IBM Industry Models

Banking Data Warehouse Model (BDWM)

System of Record

Agenda

- Introduction
- Subject Areas
  - Classification and Accounting Unit
  - Involved Party
  - Product
  - Arrangement
  - Condition
  - Resource Item
  - Location
  - Event
  - Subject-based Subject Areas
- Summary

The Main Components of the BDWM

System of Record

900+ Entities

The primary storage area within the Business Data Warehouse. Partially de-normalized database populated from the Operational Systems.

Summary and Profile Area

50+ Entities

Stores commonly used de-generalizations and aggregations for **GENERAL** use by downstream Data Marts.

Analysis Area

10+ Sample Star Schemas

An optional area where data is prepared (aggregated and otherwise de-generalized) to assist in the easy and rapid population of **SPECIFIC** downstream Data Marts.

Housekeeping

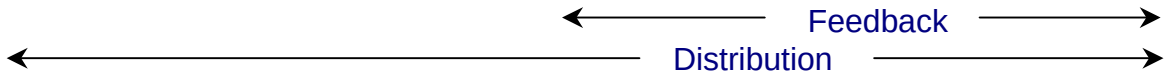
18 Entities

Relatively static data populated from the Operational Systems.

Feedback Area

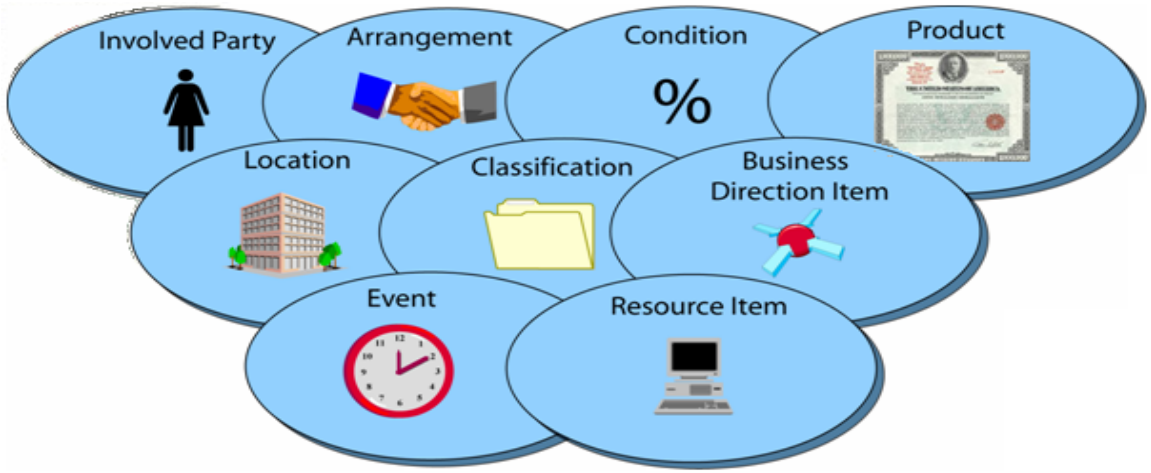
4 Feedback Entities

An optional area where downstream Data Marts can write results back based on data which originated in the warehouse.



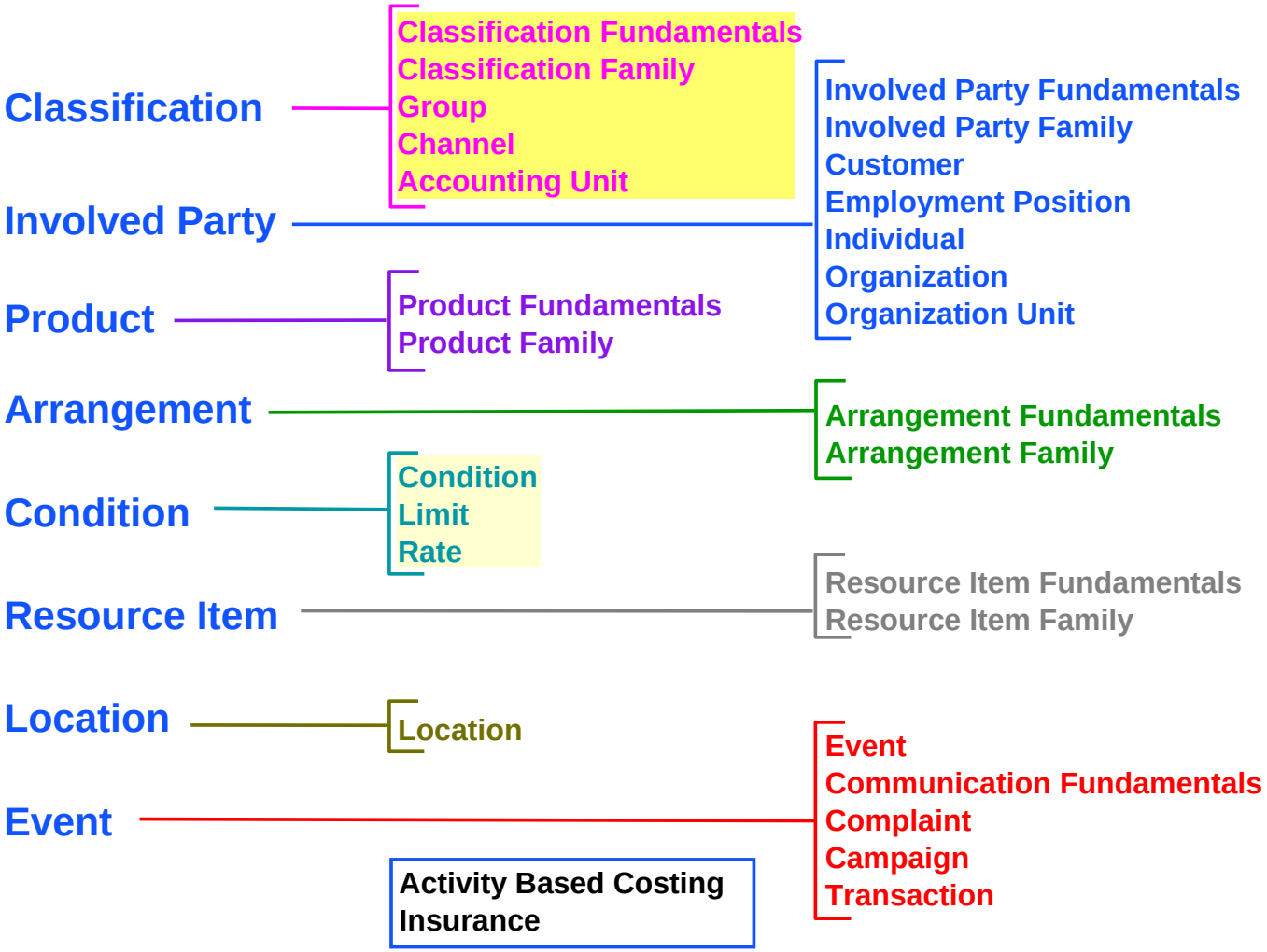
The 9 Data Concepts

- The 9 Data Concepts in the Banking Data Model provide a generic overview of the data in an enterprise.

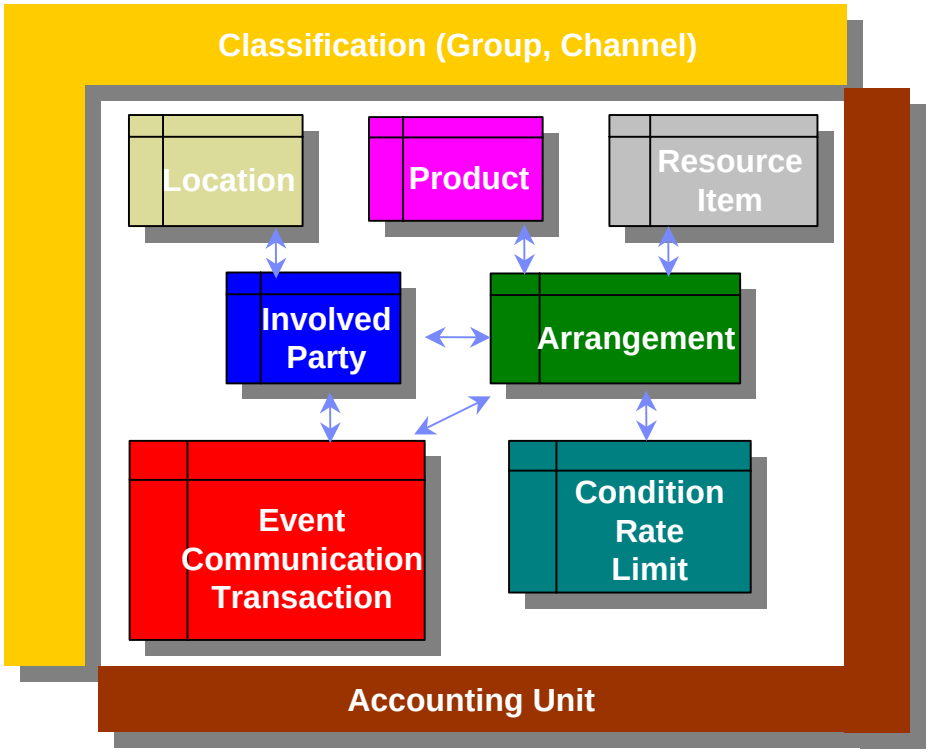


- The Banking Data Warehouse Model, models these Data Concepts and the relationships between them at a close-to-physical level.

