THE OPTIONS FIELD/OPTIONS PROFILE (OFOP) METHOD FOR TOP-DOWN DESIGN
PURPOSE OF THE OFOP METHOD

To offer an efficient way for a group of people to carry out a design process that incorporates the collective knowledge of the group.
APPLICATIONS OF THE OFM-OPM

Design of:

- Revised Judicial System Including a Court Administrator
- Technology Transfer Organization
- Peace Research Forum
- Product Engineering Center
- Authority Allocation System for New Product Development
- Municipal Expenditure Reduction System
- Press Safety System
- Manufacturing Engineering Organization
- Futures-Oriented Workshop for Stakeholders
EXAMPLES OF APPLICATIONS

In ORGANIZATION DESIGN:

• Judicial System
• Technology Transfer Organization
• Peace Research Organization
• Product Engineering Center
• Manufacturing Engineering Organization
• Management System
  — municipal management
  — product design management

In SAFETY SYSTEM DESIGN

• Design of a Press Safety System

In DESIGN OF A PARTICIPATIVE MEETING ON FOREST RESOURCE MANAGEMENT
CHARACTERISTICS OF THE OPOP METHOD

- Intended for use in top-down design
- Suitable for participative design
- Relies on an experienced group facilitator
- Emphasizes qualitative design with quantitative follow-up, but is not limited to qualitative design
- Uses computer assistance to carry out logically complex steps
- Uses computer-generated displays to aid the group
  - Not all software has been written
- Uses Consensus Methodologies to assist in some tasks
  - generating design options
  - identifying design dimensions
  - testing dimensional interdependence
  - finding sequence of design choices
- Facilitates design iteration at each design stage
- Displays intermediate status of design thinking
- Displays answers to important design review questions
- Allows hierarchical design process (from the general to the most specific) in any desired number of stages
SUPPORTING RESOURCES FOR THE OFOP METHOD

- A specially designed room, equipped with large display spaces, computer terminal, video display unit, and other supporting furniture.

- A highly trained facilitator, familiar with OFOP theory, and experienced in facilitating the process.

- A computer with suitable software.
<table>
<thead>
<tr>
<th><strong>A. Basic Learning Outcomes Sought</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• To be able to synthesize concepts from subject overlap</td>
</tr>
<tr>
<td>• To be able to critique environmental issues in the real world context</td>
</tr>
<tr>
<td>• To be able to analyze complex systems</td>
</tr>
<tr>
<td>• To be able to structure elements of the environment into dynamic patterns</td>
</tr>
<tr>
<td>• To develop environmental concepts and principles</td>
</tr>
<tr>
<td>• To acquire skills in data collection on environmental issues</td>
</tr>
<tr>
<td>• To be able to identify important elements of the environment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B. Presumed Learning Style</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Learning in the representational style (two inter-related concepts)</td>
</tr>
<tr>
<td>• Learning through personal operations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>C. Presumed Learner Skills Base</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Can read prose</td>
</tr>
<tr>
<td>• Can write</td>
</tr>
<tr>
<td>• Can use specific mathematics</td>
</tr>
<tr>
<td>• Can read translatable graphics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>D. Mode of Environmental Education</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Projects</td>
</tr>
<tr>
<td>• Field-oriented</td>
</tr>
<tr>
<td>• Process-oriented</td>
</tr>
<tr>
<td>• Environmental</td>
</tr>
<tr>
<td>• Extended experience</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>E. Type of Environmental Education</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Community CE</td>
</tr>
<tr>
<td>• Personal, post-secondary CE</td>
</tr>
<tr>
<td>• Personal, secondary CE</td>
</tr>
<tr>
<td>• Personal, elementary CE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>F. Mediator Model</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Learning process designer</td>
</tr>
<tr>
<td>• Group discussion leader</td>
</tr>
<tr>
<td>• Field guide and interpreter</td>
</tr>
<tr>
<td>• Classroom lecturer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>G. Learner Interaction Resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• E-mail environment</td>
</tr>
<tr>
<td>• General environment</td>
</tr>
<tr>
<td>• Computer-assisted processes</td>
</tr>
<tr>
<td>• Audio-visuals</td>
</tr>
<tr>
<td>• Printed modules</td>
</tr>
<tr>
<td>• Physical modules</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>H. Source of Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Usage-extended materials</td>
</tr>
<tr>
<td>• General planning materials</td>
</tr>
<tr>
<td>• Some specific materials</td>
</tr>
<tr>
<td>• Standard textbooks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>I. Curriculum Delivery Concept</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Spreads into degrees in process to emerging specialized skills</td>
</tr>
<tr>
<td>• Determine &quot;core modules&quot; in terms of existing courses</td>
</tr>
<tr>
<td>• Develop and integrate CE with various subjects in the curriculum</td>
</tr>
<tr>
<td>• Test CE as a component into existing subject matter and reported as implemented and evaluated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>J. Origin of Financing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Local, the funds</td>
</tr>
<tr>
<td>• State the funds</td>
</tr>
<tr>
<td>• Federal, the funds</td>
</tr>
<tr>
<td>• Private funds</td>
</tr>
<tr>
<td>• In-kind gifts</td>
</tr>
</tbody>
</table>

