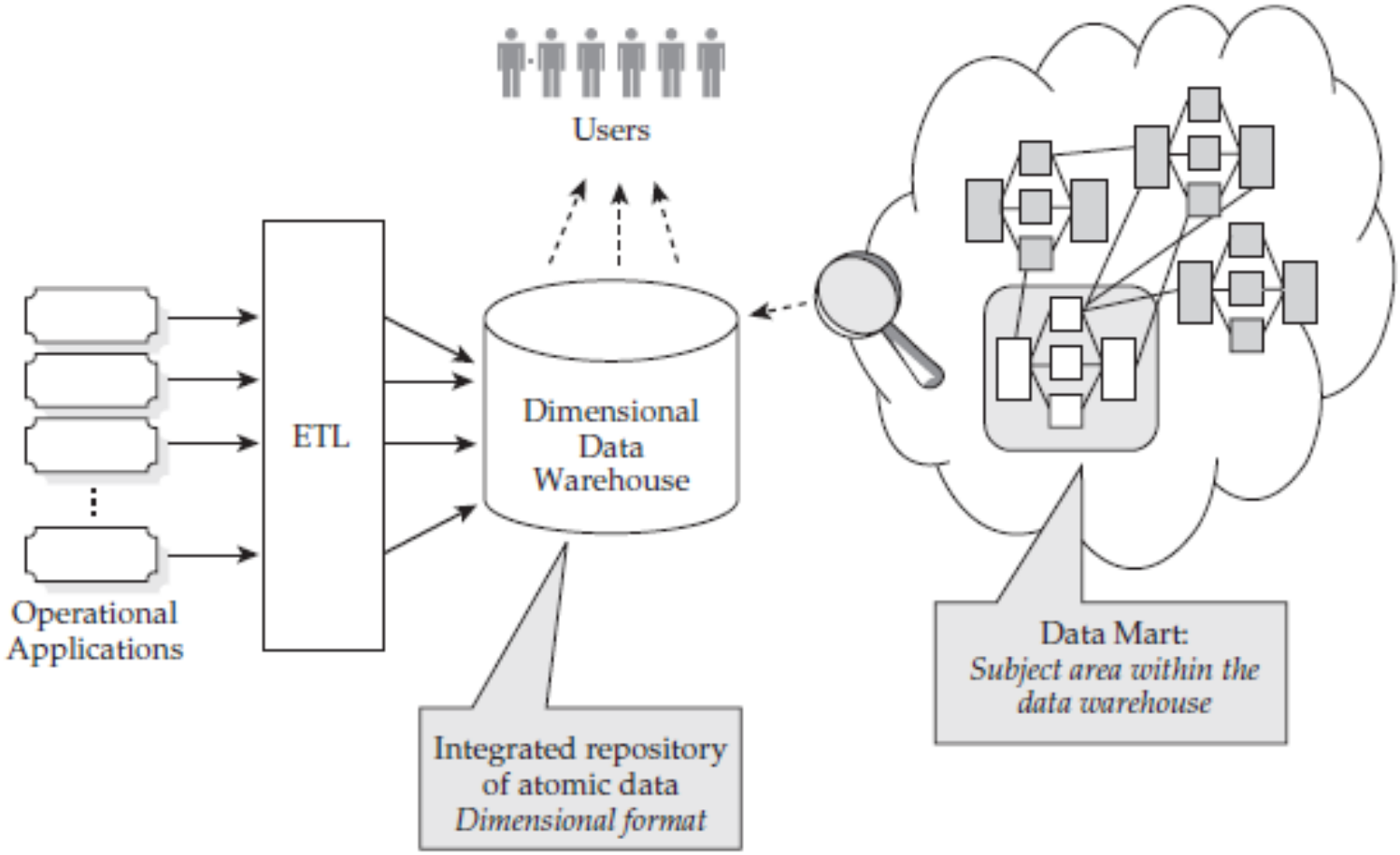


William H. Inmon



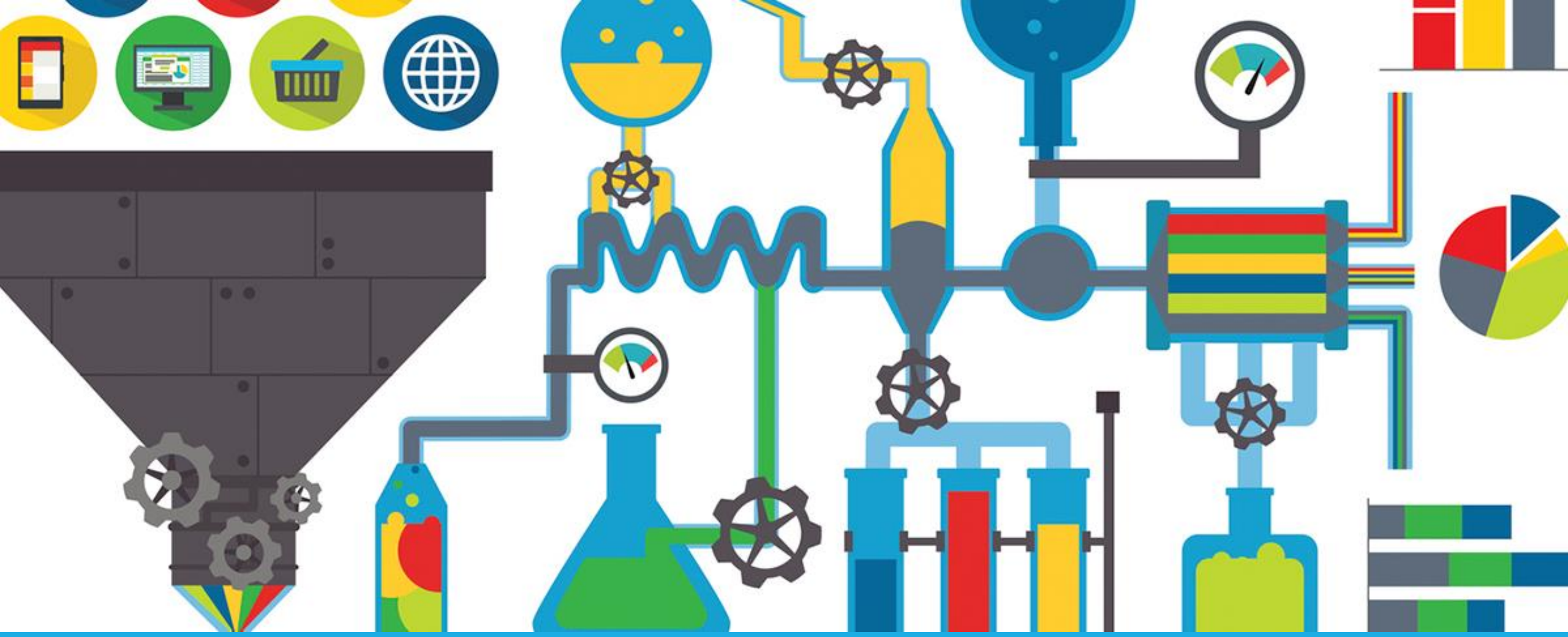
# Data Warehouse Architecture **Kimball** – Star Schema


Ralph Kimball



# Comparison of Data Warehouse Architectures

| Architecture | Advocate | Also Known As | Description | Role of Dimensional Design |
|---|---|---|---|---|
| Corporate Information Factory (CIF) | William H. Inmon | • Atomic Data Warehouse<br>• Enterprise Data Warehouse | • Enterprise data warehouse is an integrated repository of atomic data<br>• It is not accessed directly<br>• Data marts reorganize data for departmental use/ analysis | Dimensional design used for data marts only |
| Multidimensional Modeling/ Star Schema | Ralph Kimball | • Enterprise Data Warehouse<br>• Bus architecture<br>• Architected data marts<br>• Virtual data marts | • Dimensional data warehouse is an integrated repository of atomic data<br>• Subject areas within the dimensional data warehouse sometimes called data marts<br>• Data marts not required to be separate databases | All data organized dimensionally |



