Knowledge Capture and Codification

Lecture #4

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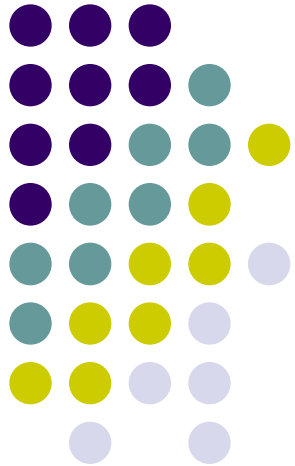


Lecture Objective

Students can use techniques and methods to

capture tacit knowledge and to codify/organize explicit knowledge by understanding related basic concept and terminology

Introduction (1)

- First stage in Integrated KM Cycle
- To capture or extract tacit knowledge
- To organize or codify explicit knowledge
- Differentiate between capturing/identifying existing knowledge and creation of new knowledge
- Not purely about technology (IT)

The Known-Unknown Matrix

Information sources

User awareness	known	unknown
known	Know that we know	Know that we don't know
unknown	Don't know that we know	Don't know that we don't know

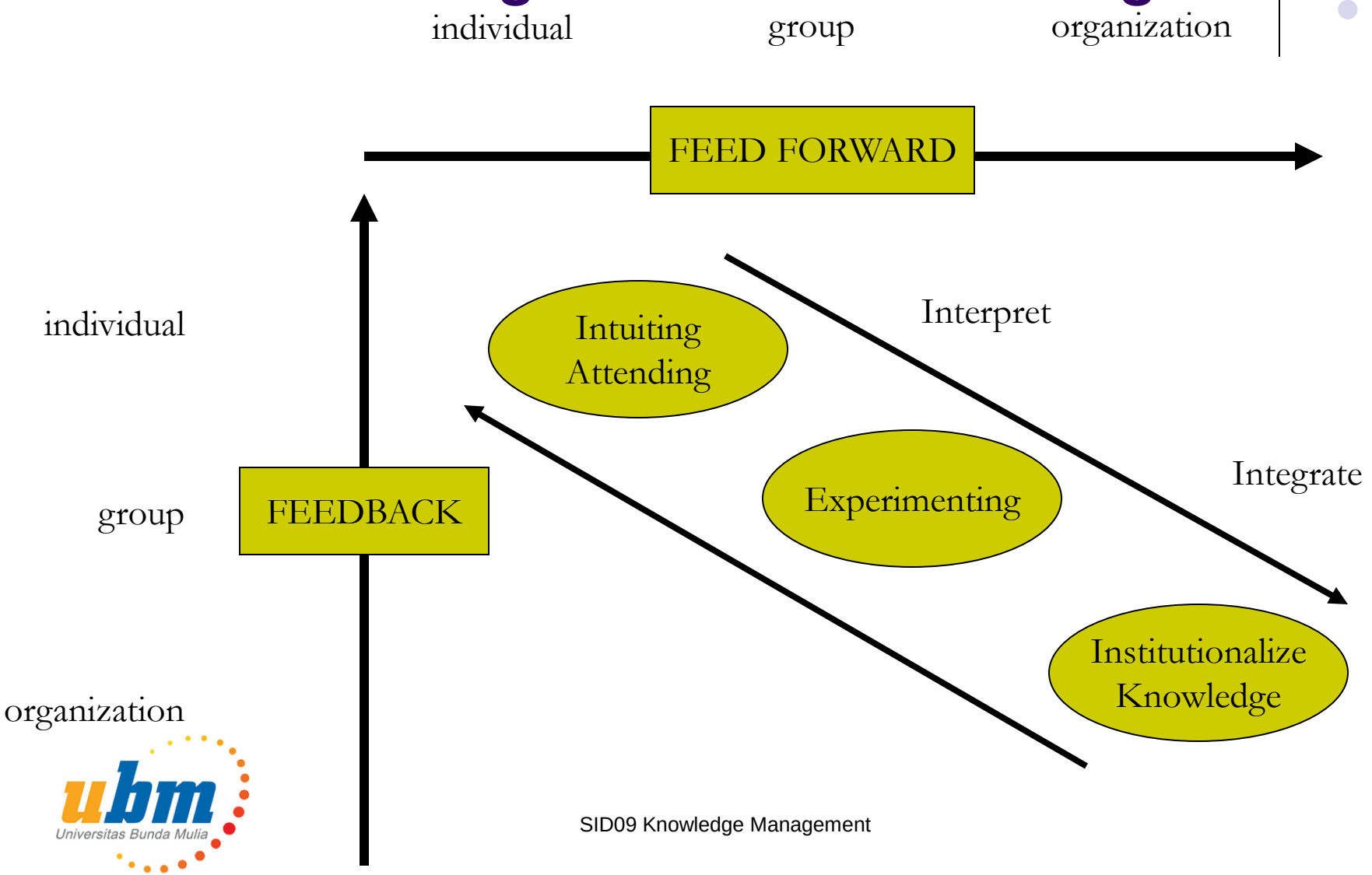
Introduction (2)

