Systems Leadership
with emphasis on academic environments

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Leaders lead systems… Systems thinking informs leadership

K.C. Ting's Select Leadership Experience
"Empower with knowledge and wisdom (kW) for Life."

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Academic/Professional
- ❑ **Department head/chair at University of Illinois, The Ohio State University, Rutgers University, and University of Houston**
- ❑ Chair of Stewarding Excellence@Illinois Project Team to review Beckman Institute and Institute for Genomic Biology at University of Illinois
- ❑ **Member or chair of nine external review teams to evaluate academic and research programs in U.S., Japan, China, Taiwan, and Malaysia.**
- ❑ Chair of ASABE ED-210, SE-30, SE-303, IET-218

Research
- ❑ **Leader of Energy Biosciences Institute Program on Engineering Solutions for Biomass Feedstock Production, University of Illinois**
- ❑ Member of Steering Committee for ADM Institute for the Prevention of Post-harvest Loss, University of Illinois
- ❑ **Leader of NJ-NASA Specialized Center of Research and Training Systems Analysis and Modeling Team, Rutgers University**
- ❑ Editor-in-Chief, Computers and Electronics in Agriculture
- ❑ **Editor, Information and Electrical Technologies Division, ASABE**

Leadership Development
- ❑ **NASULGC Food Systems Leadership Institute Fellow**
- ❑ ESCOP/ACOP/USDA Leadership Development Program
- ❑ **The University System, Institute of Higher Education Management, Management Workshop for Academic Department and Division Heads**

Leadership Awards
- ❑ **2008 American Society of Agricultural and Biological Engineers (ASABE) Kishida International Award**
- ❑ 2011 ASABE James R. and Karen A. Gilley Academic Leadership Award

ASABE Gilley Academic
Leadership Award (2011)

**K.C. Ting , Ph.D., P.E.
Professor and Head
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I. Introduction

"Information is processed data. Knowledge is internalized information. Wisdom is effective use of knowledge. Knowledge is energy. Combined knowledge and wisdom (kW) is power."

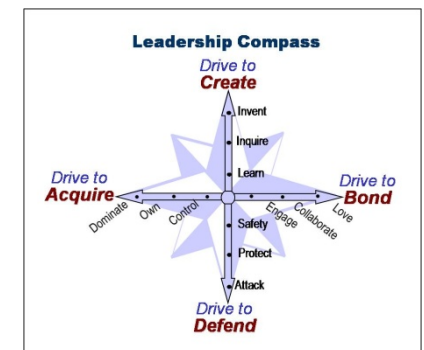## I – 1. Leadership Development

I – 2. Things Worthy of Attention

❑ **Proactive communication leads to well-informed colleagues.**

❑ Well-informed colleagues are an invaluable strength of an organization.

❑ **A key responsibility of leaders and administrators is providing value-added visions and making decisions.**

❑ In an organization, how the decisions are made is equally important as what the decisions are.

❑ **It has become increasingly important to have, as well as to be able to develop, people who can both lead and administrate.**

❑ It is very important to make fostering leadership and administrative skills one of the top priorities.


Leadership Compass

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❑ **Effectiveness of a leader can be best judged by how productive his/her team members (both individually and as a team) are.**

❑ Leadership works at its best when it enables the highest possible productivity of a team.

❑ **The definition of productivity should be developed by participation of the team members and the clientele.**

❑ The measure of effectiveness is a continuous process and a functional feed-back mechanism is essential for achieving and maintaining high levels of effectiveness.

❑ **The first priority of the leadership is human resource development including planning, recruiting, enabling, empowering, coordinating, mentoring, and supporting.**

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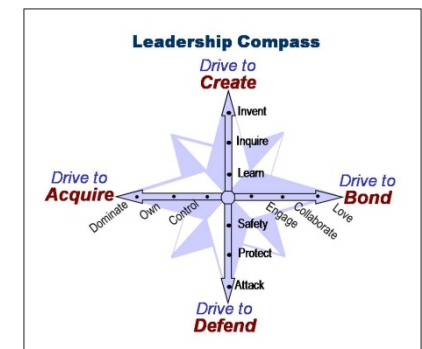
I – 2. Things Worthy of Attention

❑ **Quality work**

❑ Be responsive

❑ **Meet the deadlines**

❑ Think globally, do locally

❑ **Honesty**

❑ Integrity

❑ **Team work (lead, follow, support, cheer, and celebrate)**

❑ Be part of the solution

❑ **Collegiality**

❑ Interpersonal skills

❑ **Be patient**

❑ Strategic framing
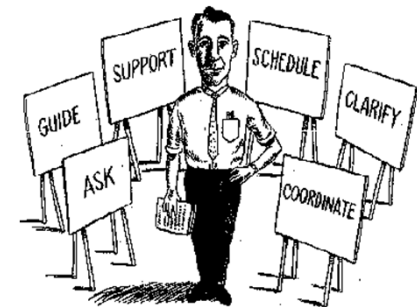
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II. Academic Profession

"We are in the business to "empower human capacity with knowledge and wisdom (kW)" - a great business to be in."

II – 1. **Academic Infrastructure**

II – 2. **Academic Departments**

II – 3. **Academic Responsibilities**

II – 4. **Performance Evaluation**

II – 5. **Institutional Culture**

II – 6. **Collegiality**

II – 7. **Professional Network**

II – 8. **Diversity**

II – 9. **Resource Generation and Utilization**

II – 10. **Faculty Issues vs. Administration Issues**

II – 11. **Getting Started and Professional Development**

II – 1. Academic Infrastructure

☐ **University**   ☐ **School**

☐ College   ☐ Institute

☐ **Department**   ☐ **Division**

☐ Program   ☐ Section

☐ **Unit**

☐ Group

☐ **Center**

☐ Office

☐ **Etc.**

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II – 2. Academic Departments (1)

❑ **Administrative units** which provide a discipline-oriented home base for faculty, staff, and students to develop, coordinate, manage, implement, evaluate, and modify teaching, research, and outreach programs.