# Data Analysis

To identify anomaly data for Data Cleansing

# Lost “Primary Key”

```
SELECT *
FROM MANIFEST_ITEM_SERAH@db_admail
WHERE TRIM(KDITEM) IS NULL
;
```

Grid

Data Grid | DBMS Output (disabled)

Cancel

| KDITEM | KDSTATUS | KDMI | BRT_ITEM_SRH | WKTLOKAL | WKTSRV | KDNOPENT |
|---|---|---|---|---|---|---|
| | 1100 | | 0 | 1/25/2013 3:39:52 PM | 1/28/2013 4:43:44 PM | 52200 |
| | 1100 | 13000~110~13000~120~13~000024 | 10890 | 4/2/2013 4:25:41 PM | 4/4/2013 1:12:45 PM | 13000 |
| | 1100 | 24300~110~24392~110~13~000001 | 0 | 4/17/2013 9:41:05 AM | 4/17/2013 10:19:59 AM | 24392 |
| | 1100 | 40125A~110~40400~120~12~000002 | 0 | 12/28/2012 2:45:50 PM | 12/29/2012 7:42:17 AM | 40400 |
| | 1100 | 40161B~110~40400~120~13~000012 | 74 | 1/17/2013 1:10:01 PM | 1/17/2013 1:57:14 PM | 40400 |
| | 1100 | 40383~110~40383~120~13~000001 | 0 | 1/7/2013 2:13:37 PM | 1/8/2013 7:56:44 AM | 40400 |
| | 1100 | 40511A~110~40500~120~13~000028 | 8500 | 2/18/2013 2:32:59 PM | 2/19/2013 2:11:19 PM | 40500 |
| | 1100 | 41263~110~41263~120~13~000005 | 200 | 1/11/2013 11:25:51 AM | 1/11/2013 11:28:35 AM | 41263 |
| | 1100 | 41371~110~41300~140~13~000023 | 0 | 3/21/2013 12:52:32 PM | 3/21/2013 3:27:06 PM | 41300 |
| | 1100 | 42100~110~42100~120~13~000022 | 0 | 4/10/2013 3:26:47 PM | 4/11/2013 5:02:51 PM | 42100 |
| | 1100 | 43100~110~43100~140~13~000032 | 0 | 3/4/2013 12:37:51 PM | 3/4/2013 6:34:35 PM | 43100 |
| | 1100 | 43200~110~43200~120~13~000094 | 0 | 2/25/2013 5:43:06 PM | 2/25/2013 5:44:35 PM | 43200 |
| | 1100 | 43253~110~43255~140~13~000007 | 10 | 1/31/2013 9:34:11 AM | 1/31/2013 12:52:28 PM | 43255 |
| | 1100 | 43266~110~43200~120~13~000002 | 0 | 2/23/2013 11:57:26 AM | 2/25/2013 11:57:47 AM | 43200 |
| | 1100 | 44100~110~40400~120~13~000011 | 0 | 2/11/2013 3:06:07 PM | 2/11/2013 4:01:20 PM | 40400 |

2 | Row 1 of 65 total rows | STAGING1@10.33.41.176:1521/DWHPOS | Modified

# “Strange” Data

```
SELECT *
FROM MANIFEST_ITEM_SERAH@db_admail A
WHERE A.BRT_ITEM_SRH=0
;
```

Grid

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Explain Plan | Script Output

Cancel

| KDITEM | KDSTATUS | KDMI | BRT_ITEM_SRH | WKTLOKAL | WKTSRV | KDNOPENT |
|---|---|---|---|---|---|---|
| | 1100 | | 0 | 1/25/2013 3:39:52 PM | 1/28/2013 4:43:44 PM | 52200 |
| | 1100 | 24300~110~24392~110~13~000001 | 0 | 4/17/2013 9:41:05 AM | 4/17/2013 10:19:59 AM | 24392 |
| | 1100 | 40125A~110~40400~120~12~000002 | 0 | 12/28/2012 2:45:50 PM | 12/29/2012 7:42:17 AM | 40400 |
| | 1100 | 40383~110~40383~120~13~000001 | 0 | 1/7/2013 2:13:37 PM | 1/8/2013 7:56:44 AM | 40400 |
| | 1100 | 41371~110~41300~140~13~000023 | 0 | 3/21/2013 12:52:32 PM | 3/21/2013 3:27:06 PM | 41300 |
| | 1100 | 42100~110~42100~120~13~000022 | 0 | 4/10/2013 3:26:47 PM | 4/11/2013 5:02:51 PM | 42100 |
| | 1100 | 43100~110~43100~140~13~000032 | 0 | 3/4/2013 12:37:51 PM | 3/4/2013 6:34:35 PM | 43100 |
| | 1100 | 43200~110~43200~120~13~000094 | 0 | 2/25/2013 5:43:06 PM | 2/25/2013 5:44:35 PM | 43200 |
| | 1100 | 43266~110~43200~120~13~000002 | 0 | 2/23/2013 11:57:26 AM | 2/25/2013 11:57:47 AM | 43200 |
| | 1100 | 44100~110~40400~120~13~000011 | 0 | 2/11/2013 3:06:07 PM | 2/11/2013 4:01:20 PM | 40400 |
| | 1100 | 45471~110~45400~120~13~000006 | 0 | 1/22/2013 12:06:42 PM | 1/22/2013 12:08:49 PM | 45400 |

# “Strange” Data

```
SELECT *
FROM MANIFEST_ITEM_SERAH@db_admail
WHERE CK_STR(TRIM(KDITEM))='INVALID'
;
```

Grid

Data Grid | DBMS Output (disabled)

Cancel

| KDITEM | KDSTATUS | KDMI | BRT_ITEM_SRH | WKTLOKAL | WKTSRV | KDNOPENT |
|---|---|---|---|---|---|---|
| !@(%^@&*(^# | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:52:28 PM | 2/26/2013 8:29:27 PM | 40400 |
| !@(%^@($#%@ | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:52:16 PM | 2/26/2013 8:29:27 PM | 40400 |
| !@((*@%(%** | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:14 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(&)@ | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:17 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(*&& | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:50:16 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(^$) | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:07 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(^%# | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:08 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(^&( | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:10 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(^)* | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:12 PM | 2/26/2013 8:29:26 PM | 40400 |
| !@((*@%(^@$ | 1200 | 40400~120~40400~140~13~000069 | 0 | 2/26/2013 7:48:11 PM | 2/26/2013 8:29:26 PM | 40400 |

# Out of range Data

```
SELECT TO_CHAR(WKTLOKAL,'RRRR-MM') YRMON, COUNT(1)
FROM MANIFEST_ITEM_SERAH@db_admail A
WHERE A.BRT_ITEM_SRH=0
GROUP BY TO_CHAR(WKTLOKAL,'RRRR-MM')
ORDER BY 1
;
```

a Grid

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | Code

Cancel

| YRMON | COUNT(1) |
|---|---|
| 2008-01 | 33 |
| 2009-03 | 268 |
| 2012-08 | 6016 |
| 2012-09 | 20580 |
| 2012-10 | 19973 |
| 2012-11 | 20373 |
| 2012-12 | 239491 |
| 2013-01 | 2353606 |
| 2013-02 | 3602324 |
| 2013-03 | 4446627 |
| 2013-04 | 5108900 |
| 2013-12 | 2 |

Untuk WKTLOKAL masih saja mengandung tanggal yang janggal, misalnya dari data di atas terdapat data ‘2013-12’ (Desember 2013), padahal seharusnya belum ada transaksi kiriman di bulan tersebut. Atau juga data transaksi yang dicatat sebagai tahun ‘2008’ dan ‘2009’.

