Program Magister Teknik dan Manajemen Industri ITB

KULIAH 2
PERUMUSAN MASALAH

Tujuan dan Pokok Bahasan

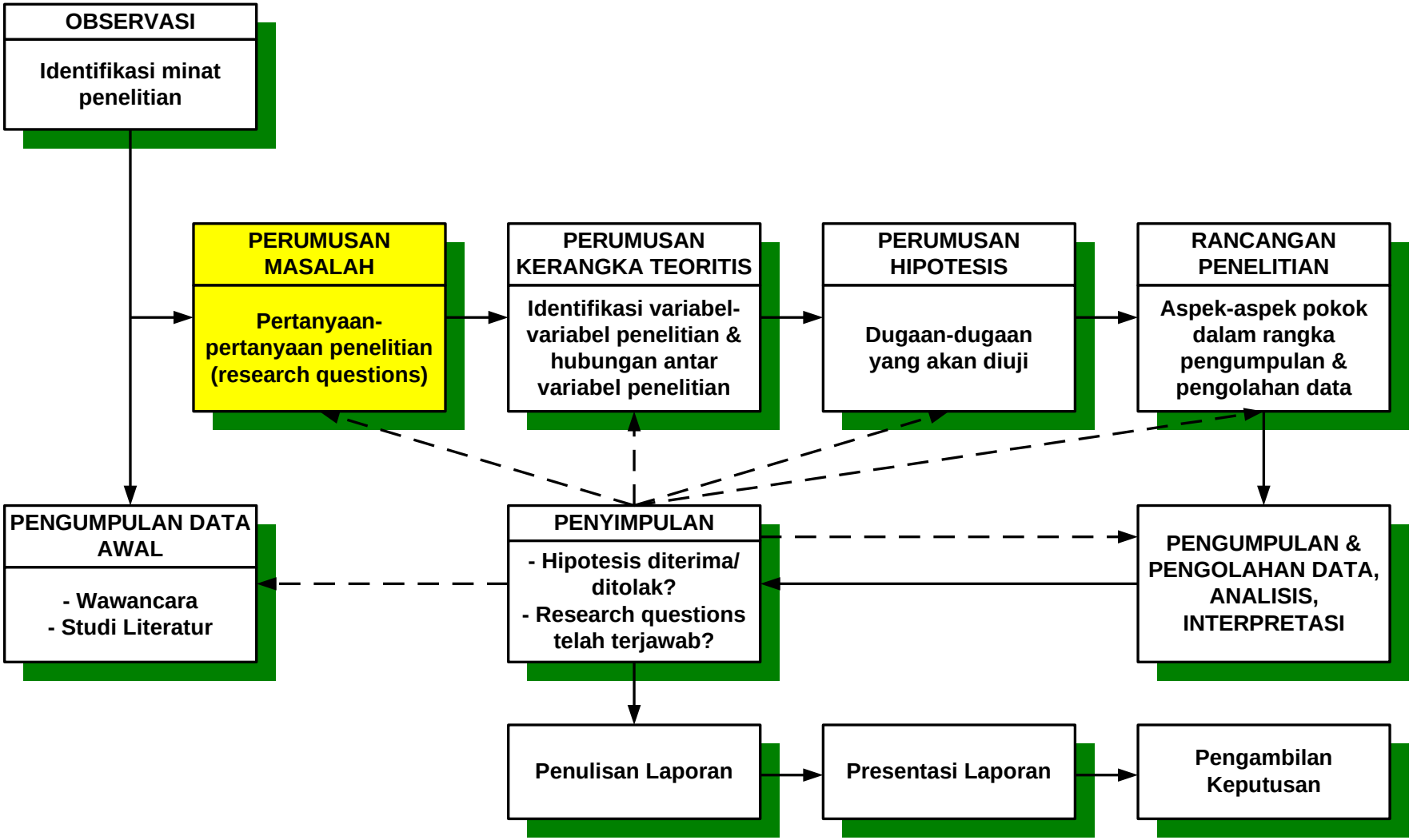
Tujuan:

- Mahasiswa mampu merumuskan masalah dan memformulasikan tujuan penelitian berdasarkan hasil studi penelitian terdahulu (perumusan state of the art)

Pokok Bahasan:

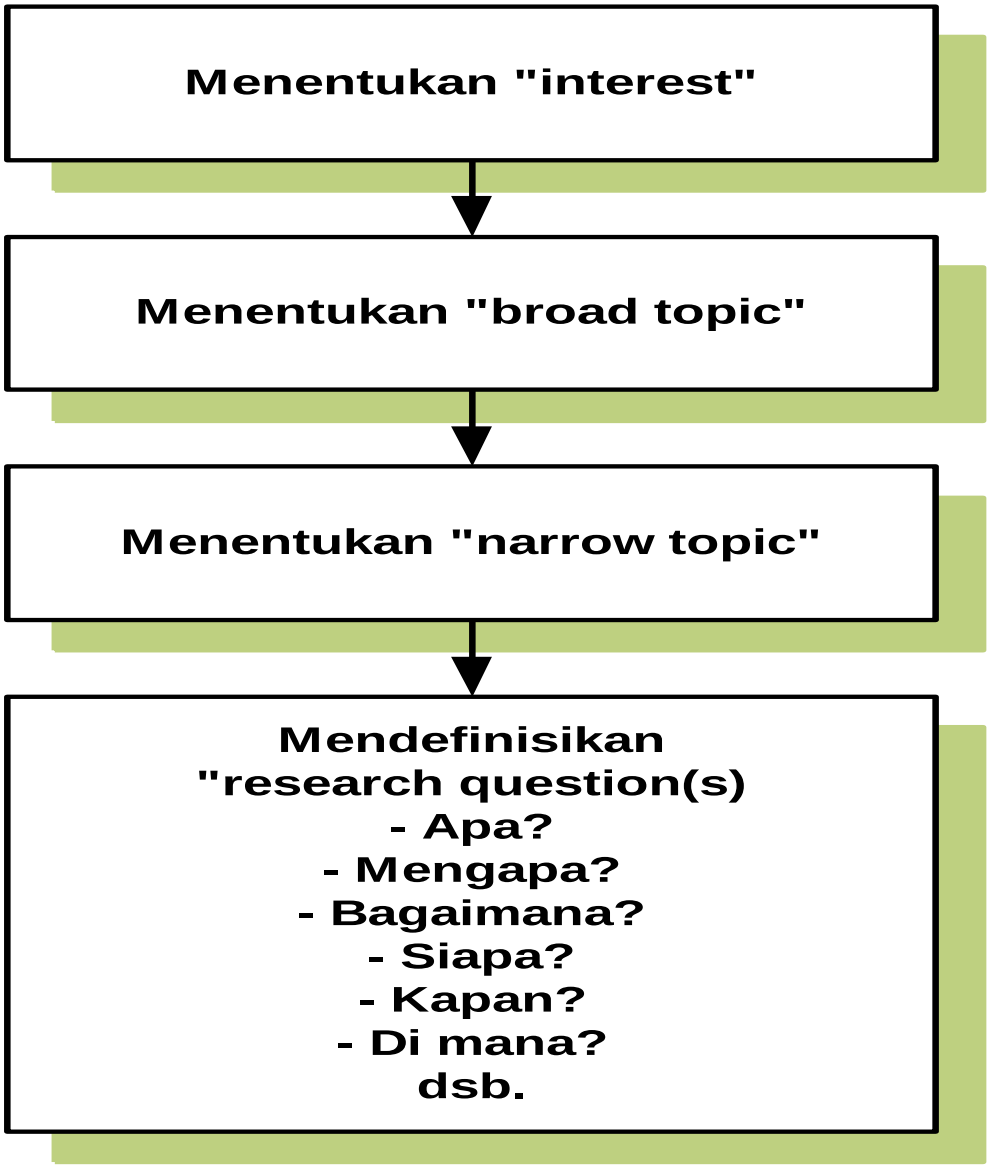
1. Pendahuluan
2. Grouping & Taxonomy of Problem
3. Characteristic of Problem & Integrated Approach
4. Analysis of Integrated System
5. Perumusan masalah (problem formulation)