❑ **Resources -** human, facility, financial, information, time, infrastructure, department by-laws, pattern of administration, etc.
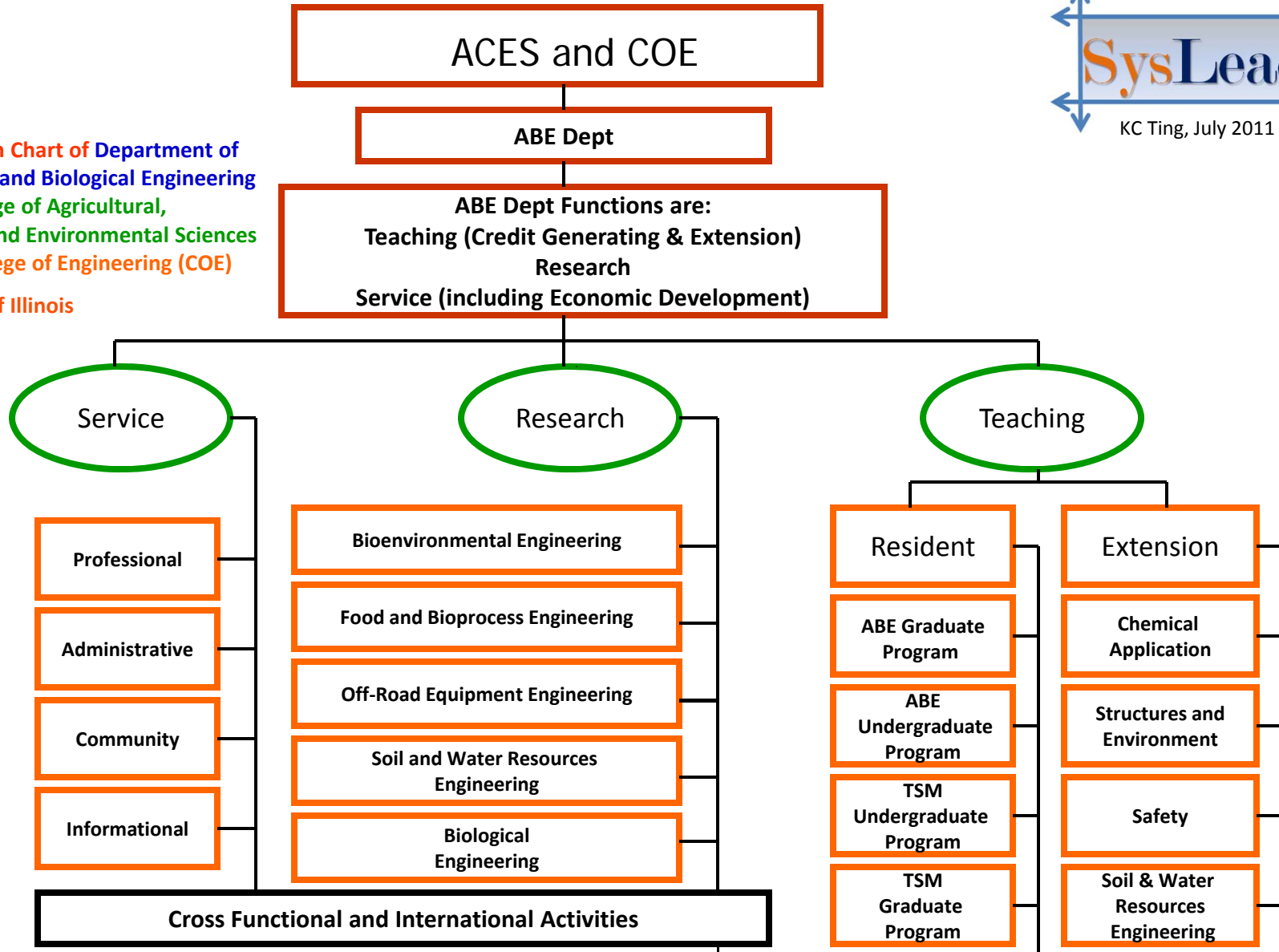

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II – 2. Academic Departments (2)

❑**Processes - teaching, research, extension and outreach programs; administrative, service, and operational functions; academic, professional and social activities, etc.**

❑**Deliverables - a learning organization; educated and trained professionals; generated and disseminated information; technical and professional services; development of discipline-oriented expertise; contribution to multiple-disciplinary programs; etc.**

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Organization Chart of Department of Agricultural and Biological Engineering (ABE), College of Agricultural, Consumer and Environmental Sciences (ACES), College of Engineering (COE)

University of Illinois

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ACES and COE

ABE Dept

ABE Dept Functions are:
Teaching (Credit Generating & Extension)
Research
Service (including Economic Development)

Service

- Professional
- Administrative
- Community
- Informational

Research

- Bioenvironmental Engineering
- Food and Bioprocess Engineering
- Off-Road Equipment Engineering
- Soil and Water Resources Engineering
- Biological Engineering

Teaching

Resident

- ABE Graduate Program
- ABE Undergraduate Program
- TSM Undergraduate Program
- TSM Graduate Program

Extension

- Chemical Application
- Structures and Environment
- Safety
- Soil & Water Resources Engineering

Cross Functional and International Activities

II – 3. Academic Responsibilities

❑ **Teaching**
(Credit-Generating Instruction; Outreach/Extension Education)

❑ **Research**
(Discovery; Synthesis; Integration; Implementation)