# Inconsistent Data

```
SELECT SUBSTR(A.KDMI,INSTR(A.KDMI,'~',1,2)+1,INSTR(A.KDMI,'~',1,3)-INSTR(A.KDMI,'~',1,2)-1) KDNOPENTX
, SUBSTR(A.KDMI,INSTR(A.KDMI,'~',1,3)+1,INSTR(A.KDMI,'~',1,4)-INSTR(A.KDMI,'~',1,3)-1) KDTRX
, A.*
FROM MANIFEST_ITEM_SERAH@db_admail A
WHERE TRIM(A.KDMI) IS NOT NULL
AND LENGTH(A.KDNOPENT)>5
AND SUBSTR(A.KDMI,INSTR(A.KDMI,'~',1,2)+1,INSTR(A.KDMI,'~',1,3)-INSTR(A.KDMI,'~',1,2)-1)<>A.KDNOPENT
;
```

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Explain Plan | Script Output

Cancel

| KDNOPENTX | KDTRX | KDITEM | KDSTATUS | KDMI | BRT_ITEM_SRH | WKTLOKAL | WKTSRV | KDNOPENT |
|---|---|---|---|---|---|---|---|---|
| 75300 | 140 | 12530098349 | 1200 | 75300~110~75300~140~13~000001 | 0 | 4/1/2013 10:38:06 AM | 4/1/2013 9:41:18 AM | 75324A |
| 75300 | 140 | 12674303505 | 1200 | 75300~110~75300~140~13~000001 | 0 | 4/1/2013 10:38:36 AM | 4/1/2013 9:41:19 AM | 75324A |
| 40565 | 140 | 12733563454 | 1100 | 40500~110~40565~140~12~000001 | 35 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733616703 | 1100 | 40500~110~40565~140~12~000001 | 60 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733616716 | 1100 | 40500~110~40565~140~12~000001 | 60 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844130 | 1100 | 40500~110~40565~140~12~000001 | 10 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844234 | 1100 | 40500~110~40565~140~12~000001 | 40 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844510 | 1100 | 40500~110~40565~140~12~000001 | 15 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844523 | 1100 | 40500~110~40565~140~12~000001 | 15 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844536 | 1100 | 40500~110~40565~140~12~000001 | 15 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |
| 40565 | 140 | 12733844549 | 1100 | 40500~110~40565~140~12~000001 | 15 | 12/29/2012 4:39:04 PM | 12/29/2012 5:03:08 PM | 405C101 |

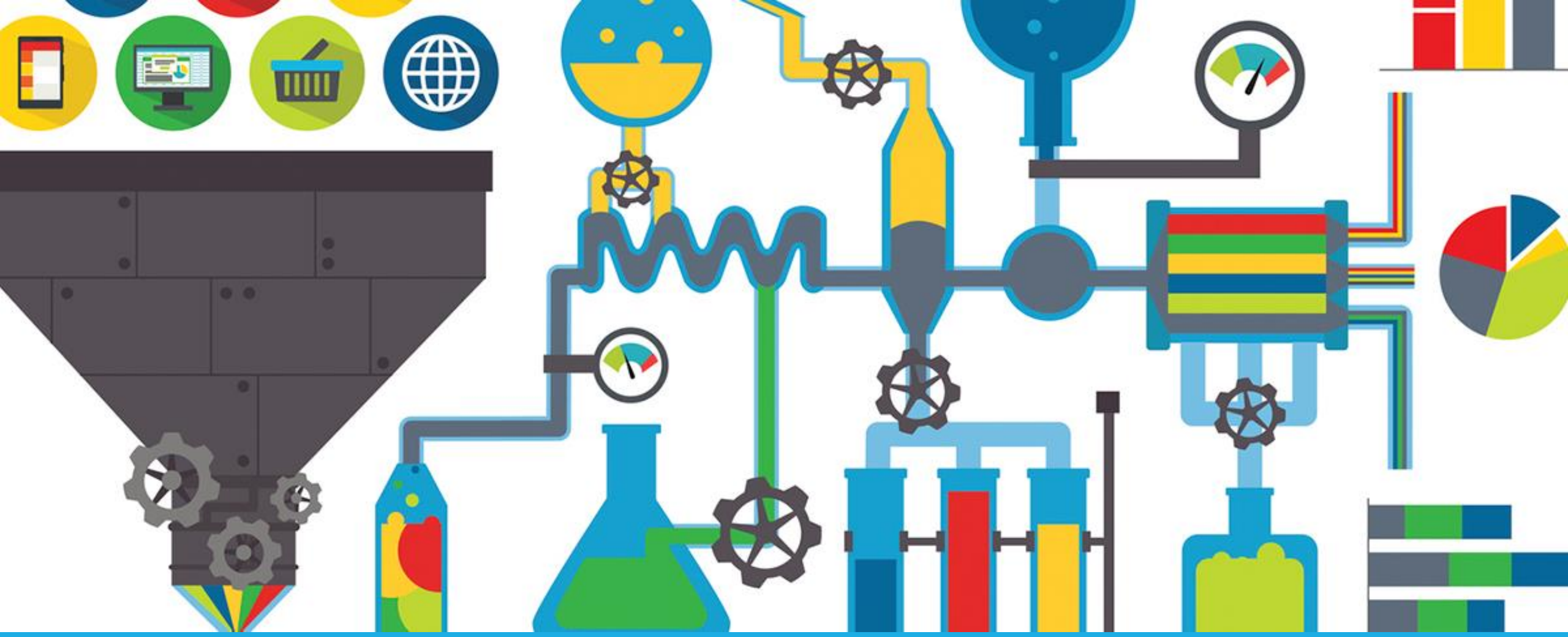
2 | Row 1 of 42 total rows | STAGING1@10.33.41.176:1521/DWHPOS | Modified

# Date data in String Data Type

```
SELECT rs_db.dbo.REPL_NUM_BY_X(WKT_BACKSHEET) WKT_BACKSHEET, COUNT(1)
FROM rs_db_20140522.dbo.TBACKSHEET
GROUP BY rs_db.dbo.REPL_NUM_BY_X(WKT_BACKSHEET)
ORDER BY 2 DESC
;
```