The BDWM System Of Record Subject Areas

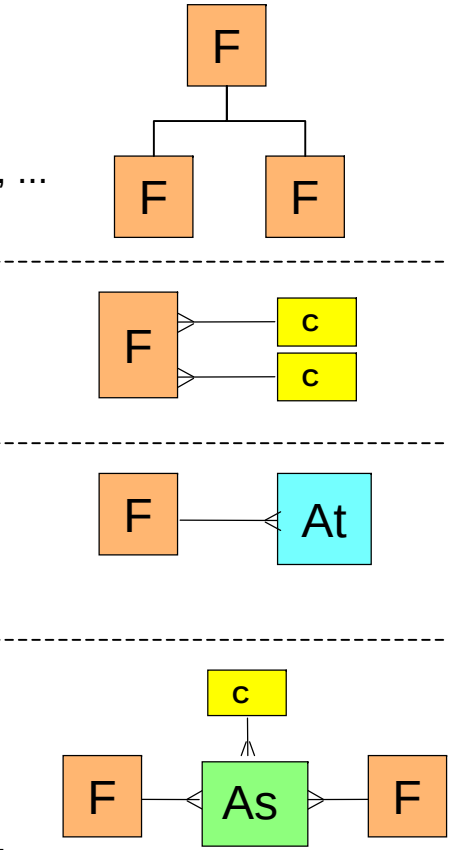


The BDWM System Of Record

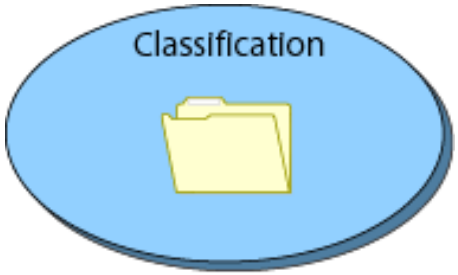


BDWM System Of Record – Entity Types

- Fundamental Entities
  - Form the backbone of the model
  - Involved Party, Individual, Arrangement, Account Arrangement, ...
- Classification Entities
  - Categorize the other entities
  - Fundamental Types, Life Cycle Status Types, Group Types, ...
- Attributive Entities
  - Extend information about Fundamentals
  - Organization Profile, Deliverable, ...
- Associative Entities
  - Link Fundamentals
  - Store history
  - Involved Party / Involved Party, Arrangement / Classification, ...



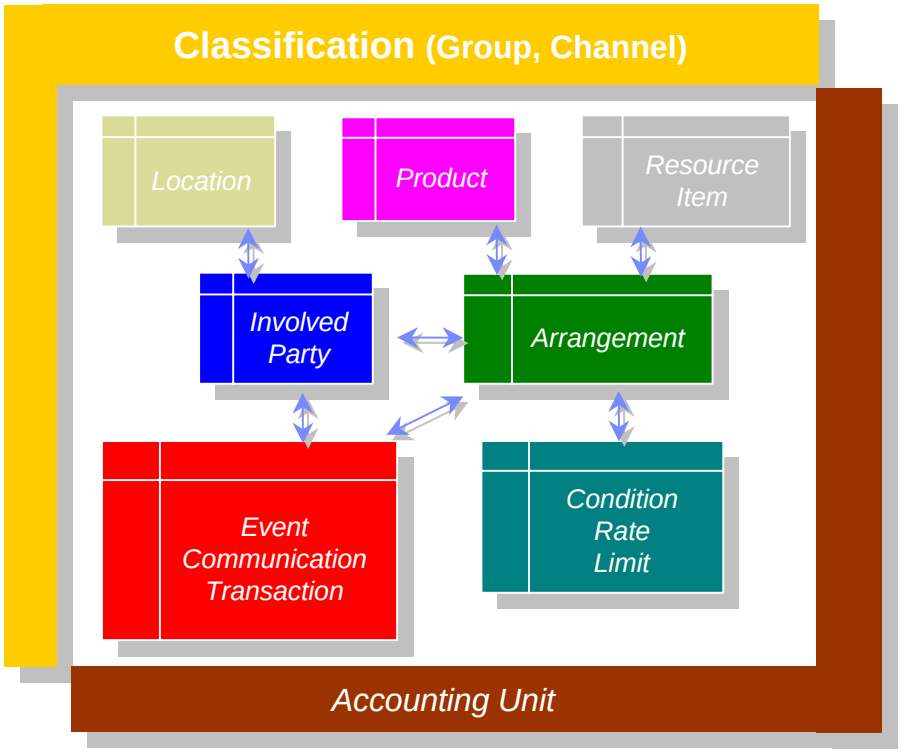
Classification



The Classification (CL) Data Concept organizes and manages business information by defining structures that provide classification categories applying to one or more Data Concepts.

Classification

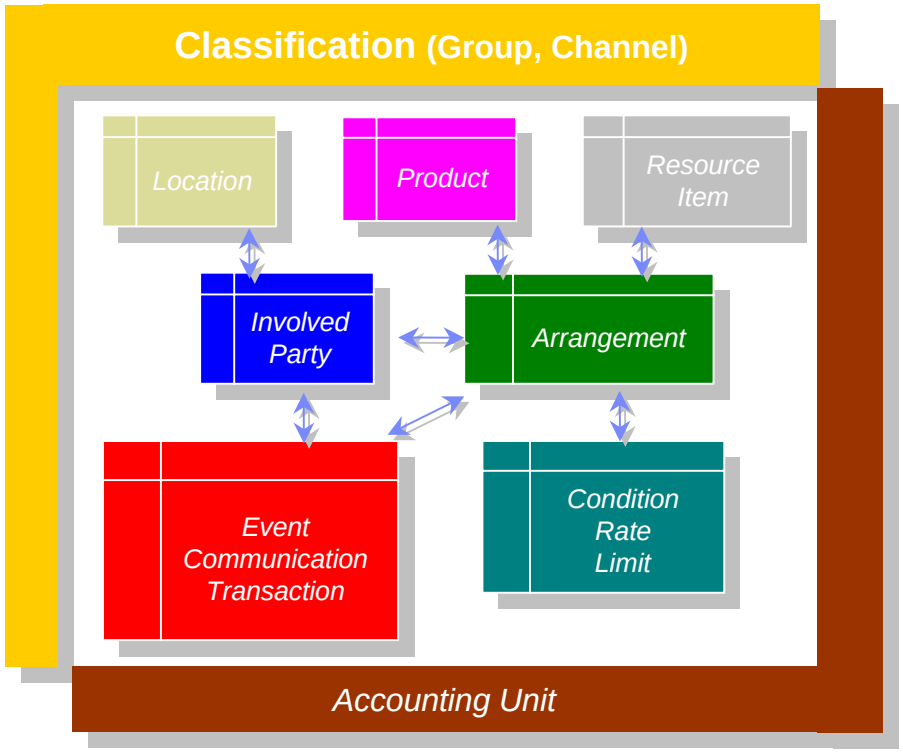
- Classification contains sets of codes used to codify a facet of the business.
- All other concepts in the BDWM have Classifications applied to them and these provide the main basis for analysis:
  - Probability Of Default Category
  - Individual Marital Status Type
  - Arrangement Financial Status Type
  - Finance Service Restructure Status
  - Complaint Severity Level
  - Arrangement / Involved Party Rltnp Type