❑ **Service**
(Academic; Administrative; Professional; Public; Community; Economic Development)
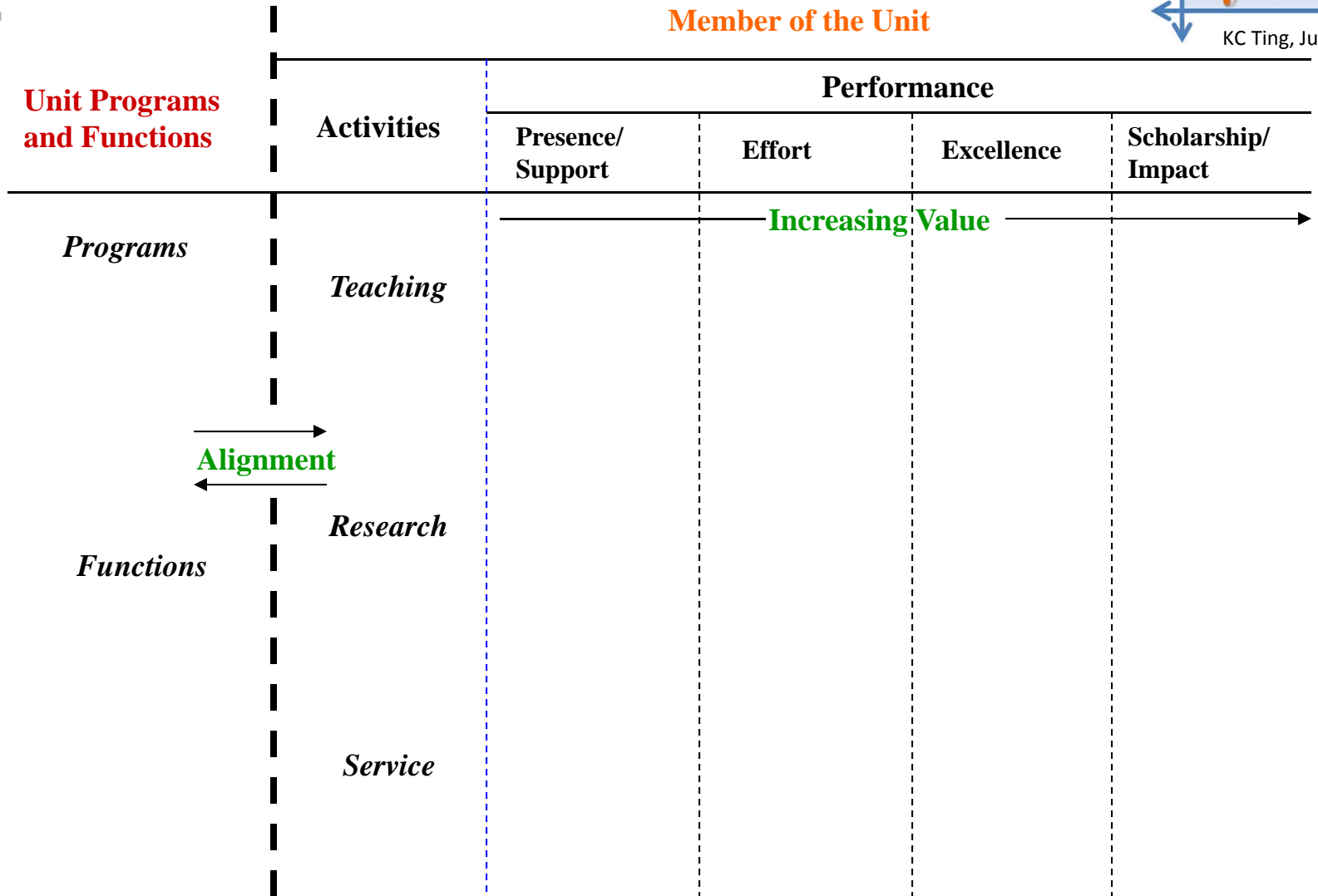
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Criteria (Things that are valued)

- ❑ **High quality professional work**

- ❑ Relevance to the goals of the Department, College, and University

- ❑ **Impact of program efforts**

- ❑ Diversity of scholarly responsibilities and contributions

- ❑ **Recognition for research, teaching, and service efforts**

- ❑ Disciplinary and multidisciplinary efforts

- ❑ **Individual and team contributions**

- ❑ Peer-review – both as validation of accomplishment and as a contribution to development of others

Source: College of Food, Agricultural, and Environmental Sciences, Ohio State, Faculty Review System Guidelines 2/8/2000

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Performance Matrix

SysLead

Member of the Unit

Unit Programs and Functions

Activities	Performance			
	Presence/ Support	**Effort**	**Excellence**	**Scholarship/ Impact**

Programs

— **Increasing Value** →

Teaching

→
Alignment
←

Research

Functions

Service

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II – 5. Institutional Culture

The way things are interpreted and done, as well as how people behave

❑ **Values aspect –**

   Beliefs, Purposes

❑ **Rational aspect –**

   Structures, Systems

❑ **People aspect –**

   Attitudes, Behaviors

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Professional relationships and interpersonal skills at work place

❑ **Short term relationship**

❑ Long term relationship

❑ **Understand generally accepted behavior and practices**

❑ Expand complementary interests

❑ **Inter-disciplinary activities**

❑ Committees and task forces

❑ **Mitigate conflicting goals (manage differences constructively)**

❑ The importance of communication

❑ **The last resort**

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II – 7. Professional Network

❑ **Establish collaboration**

❑ Broaden views

❑ **Keep informed**

❑ Gain access

❑ **Gather support**

❑ Share opportunities

❑ **Contribute to the larger scope**

❑ Conduct a reality check

❑ **Build friendships**

II – 8. Diversity

❑ **Is a strength**

❑ Is how the world is made up naturally

❑ **Is a pleasant experience**

❑ Is a policy and legal issue

❑ **Is a learnable concept and skill**

❑ Needs a broad and comprehensive definition

❑ **Requires full understanding and attention**

❑ Deserves continuous effort

II – 9. Resource Generation and Utilization

❑ **Time**

❑ Energy (individual, group)

❑ **Human (office and technical staff, students, mentors, peers, friends, family)**

❑ Financial (allocated, targeted, competitive, gifts)

❑ **Physical/Facility**

❑ Informational

❑ **Organizational**

❑ Industry and Corporation

❑ **Political (public, communities, governments, and organizations)**

II – 10. Faculty Issues vs. Administration Issues

❑ **Faculty Input**

❑ Faculty Participation

❑ **Faculty Advisory**

❑ Faculty Initiatives

❑ **Faculty Resolution**

❑ Faculty Governance

❑ **Faculty Committee**

❑ Faculty Meeting

❑ **Resource Allocation**

❑ Resource Management

❑ **Policy, Procedure, and Rule Enforcement**

❑ Unit Representation

❑ **Faculty/Staff Coordination**

Information Source: Unit By-laws

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II – 11. Getting Started and Professional Development (1)

❑ **Start as early as you can**

❑ Become familiar with faculty responsibilities, rights, and, career advancement issues

❑ **Get on all key e-mail distribution lists**

❑ Meet all key colleagues as soon as possible (networking on and outside campus)

❑ **Keep the big dreams and assess the reality (strategic plan)**

❑ Work closely with your mentors

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II – 11. Getting Started and Professional Development (2)

❑ **Remember the importance of professionalism and life-long learning**

❑ Learn how to manage time and balance work and personal life

❑ **Learn how to be a good researcher, teacher, and committee member/leader**

❑ Learn how to advise, supervise, and mentor graduate students and post-docs

❑ **Learn how to utilize resources and ask good questions**

> **To faculty members: Although many colleagues will try to "protect" you, and be very interested in your success as a faculty member, you are ultimately responsible for your own career development**

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III. Leadership

"Leaders must enable themselves and others to lead."