1. Pendahuluan



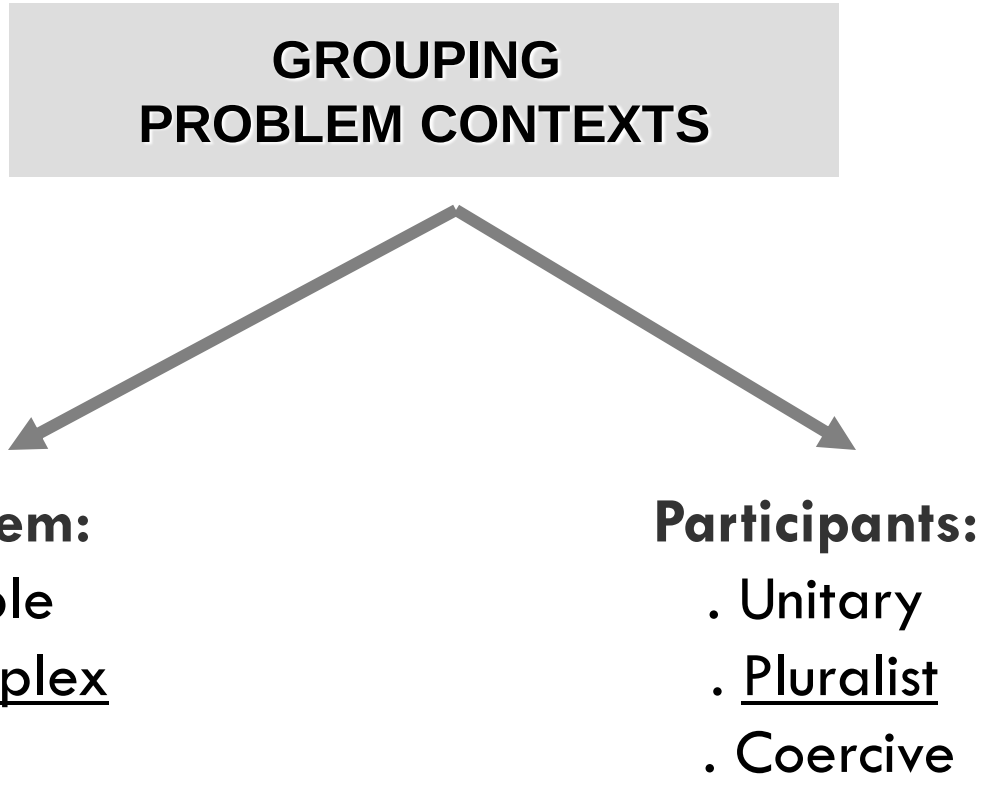
Research Process for Basic and Applied Research (Sekaran, 2000)

1. Pendahuluan



2. Grouping & Taxonomy of Problem

Grouping Problem Contexts:



2. Grouping & Taxonomy of Problem

Grouping Problem Contexts:

- **Simple System:**
  - A small number of elements
  - Few interactions between the elements but highly organized
  - Attributes of the elements are predetermined
  - Well-defined laws govern behavior
  - The system does not evolve over time, unaffected by behavioral influences and largely closed to the environment
  - Sub system do not pursue their own goals

2. Grouping & Taxonomy of Problem

- **Complex System:**
  - A large number of elements
  - Many interactions between elements and loosely organized
  - Attributes of elements are not predetermined
  - Probabilistic in behavior
  - System evolve over time, subject to behavioral influences and largely open to the environment
  - Sub system are purposeful and generate their own goals

2. Grouping & Taxonomy of Problem

Grouping Problem Contexts:

- **Unitary Participant:**
  - They share common interests
  - Their_value and beliefs are highly compatible
  - They largely agree upon ends and means
  - They are all participate in decision making
  - They act in accordance with objectives
- **Pluralist participant:**
  - They have a basic compatibility of interest
  - Their values and beliefs diverge to some extent
  - They do not necessarily agree upon end and means, but compromise is possible
  - They are all participate in decision making
  - They act in accordance with agreed objectives

2. Grouping & Taxonomy of Problem

- **Coercive Participant:**
  - They do not share common interest
  - Their values and beliefs are likely to conflict
  - They do not agree upon ends and means and genuine compromise is not possible
  - Some coercive other to accept decisions
  - No agreement over objectives is possible given present systemic arrangement

2. Grouping & Taxonomy of Problem

- **Simple Unitary:**
  - Problem solver can easily establish objectives in term of a system
  - System of concern can often be represented in qualitative or highly structured model

