Building an ER Model
Noun Analysis

Review - Our Basic ER Model

- Entities and Entity Set (boxes)
- Relationships and Relationship sets (diamonds)
  - binary
  - n-ary
- Key constraints (1-1,1-M, M-M, arrows on 1 side)
- Participation constraints (bold for Total)
- Weak entities - require strong entity for key

- Aggregation - an alternative to n-ary relationships
- ISA hierarchies - abstraction and inheritance

E-R Modeling : Noun Analysis

- Gather domain knowledge and requirements by using appropriate combination of various fact finding techniques
- Develop description of the problem
- Description contains several nouns and verbs
- Analyze problem description using noun analysis method
- Noun and verb lists are analyzed using various criteria
- Get truncated list of nouns using these criteria
- The things that each entity is suppose to know form list of attributes
- Some of the nouns become attributes

Noun Analysis (2)

To analyze the list of the nouns & reject those that are unsuitable for use as the basis for entities.

Duplicates: if two or more nouns are simply names for the same thing, then only one of these should be used as the basis for an entity

Irrelevant : entities which exist in the problem domain but which are not part of the intended system should also be discarded

Noun Analysis (3)

Vague: When considering words carefully it sometimes become clear that they do not have a precise meaning and cannot be basis for useful entity in the system

General: Some words are too general

Attributes: Some words we want to keep as a part of some entity and not an entity itself

Associations: some words actually represent a relationship between entities

English to E-R

English Grammar   **E-R**

- Common Noun   Entity Set
- Proper Noun   Entity
- Adjective   Attribute for entity
- Adverb   Attribute for relationship

Candidate Entity Sets

Season's Flavour management wishes to increase security, both in their building and on site, without offending their employees. They would also like to prevent people who are not part of the company from using the Season's Flavour car park.

Contd.

It has been decided to issue identity cards to all employees, which they are expected to wear while on the Season's Flavour site. The cards record the name, department and number of the member of the staff, and permit access to the Season's Flavour car park.

Contd.

- A barrier and a card reader are placed at the entrance to the car park. The driver of an approaching car inserts his/her numbered card in the card reader, which then checks that the card number is known to the Season's Flavour system. If the card is recognized, the reader sends a signal to raise the barrier and the car is able to enter the car park.

Contd.

At the exit also there is a barrier, which is raised when a car wishes to leave the car park.

When there are no spaces in the car park a sign at the entrance displays 'Full' and is only switched off when a car leaves.

Contd.

- Special visitors' cards, which record a number and the current date, also permit access to the car park. Visitors' cards may be sent out in advance, or collected from reception. All visitors' cards must be returned to the reception when the visitor leaves Season's Flavour.

Candidate Entity Sets : SF

- Season's Flavour (D)
- management (I)
- Security (V)
- Building (I)
- Site (I)
- Employee
- People (V)
- Company (I)
- car park

Candidate Entity Sets : SF

- Staff Identity Cards
- Name (Att)
- Department (Att)
- number (Att)
- member of the staff (I)
- Access (A)
- Barrier
- card reader
- entrance

Candidate Entity Sets : SF

- Driver (R)
- Car
- card number (Att)
- System (G)
- Signal (implementation constructs)
- Exit
- Space

Candidate Entity Sets : SF

- Sign(FULL Sign)
- visitors' cards
- current date (Att)
- Reception (I)
- Visitor (I)

Total Candidate Entity Sets: 30