III – 1. **Think Systems**

III – 2. **Pay Attention to Details**

III – 3. **Make Things Happen**

III – 4. **Get Things Done**

III – 5. **Enable People to Succeed**

III – 6. **Lead, Follow, Support, Cheer, and Celebrate**

❑ **Problems and issues, that are worth a leader's effort to solve and resolve, are those without obvious solutions.**

❑ An effective way of analyzing problems and formulating solutions is *systems approach*.

❑ **Systems thinking facilitates big-picture views**

❑ A system consists of interacting components integrated to achieve certain goals (normally under certain constraints). A component may be anything definable and describable. An interaction may be governed by mathematical, logical, functional, social, regulatory, political, and heuristic relationship.

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III – 1. Think Systems (2)

❑ **Components and systems are relative terms; i.e. a system may be a component of a larger system and a component may be a system of smaller components.**

❑ **Systems thinking promotes diversity and inclusiveness.**

❑ **Systems thinking avoids local improvement and optimum that weakens the overall system**

❑ **Systems thinking is a learnable skill**

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- ❑ **"Devil is in the details"**
- ❑ Avoid "vacuum" behind big ideas
- ❑ **Communicate expectations clearly**
- ❑ Delegate and follow up
- ❑ **Most "negative" feedback is about lack of attention to details**
- ❑ Mapping "details" to system level issues and vice versa
- ❑ **Good staff support is invaluable**
- ❑ The 80-20 rule does happen: 80% of effort for 20% of details
- ❑ **Every team needs at least one detail person**

III – 3. Make Things Happen (1)

❑ **Leadership is essential in charting directions and managing changes**

❑ Leaders deal with problems without obvious solutions

❑ **The benefit of being surrounded by best people**

❑ Consolidation of ideas

❑ **Conflict resolution**

❑ Persuasion, motivation, and consensus building

❑ **The power of the "first draft"**

❑ The power of intent

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III – 3. Make Things Happen (2)

❑ 9 Rs of "strategic intent" development

- **Reasons**
- **Roadmap**
- **Responsibilities**
- **Roles**
- **Rules**
- **Results**
- **Resources**
- **Renewed**
- **Renowned**

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❑ **The eight-stage process of creating major change (by John P. Kotter, *Leading Change*, Harvard Business School Press, 1996, 187p)**

1. **Establishing a sense of urgency**
2. Creating the guiding coalition
3. **Developing a vision and strategy**
4. Communicating the change vision
5. **Empowering broad-based action**
6. Generating short-term wins
7. **Consolidating gains and producing more change**
8. Anchoring new approaches in the culture

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III – 4. Get Things Done (1)

❑ **Leaders are very skillful at multi-tasking and parallel processing**

❑ Leaders deliver high quality results in a timely fashion

❑ **The art of delegation**

❑ Mobilize taskforces with clear expectations

❑ **Allocate resources towards strategic goals and tasks**

❑ A case of strategic change following John Kotter's eight-step process

III – 4. Get Things Done (2)
A case study (1)

Changes Needed –

❑ **Disciplinary Change: "Agricultural   Engineering"**
   to "Agr. and/or Bio. Engineering"
❑ **Enrollment increase**
❑ **Curricula revision**
❑ **Funding model change**
❑ **Organization change**
❑ **Faculty development**

III – 4. Get Things Done (3)
A case study (2)

Step 1. Urgency – Factors and Environments Influencing the Change: (1)

❑ **Clientele and stakeholders**

❑ Market place and industries

❑ **Land Grant missions and government policies**

❑ Accreditation requirements for undergraduate engineering programs

❑ **Professional engineering licensing**

Step 1. Urgency – Factors and Environments Influencing the Change (2):

❑ **University and College strategic plans**

❑ **Accountability and reward systems**

❑ **Resource availability and funding decisions**

❑ **Centralized decision-making versus grass root empowerment**

❑ **Curriculum and faculty development**

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III – 4. Get Things Done (5)
A case study (4)

Step 2. Guiding Coalition –

❏ **Administrative Committee (Section Leaders and Assistant to the Head)**

❏ **Department Faculty Advisory Committee (elected by faculty)**

❏ **Taskforce leaders (most are the members of the above committees)**

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Step 3. Vision and Strategy (1) – Outcome of a 9 month long strategic planning process including SWOT, retreat, etc.

(1) Vision: "We will be the best agricultural and biological engineering department in teaching, research, and outreach, while integrating biology and engineering and maintaining a collegial environment that emphasizes professional and personal development."

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Step 3. Vision and Strategy (2) – Outcome of a 9 month long strategic planning process including SWOT, retreat, etc.

(2) Mission: "We integrate life and engineering for enhancement of complex living systems by providing student-centered educational experiences in engineering and systems management, by conducting high impact research, and by delivering value-added information, knowledge, and wisdom."

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Step 3. Vision and Strategy (3) – Outcome of a 9 month long strategic planning process including SWOT, retreat, etc.

<u>(3) Core Values:</u> "We are in the business of empowering human capacity with knowledge and wisdom. In everything we do, we value

- **Excellence**
- **Integrity and Ethics**
- **Creativity and Innovation**
- **Science-Based Scholarship**
- **Inclusiveness and Collegiality**

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III – 4. Get Things Done (9)
A case study (8)

Step 3. Vision and Strategy (4) – Outcome of a 9 month long strategic planning process including SWOT, retreat, etc.

(4) Goals:

Goal 1: Enhance Student Recruitment and Retention
Goal 2: Integrate and Enhance Curricula
Goal 3: Increase Resources
Goal 4: Design Organization to Advance Strategic Thrusts
Goal 5: Strengthen Faculty Capacity

III – 4. Get Things Done (10)
A case study (9)

Step 3. Vision and Strategy (5) – Outcome of a 9 month long strategic planning process including SWOT, retreat, etc.