- Each BDWM Classification represents an FSDM Scheme.
- The FSDM Values become rows in the Classification table.
- Classifications are closely associated with:
  - All other Subject Areas

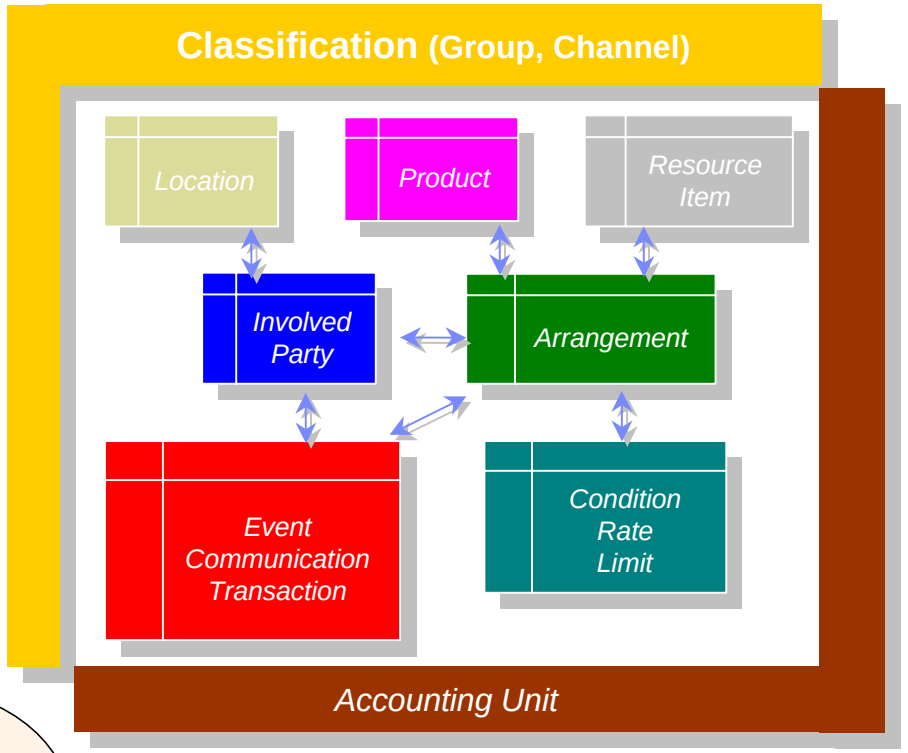
Classification – Fundamentals and Family

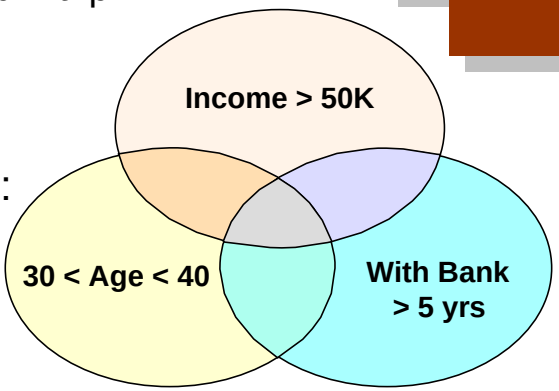
- Classification Fundamentals describes the entities and relationships closely related to Classification itself:
  - Classification Scheme
  - Classification / Classification Rltnp
- Classification Family is a collection Point for the many Classification entities that are distributed throughout the model:
  - Types for Fundamental entities (Collateral Type, Communication Type)
  - Types for Associative entities (Arrangement / Involved Party Rltnp Type)
  - Classifications of Classifications (Currency Category, Risk Portfolio Type)



Group

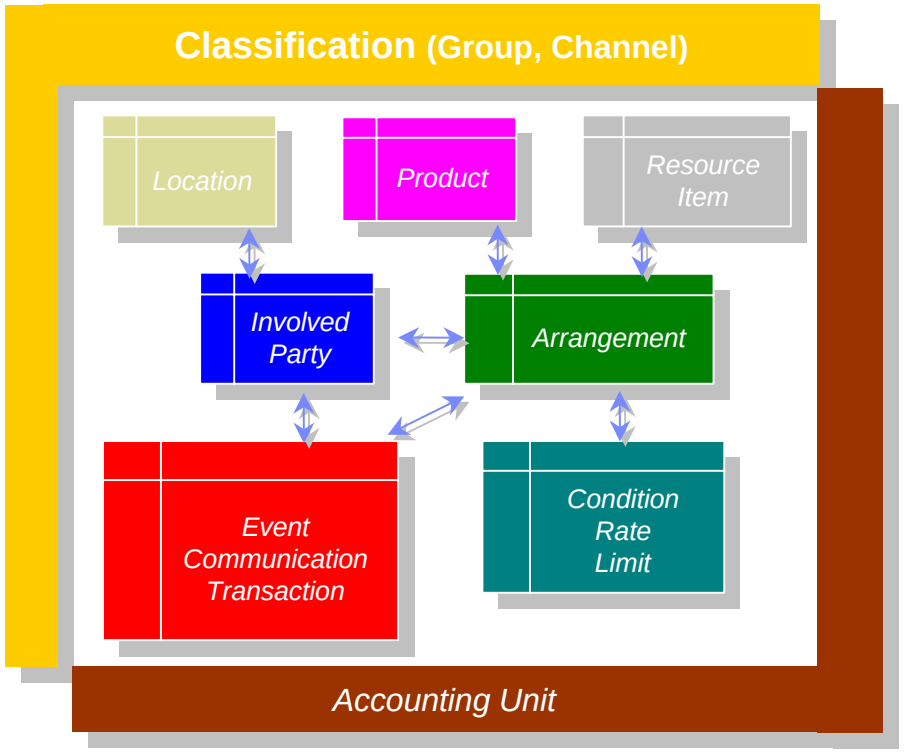
- A Group groups objects of interest to the Financial Institution. For example:
  - Market Segments (groups of Involved Parties)
  - Time Segments
  - Product Group
- The Group Subject Area contains entities that support segmentation:
  - Segment Numeric Information
  - Arrangement Time To Maturity Segment
  - Reliability Rating
  - Involved Party / Group Rltnp
  - Time Band
  - Unit Of Measure
- Closely associated with:
  - Campaign
  - Involved Party
  - Classification

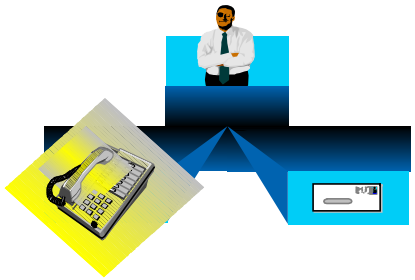




Channel

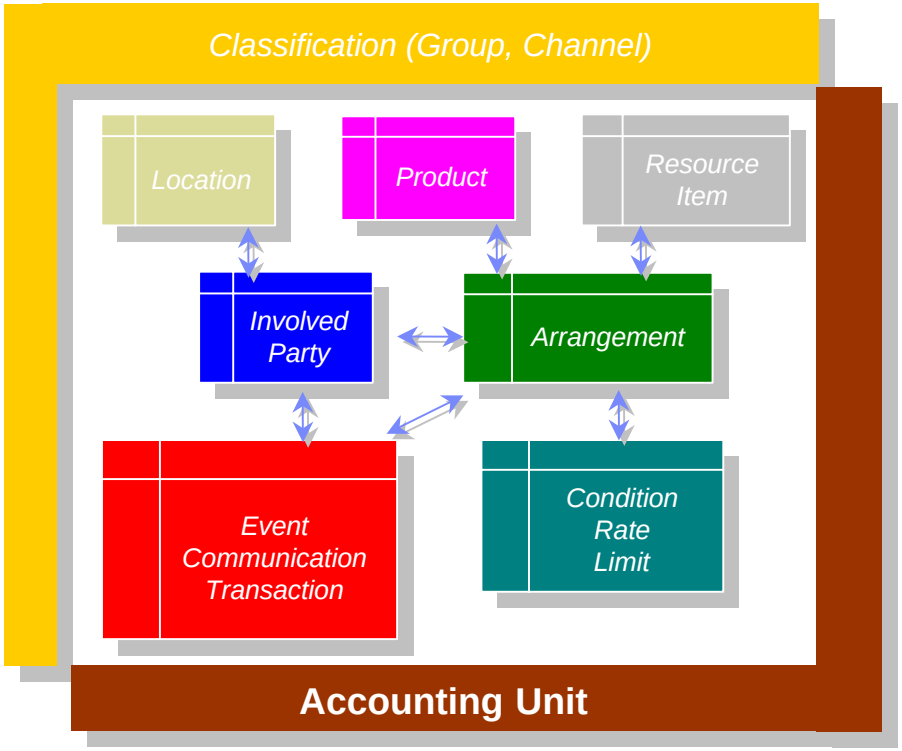
- Channel identifies the different delivery mechanisms through which products and services are made available to the customer and by which the Financial Institution and customers communicate.
- A Channel is a role played by either an Involved Party (e.g. Employee, Organization Unit) or a Resource Item (e.g. an ATM, a Website).
- The Channel Subject Area contains entities that support Channel:
  - Channel Ownership Type
  - Electronic Delivery Device
  - Resource Item / Channel Rltnp
- Closely associated with:
  - Involved Party and Resource Item
  - Communication and Campaign
  - Activity Based Costing





