

: *What is an appropriate DSS deployment strategy?*

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Decision support system (DSS) development often follows a sequence of awareness, plan, analysis, design, build, deploy, and operate. But DSS prototyping or agile development overlaps design, build, deploy and operate steps. Realistically, a specific DSS at some point should move from build to full-scale deployment or be abandoned. Therefore, developers must choose an appropriate company-specific, deployment strategy for a decision support application. The type of DSS, its scope, the company culture, and the magnitude of change should influence choice of a deployment strategy. How we "roll out", "go live" or "put in place" a new DSS impacts its use and success. What strategies are available?

In general, DSS deployment should be a top-down, IT directed activity. Some user built, small-scale DSS may be bottom-up deployments, but that is generally undesirable. Types of deployment strategies include 1) direct adoption, 2) parallel running, 3) phased adoption, and 4) pilot introduction. These four generic strategies may be used singly or sometimes in combination. Let's review each strategy:

1) Direct adoption or what some call the "big bang" approach is a complete, full scale deployment of a completed DSS to all intended users. When the scope is large and the DSS is novel and potentially disruptive this may create a "big bang" in the organization!

2) Parallel running deployment is more common with accounting and transaction processing systems than DSS. But today we have legacy DSS that are being replaced. Even without a legacy DSS, decisions get made. Parallel running involves using both the old and the new decision process for a trial period and comparing results. This strategy can reassure managers and provide a fall back if the DSS is flawed or rejected by users.

3) Phased adoption is a strategy of implementing a DSS over a period of time (sequentially) to different parts of an organization in a planned order. Phased may also refer to deploying only part of the functionality of the system in a planned sequence over time. For example, an enterprise-wide DSS may only bring some data online initially or only some web-based reports may be initially available. Phased deployment should include defined milestones.

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4) A pilot deployment involves having a few offices, departments or other organization units "try" or "test" a prototype or the full DSS. The pilot occurs to provide feedback, gain deployment experience and validate the application. Once the pilot has been evaluated as a success, the implementation team would expand the pilot with phased adoption, direct changeover or parallel running. A pilot is generally an appropriate initial deployment strategy for large-scale, enterprise-wide DSS.

The goal of a deployment strategy is making a new DSS available to a prepared group of targeted users to improve their decision making. Marketing, promotion and training activities need to occur prior to and during deployment. Sadly, not every targeted user will be open or receptive to adopting a new DSS. Change consequences and resistance to change need to be anticipated and managed.

What strategy is appropriate for what kind of situation?

Mukherjee and D'Souza (2003) argued phased implementation is most appropriate for a data warehouse. In some cases an enterprise-wide, data-driven DSS might be rolled out first for business analysis and special studies, and in the next phase provide performance monitoring. A more innovative data-driven DSS like that implemented by Hokuiku Coca-Cola Bottling Company (Schwartz, 2005) involved a large-scale pilot test. In the pilot test, 3,500 of the company's 60,000 vending machines were networked and managers used a column management decision support solution based on real-time data. Some observers consider pilot deployment as the first step in phased deployment. The strategies differ in that phased deployment presumes that the DSS will eventually be completely implemented. The presumption with pilot deployment is a need for evaluation and depending upon outcomes, the project may be abandoned.

Communications-driven DSS often need critical mass for success so there is a temptation to use direct adoption, but scalability can be a problem. So in general bringing on user affinity groups in phases is a more conservative deployment strategy for this type of DSS.

Some company cultures are more supportive of using technology to support decision making than others (cf., Power, 2001). For example, according to Tanler a "Competitor Culture will encourage managers to develop better information systems and that will lead to better decisions and better corporate performance". A positive information culture encourages active information use and recognizes that technology can help with a variety of decision tasks and can speed up the clerical side of those tasks. Organizations with a positive information culture can speed up DSS deployment and will be more successful with direct adoption deployment.

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A small scope, model-driven DSS is most likely to be rapidly deployed in a direct adoption approach. For example, the Erie County Emergency Response and Planning Application for plume modeling with an integrated Geographic Information System (GIS) was directly deployed (cf., Tomaszewski, 2005).

When the magnitude of change that is anticipated from an innovative DSS is large, then pilot testing is critical. At the Pennsylvania Department of Labor (Pontz and Power, 2002) a knowledge-driven DSS called EASE was deployed using pilot testing. The Expert Assistance System for Examiners (EASE) was initially deployed in the Scranton Unemployment Compensation Service Center, and then deployed in the Erie, Allentown and Altoona Service Centers prior to state-wide rollout.

The DSS development team must weigh the pros and cons of these four generic strategies and then explicitly choose and tailor a situation specific strategy and plan.

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