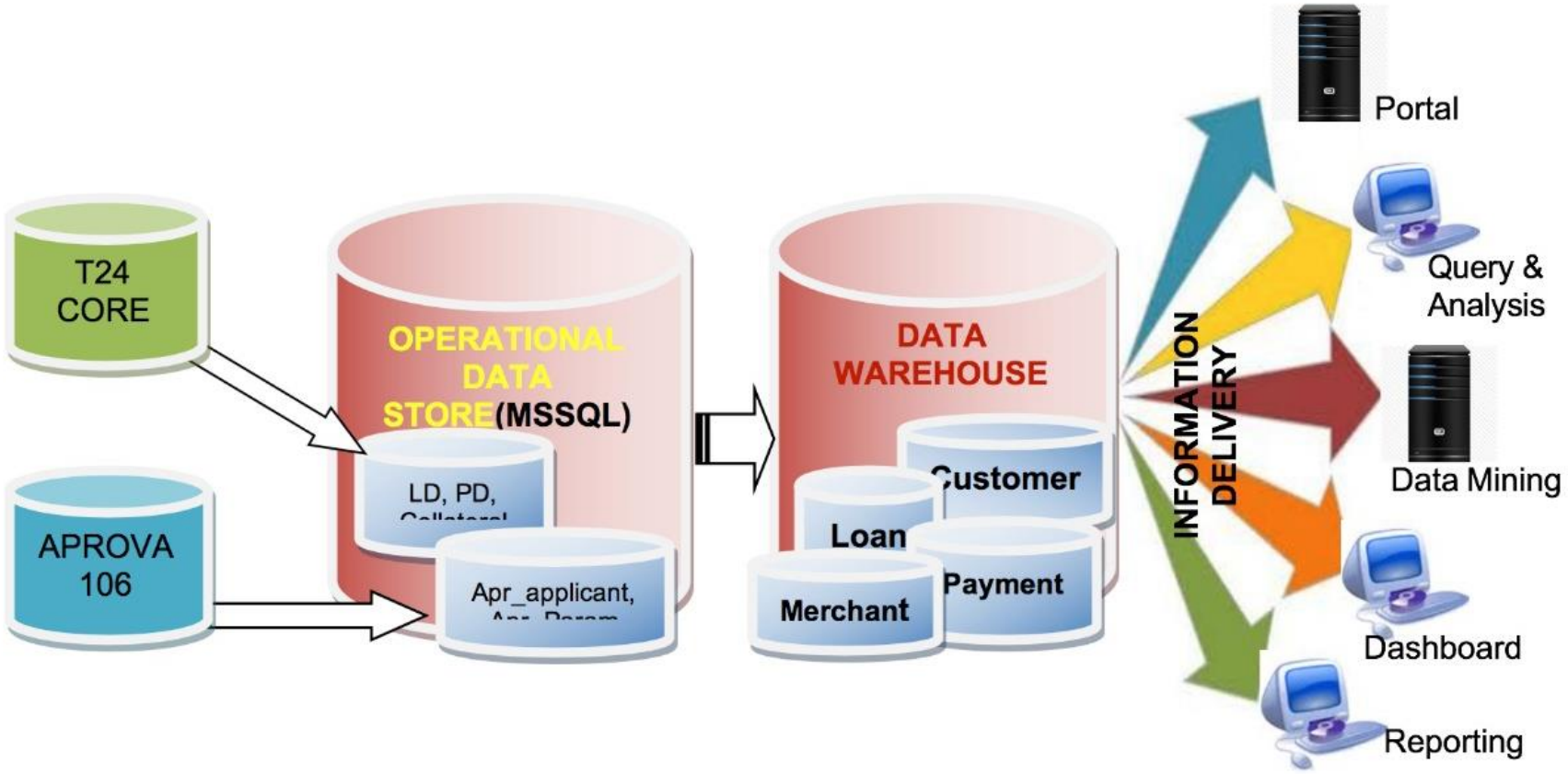
Results | Messages

| | WKT_BACKSHEET | (No column name) |
|---|---|---|
| 1 | XXXX-XX-XX XX:XX:XX.XXX | 12313407 |
| 2 | XXXX/XX/XX XX:XX:XX | 89 |
| 3 | MON XX XXXX X:XXZM | 4 |
| 4 | XXXX-XX-XX XX.XX.XX.XXX | 4 |
| 5 | MON X XXXX X:XXZM | 2 |



# CIF Monitoring case study

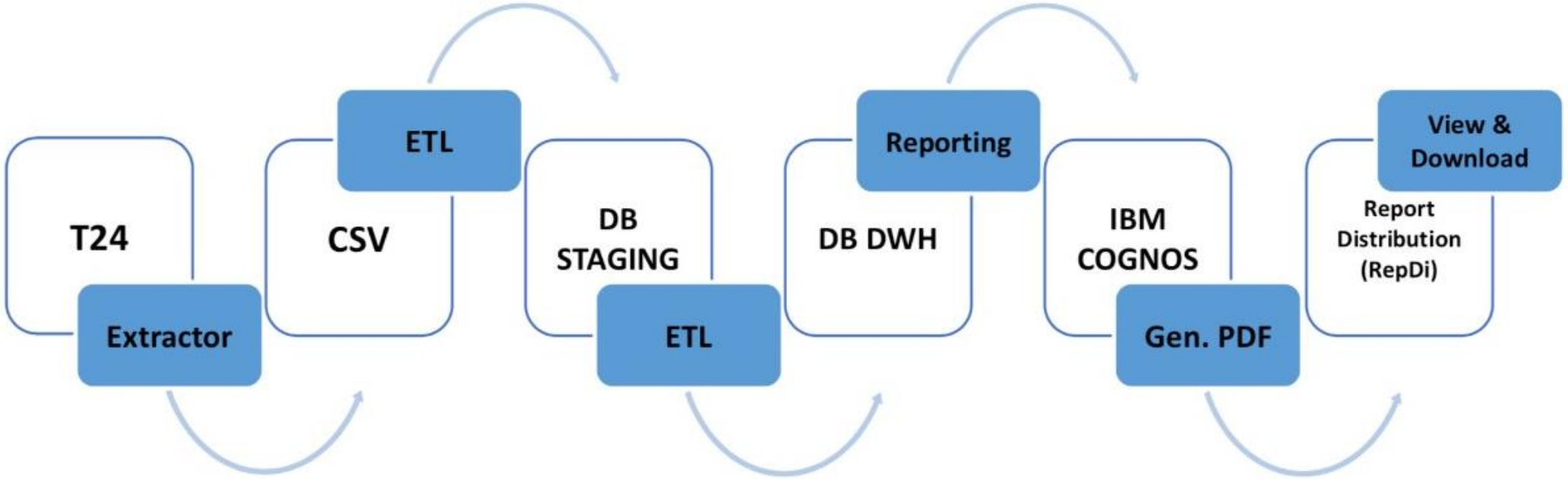
# System Architecture



# Software

| | |
|---|---|
| Operating System | Linux RHEL |
| RDBMS | IBM DB2 BLU Acceleration |
| ETL tool | IBM ® InfoShpere ™ Data Stage® and QualityStage v. 9.1 |
| BI tool | IBM Cognos Analytics |

# MIS Report Process Flow



# Steps of Development

- ✓To understand the requirement
  - What is CIF scoring?
  - Data presentation needed by business user
- ✓To understand data source and target table(s)
  - Source data comes from core banking system (T24) – loan and payment data
  - To design star schema (tables and their structure) of target (data warehouse)
- ✓To do mapping from source to target
- ✓To develop ETL process
  - ETL processes separated into two parts: (1) source to staging; (2) staging to data warehouse
  - To create jobs and sequence
  - To schedule sequence for daily run
- ✓To develop Business Intelligence dashboard/ report
  - To develop metadata model with framework
  - To develop dashboard/ report

# CIF Scoring

- Report Scoring CIF adalah report untuk memantau "kinerja" nasabah dari sisi peminjaman kredit dan pembayarannya. Semakin nasabah tertib (tidak terlambat) dalam melakukan pembayaran terhadap cicilan kredit-nya, maka penilaian (scoring) terhadap nasabah tersebut akan menjadi baik. Penilaian dilakukan per nasabah terhadap semua kredit yang berada di bawah nasabah tersebut.Untuk menentukan scoring dari kinerja pembayaran kredit per nasabah mengacu pada tabel scoring yang ada.
- Nilai-nilai parameter yang mempengaruhi nilai Score ada 2 (dua), yakni: (1) Overdue Class - Nilai ini ditentukan dari nilai overdue, selisih antara Tanggal Bayar dan Tanggal Jatuh Tempo. Pada contoh report di bawah terdapat pada kolom "Dpd"; (2) Usia relatif dari bulan Tanggal Jatuh Tempo terhadap bulan Tanggal Scoring. Nilainya akan bergerak terus seiring dengan waktu proses generasi data Scoring.