- IT only to ensure information availability
- Need to capture both tacit & explicit knowledge
- Make it part of organizational memory (consist of employees experiences and tangible data and knowledge)
- This knowledge base is a *competitive advantage* that must be protected, developed, and shared among all organizational members
- Organizational knowledge complements individual knowledge making it broader and stronger

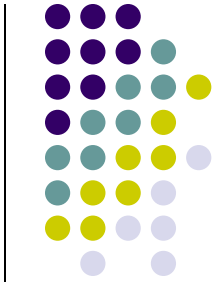
Tacit Knowledge Capture

- Learning can occur with group interaction → individual learns from collective, collective learns from individual
- Organizational learning involves assimilating new learning (exploration) & using what has been learned (exploitation)
- Individual, group, and organizational learning are linked by social & psychological process of intuiting, interpreting, integrating, and institutionalizing → 4I model

4I Model of Organizational Learning

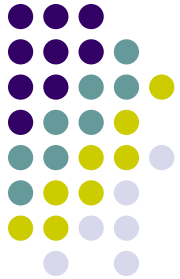


Tacit Knowledge Capture Techniques



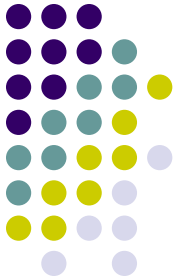
- Derived from techniques used in artificial intelligence, particularly expert systems
- Expert systems incorporates know-how gathered from experts and is designed to perform as experts do
- Some of the techniques of knowledge acquisition:
  - Structured interview
  - Questionnaires
  - Surveys
  - Observation
  - Simulation

Tacit Knowledge Capture at Individual & Group Levels



- Transfer & transformation of valuable expertise from knowledge sources (human expert, documents) to a knowledge repository (intranet, *corporate memory*)
- Example: reporters, journalists, writers, **system analysts**
- Can be tackled using graphical representation or mathematical formula

Tacit Knowledge Capture at Individual & Group Levels



The steps:

1. Knowledge engineer interviews subject matter experts
2. Produces a conceptual model
3. Translates into a computer-executable

The aim is to extract & render explicit the primarily procedural knowledge that comprise specialized know-how in a very narrow field

Procedural Knowledge

Is a knowledge of:

- How to do things
- How to make decisions
- How to diagnose
- How to prescribe

→ More on to “how”

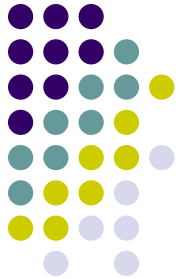
Declarative Knowledge

Denotes descriptive knowledge or knowing what

→ More on to “what”

Procedural knowledge <> Declarative knowledge

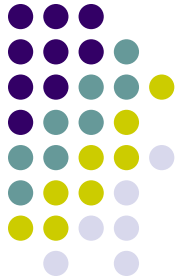
Knowledge Engineers



The major tasks:

- Analyzing information & knowledge flow
- Working with experts to obtain information
- Designing & implementing a knowledge management system or knowledge repository

Subject Matter Experts



Had to be able to:

- Explain important knowledge & know-how
- Be introspective & patient
- Have effective communication skills

Knowledge Acquisition

Three major approaches to knowledge acquisition from individuals & groups:

1. Interviewing expert
2. Learning by being told
3. Learning by observation

Should be combined to achieve maximum result in capturing tacit knowledge

Interviewing Experts

Two popular techniques for optimizing interviewing experts:

1. Structured interviewing
2. Stories

Interviewing Experts
Structured Interview

Paraphrasing → restating of the perceived meaning of the speaker's message using your own words

The goal is to check the accuracy with which message was conveyed and understood

Example: "what I believe you said was .."

