

# : *What are issues in design and development of BI and DSS?*

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Building data-driven business intelligence decision support, model-driven decision support for forecasting, inventory management, and many other systems that support a human decision maker or team are complex, time consuming tasks. The design and development issues continue to evolve as new technologies are developed and deployed. Eight specific issues/questions are especially important to assess and evaluate prior to building decision support including the design approach, sponsor wants, project requirements, appropriate technologies, relevant data availability, assumptions, potential user knowledge and expertise, and adopting design thinking.

## 1. What approach should be used for BI and DSS design and development"

There is no single agreed upon approach or methodology to design the best decision support system. There are three main approaches to system design and development: 1) the traditional system development life cycle (SDLC) approach; 2) rapid prototyping aka agile and 3) end-user approach (cf., Power, 2002). Each approach has pros and cons so it is difficult to recommend the "best one" for BI and DSS. Given the development of easy to customize tools, agile, rapid prototyping is often the best.

## 2. What does a DSS project sponsor want and what do developers think the sponsor wants?

Leaders and decision makers have only a general idea in most cases of the BI and DSS possibilities and the effort required to design and deploy a novel decision support capability. IS/T managers and developers may realize how complex business decision making is in the current disrupted business environment, but the understanding of how to improve and support decision making may be biased or incomplete.

## 3. What are the project requirements?

The more unstructured the decision the less knowledge of requirements. The ambiguity about requirements should lead to using an agile development approach. Establishing requirements is easier when problems are routine and structured. Managers can explain the process that has been used, developers can document the current process and then work with participants to brainstorm

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problems and possible improvements.

### 4. What technology(s) should be used to create a new decision support capability?

Information and decision support technologies are changing. Is the Cloud the way to deploy a new system? Should a mobile app be developed? Technology selection is important, but not all decision support must be built using new technologies and unfamiliar software. Vendors will promote new products to managers and IT staff, but developers must carefully evaluate possibilities. Technology selection is a very important step and managers should be informed about the trade-offs associated with alternatives.

### 5. How difficult is it to capture and analyze relevant data?

Data, model, and knowledge-driven DSS incorporate facts and past data and observations into the respective systems. DSS may quantify some intangible decision relevant data and incorporate this data into analyses and models, but decision makers must still assess the accuracy and relevance of the data and analyses provided. Soft, subjective data must be incorporated when relevant and deemed appropriate. It is important to remember that some data is difficult to capture and record, and some sentiments, values, and subjective data cannot be captured at all.

### 6. What assumptions do decision makers and developers make that influence use of a DSS and any decisions that result?

Decision makers may not recognize all assumptions used in building a decision support system and that then influence analysis of a specific decision problem. Making decisions without considering assumptions implicit in using a tool is a mistake. Decision makers must realize that computerized DSS are support tools and are not infallible. Decision makers must **not** assume a decision support result is more than a recommendation.

### 7. How much information technology knowledge and expertise do potential users of a new decision support capability have?

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Although computing user interfaces for decision support tools are much easier to learn, understand, and use, some decision makers may be reluctant to adopt and use a new tool. Potential users with greater IT knowledge and expertise often find it easier to learn new systems than those who are infrequent users and hence lack knowledge and expertise. Build a decision support capability that is targeted to potential users. Match the design to user needs, abilities, and skills.

8. Is design thinking the key to building successful decision support?

According to Tim Brown, in his book **Change by Design**, "A purely technocentric view of innovation is less sustainable now than ever, and a management philosophy based only on selecting from existing strategies is likely to be overwhelmed by new developments at home or abroad. What we need are new choices - new products that balance the needs of individuals and of society as a whole." Decision support presents numerous challenges and we do need new decision support choices that help managers make better decisions. Perhaps decision support designers should follow a more solution-based approach to solving problems with more Artificial Intelligence (AI), perhaps decision process support software, perhaps support that uses subjective and qualitative data from social media and experts, or perhaps a totally revolutionary view of decision support. The decision maker is key to successful decision support. Design thinking means understanding the intended user, a specific decision maker or category of decision makers, in a specific situation, prior to building and creating a system. Solve any problems that limit or restrain effective decision making.

Decision support systems are interactive computer-based systems and subsystems that help people use computer communications, data, documents, knowledge, and models to solve problems and make decisions. Building new capabilities using new technologies raises some familiar questions, but the alternatives may have changed or the possibilities have expanded. Revisiting past design and development choices may show that factors from the past that constrained our choices no longer are a barrier. Decision support solutions considered and rejected may now be feasible.

### References

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