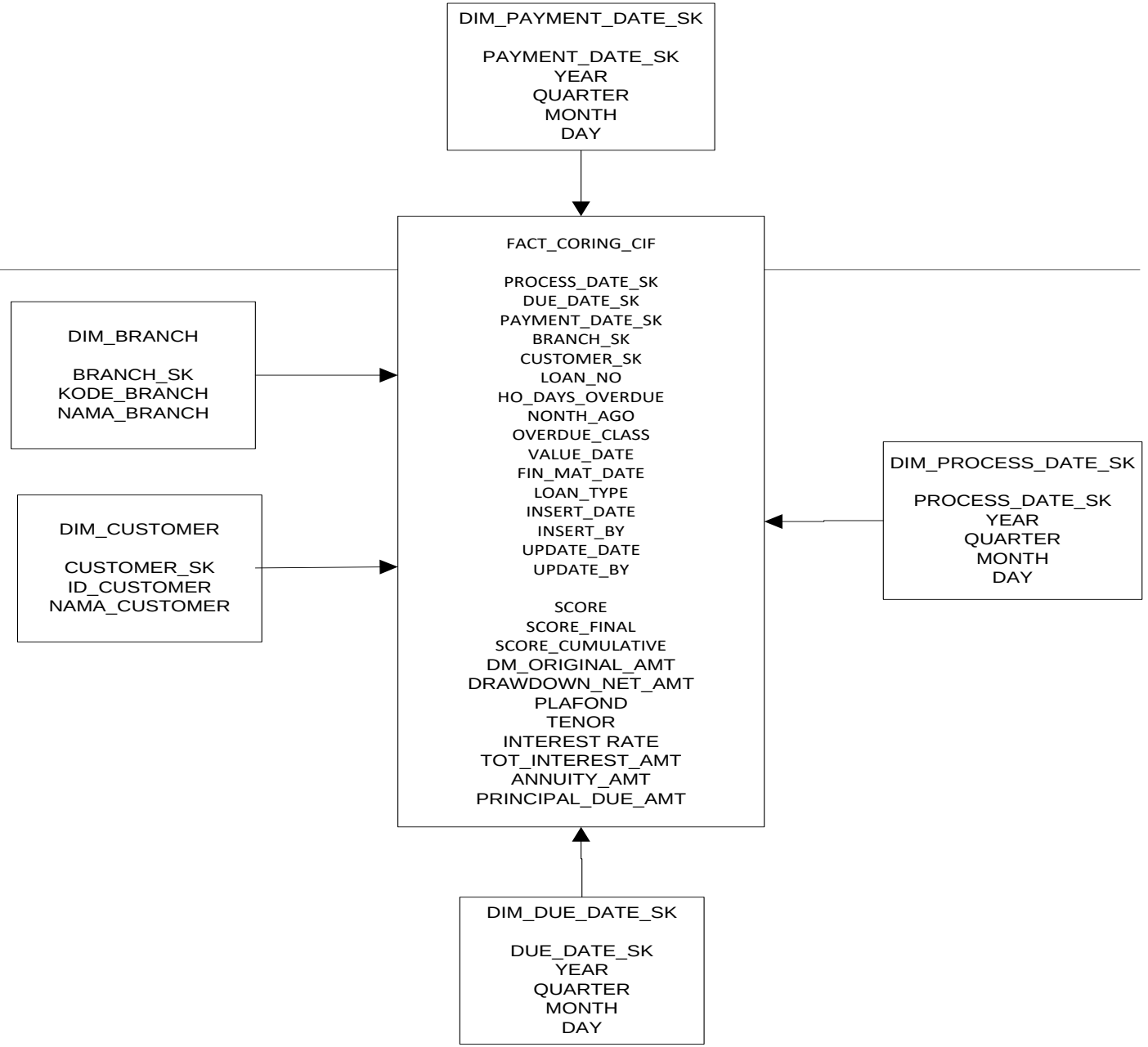
*) CIF = Customer Information System

# Report/ Data Presentation

**Tgl. Score** 01April 2015.
**CIF** 30305837
**Nama** [illegible]

| LD1314101389 | | | Kelompok | Score | LD1415392220 | | | Kelompok | Score | LD1502088513 | | | Kelompok | Score | Score Akhir | Kumulatif |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TglJT | TglByr | Dpd | | | TglJT | TglByr | Dpd | | | TglJT | TglByr | Dpd | | | | |
| 6/21/2013 | 6/21/2013 | 0 | 22A | 19.0583 | | | | | | | | | | | 19.0583 | 19.0583 |
| 7/21/2013 | 7/21/2013 | 0 | 21A | 19.4320 | | | | | | | | | | | 19.4320 | 38.4903 |
| 8/21/2013 | 8/21/2013 | 0 | 20A | 19.8057 | | | | | | | | | | | 19.8057 | 58.2960 |
| 9/21/2013 | 9/21/2013 | 0 | 19A | 20.1794 | | | | | | | | | | | 20.1794 | 78.4754 |
| 10/21/2013 | 10/21/2013 | 0 | 18A | 20.5531 | | | | | | | | | | | 20.5531 | 99.0285 |
| 11/21/2013 | 11/21/2013 | 0 | 17A | 20.9268 | | | | | | | | | | | 20.9268 | 119.9553 |
| 12/21/2013 | 12/21/2013 | 0 | 16A | 21.3004 | | | | | | | | | | | 21.3004 | 141.2557 |
| 1/21/2014 | 1/21/2014 | 0 | 15A | 21.6741 | | | | | | | | | | | 21.6741 | 162.9298 |
| 2/21/2014 | 2/21/2014 | 0 | 14A | 22.0478 | | | | | | | | | | | 22.0478 | 184.9776 |
| 3/21/2014 | 3/24/2014 | 3 | 13A | 22.4215 | | | | | | | | | | | 22.4215 | 207.3991 |
| 4/21/2014 | 4/21/2014 | 0 | 12A | 22.7952 | | | | | | | | | | | 22.7952 | 230.1943 |
| 5/21/2014 | 5/21/2014 | 0 | 11A | 23.1689 | | | | | | | | | | | 23.1689 | 253.3632 |
| 6/21/2014 | 6/23/2014 | 2 | 10A | 23.5426 | | | | | | | | | | | 23.5426 | 276.9058 |
| 7/21/2014 | 8/2/2014 | 12 | 9A | 23.9163 | 7/2/2014 | 7/2/2014 | 0 | 9A | 23.9163 | | | | | | 23.9163 | 300.8221 |
| 8/21/2014 | 8/25/2014 | 4 | 8A | 24.2900 | 8/2/2014 | 8/2/2014 | 0 | 8A | 24.2900 | | | | | | 24.2900 | 325.1121 |
| 9/21/2014 | 9/27/2014 | 6 | 7A | 24.6637 | 9/2/2014 | 9/2/2014 | 0 | 7A | 24.6637 | | | | | | 24.6637 | 349.7758 |
| 10/21/2014 | 10/22/2014 | 1 | 6A | 25.0374 | 10/2/2014 | 10/2/2014 | 0 | 6A | 25.0374 | | | | | | 25.0374 | 374.8132 |
| 11/21/2014 | 11/24/2014 | 3 | 5A | 25.4111 | 11/2/2014 | 11/5/2014 | 3 | 5A | 25.4111 | | | | | | 25.4111 | 400.2243 |
| | | | | | 12/2/2014 | 12/2/2014 | 0 | 4A | 25.7848 | | | | | | 25.7848 | 426.0091 |
| | | | | | 1/2/2015 | 1/9/2015 | 7 | 3A | 26.1584 | | | | | | 26.1584 | 452.1675 |
| | | | | | 2/2/2015 | 2/3/2015 | 1 | 2A | 26.5321 | 2/21/2015 | 2/23/2015 | 2 | 2A | 26.5321 | 26.5321 | 478.6996 |
| | | | | | 3/2/2015 | 3/2/2015 | 0 | 1A | 26.9058 | 3/21/2015 | Bln Bayar | | | | 26.9058 | 505.6054 |
| | | | | | | | | | | 4/21/2015 | x | | | | | |