(5) Technical Initiatives

Initiative 1: Agricultural Automation
Initiative 2: Bio-Energy and Bio-Products
Initiative 3: Sustainable Environment
Initiative 4: Biological Engineering
Initiative 5: Systems Informatics and Analysis

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Step 4. Communicating Vision –

- ❑ **Departmental Monday lunch meetings**
- ❑ **Departmental faculty meetings**
- ❑ **Department Administrative Committee meetings (once per month)**
- ❑ **Department Faculty Advisory Committee meetings (once every two months)**
- ❑ **State of the Department presentations (once every semester)**
- ❑ **Department External Advisory Committee meetings (once per year)**
- ❑ **Department annual reports to the College**
- ❑ **Faculty annual review conversations**
- ❑ **Email communications**
- ❑ **Posting of Strategic Plan on the Departmental website**

A case study (11)

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Step 5. Empowerment –

❑ **Five task forces were established for the five strategic goals.**

❑ **Each task force is lead by one faculty member.**

❑ **All faculty, staff, graduate students, and external advisors were invited to serve as task force members by their choices.**

❑ **Each person may participate in multiple task forces.**

❑ **The charge to the task forces was to develop a set of indicators of success and a list of actions.**

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Step 6. Short Term Wins (1) – The Department took a simultaneous planning and implementation approach. Several "wins" were the result of this process:

❑ Received recognition as the number 1 agricultural engineering undergraduate program ranked by the U.S. News and World Report

❑ Appointed a half-time academic program coordinator for undergraduate student recruitment, placement etc.

❑ Identified domains and core competencies for agricultural and biological engineering (as well as technical systems management)

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U of I Agricultural and Biological Engineering Domains

Bio-Based Processing and Production Systems;

Biomass and Renewable Energy;

Precision and Information Agriculture;

Agricultural and Biosystems Management;

Agricultural Safety and Health;

Food Quality and Safety;

Environmental Stewardship;

Land and Water Resources;

Spatially Distributed Systems;

Structure and Facilities for Living Systems;

Indoor Environmental Control;

Bio-sensors, Bio-instrumentation, Bio-informatics, and Bio-nanotechnology;

Intelligent Machinery Systems;

Automation of Biological Systems;

Advanced Life Support Systems.

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Automation-Culture-Environment-Systems (ACESys)

Core Competencies for Agricultural and Biological Engineering

AUTOMATION: *Machine Capabilities of* Perception; Reasoning & Learning; Communication; and Task Planning & Execution

Automation and Culture

Automation and Environment

SYSTEMS: *Studies, Analysis, and Integration for overall* Technical Workability, Economic Viability, Energy Efficiency, Ecological Harmony, Social & Political Issues, Optimization, and Management

CULTURE: *Biology of* Plants, Animals, Microorganisms, and Human

ENVIRONMENT: *The Surroundings and processes including* Air, Water, Soil, and controlled environment

Culture and Environment

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Step 6. Short Term Wins (2) – The Department took a simultaneous planning and implementation approach. Several "wins" were the result of this process:

❑ **Reached a decision to change the degree name from Agricultural Engineering to Agricultural and Biological Engineering**

❑ **Initiated a curriculum revision based on the domains and core competencies**

❑ **Increased success of grant proposals**

❑ **Participated in a BP funded Energy Biosciences Institute**

❑ **Developed a concept of encouraging multiple engagements in Sections, Domains, and Core Competencies**

❑ **Used the Provost's Targets of Opportunity to add faculty members to the department**

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III – 4. Get Things Done (17)
A case study (16)

Step 7. Integration of Gains for Further Success –

❑ **The systematic approach in identifying the "must win" strategic goals enabled the short term wins to become an integral part of advancing the departmental overall goals.**

❑ **The strategic actions recommended by the task forces further validated the urgency of top priorities.**

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III – 4. Get Things Done (18)
A case study (17)

Step 8. Anchoring New Approaches in the Culture –

❑ **Most results of the strategic plan implementation process involve fundamental, conceptual, and methodological changes.**

❑ **It is expected that the new approaches and the willingness to explore new approaches will continue to be part of the continuous improvement effort.**

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III – 5. Enable People to Succeed

- ❑ **Recognize talents**
- ❑ Help set goals
- ❑ **Provide mentoring and role models**
- ❑ Help with networking opportunities
- ❑ **Provide enabling work environment and resources**
- ❑ Provide leadership and succession opportunities
- ❑ **Provide professional development opportunities**
- ❑ Recognize achievements

III – 6. Lead, Follow, Support, Cheer, and Celebrate

❑ **Leaders must lead**

❑ Leaders know the importance of team work

❑ **Leaders pay attention to cultivate future leaders**

❑ Leaders provide leadership opportunities to others

❑ **Leaders promote graceful effectiveness**

❑ Leaders share credits

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IV. Systems Approach

"Problem analysis and solving skills are a fundamental core competency of leadership intelligence."

IV – 1.   System

IV – 2.   Systems Thinking

IV – 3.   Systems Analysis Steps

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❑ **A group of interrelated components integrated to function/behave in certain ways and/or serve certain purposes (normally under certain constraints and/or external influences).**

❑ **"System" and "component" are relative terms; i.e. a system may be a component of a larger system and a component may be a system of smaller components.**

Example:

**An academic unit as a system –
Faculty, Staff, Students, Degree and Research Programs, Offices, Laboratories, Equipment, Department By-laws, Administrative Structure, etc.**

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What: A Holistic Approach emphasizing the performance as a whole based on the understanding of all components in the system and the interrelationships among the components [i.e. making things work better, as well as making things work together].