Interviewing Experts
Structured Interview

Clarifying → lets the expert know that the message was not immediately understandable

These responses encourage the expert to elaborate or clarify the original message so that the interviewer gets a better idea of the intended message

Example: “I don’t understand ..”

Interviewing Experts
Structured Interview

Summarizing → helps the interviewer compile discrete pieces of information and form a knowledge acquisition session into a meaningful whole

It also helps confirm that the expert's message was heard and understood correctly

Example: "What I've heard from you so far .."

Interviewing Experts
Structured Interview

Reflecting feelings → mirrors back to the speaker the feelings that seem to have been communicated, the focus is on emotions, attitudes, reactions not on the content

The purpose is to clear the air of some emotional reaction or negative impact of the message

Example: “You seem frustrated about ..”

Interviewing Experts
Stories

Story → the telling of a happening or a connected series of happenings whether true or fictitious

Narrative → not just about telling, constructing or even eliciting stories, it is about allowing the patterns of culture, behavior, and understanding that are revealed by stories to emerge

Interviewing Experts
Stories

Organizational story → detailed narrative of past management actions, employee interactions, or other key events that have occurred and that have been communicated informally

Interviewing Experts
Stories

Knowledge-sharing stories need to be

authentic, believable, compelling, and concise so that the moral of the story or the organizational lessons to be learned can be easily understood, remembered, and acted upon

Learning by Being Told

The interviewee expresses and refines his/her knowledge, and at the same time, the knowledge manager clarifies and validates the knowledge artifact that renders this knowledge in explicit form

Example:

- Task analysis
- Process tracing
- Protocol analysis
- Simulations

Learning by Observation

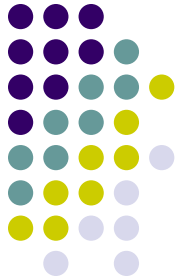
Two types of expertise:

- Skill or motor based → physical
- Cognitive → non-physical

Expertise is a demonstration of the application of knowledge

Involves presenting the expert with a sample problem, case study to be solved

Tacit Knowledge Capture at the Organizational Level



Major organizational knowledge acquisition processes:

1. **Grafting** → migration of knowledge between firms (merger, acquisition)
2. **Vicarious learning** → one firm observes other firm's demonstration of techniques or procedures (benchmarking studies)
3. **Experiential learning** → knowledge acquisition within firm; knowledge created by doing & practicing
4. **Inferential processes** → interpretation of events, states, changes, and outcomes relative to the activities undertaken & decision made

Explicit Knowledge Codification

By converting knowledge into a tangible, explicit form such as a document, that knowledge can be communicated much more widely and with less cost

The issue faced is quality which encompasses:

1. Accuracy
2. Readability/understandability
3. Accessibility
4. Currency
5. Authority/credibility

Explicit Knowledge Codification

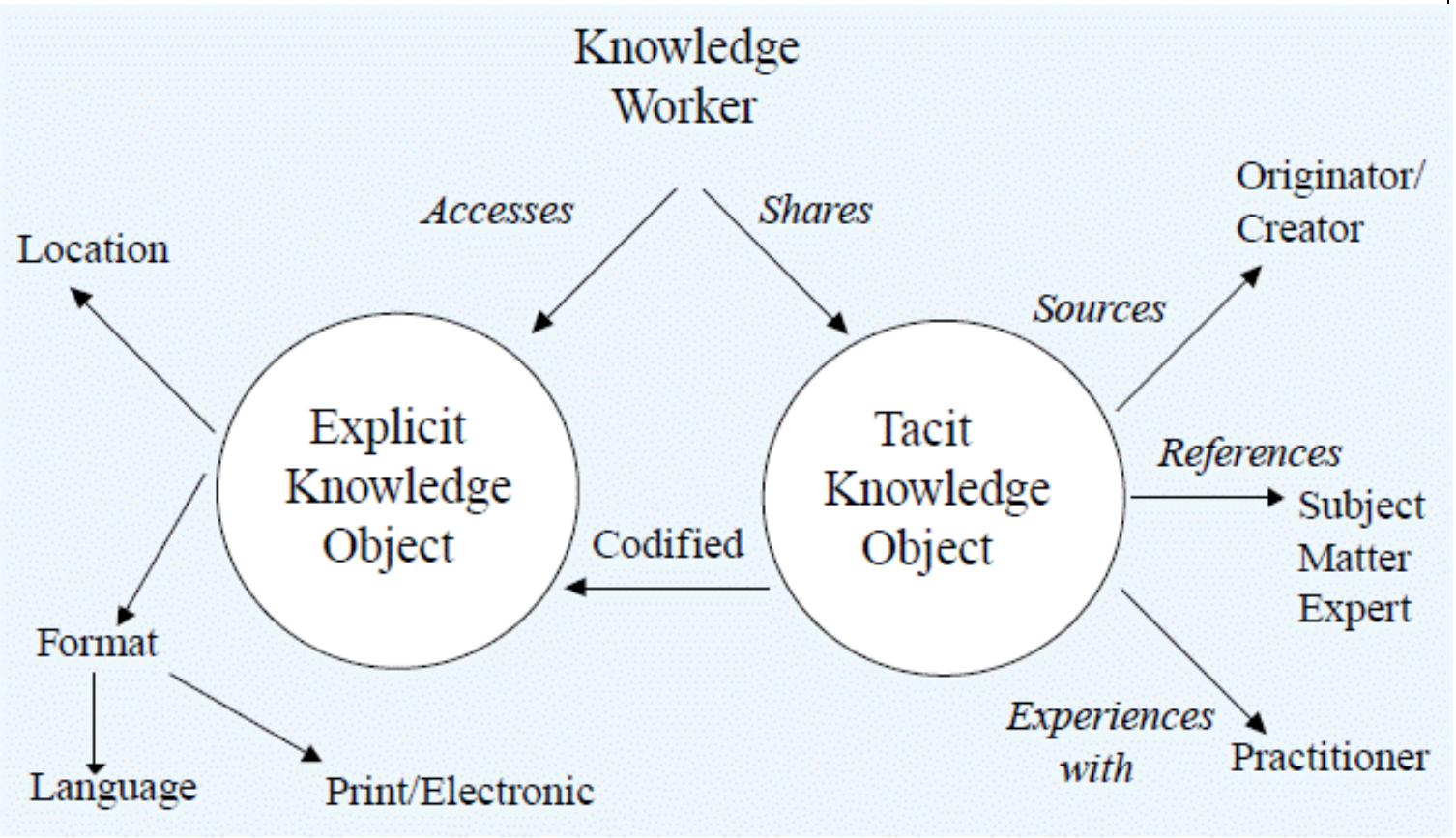
Techniques to make codification of explicit knowledge:

1. Cognitive maps
2. Decision trees
3. Knowledge taxonomies
4. Task analysis

Cognitive Map

- Representation of a mental model of a person's knowledge
- It provides a good form of codified knowledge
- Mental model is a symbolic or qualitative representation of something in the real world