Accounting Unit

- An Accounting Unit is a repository used to monitor both monetary and non-monetary standings.
  - Commonly used for Arrangements, but can monitor ANY required quantity.
- The Accounting Unit Structure
  - Provides a means of reflecting the structure of a Financial Institution's General Ledger in the Warehouse environment.
  - Provides the generic structures which may be used by a Financial Institution to extend or enhance the Summary area entities provided within the BDWM.
- The Accounting Unit Subject Area contains entities that support Accounting Units. For example:
  - Accounting Unit Information Type
  - Accounting Category
  - Arrangement / Accounting Unit Rltnp



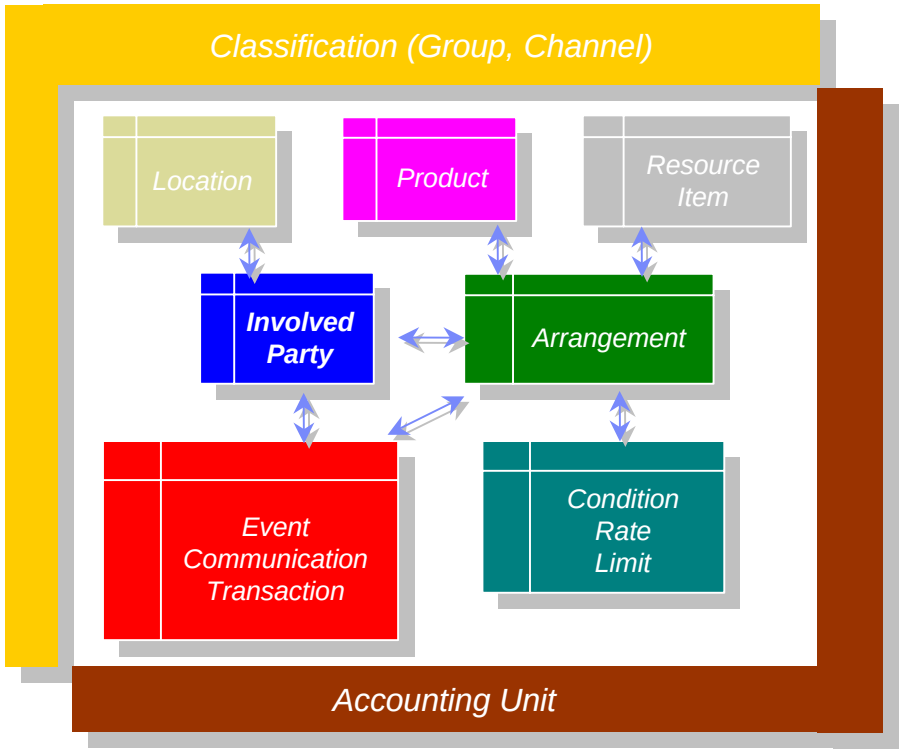
Involved Party

The Involved Party (IP) Data Concept represents all participants that may have contact with the Financial Institution or that are of interest to the Financial Institution and about which the Financial Institution wishes to maintain information.

This includes information about the Financial Institution itself.

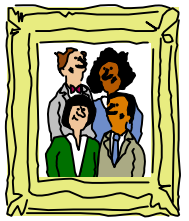
Involved Party

- Involved Parties are persons or organized groups of persons about whom the Financial Institution needs or wants to keep information.
- Significant Involved Party Types:
  - Individual
  - Household
  - Organization
  - Organization Unit
  - Employment Position
  - Customer
- Closely associated with:
  - Location
  - Campaign
  - Arrangement
  - Classification and Segment



Involved Party – Fundamentals and Family

- Involved Party Fundamentals contains the structures common to all the Involved Parties in the BDWM. For example:
  - Involved Party Alternative Name
  - Financial Legal Status
  - Legal Competency Status
  - Involved Party / Location Rltnp
  - Involved Party / Arrangement Credit Risk Category Rltnp
  - Involved Party Name Type
    - FinCEN Entity Identifier



- Involved Party Family contains all the subtypes of Involved Party, together with related Attributive and Classification entities. For example:
  - Individual
  - Household Profile
  - Household Income Segment

Involved Party – Individual

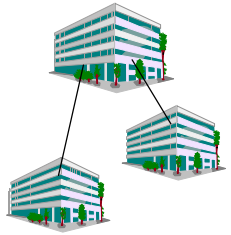
- Individual contains the set of entities which describes Involved Parties who are unique persons. Individual tracks personal details such as:
  - Date of birth
  - Marital status
  - Financial status
- Example entities related to Individuals:
  - Individual Age Group
  - Individual Profile
  - Gender
  - Religion
  - Individual Life Cycle Status Type
  - Individual Smoking Frequency Segment
  - Probability Of Default Category

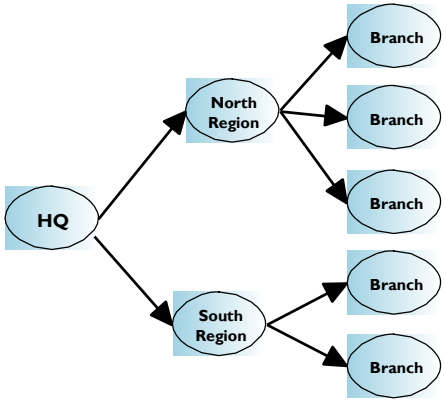
Involved Party – Organization

- Organization contains the set of entities describing Involved Parties that are Organizations (typically companies and institutions that are Customers or competitors of the Financial Institution).
- Organization may also be used to describe the Financial Institution itself and hence the link between Organization and Organization Unit (e.g. branches of the Financial Institution).
- Example entities related to Organizations:
  - Organization Legal Structure Type
  - Organization Profile
  - Industry Classification
  - Organization Turnover Segment
  - Organization Life Cycle Status Type

Involved Party – Organization Unit

- Organization Unit contains the set of entities describing Involved Parties that are organizational sub-divisions (Branches, Departments, ...) of Organizations (e.g. Financial Institutions). It provides the basis for measuring the performance of branches and other business units.
- Example entities related to Organization Unit:
  - Organization
  - Organization Unit Geography
  - Line Of Business
  - Organization Unit Life Cycle Status
- Closely associated with:
  - Accounting Unit
  - Arrangement
  - Transaction
  - Complaint



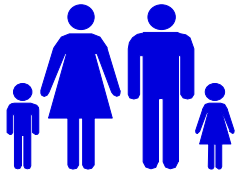


Involved Party – Employment Position

- Employment Position tracks details relating to employment positions, whether filled or vacant. For example:
  - The assigned Employee (if any)
  - The Organization Unit to report to.
- The Subject Area also contains entities related to occupations and employment in general.
- Example entities related to Employment Positions:
  - Employee (subtype of Individual)
  - Organization Unit
  - Customer
  - Employment Life Cycle Status Type
  - Employment Position Type

Involved Party – Customer

- Customer identifies an Involved Party whom the Financial Institution regards as a customer, either potential, current, or past. Any Involved Party can potentially play a Customer role.
- Example entities related to Customer:
  - Customer Market Segment
  - Customer Life Cycle Status
  - Customer Performance Status
  - Involved Party Credit Risk Rating
  - Organization Unit Proximity Segment
  - Customer Non-Performing Loan Status



- For Data Warehousing purposes, a Customer is a customer of the overall Financial Institution. Relationships with sub-units of the Financial Institution (e.g. a branch) are tracked via Arrangements.