- **Simple-Coercive:**
  - Real differences of interest as well as of a values and beliefs may exist
  - Different groups seek to use whatever power they have to impose their favored strategy upon others
  - Source of power of different participants will be relatively easy to identify

2. Grouping & Taxonomy of Problem

- **Complex – Unitary:**
  - Determine the purpose to be pursued and the relevant system for achieving this purpose
  - Specify sub system and wider systems
  - Detail the environment, operations and management of each sub-system
  - Study the coordination of the system in focus
  - Study the control of the system in focus
  - Study the policy-making function of the system in focus
  - Check that all information channels, transducers and control loops are properly designed

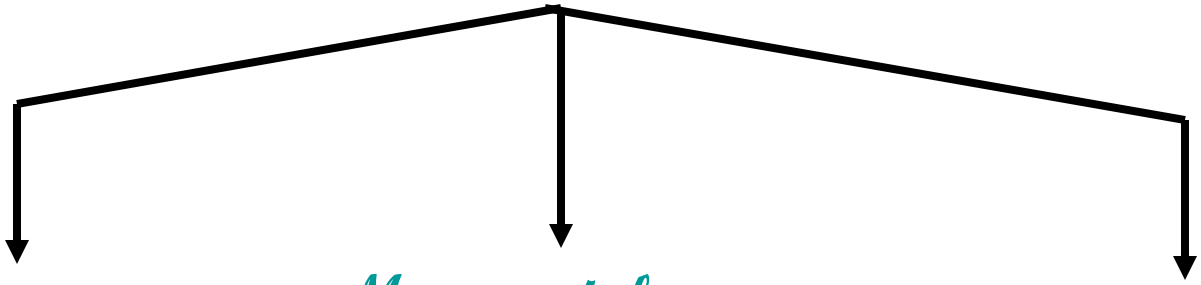
2. Grouping & Taxonomy of Problem

- **Complex- Pluralist:**
  - Start with problem situation unstructured
  - Work toward a problem situation expressed and name some relevant human activity systems
  - Formulate root definitions relevant human activity systems
  - Develop conceptual models of system named in the root definitions
  - Undertake comparison of conceptual models with the expression of the problem situation
  - Discuss cultural feasible and systematically desirable changes
  - Take action to improve the problem

- **Complex-Coercive:**
  - Have the true of power of the various participants
  - Not yet possess the tools to tackle the problem

3. Taxonomy of Problem

- **Taxonomy Of Problem:**



Phenomena:

- Deterministic
- Probabilistic
- Uncertainty

Managerial:

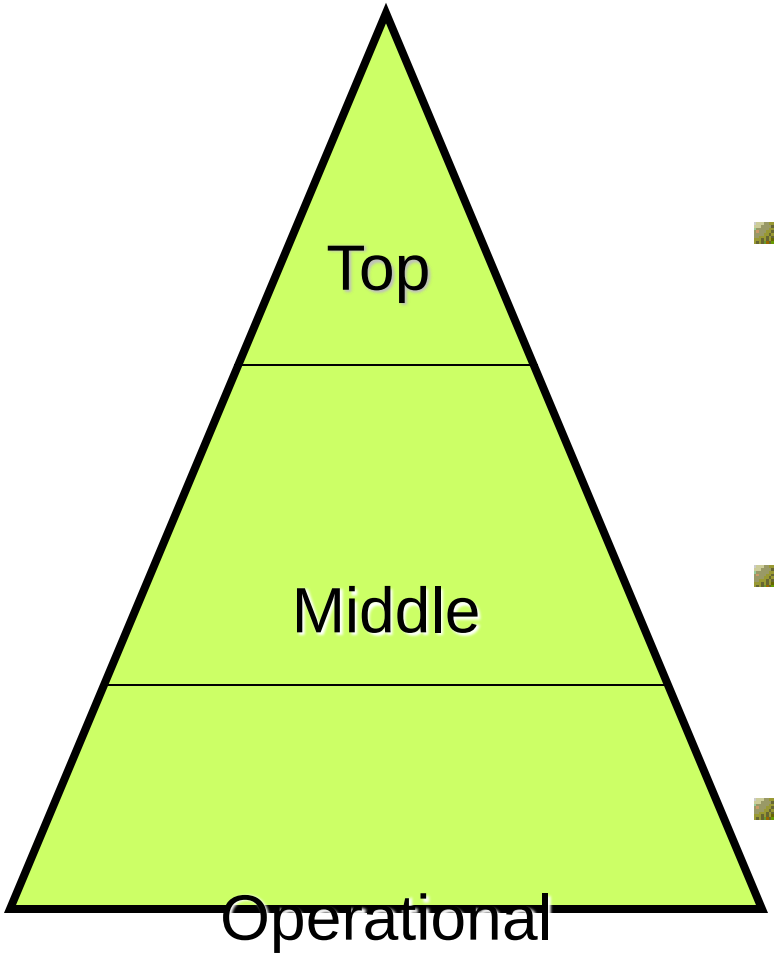
- Strategic
- Tactical
- Operational

Quantification:

- Quantitative
- Qualitative

3. Characteristic of Problem & Integrated Approach

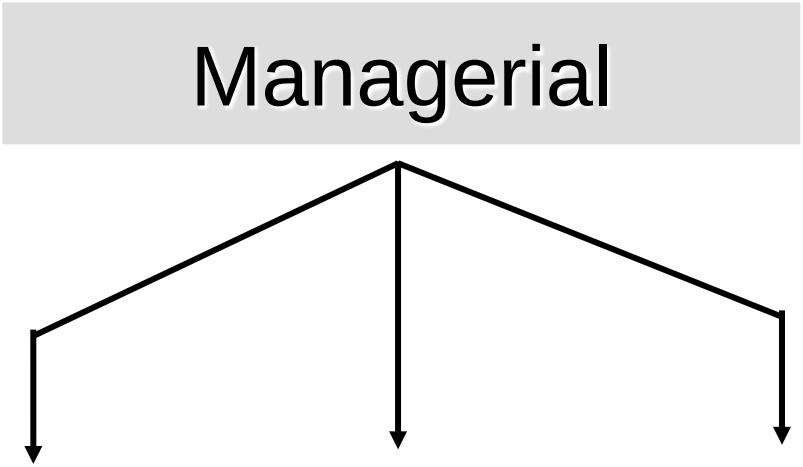
Mangerial Grid and Problems



- Strategic — Uncertainty
- Tactical — Probabilistic
- Operational — Deterministic