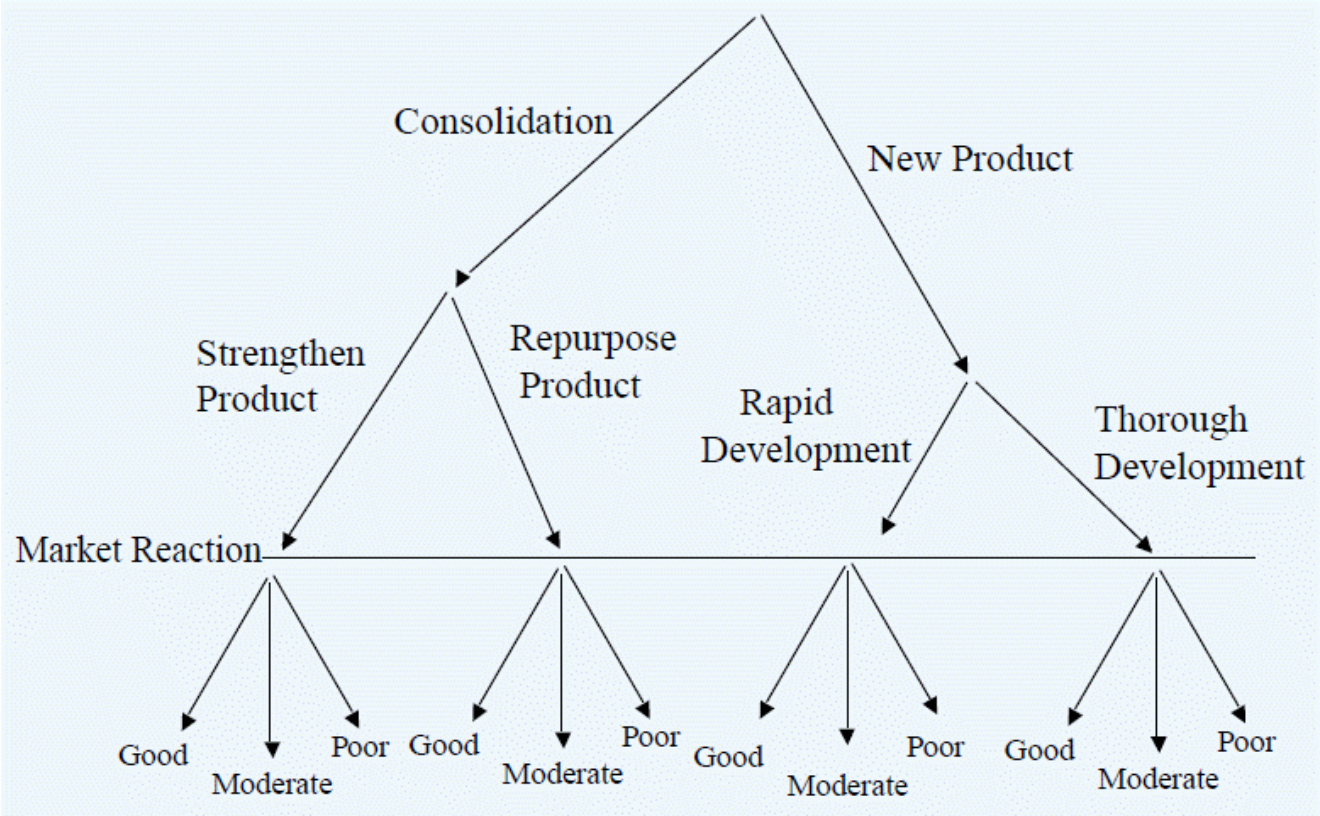
Sample


Knowledge Worker
Accesses
Shares
Location
Originator/ Creator
Sources
Explicit Knowledge Object
Tacit Knowledge Object
References
Subject Matter Expert
Codified
Format
Experiences with
Practitioner
Language
Print/Electronic

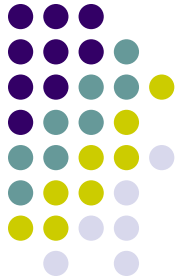
Decision Trees

- Compact & efficient
- Typically in the form of flowchart, with alternate paths indicating the impact of different decision being made at a juncture point

Sample


Consolidation
New Product
Strengthen Product
Repurpose Product
Rapid Development
Thorough Development
Market Reaction
Good
Moderate
Poor
Good
Moderate
Poor
Good
Moderate
Poor
Good
Moderate
Poor