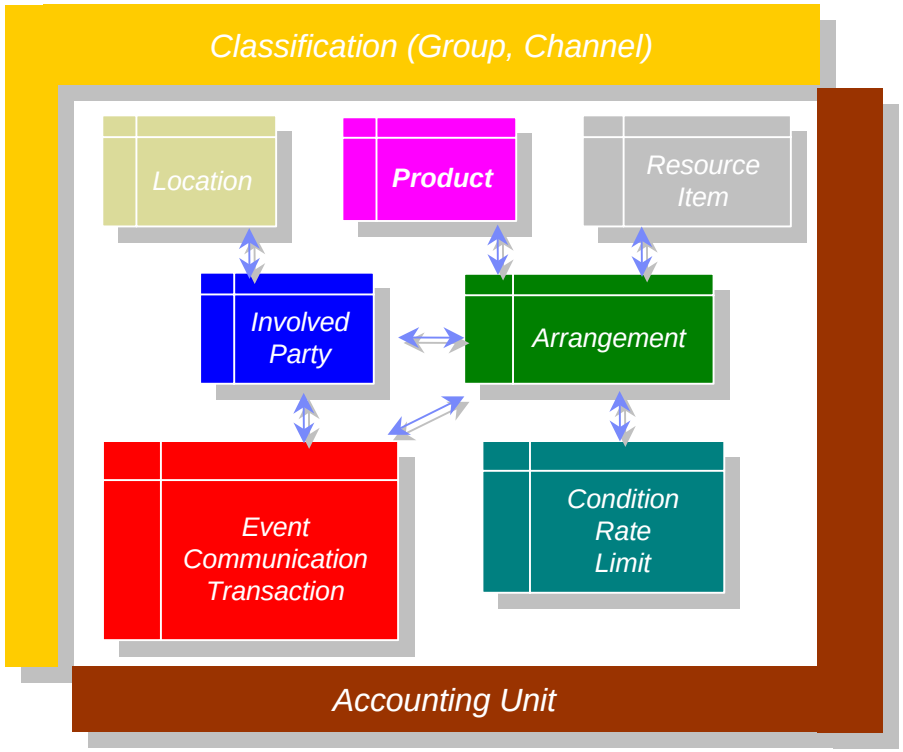
Product

The Product (PD) Data Concept describes products and services that can be offered, sold or purchased by the Financial Institution, its competitors and other Involved Parties during the normal course of business.

This Data Concept also includes non-financial goods and services that are of interest to the Financial Institution.

Product

- A Product is any Goods or Service offered by the Financial Institution or its competitors. The Product structure in the BDWM is simplified compared to that in a Core Banking System.
- Significant Product Types:
  - Investment Product
  - Financial Market Instrument
  - Insurance Product
- Closely associated with:
  - Arrangement
  - Involved Party
  - Communication
  - Campaign

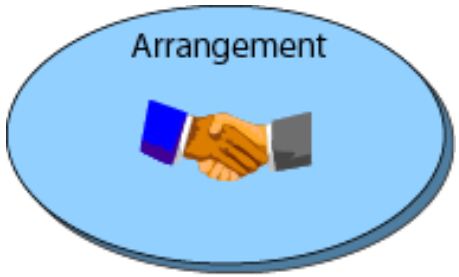


Product – Fundamentals and Family

- Product Fundamentals contains the structures common to all the Products in the BDWM. For example:
  - Product Alternative Name
  - Product Life Cycle Status Type
  - Product Activity
  - Product / Involved Party Rltnp
  - Fund / Product Rltnp

- Product Family contains all the subtypes of Product, together with related Attributive and Classification entities. For example:
  - Derivative Investment Product
  - Mineral Commodity
  - Debenture and Bond
  - Stock Instrument

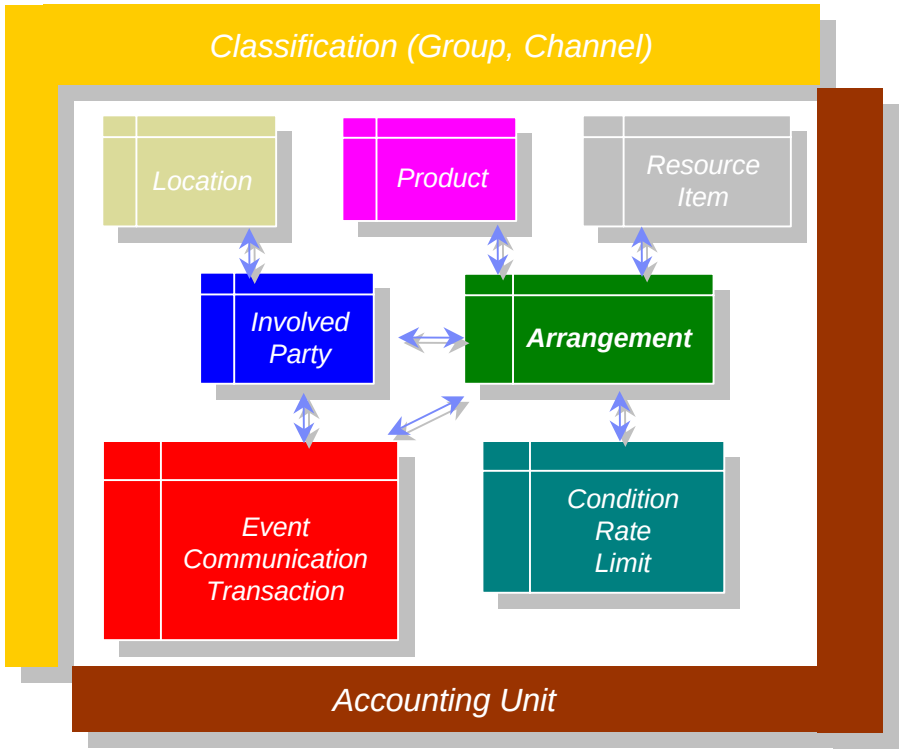
Arrangement

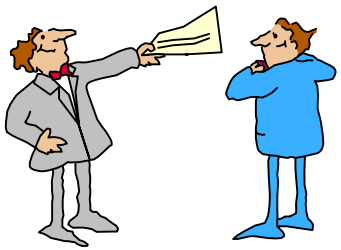


The Arrangement (AR) Data Concept represents a potential or actual agreement between two or more Involved Parties, that provides and affirms the rules and obligations associated with the sale, exchange or provision of Products or resources.

Arrangement

- Arrangement records any legally binding agreement between two or more Involved Parties.
- Significant Arrangement Types:
  - Product Arrangement
  - Security Arrangement
  - Trading Arrangement
  - Employment Arrangement
- Closely associated with:
  - Product
  - Involved Party
  - Communication
  - Channel
  - Resource Item



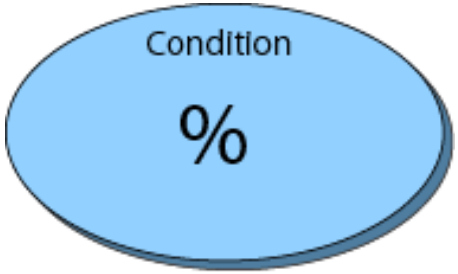


Arrangement – Fundamentals and Family

- Arrangement Fundamentals contains the entities and relationships applying to all Arrangements in the BDWM. For example:
  - Arrangement Activity and Schedule
  - Arrangement / Rate Type Rltnp
  - Arrangement / Accounting Unit Rltnp

- Arrangement Family contains all the subtypes of Arrangement, together with related Attributive and Classification entities. For example:
  - Account, Account Facility & Over The Counter Service Arrangement
  - Collateral Arrangement
  - Finance Service Arrangement
  - Investment Arrangement
  - Mutual Fund Holding
  - Asset Securitization Arrangement