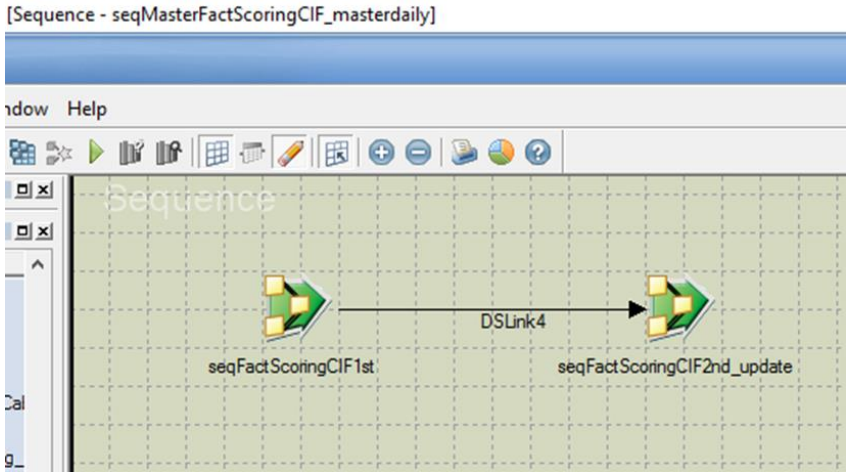
# Star Schema

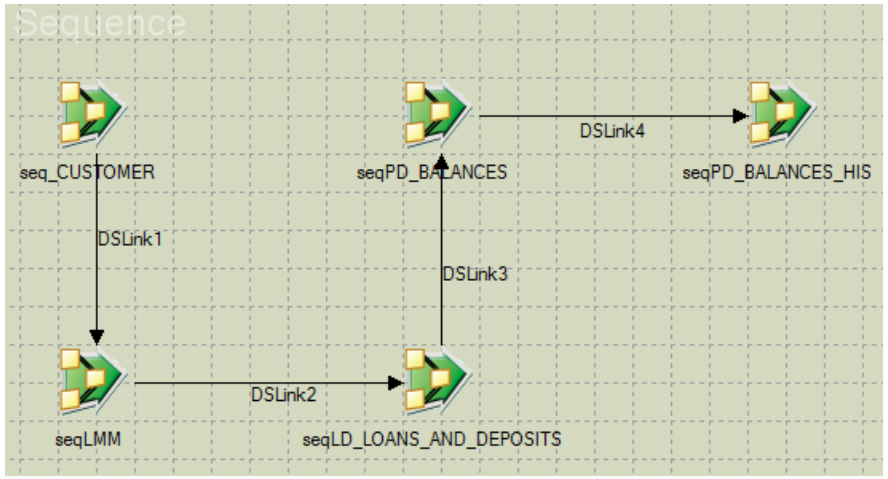

DIM_PAYMENT_DATE_SK
PAYMENT_DATE_SK
YEAR
QUARTER
MONTH
DAY
FACT_CORING_CIF
PROCESS_DATE_SK
DUE_DATE_SK
PAYMENT_DATE_SK
BRANCH_SK
CUSTOMER_SK
LOAN_NO
HO_DAYS_OVERDUE
NONTH_AGO
OVERDUE_CLASS
VALUE_DATE
FIN_MAT_DATE
LOAN_TYPE
INSERT_DATE
INSERT_BY
UPDATE_DATE
UPDATE_BY
SCORE
SCORE_FINAL
SCORE_CUMULATIVE
DM_ORIGINAL_AMT
DRAWDOWN_NET_AMT
PLAFOND
TENOR
INTEREST RATE
TOT_INTEREST_AMT
ANNUITY_AMT
PRINCIPAL_DUE_AMT
DIM_BRANCH
BRANCH_SK
KODE_BRANCH
NAMA_BRANCH
DIM_CUSTOMER
CUSTOMER_SK
ID_CUSTOMER
NAMA_CUSTOMER
DIM_PROCESS_DATE_SK
PROCESS_DATE_SK
YEAR
QUARTER
MONTH
DAY
DIM_DUE_DATE_SK
DUE_DATE_SK
YEAR
QUARTER
MONTH
DAY

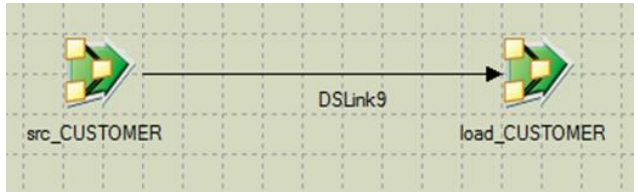
# Mapping Source to Target

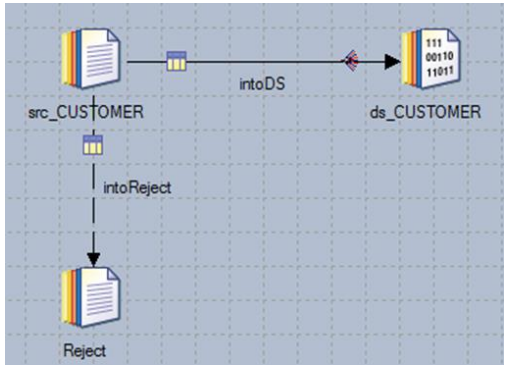
| No | Report Field/Column | Source | | | Description/ Business Rule |
|---|---|---|---|---|---|
| | | System | Table | Column | |
| 1. | CIF | T24 | CUSTOMER | ID | Kode unik nasabah (Customer Information File) --> Pada tabel Customer di T24 sama dengan ID Customer.<br><br>LD.CUSTOMER_ID = CUSTOMER.ID |
| 2. | Nama | T24 | CUSTOMER | Name_1 | Nama nasabah<br><br>LD.CUSTOMER_ID = CUSTOMER.ID |
| 3. | Nomor PK | T24 | LD | ID | Nomor Perjanjian Kredit (Loan Account Number)<br><br>Clue:<br>`SELECT CUSTOMER CIF`<br>`, ID NO_PK`<br>`, CO_CODE BRANCH_CODE`<br>`, MAX(REPORT_DATE)`<br>`FROM LD`<br>`GROUP BY CUSTOMER, ID, CO_CODE`<br><br>⇒ Data yang di-backup bersifat historical. |

