

**ANN** (artificial neural network) adalah kerangka/model pemrosesan informasi yang terinspirasi dari cara saraf kita memproses informasi. ANN terdiri dari processing elements yang banyak yang saling terhubung (neuron) yang bekerja sama memecahkan masalah.

**Elemen ANN** : processing element (neuron), network architecture (hidden layer, parallel processing), network information processing (input, output, connection weight, summation func)

**ANN feedforward**: information flows through the function being evaluated from x, through the intermediate computations used to define f, and finally to the output y. Ga ada feedback yang diberikan kepada connectionnya. Kalo ada namanya **recurrent feedforward**.

**Supervised learning**: for prediction type problem, e.g backpropagation. How? Compute temporary output, compare to desired result, adjust weight and repeat until desired output achieved

**Unsupervised learning**: for clustering type problem, self-organizing

**Backpropagation learning works**

- Initialize weights with random values and set other network parameters
- Read in the inputs and the desired outputs
- Compute the actual output (by working forward through the layers)
- Compute the error (difference between the actual and desired output)
- Change the weights by working backward through the hidden layers
- Repeat steps 2-5 until weights stabilize

**Hopfield Network**: Highly interconnected neurons. For complex computational problem e.g optimization problem

**SOM (self organizing map)** : for clustering type problem

**Disadvantage ANN** : blackbox solution, lacking expandability, hard handle large number var

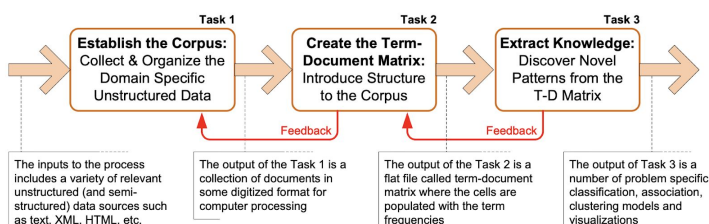
**Advantage ANN**: handle highly non linear relation, provide better results, can handle num&cat

**Text mining** : A semi-automated process of extracting knowledge from unstructured data sources. **Stemming** : buat jadi kata dasar

**Text mining application area** : Information extraction, Topic tracking, Summarization, Categorization, Clustering, Concept linking, Question answering

Cara ngurangi **dimensi dari matrix TDM** (term by document)

- Manual - a domain expert goes through it
- Eliminate terms with very few occurrences in very few documents (?)
- Transform the matrix using singular value decomposition (SVD)
- SVD is similar to principle component analysis



**Web mining**: proses ekstrak dokumen web dan menemukan relasi/pola dari data web tsb. **Web content/structure, usage mining**

**Web content/structure** : data collection pake crawlers

**Web usage** : server access logs, agent logs, cookies. Tujuannya

- Determine the lifetime value of clients
- Design cross-marketing strategies across products.
- Evaluate promotional campaigns
- Present dynamic information to users based on their interests

**Data warehouse** A physical repository where relational data are specially organized to provide enterprisewide, cleansed data in a standardized format.

**Karakteristiknya** : Subject oriented, Integrated, Time-variant (time series), Nonvolatile, Summarized, Not normalized, Metadata, Web based, relational/multi-dimensional, Client/server, Real-time and/or right-time (active)

**Data mart** : A departmental DW that stores only relevant data, ada dependent(subset) dan independent(small data for strategic bisnis)

**metadata** describe the contents of a data warehouse

**DW development approaches** : Inmon Model (EDW approach top down), kimball model (data mart approach bottom up)

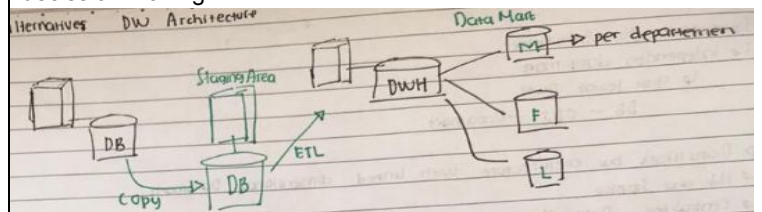
**\*\*Kimball** uses the dimensional model such as star schemas or snowflakes to organize the data in dimensional data warehouse while Inmon uses ER model in enterprise data warehouse. Inmon only uses dimensional model for data marts only while Kimball uses it for all data

**\*\*Inmon** uses data marts as physical separation from enterprise data warehouse and they are built for departmental uses. While in Kimball's architecture, it is unnecessary to separate the data marts from the dimensional data warehouse.

**\*\*In dimensional data warehouse of Kimball**, analytic systems can access data directly. While in Inmon's architecture, analytic systems can only access data in enterprise data warehouse via data marts.

**DW structure**: star scheme (central table), relational

**Realtime DW**: enable realtime update, realtime analysis, and decision making

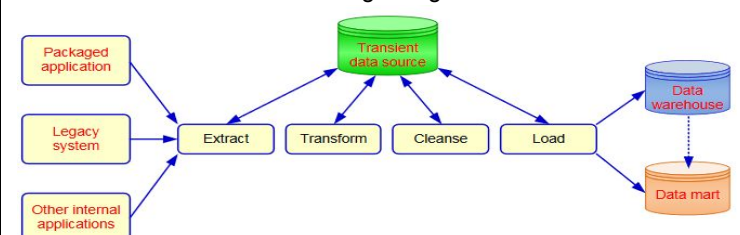


**staging area**: utk copy dr DB sebelum diproses ke DWH. krn kalo lgsg dr DB data ditarik lama & mengganggu aktivitas yg brjalan.