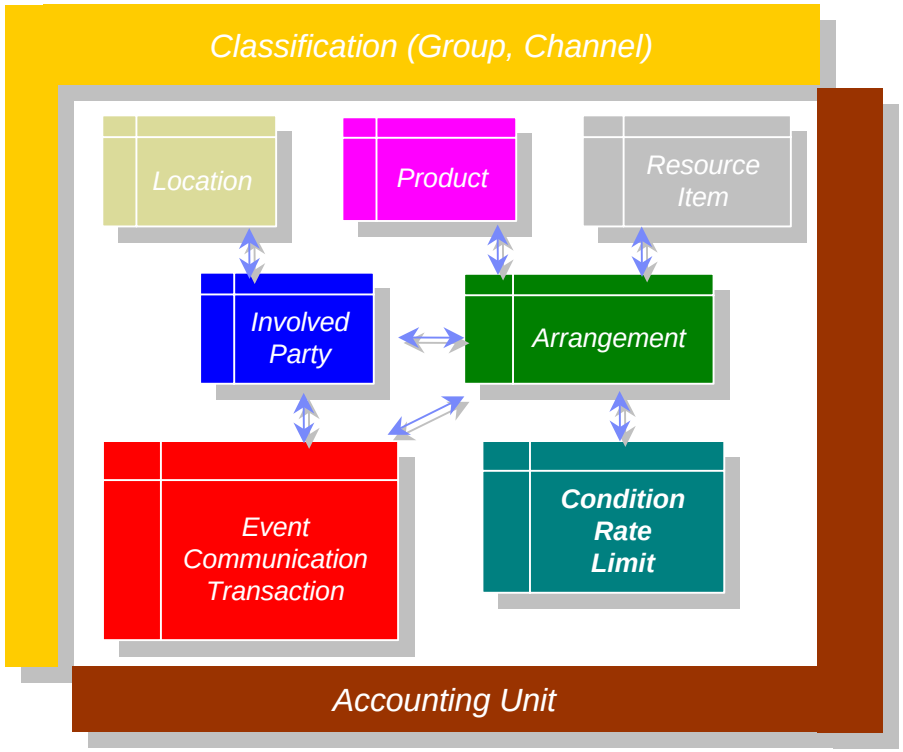
Condition



The Condition (CD) Data Concept describes the specific requirements that pertain to how the business of a Financial Institution is conducted and includes information such as prerequisite or qualification criteria and restrictions or limits associated with those requirements

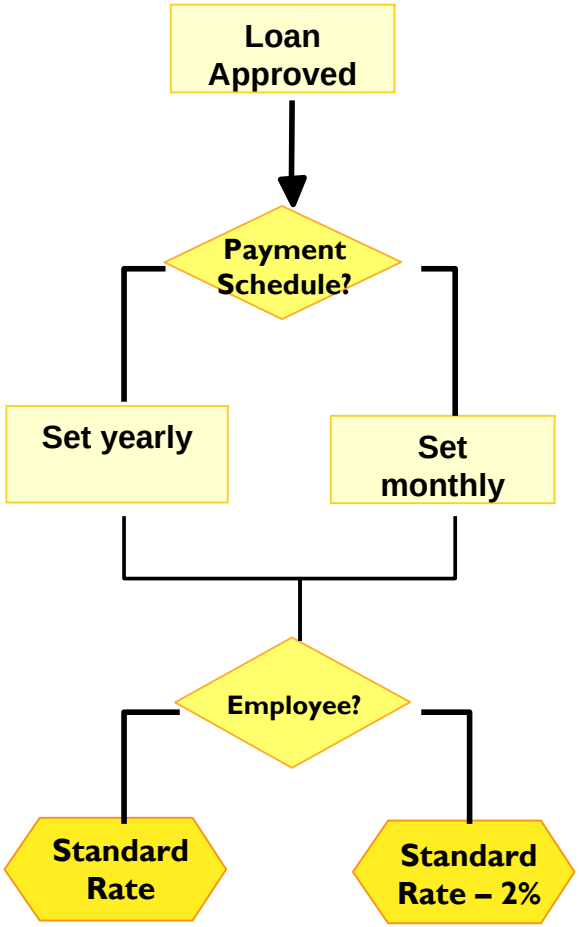
Condition

- Conditions can apply to various aspects of a financial institution's operations, such as determination of eligibility for product purchase, the servicing of Arrangements or authorisation criteria to perform certain business transactions.



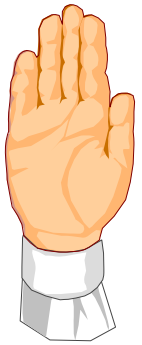
Condition

- Significant Condition Types:
  - Limit
  - Rate
  - Periodicity Interval
  - Condition Numeric Range
  - Condition / Condition Rltnp Type
- Closely associated with:
  - Product
  - Arrangement
  - Insurance



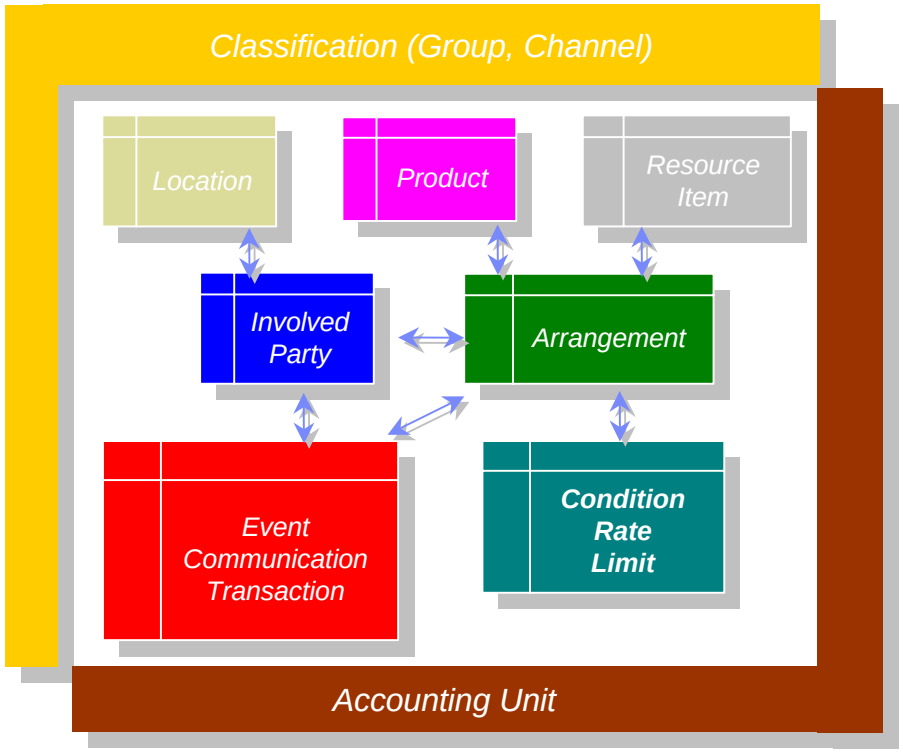
Limit

- Limit is a collection point for all entities and associatives in the model which have limits imposed on them.
- This subject area contains all of the data structures used to model Limits and Limit violations. For example:
  - Associative Limits
  - Associative Limit Changes
  - Limit Type
  - Limit Basis
  - Limit Timeframe Type
  - Limit Status Type
  - Limit Violation Severity Level
  - Involved Party / Location Rltnp Limit

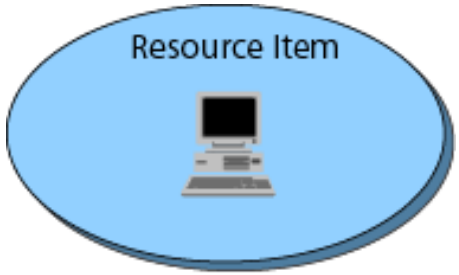


Rate

- Rate uses a standard or scale to express a quantity or amount in relation to another quantity or amount, usually for the purposes of comparison or charging (e.g. an Interest Rate expressed as a percentage of the amount outstanding).
- Example entities related to Rates:
  - Interest Rate
  - Exchange Rate
  - Exchange Rate History
  - Exchange Rate Usage Type
  - Rate Reference Type
  - Arrangement / Rate Type Rltnp
- Closely associated with:
  - Finance Service Arrangements
  - Deposit Arrangements
  - Currency