# ETL Development: Sequence & Job

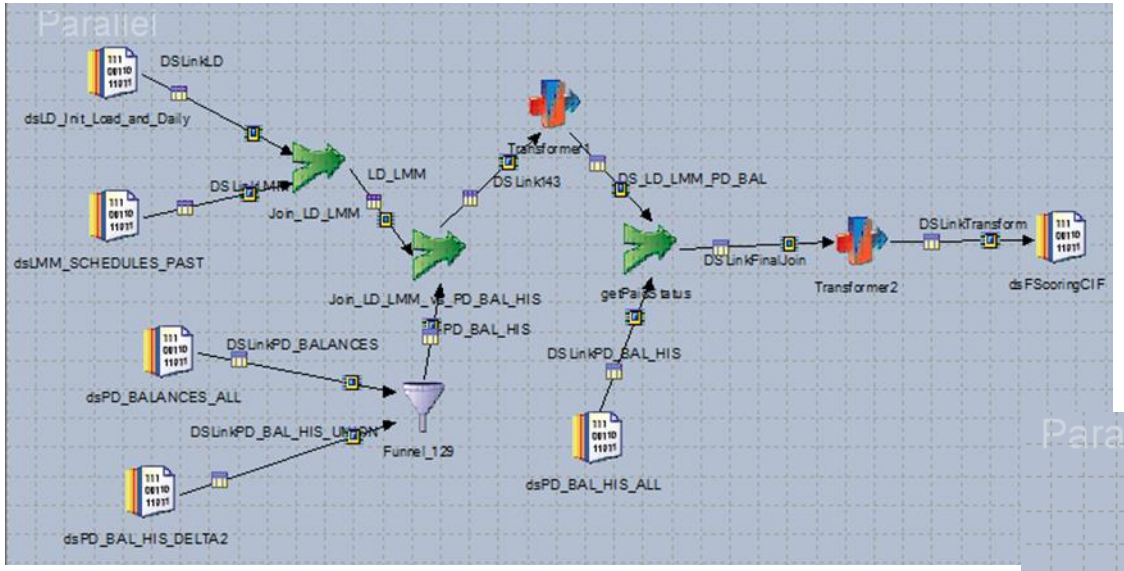


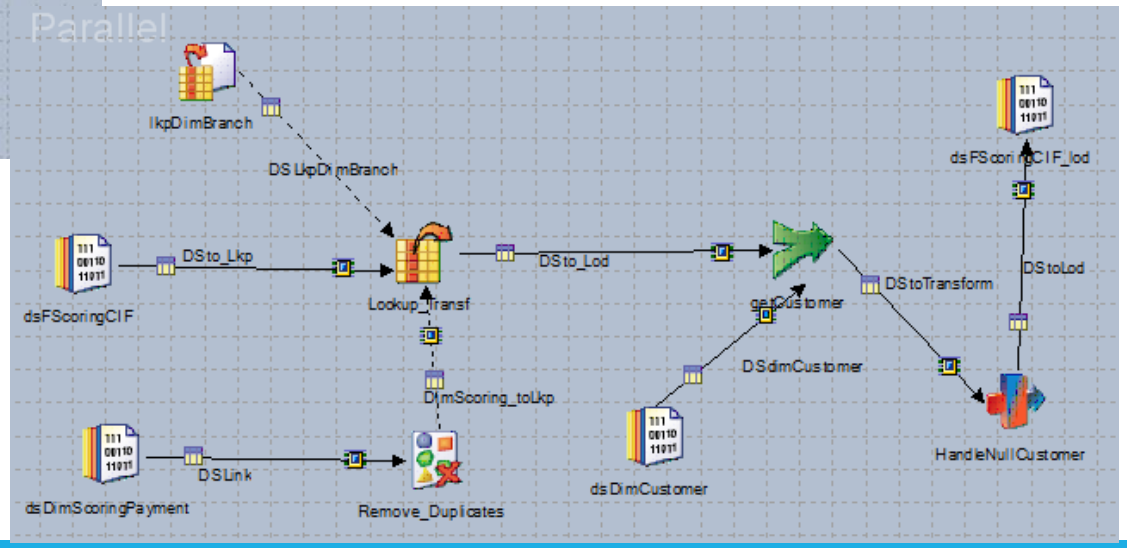



# ETL Development: Jobs



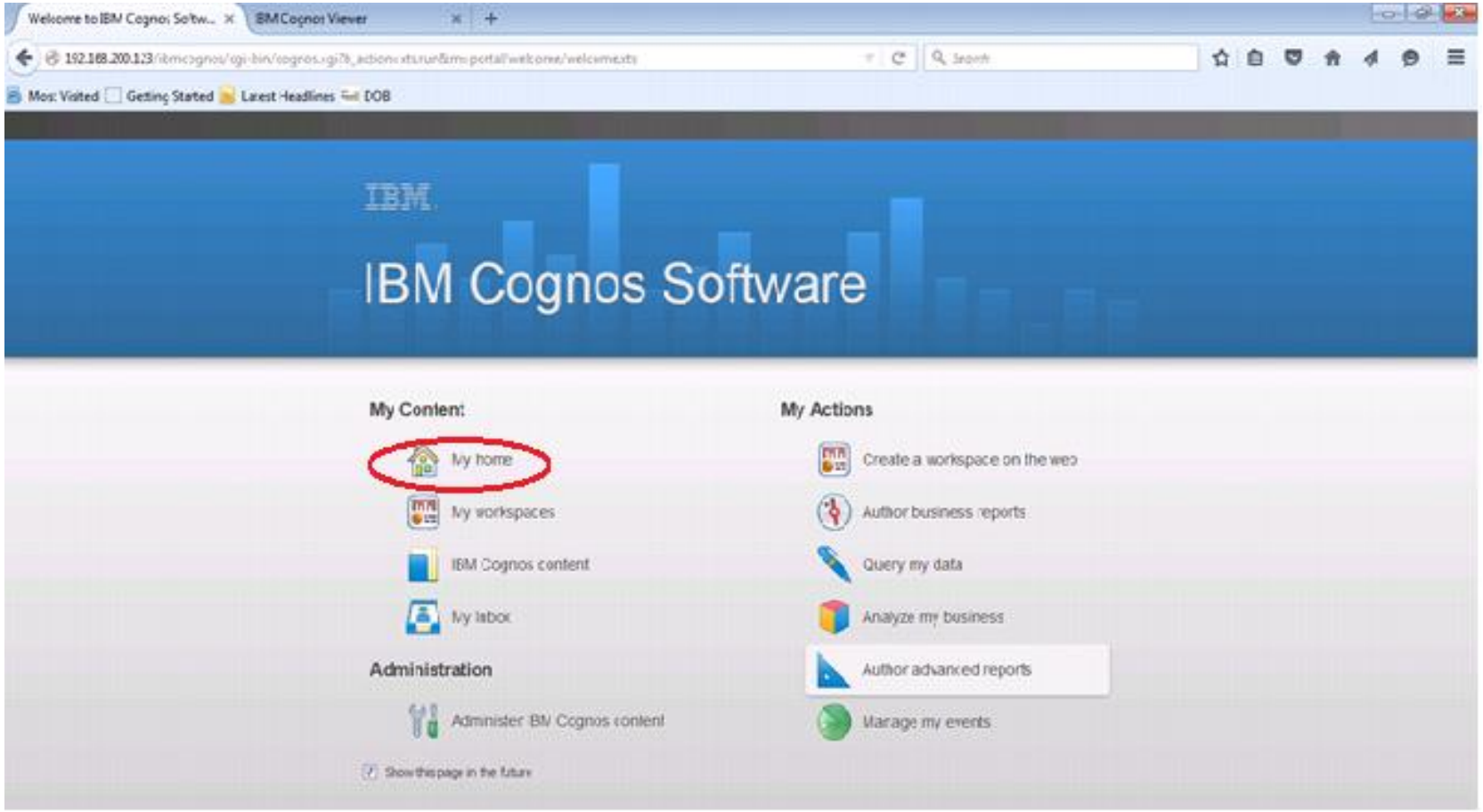
# ETL Development: Transformation (e.g.)

**PAYMENT_DATE_SK**

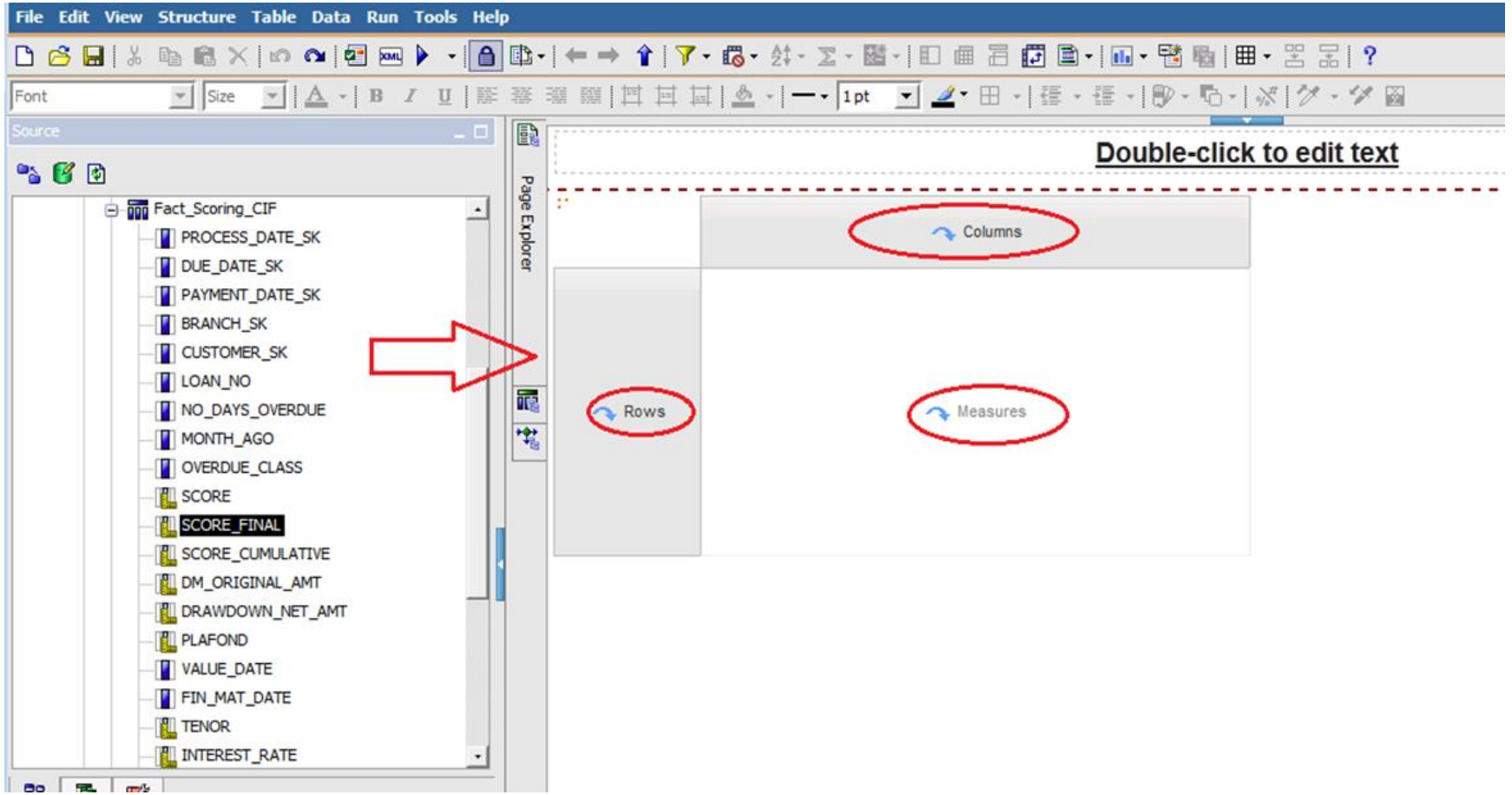
```
= IF IsNull(PAYMENT_STATUS) AND MAX_NO_DAYS_OVERDUE>0

THEN 99990101

ELSE AsInteger(DateToString(IF NullToValue(MAX_NO_DAYS_OVERDUE,0)=0

                                    THEN DATE_REC

                                    ELSE DateOffSetByDays(DATE_REC,
Max(NullToValue(MAX_NO_DAYS_OVERDUE,0),NullToValue(NO_DAYS_OVERDUE,0))
),"%yyyy%mm%dd"

   )

)
```