Knowledge Taxonomies

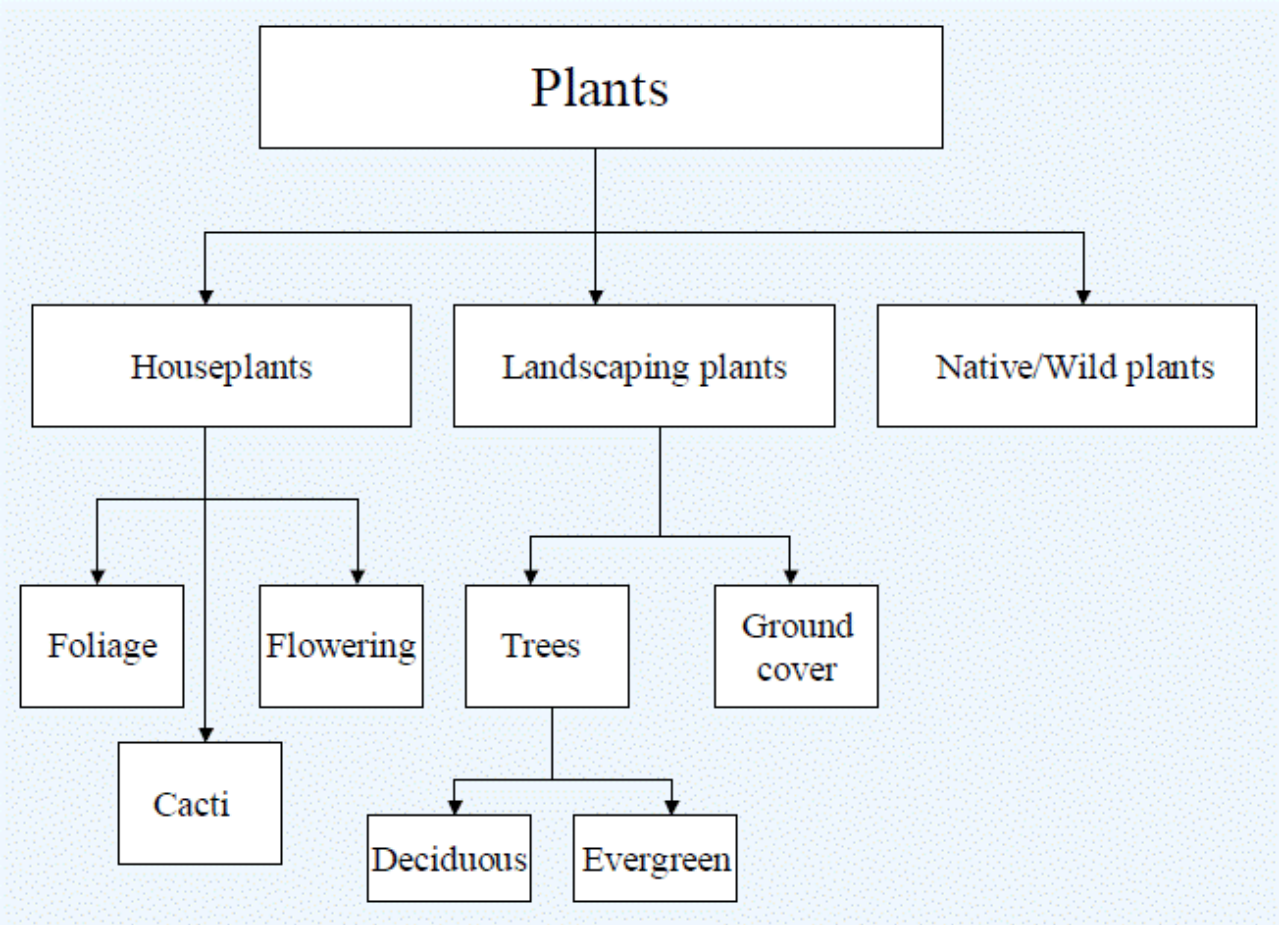


Concept is the building blocks of knowledge & expertise

Taxonomies → basic classification systems that enable us to describe concepts & their dependencies in a hierarchical form

Knowledge taxonomies enable knowledge to be represented in a graphical form

Sample


Plants
Houseplants
Landscaping plants
Native/Wild plants
Foliage
Flowering
Trees
Ground cover
Cacti
Deciduous
Evergreen

Thank you!

This is the end of today's lecture