**Options Field for Regional Environmental Learning System**
### Options Field Meeting Design

#### 1. Outcomes:
- Issue/concern identification
- Improve VDF credibility
- Learning by participants
- More responsible planning
- Proactive/interactive management
- More innovative problem solving
- Better resolution of discrepancy gap
- Conflict resolution
- Development of programs to meet needs
- Interagency cooperation or coordination
- Institutionalization system (internalize)
- Value-based SAU futures (commit)
- Shared vision of the future
- Long-range sense of direction
- Focus on long-range problems

#### 2. Activities:
- Scenario construction
- Learning and training
- Data and document review
- Legislative analysis
- Criteria selection
- Information transfer
- Goal/issue identification
- Analysis, evaluation and decision making
- VDF staff

#### 3. Actors:
- VDF public(s) such as:
- Stakeholders
- Representives
- Forest industry
- State politics
- Environmental groups
- Recreation/special interest groups
- Local planning administration
- Landowners
- Agency representatives
- Forestry associations
- Others

#### 4. Roles within Activities:
- Communication
- Facilitation
- Participation
- Recording of W-E process
- Program planning
- Scheduling events
- Reporting outcomes
- Information transfer
- Training
- Implementation

#### 5. Time Horizon:
- One day
- One and one-half days
- Ten and one-half days
- Two half-days

#### 6a. Workshop Duration:
- Year 2000
- Year 2020
- Year 2030
- Five year intervals
- Ten-year intervals

#### 6b. Number of Participants:
- 5-10
- 10-20
- 20-30
- 30-40
- 40-50
- 50 and above

#### 7. Outputs from Activities:
- Program identification
- Future scenarios
- Tools
- Support for processes
- Information base
- Resource allocation

---

### Participant Selection Criteria:
- Factual data
- Opinions/attitudes
- Assumptions
- Demographics
- Information
- Trends
- Sources
- Constraints
- Budgets
- Mental models
- Needs
- Process information

### Input into Activity:

#### 9. Participant:
- District Foresters
- Community leaders
- Stakeholders
- State Foresters
- Any interested public
- Forest Supervisors
- Related agency
- VDF staff
- VDF team

#### 10. Convene:
- Richmond (state-wide)
- Each SAF
- VDF
- SAF
- Forestry District
- SAF groupings
- SAF division

#### 11. Broad Geographical Location:
- Hotel
- Courthouses
- SAF facility
- VPA Center for Interactive Management
- College facilities
- High school facility
- Conference centers
- Forestry facilities (RPP, National Park)
- Commercial facility (bank)
- Project organization halls
- Stakeholder facilities

#### 12. Specific Site:
- Sensitivity
- Desire to participate
- Knowledge of the process
- Knowledge of the context
- Related past experience
- Ability to communicate effectively
- Ability to run a meeting
- Available time

#### 13. Facility Support:
- A-V equipment
- Food services
- Lodging
- Accommodations
- Reproduction capability
- Pleasure surroundings
- Joint and separate meeting rooms
- Situation room
- Computer support