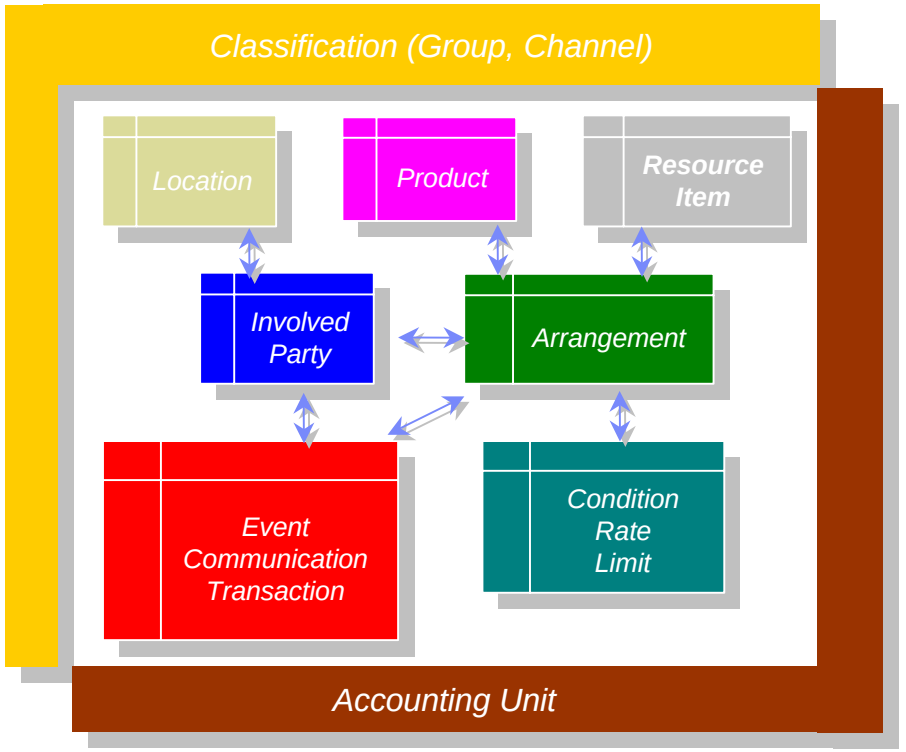
Resource Item



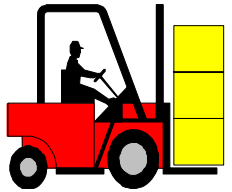
The Resource Item (RI) Data Concept includes and describes any value item, either tangible or intangible, that is owned, managed, used by, or of specific interest to the Financial Institution in pursuit and accomplishment of its business.

Resource Item

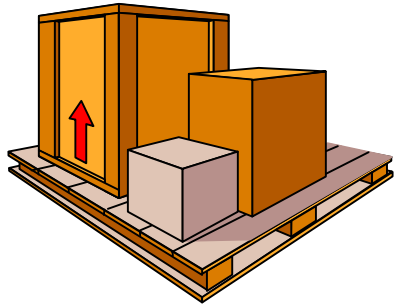
- Resource Item is any asset of interest to the Financial Institution (e.g. those it owns or has equity in, and those pledged as Collateral).
- Significant Resource Item Types:
  - Real Property
  - Documentation Item
  - Electronic Delivery Device
  - Chattel
  - Financial Resource Item
  - Electronic Document
- Closely associated with:
  - Security (Collateral) Arrangement
  - Involved Party
  - Insurance



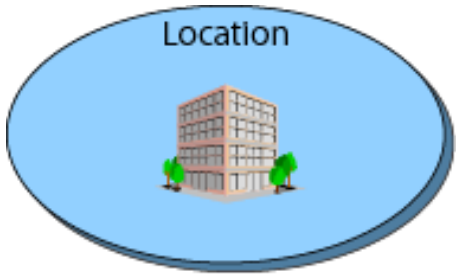
Resource Item – Fundamentals and Family



- Resource Item Fundamentals contains the structures common to all the Resource Items in the BDWM. For example:
  - Resource Item Value
  - Resource Item Encumbrance
  - Resource Item Appraisal Age Segment
  - Resource Item / Insurance Claim Rltnp
- Resource Item Family contains all the subtypes of Resource Item, together with related Attributive and Classification entities. For example:
  - Web Page
  - Communication Template
  - Question and Multiple Choice Option
  - Building and Vehicle



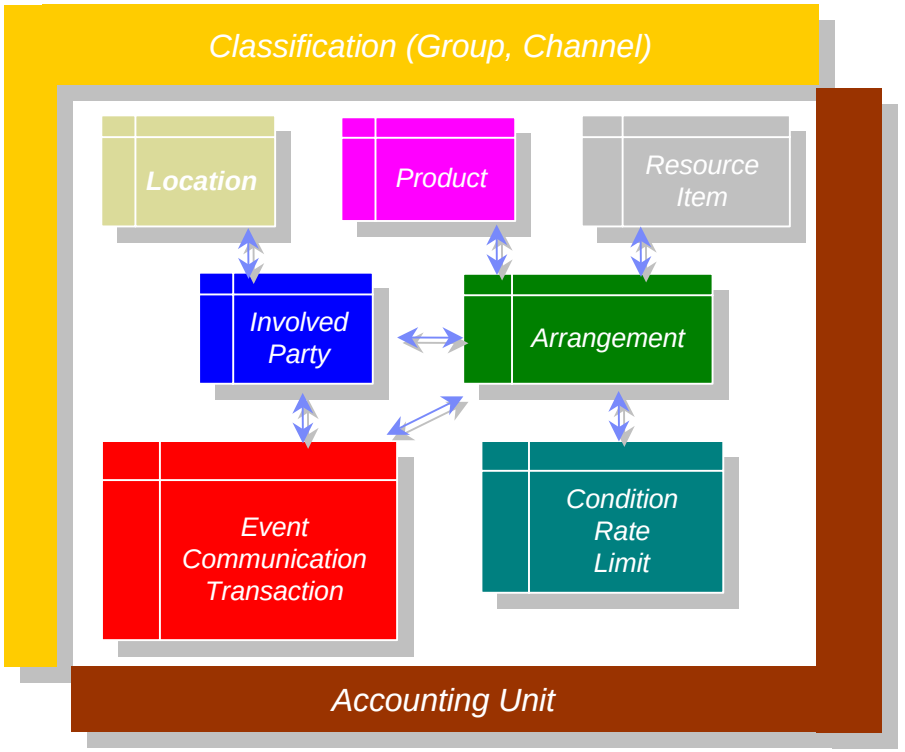
Location

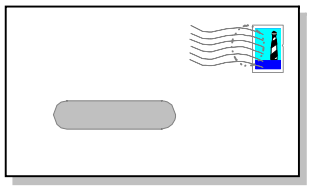


The Location (LO) Data Concept describes a place where something can be found, a destination of information or a bounded area, such as a country or state, about which the Financial Institution wishes to keep information.

Location

- Location stores the physical or logical Locations used by the Financial Institution and by Customers. For Example:
  - 2 Burlington Road, Dublin 4, Ireland
  - 1600, Pennsylvania Ave, Washington
  - 3IFWHelp@ie.ibm.com
  - +353 1 1234567
- Significant Location Entities:
  - Geographic Area
  - Geographic Area Profile
  - Postal Address
  - Telephonic Address
  - Electronic Address
  - Involved Party / Address Associatives
  - Arrangement Credit Source Location