**independent data mart** : kesulitannya pengkodean data berbeda jd hrs disatuin agar terintegrasi (ada kode standar)

**Centralized DWH Arch** : berhenti di DWH gk ke data mart, lgsg dipake ke aplikasi

**Federated Arch** : DWH dr berbagai org disatuin



**Data cube -grain** : tabel fact cuma 3 dim saja agar fokus, jd bs hitung fact 2 dim. Cth product\_store\_location

**Data slicing** : sesuai kepentingan tahun/bulan tertentu

**Scalability issue DW**:

The amount of data in the warehouse, How quickly the warehouse is expected to grow, number of concurrent users, complexity queries

**Bisnis performance management** : A real-time system that alert managers to potential opportunities, impending problems, and threats, and then empowers them to react through models and collaboration

**Process to optimize business performance:**

**Strategic:** Conduct a current situation analysis, Determine the planning horizon, Conduct an environment scan, Identify critical success factors, Complete a gap analysis

**Plan:** Operational plan: plan that translates an organization's strategic objectives and goals into a set of well-defined tactics and initiatives || tactic(operational) vs budget(financial)

Financial planning and budgeting : resource allocation, etc

**Monitor:** Diagnostic control system A cybernetic system that has inputs, a process for transforming the inputs into outputs, a standard or benchmark against which to compare the outputs, and a feedback channel to allow information on variances between the outputs and the standard to be communicated and acted upon.

**Act and adjust:**

**Balance score card:** A performance measurement and management methodology that helps translate an organization's financial, customer, internal process, and learning and growth objectives and targets into a set of actionable initiatives

**BSC** is designed to overcome the limitations of systems that are financially focused

**BSC:** financial(gimana biar sukses finansial), internal business process(gimana cara satisfy shareholder), learning and growth(gimana cara jaga kemampuan untuk berubah dan improve), customer(how should appear to customer)

**Six sigma:** A performance management methodology aimed at reducing the number of defects in a business process to as close to zero defects per million opportunities (DPMO) as possible

**Performance dashboard:** Visual display used to monitor operational performance (free form...)

**Performnace scorecards:** Visual display used to chart progress against strategic and tactical goals and targets (predetermined measures...)

**Group support system:** Increase benefits / decrease losses of collaboration

**Nominal Group Technique:** Individuals work alone to generate ideas which are pooled under guidance of a trained facilitator

**Delphi Method:** A structured process for collecting and distilling knowledge from a group of experts by means of questionnaires

**Process gains with GSS:**

Parallelism: simultaneous contributions, Larger groups can participate

Anonymity: promotes equal participation, Focus on content not personalities

Triggering: stimulates thinking

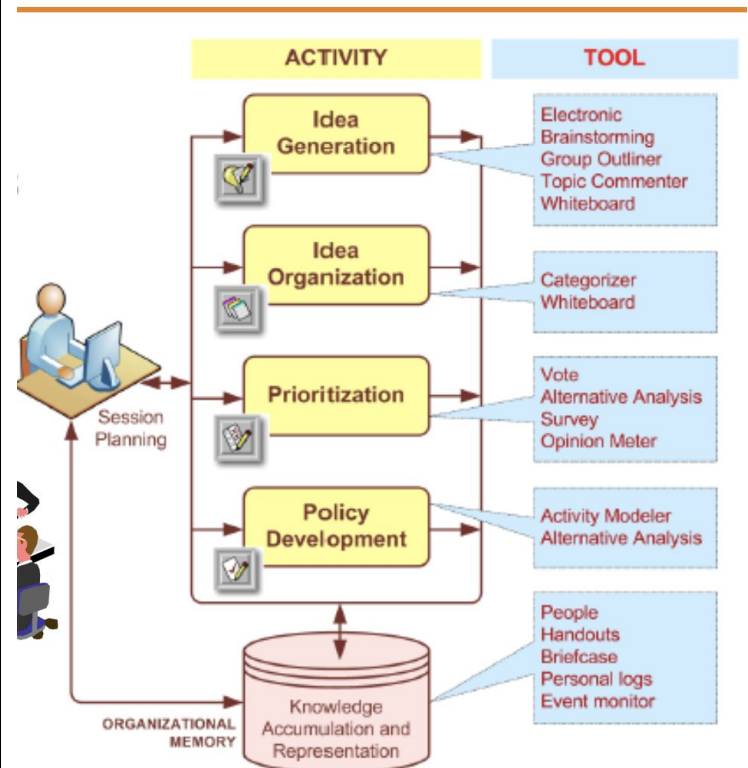
Synergy: integrates ideas

Structure: facilitates problem solving

Record keeping: promotes organizational memory

**Looses:** freeriding, flaming

**GSS meeting process**



**Kekurangan decision room:** High Cost, Need for a Trained Facilitator, Requires Specific Software Support for, Different Cooperative Tasks, Infrequent Use, Different Place / Different Time Needs, May Need More Than One

**Level collaboration:** collected work, coordinated wrk, concerted wrk