#### 14. Characteristics of Facilitators:
- Expert -- lack of bias
- Synthesis: familiarity with and sense of meaning
- Interest, role and process
- Knowledge of subject matter

---

**Option:** Field for a Futures-Oriented Workshop for Stakeholders
Design Choices for a Courthouse Administrative System

<table>
<thead>
<tr>
<th>Type of Case</th>
<th>Name of Courthouse</th>
<th>Organizing Mode</th>
<th>Admin. Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>criminal</td>
<td>Fed. District Ct.</td>
<td>clerks/judges</td>
<td>fiscal mgt.</td>
</tr>
<tr>
<td>civil</td>
<td>Fed. App. Ct.</td>
<td>clerks/judges</td>
<td>systems analysis</td>
</tr>
<tr>
<td>law</td>
<td>Fed. Supreme Ct.</td>
<td>open system</td>
<td>facilities mgt.</td>
</tr>
<tr>
<td>equity</td>
<td>State District Ct.</td>
<td>closed system</td>
<td>report mgt.</td>
</tr>
<tr>
<td>federal question</td>
<td>State App. Ct.</td>
<td></td>
<td>liaison</td>
</tr>
<tr>
<td>diversity juris</td>
<td>State Supreme Ct.</td>
<td></td>
<td>jury &amp; witness mgt.</td>
</tr>
<tr>
<td>($10,000)</td>
<td></td>
<td></td>
<td>personnel mgt.</td>
</tr>
</tbody>
</table>

Completed Options Profile

A Conceptual Design for Technology Transfer Center Based on Senate Bill S1290

- **Technological Needs**
  - Basic Research
  - Applied Research
  - Development
  - Long Term
  - Short Term
  - Holistic
  - Product-Oriented
  - Process-Oriented

- **Presumed Innovation Style**
  - Exploration of significant and fundamental facts
  - Determination of facts
  - Empirical work designed to choose among alternatives as applied to new interests
  - "Imaginative" Colleges
  - Interorganizational communication patterns
  - Interorganizational communication patterns

- **Presumed Innovator Skills**
  - Can read prose
  - Can write
  - Can use technical language
  - Can read translatable graphics
  - Has adequate memory and recall skills

- **Information Channels**
  - Literature
  - Vendors
  - Customers
  - Other sources
  - External to the laboratory
  - Laboratory Technical Staff
  - Company Research Programs
  - Analysis and experimentation
  - Previous personal experience
  - Group Discussion
  - Other Divisions

- **Innovator's Interaction Resources**
  - Laboratory Environment (new college grad)
  - Non-Laboratory Environment (short courses, seminars, conferences)
  - Computer-Assisted Processes
  - Print Modules
  - Physical Modules

- **Formal Literature Sources**
  - Textbooks
  - Trade Journals
  - Privately Sponsored Engineering Journals
  - Professional Engineering Journals
  - Handbooks
  - Other Journals
  - Conference proceedings
  - Scientific & Math. Journals

- **Informal Literature Sources**
  - Internal Reports
  - Reports from other corporations
  - Government reports
  - University Reports
  - Reports of unknown origin

- **Information Broker/Mediator**
  - Universities
  - Business Organization
  - Government agencies
  - Foreign country counterparts
  - Lecturers
  - Group discussion leaders
  - Guide and Interpreter
  - Information process manager

- **Origin of Funding**
  - Local Tax Funds
  - State Tax Funds
  - Federal Tax Funds
  - In-kind Transfers
  - Private Funds

System Tie Line
OPTIONS FIELD PORTION

GIVEN:
Knowledge of what is to be designed.
Design team.
Room equipped to serve the process, with access to software.
Facilitator.

HERE ARE THE STEPS:

WHAT TO DO:

1. Generate options.
2. Edit options to assure that all options are simple.
3. Sort options into similarity sets. Name each set.
4. Confirm the design dimensions.
5. Test dimensional dependency and form clusters.
6. Sequence the clusters according to judgment concerning choice sequence.
7. Sequence the dimensions in each cluster.
8. Print the Options Field for display, using the sequences just developed, and using the display conventions.