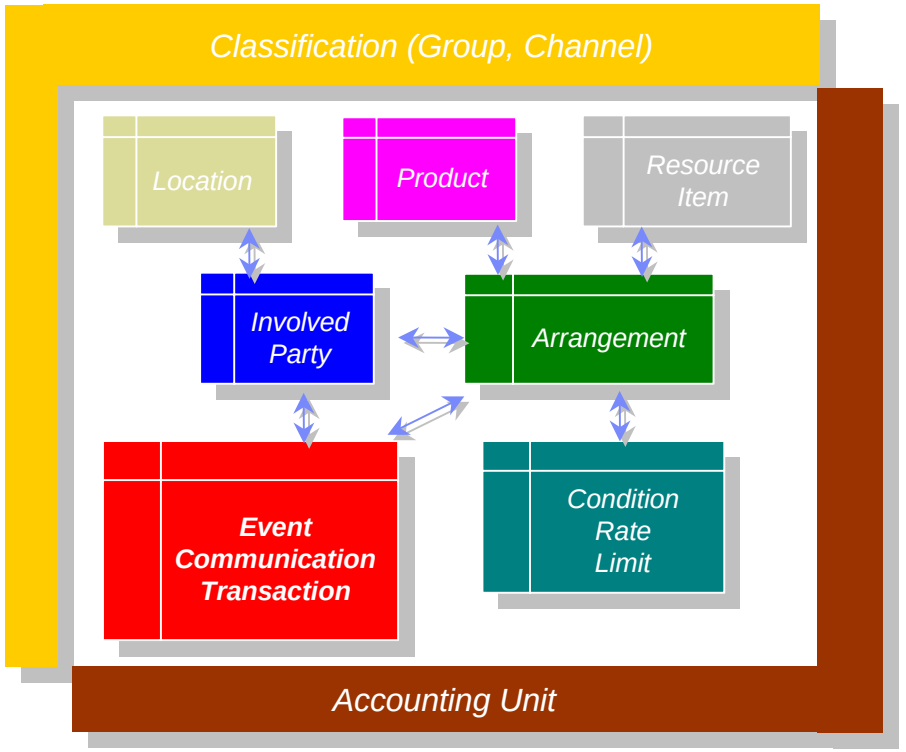


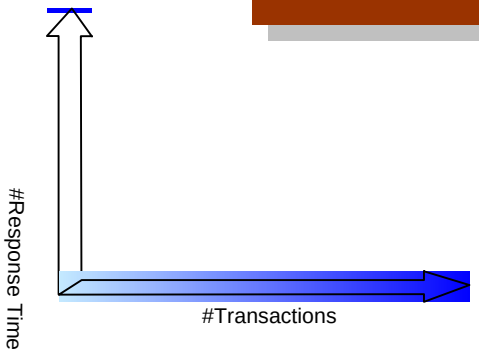
Event

The Event (EV) Data Concept describes a happening about which the Financial Institution wishes to keep information as a part of carrying out its mission and conducting its business.

Event

- Events covers all activities which the Financial Institution wants to track – from Orders through to Posting Entries.
- Significant Event Types:
  - Communication
  - Complaint
  - Transaction
  - Insurance Claim
  - Loss Event
- Closely associated with:
  - Arrangement Activities
  - Involved Party
  - Insurance





Communication – Fundamentals

- A Communication records an exchange of information with an Involved Party. For example:
  - Receive a Customer's request for an interim statement
  - Transmit a report on liquidity levels to the Federal Reserve (USA)
  - Make Marketing Campaign call to Customer

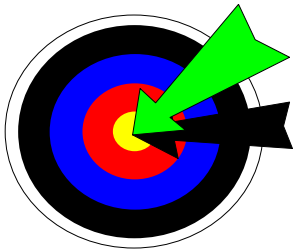
- Example entities related to Communications:
  - Communication Thread
  - Communication Type
  - Communication Form
  - Communication Direction
  - Communication Contact Status
  - Questionnaire

Complaint

- Complaint is the set of entities and relationships dealing with the receipt, tracking and response to Complaints from Customers of the Financial Institution.
- Example entities related to Complaint:
  - Complaint Type
  - Complaint Severity Level
  - Escalation Status
  - Resolution Time Band
  - Complaint Response
- Closely associated with:
  - Customer (typically the person raising the complaint)
  - Organization Unit
  - Employment Position

Campaign

- Campaign identifies a process the Financial Institution undertakes in order to accomplish specific business defined objectives.
- Example entities related to Campaign:
  - Campaign Activity
  - Campaign Deliverable
  - Campaign / Segment Rltnp
  - Campaign / Involved Party Rltnp
- Closely associated with:
  - Arrangement
  - Product
  - Communication

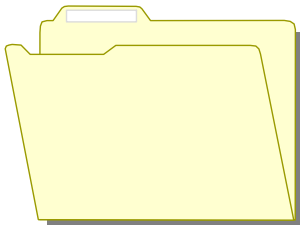


Transaction

- Transaction and Financial Market transaction tracks the actual transactions enacted against Customers or Arrangements.
- Example related entities:
  - Transaction Type
  - Transaction Document
  - Posting Entry
  - Transaction Allocation
  - Suspicious Activity
- Closely associated with:
  - Arrangement (Financial Status, Life Cycle Status)
  - Channel
  - Organization Unit

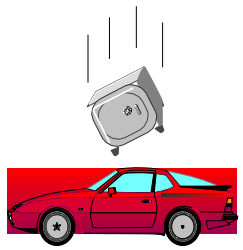
Subject-Based Subject Areas

- The Subject-Based Subject Areas contain entities relevant to a particular subject rather than a particular entity.
- The following Subject-Based Areas exist:
  - Insurance
  - Activity Based Costing
  - Housekeeping



Insurance

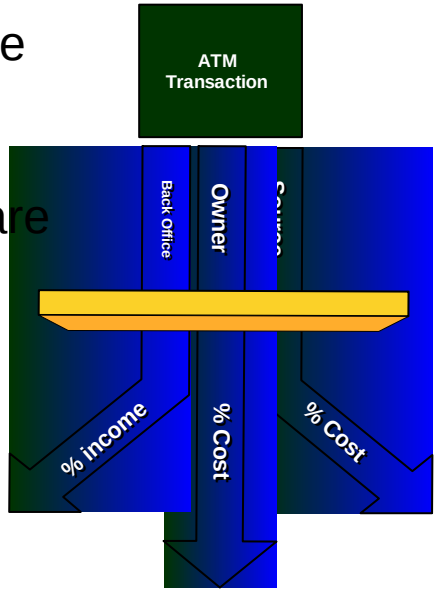
- The Insurance Subject Area groups together all entities directly or indirectly involved in modeling Insurance. BDWM Insurance modelling is derived from the IIW models.
- Example entities related to Insurance:
  - Insurance Arrangement and Policy
  - Insurance Claim and Hazards
  - Building and Vehicle
  - Classifications of Individual (e.g. Health Status, Smoking habits, Driver License details, Age Segment, ...)



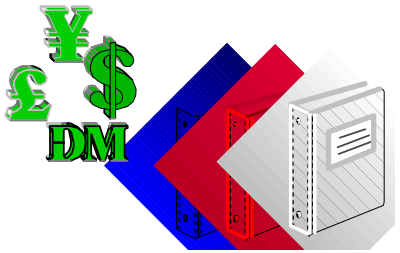
- Closely associated with:
  - Resource Item
  - Involved Party
  - Location

Activity Based Costing

- The purpose of Activity Based Costing is to enable the assignment of costs to the activities of the Financial Institution, and to then allocate those costs out to the various agencies within the Financial Institution that are considered to be responsible for generating them.
- Example entities related to ABC:
  - Allocation Center
  - Distribution and Allocation Configuration
  - Allocation Reason
- Closely associated with:
  - Involved Party
  - Channel
  - Transaction



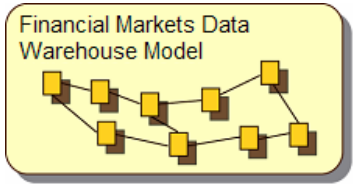
Housekeeping



- The "Housekeeping" entities hold information used by the Financial Institution which is static or at most changed infrequently.
- All can potentially be used as a basis for analysis. Housekeeping entities can be treated differently for ETL.
- Location
  - Countries
  - States
  - Cities
- Event
  - Measurement Periods
- Product
  - Product Codes
- Classification
  - Currencies
  - Channels
  - Units of Measure
- Involved Party
  - Segments

Tricks of the Trade – Characteristic Entities

- Characteristic entities are a logical-level mechanism used to make identical sets of attributes available on several different entities.
- Usually named "Xxxx Characteristic".
- General Rules:
  - Create a pseudo-entity with the required attributes as its primary key.
  - Create relationships to the target entities to migrate the required attributes.
- Examples:
  - Summary Characteristic,
  - Population Event Characteristic,
  - Limit Characteristic.



NOTE: Characteristic tables are logical-only, but leave a 'footprint' behind in the form of the migrated keys.

The Design Model System Of Record – Features

- Based on the Nine Data Concepts of the FSDM.
- Support for the BDW areas of:
  - Asset & Liability
  - Profitability
  - Relationship Management
  - Risk
  - Basel II
- Consolidated low-level data.
- Flexible and reusable data structures
  - Entities and Relationships
  - Associatives
  - Classifications
  - History
- Close-to-physical logical model.

Summary