Why:

❑ Individually functioning components do not necessarily make up a workable system;

❑ Piece-wise knowledge about individual components does not automatically provide a complete understanding of the overall system;

❑ Necessary yet missing components can be detected after observing/analyzing the system as a whole

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1. **Define System's Scope and Objectives**
2. *Identify System Constraints*
3. **Establish Indicators of Success**
4. *Conduct System Abstraction*
5. **Obtain Data and Information**
6. *Handle Uncertainty and Incomplete Information*
7. **Incorporate Heuristic and Fuzzy Reasoning**
8. *Develop System Model*
9. **Verify and Validate Model**
10. *Investigate What-Ifs*
11. **Draw Conclusions**
12. *Plan and Execute Actions*
13. **Communicate Outcomes**
14. *Continuous Monitoring and Improvement*

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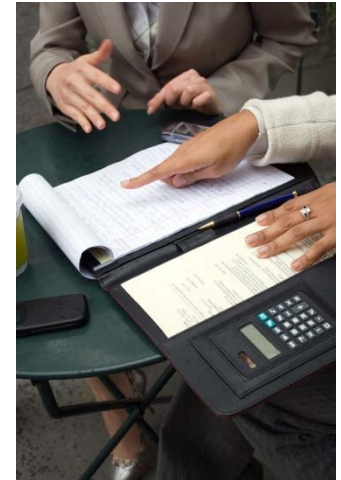
1. Define System's Scope and Objectives

- **Set system boundaries for the purpose of analysis**

- Specify required system functions

- **Describe relevant system considerations**

- State systems level issues and questions

- **Etc.**
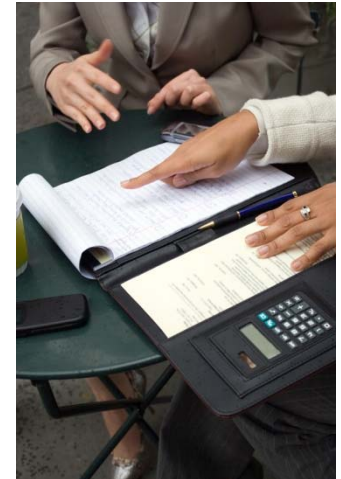
2. Identify System Constraints

- **Resource limitations**

- Social acceptance

- **Regulatory policies**

- Etc.
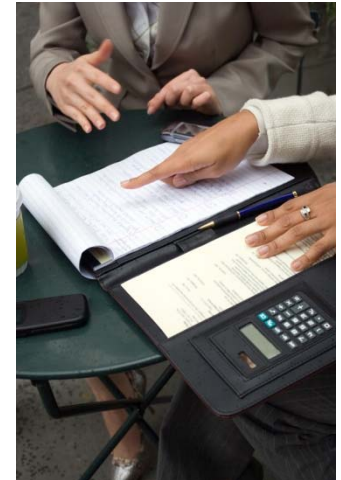
3. Establish Indicators of Success

- **Minimum cost**

- Maximum return on investment

- **Maximum efficiency**

- Minimum undesirable consequences

- **Maximum social acceptance**

- Etc.
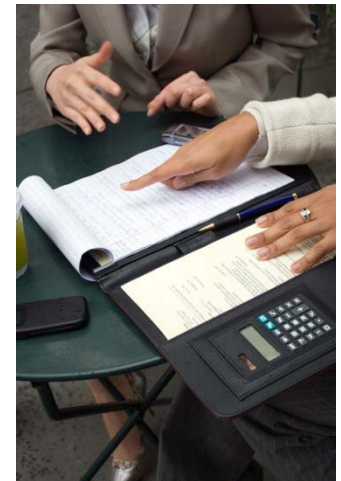
4. *Conduct System Abstraction*

- **Components and Descriptors**

- Interrelationships and Interactions

- **Initial Conditions (Current Situations)**

- Boundary Conditions (External Factors)

- **Etc.**
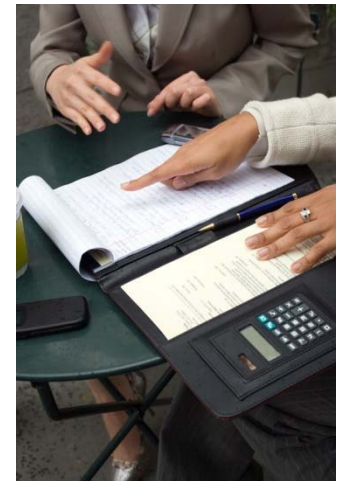
5.   *Obtain Data and Information*

- **Identify data needs and sources**

- **Establish data protocols**

- **Etc.**

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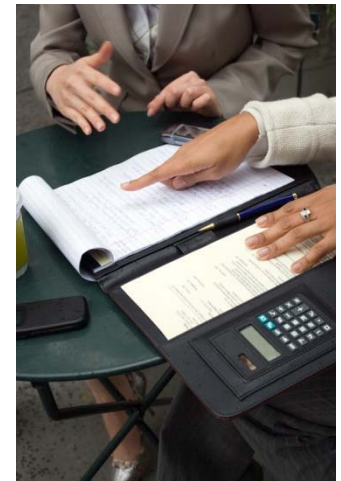
6.   Handle Uncertainty and Incomplete Information

- **Stochastic simulation**

- Heuristic reasoning (e.g. expert systems)

- **Fuzzy logic**

- Gap analysis

- **Etc.**

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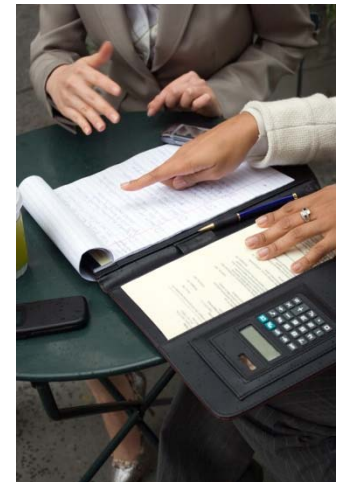
7. Incorporate Heuristic and Fuzzy Reasoning

- **Consult with experts**

- Obtain input from diverse view points
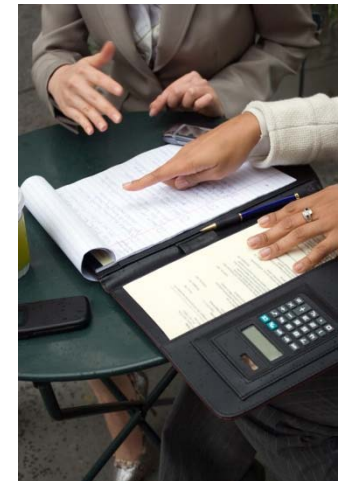
- **Practice experiential learning**