HOW TO DO IT:

Using Brainwriting, Nominal Group Technique, or (possibly) DELPHI.
Break complex options into simple ones.
Manually, or use ISM if too complex for manual sort.
Decide if specification of an option is necessary to the
Manually, or use ISM if too complex for manual clustering
Manually, or use ISM if too complex for manual sequencing.
Manually, or use special software and automatic drafting when possible.
GIVEN: An Options Field for the design, displayed on wall. Design team. Room equipped to serve the process, with access to software. Facilitator.

HERE ARE THE STEPS:

WHAT TO DO

1. Select an option (simple or compound) from the first dimension in the Options Field.
2. Tie the selected option to the Tie Line.
3. Rule out dependent options in the cluster.
4. Repeat Steps 1-3 for the second dimension in the Options Field.

CONTINUE UNTIL

5a. An option has been selected in all dimensions, OR
5b. If some dimension is blocked, start over in its cluster and proceed as before.

RESULT: A completed design alternative.
WHAT ARE SOME OPTIONS THAT ARE OPEN TO YOU IN PLANNING TO GO TO THE MOVIES?

Gone with the Wind
The Fox
Early Show
Bus
Matinee
The Strangler
The Maltese Falcon
Private Car
Late Show
Loews
General Cinema
Tenth Street
Ritz
Stanley and Livingstone
E. T.
Casablanca
Thirty-Nine Steps
Pogo Stick
Taxi
Hot Flash
Airport
Snow White
Midnight Show
Train
Bicycle
Walking
The Bijou
Harper House
<table>
<thead>
<tr>
<th>FILM</th>
<th>THEATER</th>
<th>SHOW TIME</th>
<th>TRANSPORTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gone With the Wind</td>
<td>The Bijou</td>
<td>Matinee</td>
<td>Bus</td>
</tr>
<tr>
<td>The Strangler</td>
<td>The Fox</td>
<td>Early Show</td>
<td>Walking</td>
</tr>
<tr>
<td>The Maltese Falcon</td>
<td>Loews</td>
<td>Late Show</td>
<td>Private Car</td>
</tr>
<tr>
<td>Snow White</td>
<td>General Cinema</td>
<td>Midnight Show</td>
<td>Bicycle</td>
</tr>
<tr>
<td>Airport</td>
<td>Harper House</td>
<td></td>
<td>Train</td>
</tr>
<tr>
<td>Thirty-Nine Steps</td>
<td>Tenth Street</td>
<td></td>
<td>Taxi</td>
</tr>
<tr>
<td>Casablanca</td>
<td>Ritz</td>
<td></td>
<td>Pogo Stick</td>
</tr>
<tr>
<td>E. T.</td>
<td>Hot Flash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stanley and Livingston</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TIE LINE**

OPTIONS FIELD
STRUCTURE OF DIMENSIONAL INTERDEPENDENCE

Cluster A →

Cluster B →

FILM
THEATER
SHOW TIME
TRANSPORTATION

choice of
restricts choice of

DIMENSIONAL INTERDEPEND.
going to mov
Two possible sequences for making choices in clusters
TWO POSSIBLE CHOICE
SEQUENCES FOR THE DIMENSIONS
ALTERNATIVE A. Go to see E. T. at the Ritz, attending the matinee. Get there by walking.
### Film
- Gone With the Wind
- The Strangler
- The Maltese Falcon
- Snow White
- Airport
- Thirty-Nine Steps
- Casablanca
  - E. T.
  - Stanley and Livingstone

### Theater
- The Bijou
- The Fox
- Loews
- General Cinema
- Harper House
- Tenth Street
- Ritz
- Hot Flash

### Show Time
- Matinee
- Early Show
- Late Show
- Midnight Show

### Transportation
- Bus
- Walking
- Private Car
- Bicycle
- Train
- Taxi
- Pogo Stick

---

**ALTERNATIVE B**

Go to see a double feature (Casablanca and Thirty-Nine Steps) showing at The Bijou. Casablanca is the early show and Thirty-Nine Steps is the late show. We will go by car to and from our train station, and take the train to the theater, since there is a station just one block from the theater.
ALTERNATIVE C. We will go to see Snow White at The Fox, attending the matinee. We will go by bus.
WHAT CRITERIA WILL BE USED IN CHOOSING AN ALTERNATIVE?