# ETL Data Stage Demo Session

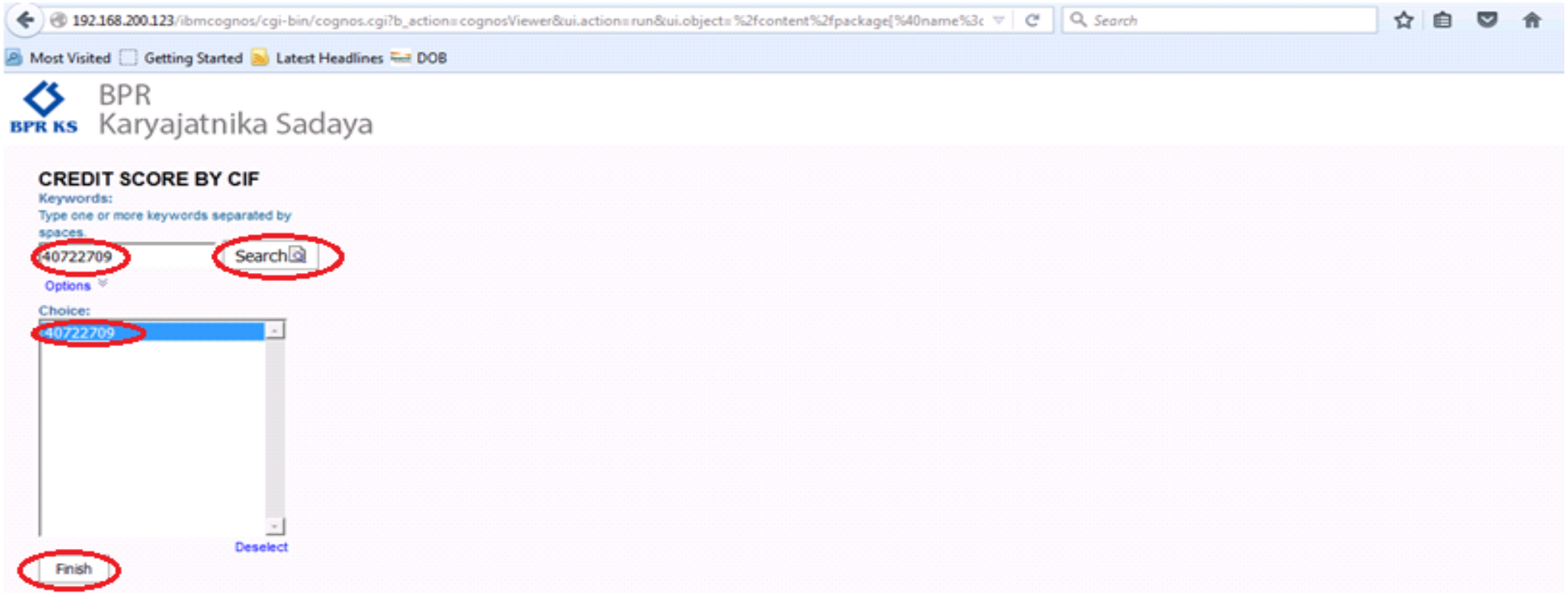
# BI Cognos: Entering application



# BI Cognos: Development Environment



# BI Cognos: Report Parameter



# BI Cognos - Report

**Tgl. Score** : 16 Oct 2015
**CIF** :
**Nama** :

| LD1406250034 | | | | | | LD1432475715 | | | | | | LD1516640770 | | | | | | Score Akhir | Kumulatif |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No | TglJT | TglByr | Dpd | Kelompok | Score | No | TglJT | TglByr | Dpd | Kelompok | Score | No | TglJT | TglByr | Dpd | Kelompok | Score | | |
| 1 | 3 Apr 2014 | 3 Apr 2014 | 0 | 18 A | 20.5531 | | | | | | | | | | | | | 20.5531 | 20.5531 |
| 2 | 3 May 2014 | 9 May 2014 | 6 | 17 A | 20.9268 | | | | | | | | | | | | | 20.9268 | 41.4799 |
| 3 | 3 Jun 2014 | 3 Jun 2014 | 0 | 16 A | 21.3004 | | | | | | | | | | | | | 21.3004 | 62.7803 |
| 4 | 3 Jul 2014 | 3 Jul 2014 | 0 | 15 A | 21.6741 | | | | | | | | | | | | | 21.6741 | 84.4544 |
| 5 | 3 Aug 2014 | 3 Aug 2014 | 0 | 14 A | 22.0478 | | | | | | | | | | | | | 22.0478 | 106.5022 |
| 6 | 3 Sep 2014 | 2 Oct 2014 | 29 | 13 B | 22.4215 | | | | | | | | | | | | | 22.4215 | 128.9237 |
| 7 | 3 Oct 2014 | 10 Nov 2014 | 38 | 12 C | -21.4537 | | | | | | | | | | | | | -21.4537 | 107.4700 |
| 8 | 3 Nov 2014 | 20 Nov 2014 | 17 | 11 B | 23.1689 | | | | | | | | | | | | | 23.1689 | 130.6389 |
| | | | | | | 1 | 20 Dec 2014 | 10 Jan 2015 | 21 | 10 B | 23.5426 | | | | | | | 23.5426 | 154.1815 |
| | | | | | | 2 | 20 Jan 2015 | 23 Feb 2015 | 34 | 9 C | -22.4143 | | | | | | | -22.4143 | 131.7672 |
| | | | | | | 3 | 20 Feb 2015 | 24 Mar 2015 | 32 | 8 C | -22.7346 | | | | | | | -22.7346 | 109.0326 |
| | | | | | | 4 | 20 Mar 2015 | 6 Apr 2015 | 17 | 7 B | 24.6637 | | | | | | | 24.6637 | 133.6963 |
| | | | | | | 5 | 20 Apr 2015 | 4 May 2015 | 14 | 6 A | 25.0374 | | | | | | | 25.0374 | 158.7337 |
| | | | | | | 6 | 20 May 2015 | 4 Jun 2015 | 15 | 5 A | 25.4111 | | | | | | | 25.4111 | 184.1448 |
| | | | | | | 7 | 20 Jun 2015 | 11 Jul 2015 | 21 | 4 B | 25.7848 | | | | | | | 25.7848 | 209.9296 |
| | | | | | | 8 | 20 Jul 2015 | 30 Aug 2015 | 41 | 3 C | -24.3356 | 1 | 16 Jul 2015 | 27 Sep 2015 | 73 | 3 D | -121.6779 | -24.3356 | 185.5940 |
| | | | | | | 9 | 20 Aug 2015 | - | 56 | 2 C | -24.6558 | 2 | 16 Aug 2015 | 30 Sep 2015 | 45 | 2 C | -24.6558 | -24.6558 | 160.9382 |
| | | | | | | 10 | 20 Sep 2015 | - | 25 | 1 B | 26.9058 | 3 | 16 Sep 2015 | - | 29 | 1 B | 26.9058 | 26.9058 | 187.8440 |

# BI Cognos Demo Session


thank you