3. Characteristic of Problem & Integrated Approach

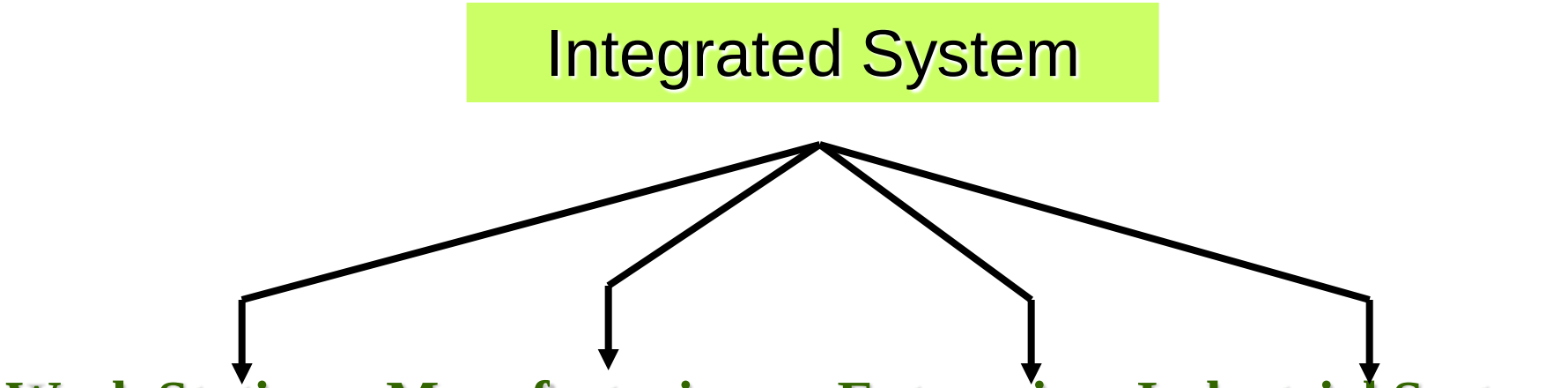
Characteristic of Problems



Operational	Tactical	Strategic
Structured	Semi structured	Unstructured
Deterministic	Probabilistic	Uncertainty
Model Standard	Model Standard	Simulation

3. Characteristic of Problem & Integrated Approach

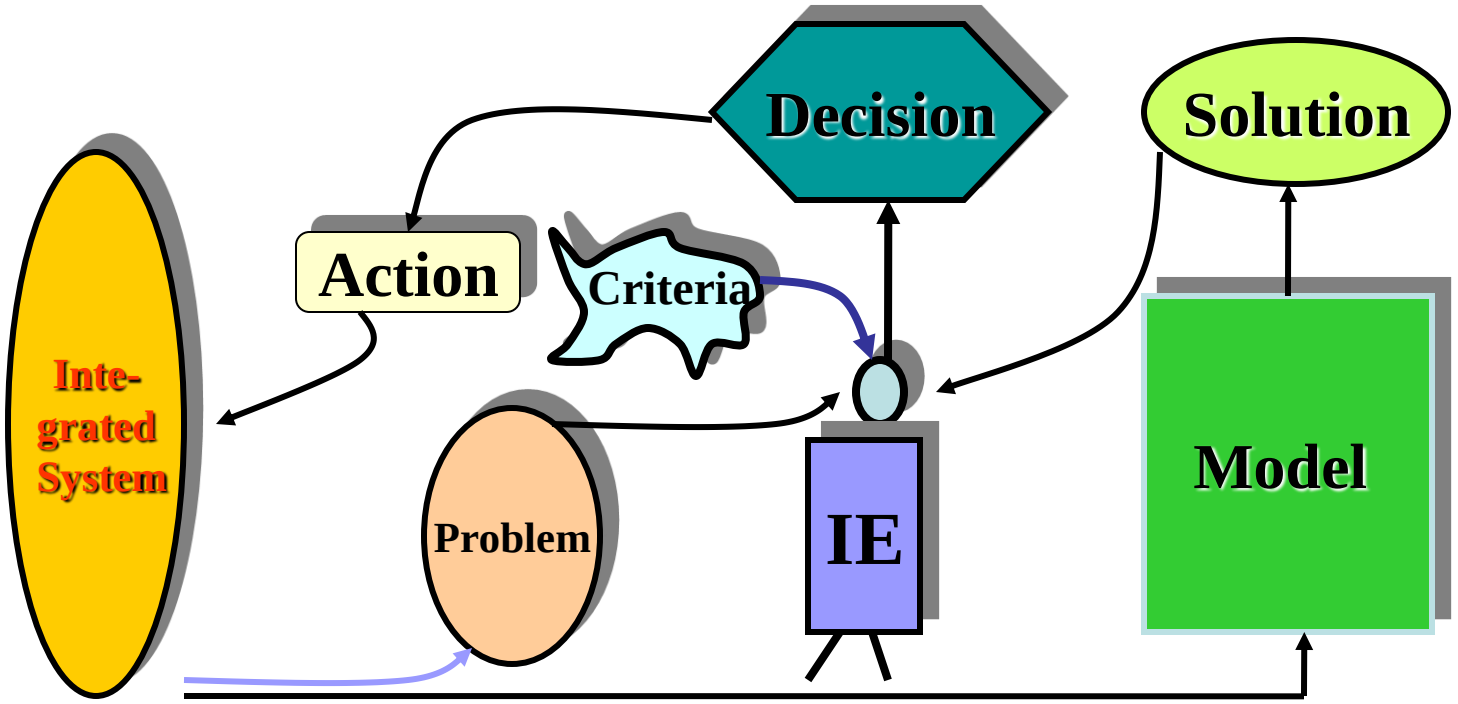
Characteristic of Problems



- Structured ⟷ Unstructured
- Deterministic ⟷ Uncertainty
- Model Standard ⟷ Simulation

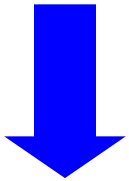
3. Integrated Approach

IE and its Integrated System

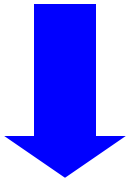


3. Characteristic of Problem & Integrated Approach

- **Problem:**
  - Any unsatisfactory situation:
    - Symptom
      - Claims
  - Difference: Expectation vs. Reality



