Outline

• The process of evaluating the client’s needs

• Defining a Decision Support System (DSS)

• Assessing the client’s culture

• Strategies for optimizing end-user buy-in

• Case example - MDSS
Adopting an MDSS

- The MDSS is a sophisticated technology that utilizes imperfect input data and rules of practice.

- Rapid adoption by end users is not likely for multiple reasons.

- The adoption process can be improved by ensuring that the end users understand the system capabilities and limitations and by taking steps to improve user buy-in.
• It is imperative that a relationship of trust be developed with the end-user (customer)
  – No B.S. sales pitches

• Patiently listening to their needs and issues is a critical first step
  – Learn about their decision processes
  – Understand their environment, constraints, etc.

• You need to understand their world in their terms
What is a decision support system?

a) An automated tool that makes decisions?
b) A semi-automated tool?
c) A handbook of recommended practices?
d) Local newspaper or news program?
e) Student assistant?

Answer: All the above!
Decision Support Systems

• Need to assess what MDSS products would be most useful:
  – Site specific weather forecasts?
  – Site specific road condition forecasts?
  – Integrated display of general weather conditions?
  – Treatment recommendations?

• It may be that only certain MDSS capabilities are required or supportable.
Assessing the Culture

Before one can consider implementing an MDSS, some important questions need to be asked to assess the customer’s culture.
First Question:

1) **What operational issues are you trying to address with an MDSS?**
   - improved efficiencies?
   - Improved safety?
   - more consistent operation?
   - improved training?

You need to understand the users’ decision process. Probing questions must be asked several different ways before a potential answer or solution may emerge.
2) What is the culture of the client’s organization?

- Would a DSS be seen as threatening?
- Does automation pose problems?
- Are general support tools viewed positively?
3) **What actual tasks and/or decisions could be supported?**

- Routine or mundane tasks (e.g., road data analysis)
- High-level analytical tasks (e.g., information assimilation)
- Critical decisions (e.g., impacting lives or costs such as identifying treatment plans)
4) **What job categories would benefit most?**

- Operators
- Supervisors
- Middle managers
- Senior managers
- Executives

Knowing the job category(s) that will utilize the decision support system will allow intelligent judgments to be made about the design and human factors issues.
5) What technical capabilities exist?
   - Is there an in-house framework to support the new technology?
   
   • Network system (external & internal)
   • Desktop computers for end-users
   • Remote field communications (PDAs)
   • Database of pertinent operations data
Assessing the Culture

6) What are the potential benefits?
   - Safety
   - Property Protection
   - Productivity
   - Risk Reduction
Assessing the Culture

7) **Who will champion the technology?**
   - Management vs. staff
   - Technology push (by management) or pull (from staff)?
8) What are the customers expectations?

This is very important!

It is critical that users expectations are at the appropriate level when new technologies (e.g., MDSS) are introduced. It is always better to error on the side of caution and let the users be creative on how they utilize new capabilities.
• There are no off-the-shelf plug and play DSSs that can fully address the needs of all end-users. There are no “one-size-fits-all” solutions!

• A “bottoms-up” rather than a “tops-down” approach should be used for DSS system development and tailoring.

• Stakeholders need to determine the level of sophistication that is required for their specific DSS application.
MDSS Challenges

Weather diagnosis and prediction is an imperfect science
- Each DOT has different needs for an MDSS
- There is a lot of diversity between DOTs
  - Operational procedures
  - Rules of practice
  - Equipment
  - Legal constraints
  - Funding constraints
  - Levels of experience

Realization

DOTs must understand that it may take several years to optimize and configure a DSS tailored for their operations. Once established, complex systems such as an MDSS will require significant maintenance and support to ensure all the information in the system is current.