- Etc.
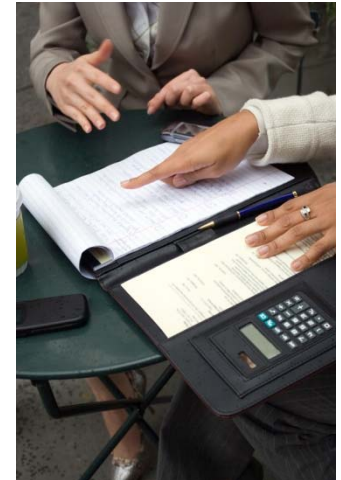
8.   Develop System Model

- **Quantification of information and/or processes**

- Mathematical and/or logical correlation of data

- **Representation of real systems**

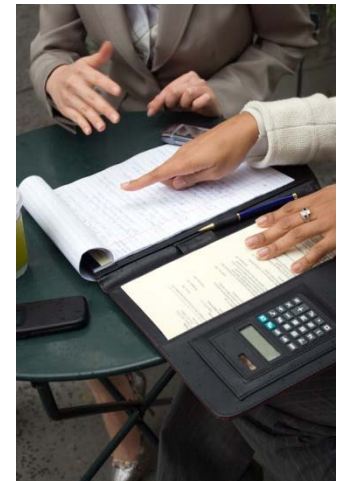- Creation of tools to enable description and/or application of concepts and ideas

- **Etc.**

9. Verify and Validate Model

- **Ensure the model performs computationally as designed**

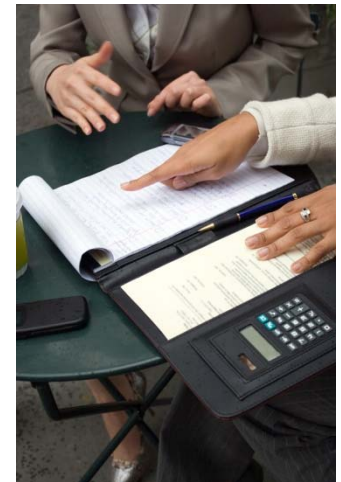- Evaluate the closeness of the model output to the reality

- **Etc.**

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10. Investigate What-Ifs

- **Scenario simulation (investigate "what if?")**

- **Optimization (best available solution)**

- **Etc.**

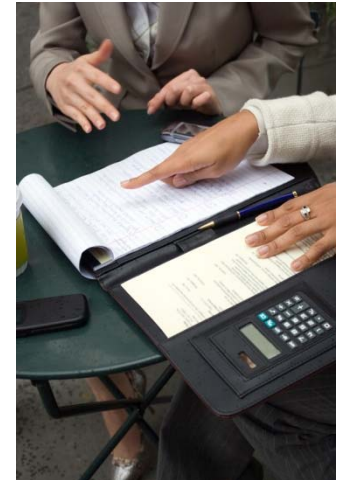## 11. Draw Conclusions

- **Technical workability & reliability**

- **Resource requirements**

- **Environmental impact**

- **Economic viability**

- **Etc.**

12. Plan and Execute Actions

- **The power of strategic intent**

- Balance planning and actions

- **Short-term success vs. long-term goals**

- Effective task forces

- **Etc.**

13. Communicate Outcomes

- **Provide decision support**

- Support system planning

- **Facilitate system management**

- Enable system operation, monitoring, and control

- **Etc.**
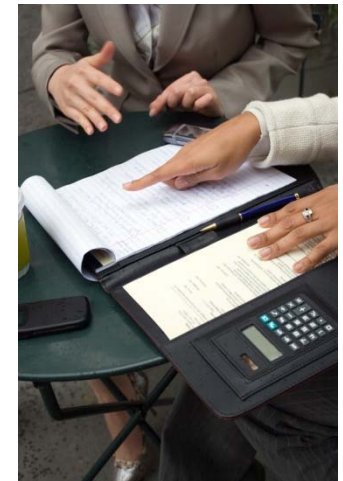
IV – 3. Systems Analysis Steps (15)

14.   Continuous Monitoring and Improvement

❑ **Identify metrics for performance measurement**
❑ Establish feed-back loops for "calculated" changes
❑ **Understand the effect of changes**
❑ **Etc.**

Contents

V. Systems Leadership
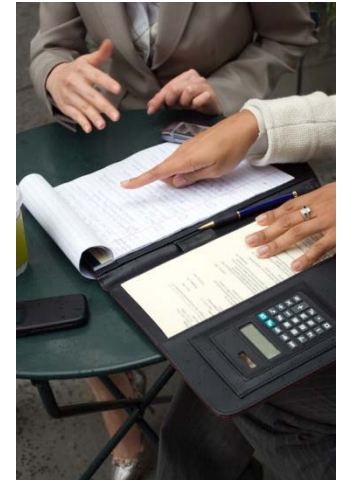
"Systems methodology and leadership ability are a powerful combination of skill sets for leaders."

V – 1.   Feedback and Feedforward Change Loop

V – 2.   Formulate Decision Support

V – 3.   Strategic Framing

V – 4.   Concurrent Analysis

V – 5.   Make Decisions

V – 6.   Facilitate Simultaneous Planning and Implementation

V – 7.   Balance Analysis and Actions

V – 8.   Promote Graceful Effectiveness

V – 9.   Build Knowledge and Wisdom

V – 10. Empower with Knowledge and Wisdom (kW)

V – 1.   Feedback and Feedforward Change Loop

SysLead

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B

External Influencing Factors

1
Vision
Issues
Problems

3
Change Leaders

5
Change Organizations

2
Expectations
Indicators of Success

A

4
Change Strategies

7
Predictive Model

6
Stakeholders Customers

8
Measure of Success

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❑ **Define the scope of the problem**

❑ Formulate required analyses and/or solutions

❑ **Connect the problem at hand to bigger pictures (i.e. the global impact of local solutions)**

❑ Determine information needs

❑ **Identify sources of information and methods for information gathering**

❑ Ask good questions

❑ **Follow "science based" methodologies in data/information analysis**

❑ Communicate the proper use of the outcome of analysis

❑ **Be mindful of the "power of the first draft"**

❑ **Develop a statement containing a strategic foundation:**

- **Purpose (Vision and Mission)**

What do you aspire to be? What do you do best for whom?

- **Core Values (Principles)**

What do you stand for? What are fundamentally and deeply held?

- **Overarching Goal (Intentions)**

What are the long-term (qualitative) accomplishments that you are committed to achieve?