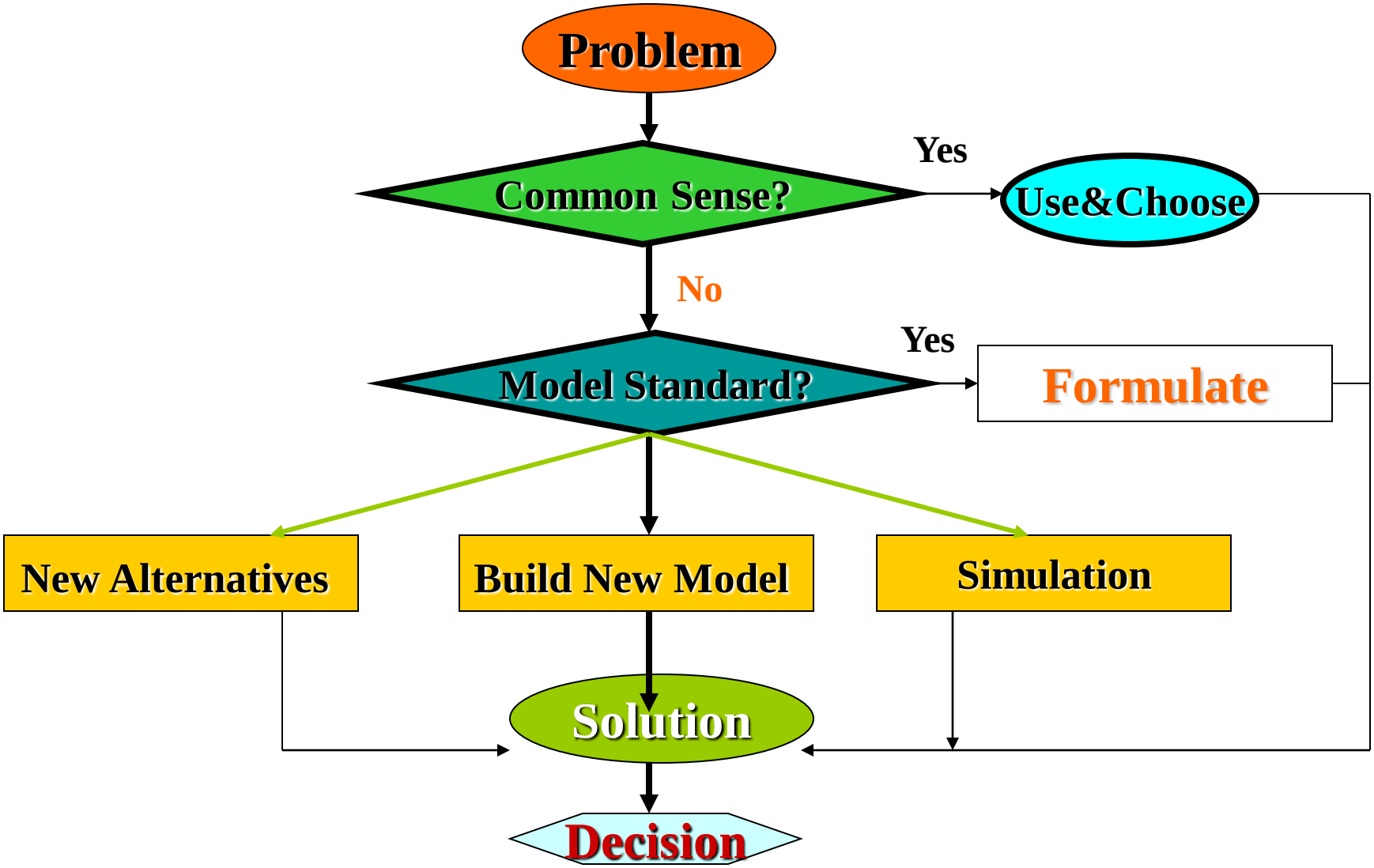
    - Root Causes



    - Problem

3. Characteristic of Problem & Integrated Approach

- **How to Get the Solution ?**



4. Analysis of Integrated System

- **Characteristic of Integrated Approach:**
  - Problem: Real
  - Model: Valid
  - Solution: Feasible
  - Decision: Effective
  - Action: Implemented

- **What IE Has To Do ?**
  1. Problem Identification
  2. Generate Alternatives
  3. Know the Standard Models
  4. Decide Performance Criteria
  5. Choose the Best Solution
  6. Make Decision
  7. Anticipate Managerial Implication
  8. Action

4. Analysis of Integrated System

Persyaratan Sistem yang ter-Integrasi:

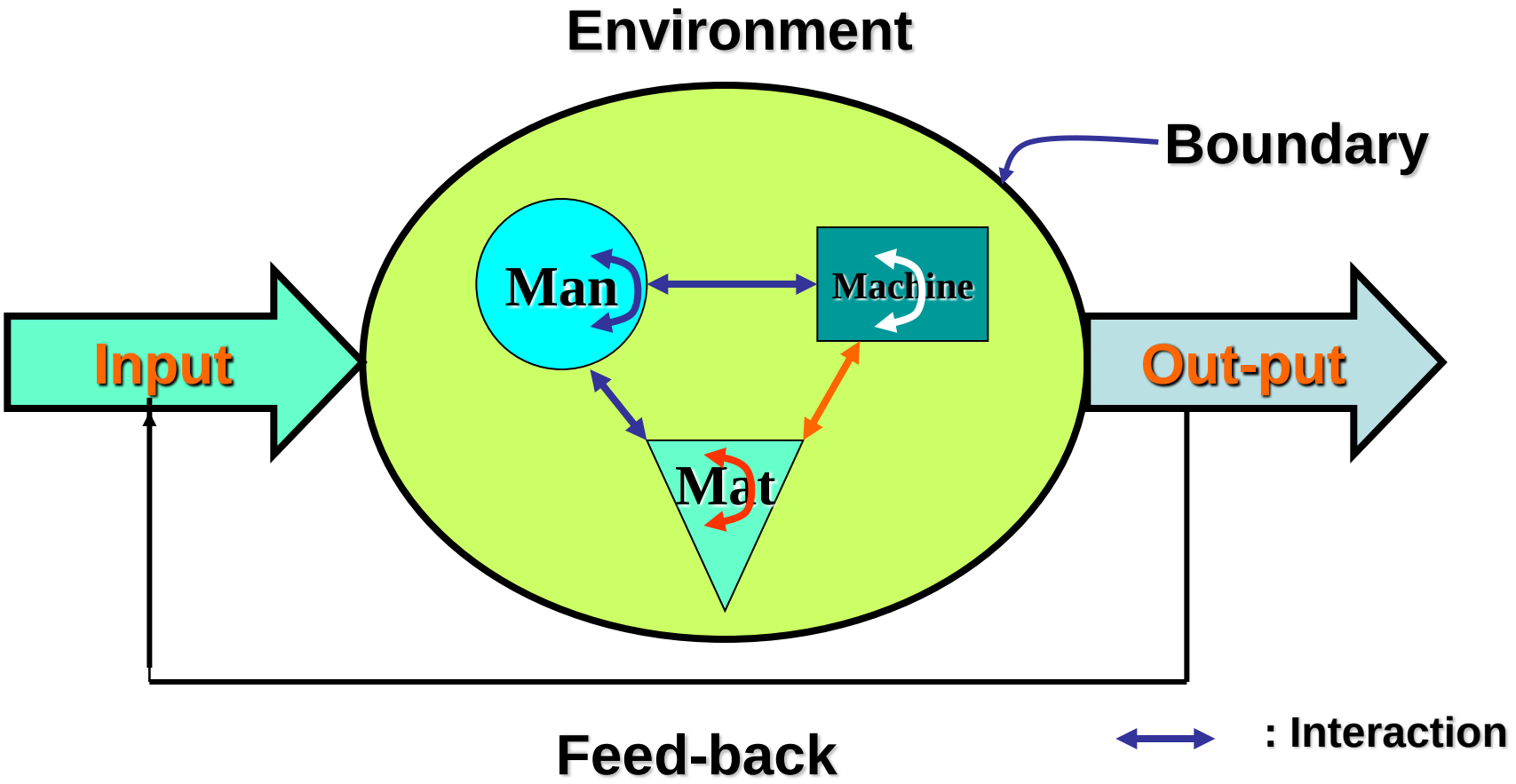
- What is the components ?
- What is the special characteristics ?
- What is special form ?
- What is output ?
- What is the performance criteria ?

Systemic Aspect:

- Structural Aspect: Man, Machine, Material
- Functional Aspect: Man-Man, Man-Material, Man-Machine, Feed-back
- Boundary
- Environment: Stakeholder and Societal
- Objective: Unitary, pluralist, coercive

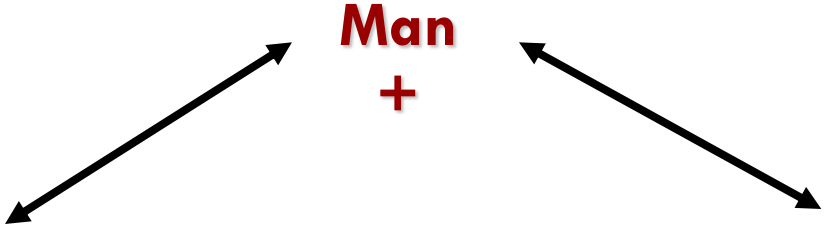
4. Analysis of Integrated System

- **Schematic Representation:**



4. Analysis of Integrated System

- **Component of Integrated System:**

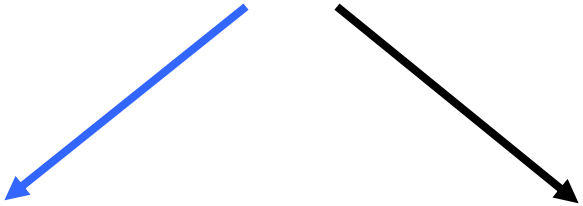


Natural System
Equipment + Material

and/or

Artificial System
Machine + Material

- **Type of Integrated System:**
  - Work Station
  - Manufacturing System
  - Corporate System
  - Industrial System



- Human Activity System
- Management Control System

4. Analysis of Integrated System

- **Schematic Representation:**

Type	Component	Objective
Work Station	Man, Machine, Productivity	Material Efficiency
Manufacturing	Man, Machine, Material	QCD
Corporate	People, Facility, Material	ROI, ROE, IRR
Industrial System	People, Infrastructure Material	Productivity Competitiveness

5. Perumusan Masalah (Problem Formulation)

- **Source Of Research Topic (Ticehurst & Veal, 2000):**
  - Personal interest:
    - Pengalaman pribadi: pengalaman ⇨ mampu melihat masalah
    - Intuisi: ilham tiba-tiba, karena konsolidasi berbagai informasi yang berkaitan dengan suatu masalah ⇨ masalah terbentuk
    - Pengamatan sepintas: Ilham tiba-tiba, tanpa rencana, karena melihat sesuatu, Contoh: konstruksi Cakar Ayam
  - The literature (Bacaan): Laporan penelitian, ada saran tentang penelitian lanjutan
  - Policy or management (Pernyataan pemegang otoritas):
    - mampu melihat masalah secara jelas
    - otoritas pemerintahan: harus menghadapi secara langsung
  - Social issues
  - Popular issues (Diskusi, seminar, pertemuan ilmiah): Para pakar, melihat masalah secara profesional

5. Perumusan Masalah (Problem Formulation)

- **Problem Formulation**:
  - Preliminary Study
  - List of Symptoms
  - Analysis
  - Identify Roots Causes
  - Define Problem

- **Masalah** muncul karena ada kesenjangan antara:
  - yang seharusnya dengan yang terjadi
  - yang diperlukan dengan yang tersedia
  - yang diharapkan dengan kenyataan

5. Perumusan Masalah (Problem Formulation)

Primary Data Collection:

- **Nature of data to be collected:**
  - Background information of the organization
  - Managerial philosophy, company policies and other structural and functional aspect
  - Perceptions, attitudes and behavioral response
- **Source of data:**
  - Primary data
  - Data gathered from the actual situation when evens occur
  - Secondary data
  - Data gathered from readily available source

Preliminary Study:

- Merumuskan/mendefinisikan isu-isu yang diamati dengan lebih jelas.

