NEWS FROM
ACADEMY

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Design Structure Matrix Methods and Applications for Project Management

Many readers of JMPM are already familiar with the design structure matrix *(DSM)*, a compact way to represent a model of a system. Projects contain many systems of interest to a project manager, including the project's result *(e.g., a product or service)*, the process to obtain it *(i.e., the activity network)*, the organization performing the work *(composed of people and teams)*, the tools used *(e.g., interconnected software and information technologies)*, and the project's goals and objectives. Each of these systems can be modeled with a DSM. The first three *(product, process, and organization)* have received the most attention in DSM applications so far, especially process DSM models in project management contexts. For instance, several articles in the initial issues of JMPM used process DSM models.

However, DSM models have not yet crossed the threshold of widespread awareness and use that would prompt their inclusion in the bodies of knowledge of major project management societies such as the Project Management Institute's Guide to the Project Management Body of Knowledge *(PMBOK Guide)*. DSM has also not yet been included in most textbooks on project management. What is needed to get project managers to understand and appreciate the benefits of DSM models?

In developing and applying DSM methods over the past 20 years, I learned long ago that pushing DSM is not the way to go. Tools should not fish for applications. When a job comes along that begs for a better tool, thoughtful practitioners will want to use it—if they know about it. However, when confronted with the problems of rework and risk caused by poor planning and coordination in projects, many project managers do not even realize that a tool like DSM could help. Thus, increasing awareness is part of the challenge, but awareness can only be increased slowly with a push approach, because many methods are competing for project managers' attention.

What could create a pull? One promising approach seems to lie in first raising awareness about the pernicious effects of rework. In an excellent set of articles in 1993, Cooper called undiscovered rework "the single most important source of project cost and schedule crises" *(emphasis in original)*. Rework is a major driver of schedule risk *(Browning 1998)*. Although many project managers quickly resonate with the problem of rework, they may not realize that, to a worthwhile extent, it can be anticipated and managed—with the right tool. Enter DSM—a tool for managing iteration and rework in projects *(e.g., Denker et al. 2001, Browning & Eppinger 2013)*.

It also helps if DSM practitioners, not just academics, help write and tell the DSM stories. For the past 15 years, a community of academics and practitioners—albeit mainly the former—has met at an annual DSM conference *(www.dsm-conference.org)*. Recently this community has spawned an industry-driven special interest group, the DSMiSIG *(http://www.dsmweb.org/en/dsm-community/i-sig.html)*, the goal of which is to increase DSM awareness and appreciation among practitioners. In May and June of 2013, the DSMiSIG sponsored a set of six DSM webinars, all of which were recorded for further distribution *(http://dsmisigwebinars.org/)*. Meanwhile, those of us in the academy can continue to expand the arsenal of DSM techniques and document DSM applications in varied industries and situations, but it helps to get the ideas out to and through practitioners as well.

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