❑ **As well as strategic actions in the forms of:**

- <u>Indicators of Success</u>

What are the specific descriptions that make the overarching goals tangible?

- **<u>Experiments (also known as Action Plans)</u>**

What tactics will you take in order to achieve the overarching goal.

A tactic includes a specific action, the person who is responsible for the action, and the time to complete.

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V – 3.   Strategic Framing (3)

❑ **Related Issues:**

- **Players (parties that you are interacting with)**

- **Context (relationships between the players and you)**

- **Domains (strategic focus areas)**

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Strategic visioning and planning procedures (1):

❑ **Prepare for a brainstorming session**
- **Determine when and where**
- Select participants (facilitator, support staff, integration leaders, discussion leaders, discussants)
- **Perform SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis**
- Distribute the result of SWOT analysis
- **Formulate and distribute agenda**
- Arrange logistics (meeting rooms, audio/visual equipment, name tags, refreshments, lunches, etc.)

Strategic visioning and planning procedures (2):

❑ **Conduct brainstorming sessions**

❑ Summarize information gathered during the brainstorming session

❑ **Prepare a draft report**

❑ Review and revise the draft report with the organization administrative committee

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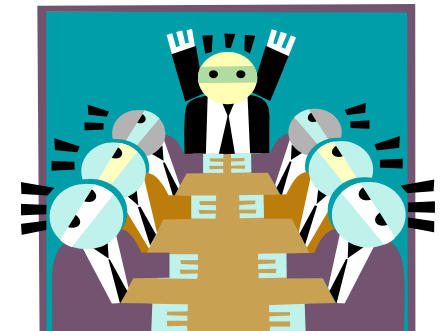**Strategic visioning and planning procedures (3):**

❑ Distribute the draft report to the members of the organization and request input

❑ **Finalize the draft report into a strategic intent/plan by considering the input**

❑ Prepare and distribute various versions of the strategic intent/plan

❑ **Implement the strategic intent/plan**

❑ *Monitor, evaluate, and modify the strategic intent*

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V – 4.   Concurrent Analysis (1)

❏ **Integrate information, knowledge, and wisdom related to the problem from various sources in a real-time fashion**

❏ Perform concurrent analysis (including simulation and optimization)

❏ **Evaluate systems level solutions**

❏ Deliver the results of analysis based on the most current situation, also in a real-time fashion

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V – 4.   Concurrent Analysis (2)

Concurrent Analysis Platform (CAP)

for Systematic Problem Solving

Problem Definition
(Criticality)

Mission Scenarios
(External Factors)

**Problem and solution
Space: Actions**

Problem Abstraction

**Decision and
Implementation**

**Information Space:
Analyses**

Action Plan

Candidate Solutions
(Implementation
Readiness Level)

V – 5.   Make Decisions (1)

Concurrent Analysis Platform for Information, Knowledge, and Wisdom empowered Problem Solving

Informatics ↔ **Decision Support System** ↔ **Modeling and Analysis**

Informatics	Decision Support System	Modeling and Analysis
• Concept diagrams of the systems under study • Database design • Standard data processing tools	• Web-based decision support system • Integration with models, databases, and user interfaces	• Simulation and optimization model • Agent-based model • Model application and analysis

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❑ **Decision making is one of the most important responsibilities of a leader.**

❑ Perceived or real inability of a leader to make decisions is a major cause of frustration for his/her team members.

❑ **High quality decision support is invaluable in decision making.**

❑ A sound "philosophical" backing help maintain the consistency and transparency of decisions.

❑ **The processes used to derive decisions are often times as important (if not more than) as the decisions themselves.**

V – 5.   Make Decisions (3)

❑ **Negotiation, conflict resolution, crucial conversation, and consensus building skills are frequently needed.**

❑ Efforts should be made to avoid any local optimum that causes system level problems and/or unexpected consequences.

❑ **Leaders should not be satisfied with only workable solutions and should strive for "optimum" solutions.**

❑ Ideally, any decision should not prevent a leader from making good decisions in the future.

V – 6. Facilitate Simultaneous Planning and Implementation

❑ **This process demonstrates the leader's strong interest in implementing the outcome of planning.**

❑ Short-term wins towards long-term goals keep team members motivated.

❑ **Implementation could provide feedback to planning.**

❑ Task forces with volunteered membership and elected leaders are frequently used for identifying implementation activities, responsible parties, and timelines.

❑ **Properly executed, this process helps build a "culture of experimentation" for the organization.**

V – 7.   Balance Analysis and Actions

❑ **Action without analysis is not wise.**

❑ Analysis without action appears to be indecisive.

❑ **Properly set scope, purpose, and depth help balance the analysis and action.**

❑ Frequently, analyses do not have to reach "perfection" to be useful.

❑ **Many analyses require reasoning with uncertain and incomplete information. Leaders are expected to exercise good judgments in deciding the corresponding courses of actions.**

❑ Outcomes of actions are valuable in refining or enhancing future analyses.

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❑ **There are usually many ways to get things done and goals accomplished.**

❑ Collegial and cooperating environments promote system wide effectiveness.

❑ **Every member of an organization deserves to be in a productive and pleasant environment at his/her work place.**

❑ The "being part of a solution" mentality is worth cultivating within an organization.

❑ **System level optimum (as opposed to local optimum) is easier to achieve when things are done with graceful effectiveness.**

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V – 9.   Build Knowledge and Wisdom

❑ A learning organization is very good at systematically capturing, sharing, and utilizing knowledge and wisdom from the information gathered, analyses performed, creativity generated, success achieved, and lessons learned.

❑ **Success breeds success; especially for organizations that are effective in building their knowledge and wisdom.**

❑ Building knowledge and wisdom is a continuous process.

V – 10. Empower with Knowledge and Wisdom (kW)

❑ **Leadership intelligence relies heavily on information, knowledge and wisdom.**

❑ Sharing of accumulated knowledge and wisdom should be strongly encouraged.

❑ **Organizational knowledge and wisdom enhance the organization's sustainability and competiveness.**

❑ **Sustainability is "continue to do well."**

❑ Competitiveness is "position to win."

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Thank You!

**2011 ASABE
James R. and Karen A. Gilley
Academic Leadership Award**

*"The courage to soar....
The conviction to prepare others for flight"*

kcting@illinois.edu

*Empower with knowledge and wisdom for lif_e_*