5. Perumusan Masalah (Problem Formulation)

Preliminary Study:

- Pengertian masalah setiap situasi di mana terjadi kesenjangan (gap) antara keadaan aktual dengan keadaan yang diinginkan.
- **Definisi masalah** merupakan suatu pernyataan atau pertanyaan yang jelas dan tepat tentang suatu isyu yang akan diteliti dengan tujuan mencari solusinya
- Definisi Masalah (Issues):
  - Masalah-masalah yang ada pada saat ini dan harus dipecahkan
  - Keinginan-keinginan untuk memperbaiki kondisi yang ada pada saat ini (walaupun pada saat ini dianggap tidak ada masalah)
  - Penjelasan konseptual dari bidang-bidang tertentu dalam rangka membangun teori yang lebih baik
  - Situasi di mana peneliti ingin mencoba menjawab pertanyaan-pertanyaan penelitian secara empiris

5. Perumusan Masalah (Problem Formulation)

- Identifikasi masalah: masalah banyak, identifikasi sulit ⇨ perlu mata terlatih
- Pemilihan masalah: identifikasi masalah, menghasilkan beberapa masalah ⇨ perlu diperiksa kelayakannya
  - Pertimbangan dari arah Masalah: kontribusi terhadap pengembangan teori dan aplikasi praktis
  - Pertimbangan dari arah Peneliti: kecocokan dengan karakteristik peneliti:
    - Ketersediaan: biaya, waktu, alat
    - Penguasaan: teori, metode
- Perumusan masalah: disarankan padat, jelas, memberikan petunjuk tentang pengumpulan data

5. Perumusan Masalah (Problem Formulation)

Observasi:

- Pengamatan terhadap fenomena atau perubahan
- Identifikasi broad problem area melalui pengamatan dan pemfokusan pada masalah nyata yang dihadapi
- Mendeteksi dan mengumpulkan gejala-gejala yang merupakan indikasi dari adanya masalah yang mesti dipecahkan
- Broad problem area akan dipersempit menjadi isu-isu yang lebih spesifik untuk penyelidikan lebih lanjut setelah pengumpulan data awal dilakukan peneliti melalui wawancara dan studi literatur

Wawancara:

- Wawancara secara formal/informal dengan individu yang terlibat secara langsung dengan sistem yang sedang diamati, atau diskusi dengan para pakar
- Tujuan:
  - menggali informasi yang dapat menjelaskan apa yang sedang terjadi & mengapa sehingga peneliti mempunyai pemahaman yang lebih baik terhadap obyek yang diteliti

5. Perumusan Masalah (Problem Formulation)

Pengumpulan Data Awal:

- Tujuan:
  - Mencari kerangka masalah yang sedang diselidiki
  - Identifikasi konsep, teori, fakta dan metodologi
  - Memposisikan penelitian yang sedang dilakukan
  - Identifikasi isu-isu yang pernah diteliti sebelumnya untuk:
    - menghindari duplikasi;
    - membantu dalam perumusan kerangka masalah yang sedang diteliti;
    - mengetahui hal-hal yang mesti dikerjakan;
    - menentukan kontribusi penelitian

5. Perumusan Masalah (Problem Formulation)

Studi Pustaka:

- The documentation of a comprehensive review of the published and unpublished work from secondary sources of data in the areas specific interest to the researcher
- Variabel-variabel penting yang diperkirakan akan mempengaruhi masalah yang sedang diteliti
- Gagasan yang lebih jelas tentang variabel-variabel yang dipertimbangkan ⇨ paling penting untuk memecahkan masalah dan membantu dalam perumusan kerangka teoritis dan hipotesis yang akan diuji
- Masalah dapat dinyatakan dengan lebih tepat dan jelas
- Menghindarkan risiko re-inventing the wheel
- Masalah yang diselidiki dianggap relevan dan penting oleh masyarakat ilmiah (scientific community)

5. Perumusan Masalah (Problem Formulation)

Problem Formulation:

- Analysis the Real System:
  - Structural, Functional, Boundary, Environment, Objective
- Identify the Symptoms:
  - Types, Magnitudes, Impacts-Consequences
- Identify Roots of Causes:
  - Approach Systemic, Fish Bone Diagram, Six Word Diagram (6 W – 12 Questions), Causal Analysis
- Analysis: Quantitative, Qualitative
- Define the Real Problem: Main Problems, Secondary Problems

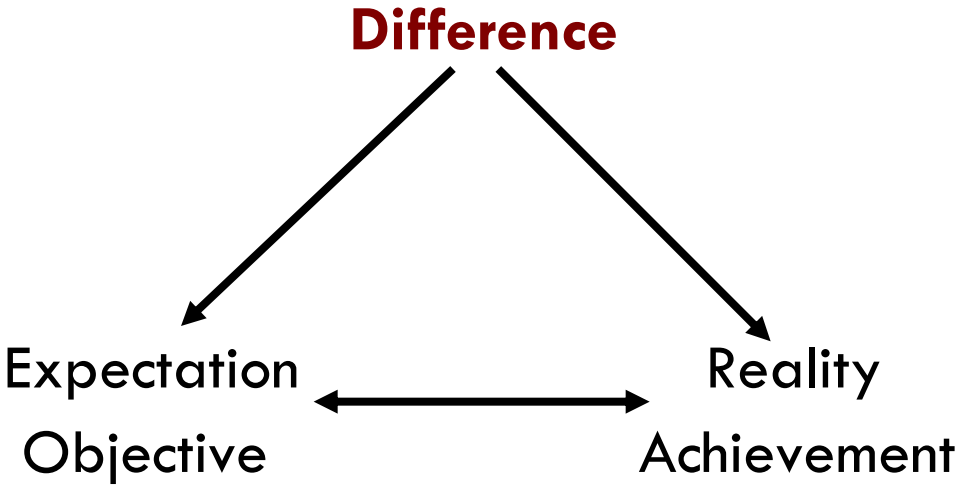
5. Perumusan Masalah (Problem Formulation)

Identify Symptoms:

- Types
- Magnitude
- Impact-consequences

- Do not confuse among !!!
- Symptom
- Root Causes
- Alternative of Solution

Symptoms



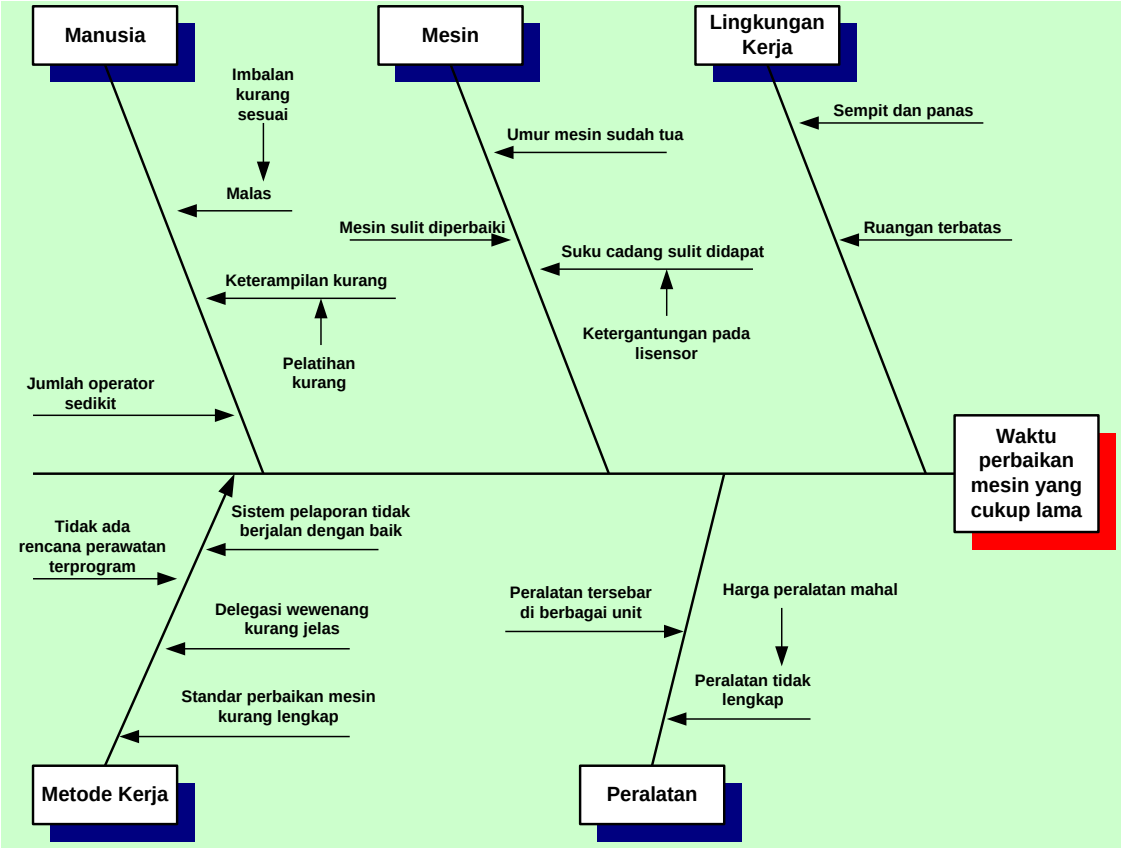
- Indicator of the problem
- Problem could exist although without any symptom
- Form: Claims, Differences Expectation and Reality

5. Perumusan Masalah (Problem Formulation)

Root Causes:

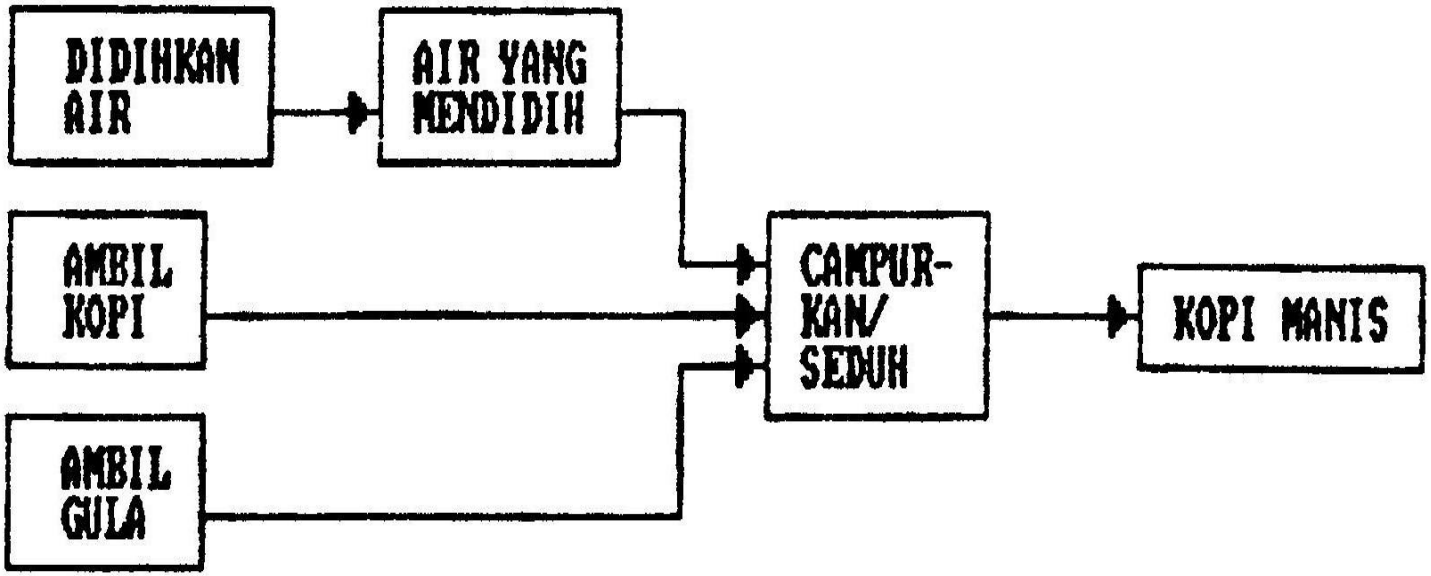
- Causes of the symptom
- Use systemic approach to identify

- **Fish Bone Diagram**
- Six Word:
  - 6 W – 12 Questions



5. Perumusan Masalah (Problem Formulation)

- Langkah-langkah penyelesaian masalah:
  - tidak ada aturan umum, menggunakan logika, common-sense
  - sering dilupakan, tidak ada pada literatur padahal penting
- Contoh:
  - Membuat kopi manis ⇨ Skema menunjukkan langkah-langkah:



5. Perumusan Masalah (Problem Formulation)

- Masih meragukan: dari mana bahan-bahan, apa persyaratan alat-alat yang digunakan dan dicoba disempurnakan sbb: