

THOUGHTS ON "STRUCTURED METHODOLOGY"  
FOR TPA TECHNOLOGY

MOHAMED ABDOU

TPA TECHNOLOGY STEERING GROUP MEETING  
UCLA  
JULY 18-19, 1985

A "STRUCTURED" METHODOLOGY/APPROACH  
WILL BE USED FOR PLANNING TECHNOLOGY

INCENTIVES

- TO ENCOURAGE CREATIVE THINKING ABOUT VARIOUS R&D PATHWAYS (ALTERNATIVES) TO ACCOMPLISH OBJECTIVES
- TO ENCOURAGE UNCOVERING AND UNDERSTANDING KEY ASSUMPTIONS, DECISION POINTS AND LIKELY OUTCOME (CONSEQUENCES) OF VARIOUS ALTERNATIVES
- TO PROVIDE A "COMMON SCALE" FOR COMPARING:
  - VARIOUS ALTERNATIVES
  - RELATIVE "WORTH" OF MAJOR FACILITIES, EXPERIMENTS (FOR EACH COMPONENT, AMONG DIFFERENT COMPONENTS?)

THE "STRUCTURED" PLANNING PROCESS SHOULD  
POSSESS CERTAIN DESIRABLE CHARACTERISTICS:

- SYSTEMMATIC AND LOGICAL
- DEFENSIBLE
- EXPLAINABLE
- QUANTIFIES THE VALUE OF PROGRAM ELEMENTS  
VS. OBJECTIVES
- QUANTIFIES SUBJECTIVE JUDGMENTS (E.G.,  
COST, TIME. TECHNICAL UNCERTAINTY)
- FACILITATES CREATION OF CONSENSUS
- ALLOWS FOR CHANGES IN POLICY AND NEW  
INNOVATIONS

## WHAT METHOD?

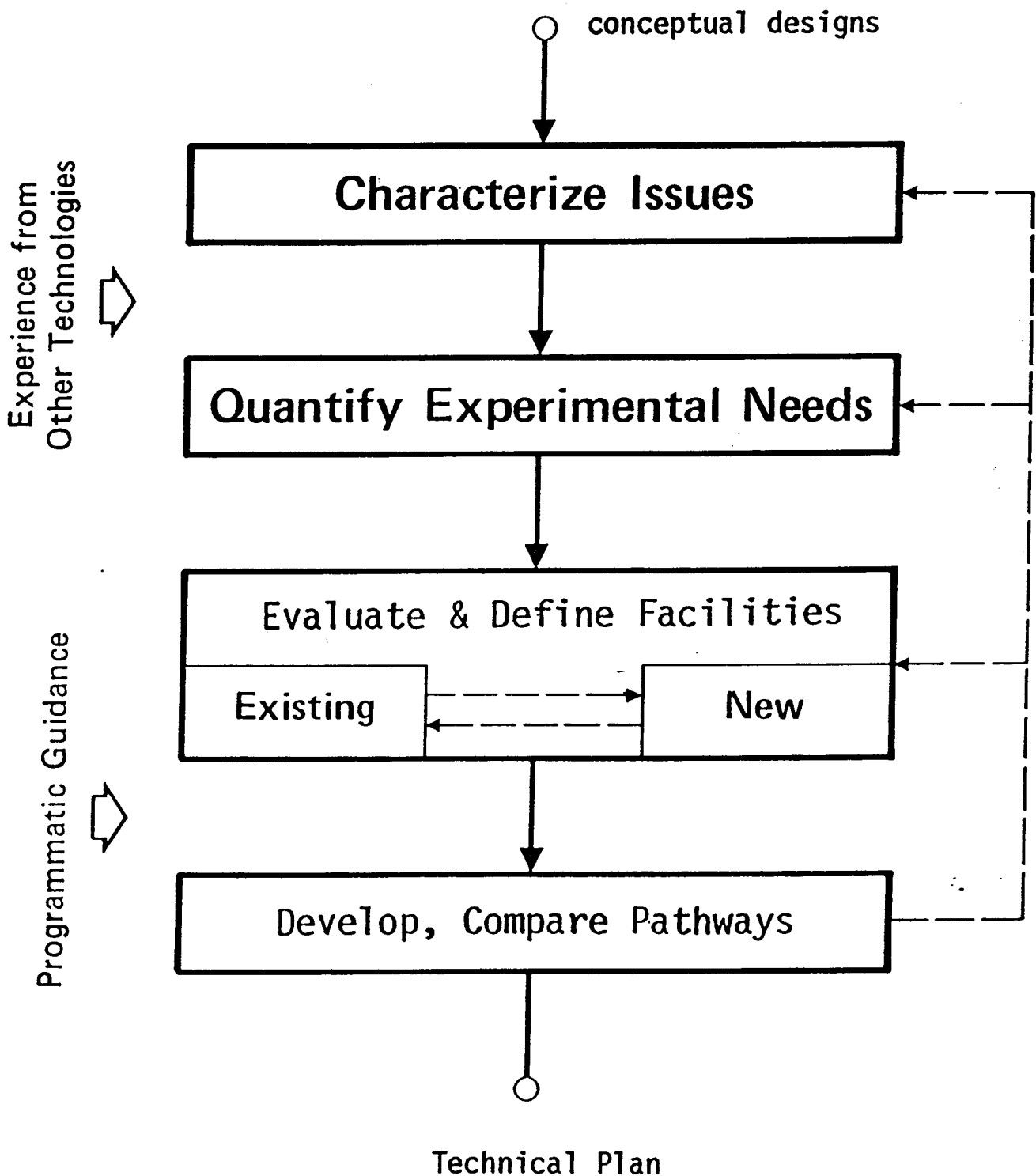
- NO IDEAL METHOD EXISTS
  
- WE NEED TO EVOLVE A METHOD
  
- IT IS VERY DESIRABLE TO HAVE THE SAME METHODOLOGY FOR ALL SUBSYSTEMS
  - THIS MAY BE DIFFICULT TO ACHIEVE
  
  - SHOULD WE ALLOW DIFFERENT METHODS FOR DIFFERENT SUBSYSTEMS?
  
  - WHAT IS MOST IMPORTANT IS THAT THE "DECISION METHOD" FOR EACH COMPONENT BE CLEAR AND DEFENSIBLE.

## SUGGESTED EXAMPLE

### METHOD A

- A METHOD IS BEING EVOLVED AND TESTED BASED ON:
  - A) "FINESSE"-TYPE PROCESS FOR DEVELOPING ALTERNATIVE PATHWAYS
  - B) "ANALYTIC - DECISION MAKING" PROCESS FOR COMPARING ALTERNATIVE PATHWAYS
  
- THE METHOD REQUIRES:
  - SUBSTANTIAL INFORMATION (EFFORT)
  - DIFFICULT PART: DEVELOPING ALTERNATIVE PATHWAYS
  - BEING CLEAR ABOUT THE SPECIFICS OF THE DECISION PROBLEM (WHAT IS IT ONE IS TRYING TO DECIDE ON?)

# FINESSE PROCESS For Experiment Planning



GENERAL PROCEDURE OF  
"DECISION ANALYSIS" APPROACH

1. DEFINE AND STRUCTURE THE DECISION PROBLEM.
2. SPECIFY OBJECTIVES AND ATTRIBUTES:
  - A. OVERALL OBJECTIVES FROM MFPP;
  - B. DEVELOP MEASURABLE (SUB)OBJECTIVES FOR EACH TECHNOLOGY COMPONENT;
  - C. DEVELOP ATTRIBUTES (EVALUATION SCALES).
3. DETERMINE PREFERENCES (VALUES) OF DECISION MAKERS.
4. GENERATE ALTERNATIVES.
5. ASSESS THE POSSIBLE CONSEQUENCES OF EACH ALTERNATIVE (DEGREE TO WHICH ALTERNATIVES MEET OBJECTIVES).
6. EVALUATE AND COMPARE ALTERNATIVES (BASED ON DEGREE OF MEETING OBJECTIVES AND PREFERENCES FOR OBJECTIVES).

## PRESENTATIONS AND DISCUSSIONS

PEERENBOOM (15 m)

KEY ELEMENTS OF  
ANALYTIC DECISION  
MAKING

TILLACK (20 m)

DETAILED AND COMPLETE  
EXAMPLE (FOCUS ON  
METHOD, DO NOT ARGUE  
SPECIFIC NUMBERS FOR  
NOW)

BERWALD (20 m)

GENERALIZATION OF  
METHODOLOGY

GROUP DISCUSSION (30 m)

GROUP RECOMMENDATION (30 m)