Time required for the total operation
Cost
Comfort in the theater
How many can attend
Loss of sleep
Expected quality of entertainment
### CRITERIA

<table>
<thead>
<tr>
<th>ALTERNATIVE</th>
<th>Time</th>
<th>Cost</th>
<th>Comfort</th>
<th>Number</th>
<th>Lost Sleep</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2½ hr.</td>
<td>$16</td>
<td>Fair</td>
<td>4</td>
<td>None</td>
<td>High</td>
</tr>
<tr>
<td>B</td>
<td>6 hr.</td>
<td>$19</td>
<td>Excellent</td>
<td>2</td>
<td>2 hr.</td>
<td>High</td>
</tr>
<tr>
<td>C</td>
<td>3½ hr.</td>
<td>$18</td>
<td>Good</td>
<td>4</td>
<td>None</td>
<td>High</td>
</tr>
</tbody>
</table>

### RELEVANT DATA ON THE CRITERIA

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Time</th>
<th>Cost</th>
<th>Comfort</th>
<th>Number</th>
<th>Lost Sleep</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### RANKING ON THE VARIOUS CRITERIA

NOTE THAT NO ALTERNATIVE DOMINATES ANY OTHER ALTERNATIVE.
### COMPARING ALTERNATIVES A AND B.

<table>
<thead>
<tr>
<th></th>
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<th>Cost</th>
<th>Comfort</th>
<th>Number</th>
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</tr>
<tr>
<td>B</td>
<td>6 hr.</td>
<td>$19</td>
<td>Excellent</td>
<td>2</td>
<td>2 hr.</td>
</tr>
<tr>
<td>Difference</td>
<td>3¼ hr.</td>
<td>$3</td>
<td>B better than A</td>
<td>2</td>
<td>2 hr.</td>
</tr>
</tbody>
</table>

**A best**  A best

---

#### Ranking of Differences.

1. Comfort
2. Lost Sleep
3. Time
4. Number
5. Cost

---

#### Weighting of Ranked Differences.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Comfort</td>
</tr>
<tr>
<td>70</td>
<td>Lost Sleep</td>
</tr>
<tr>
<td>30</td>
<td>Time</td>
</tr>
<tr>
<td>10</td>
<td>Number</td>
</tr>
<tr>
<td>5</td>
<td>Cost</td>
</tr>
</tbody>
</table>
Scores:

A  115
B  100

\[ \therefore A \text{ is better than } B \]
COMPARING ALTERNATIVES A AND C

<table>
<thead>
<tr>
<th></th>
<th>Time</th>
<th>Cost</th>
<th>Comfort</th>
<th>Number</th>
<th>Lost Sleep</th>
</tr>
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</tr>
<tr>
<td>C</td>
<td>3½ hr</td>
<td>$18</td>
<td>Good</td>
<td>4</td>
<td>None</td>
</tr>
</tbody>
</table>

Difference: 1 hr $2

A best A best C best Equal Equal

Ranking of Differences:

1. Comfort
2. Cost
3. Time

Weighting of Ranked Differences

100 Comfort
20 Cost
10 Time
Scores:  

C 100  

A 30  

... C is better than A
TRANSITIVITY CHECK: We have found that

a) C is better than A
b) A is better than B

Is it true that

c) C is better than B?

<table>
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<th>Number</th>
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<tbody>
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<td>3½</td>
<td>$18</td>
<td>Good</td>
<td>4</td>
<td>None</td>
</tr>
<tr>
<td>B</td>
<td>6</td>
<td>$19</td>
<td>Excellent</td>
<td>2</td>
<td>2 hr.</td>
</tr>
</tbody>
</table>

Difference: $1 | 2 hr.

C best, C best, B best, C best, C best

Ranking of Differences:

1. Lost Sleep
2. Comfort
3. Number
4. Time
5. Cost

Weighting of Ranked Differences:

100 Lost Sleep
40 Comfort
40 Number
30 Time
5 Cost
\[
\begin{align*}
C & \quad 175 \\
B & \quad 40 \\
\therefore \quad C \text{ is best.}
\end{align*}
\]