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Assessing Technology Transition Fit

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Purpose of this Presentation

To offer a review of the concepts of Technology Transition Fit.

To solicit feedback and participation in future expansion of this work.



A Little About the Authors

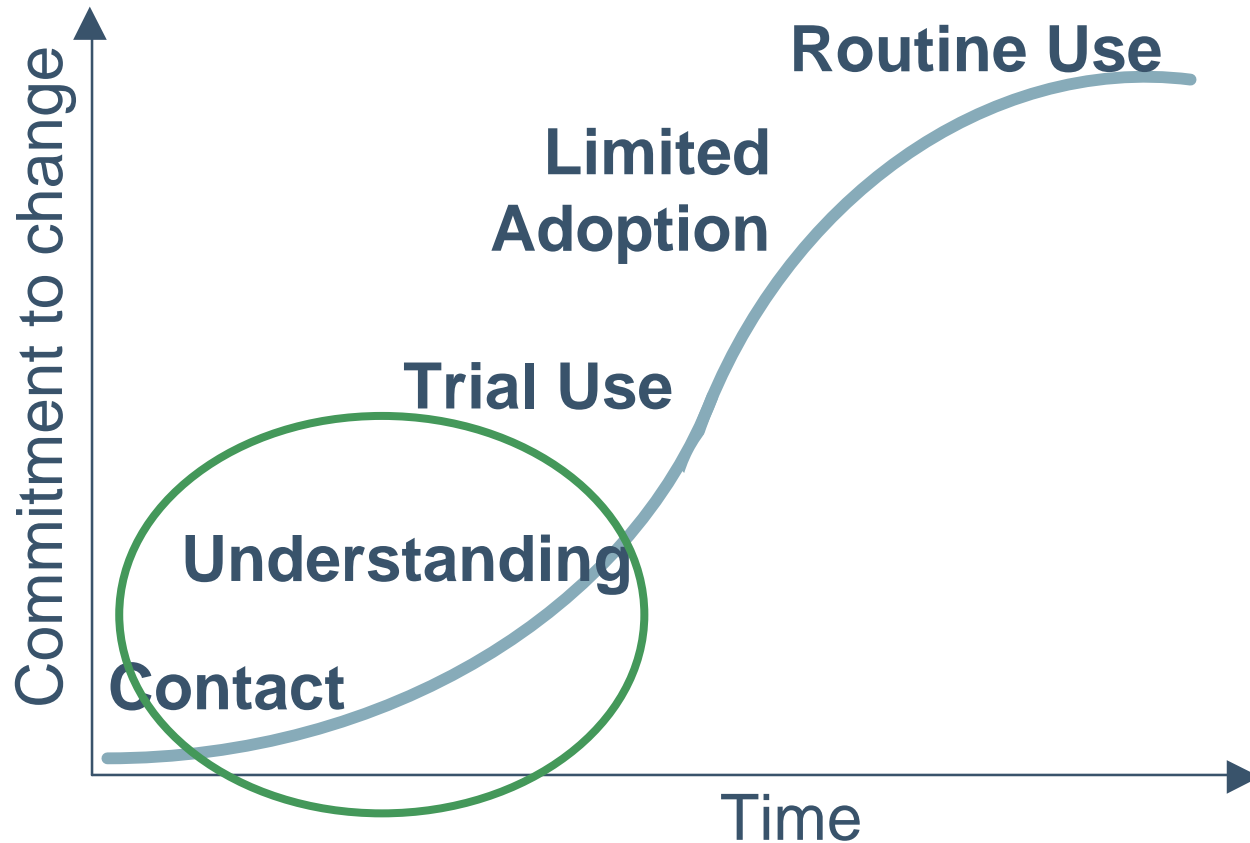
Caroline Graettinger, PhD - Manager of the Software Engineering Institute's (SEI) Technology Transition Practices (TTP) group.

Suzanne Garcia - Senior member of the TTP technical staff, specializing in the development and application of practices for managing transition readiness and fit.

The TTP mission is to develop and apply transition practices that lead to routine use of better practices for the engineering or acquisition of software-intensive systems.



Our Approach Today



* Adapted from Daryl R. Conner and Robert W. Patterson. "Building Commitment to Organizational Change," *Training and Development Journal* (April 1983):18-30.

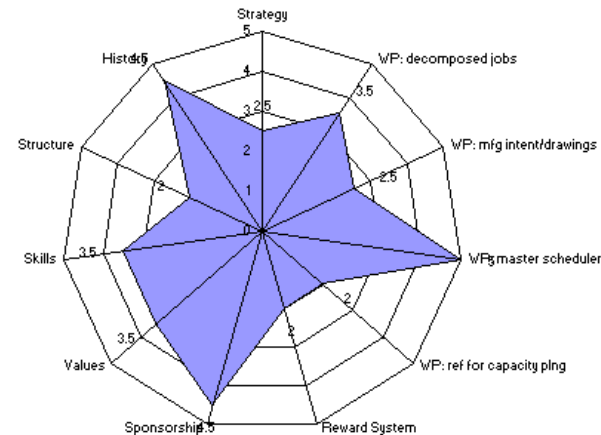


Bottom Line

Transition Fit is a management technique for use within a technology selection/implementation life cycle.

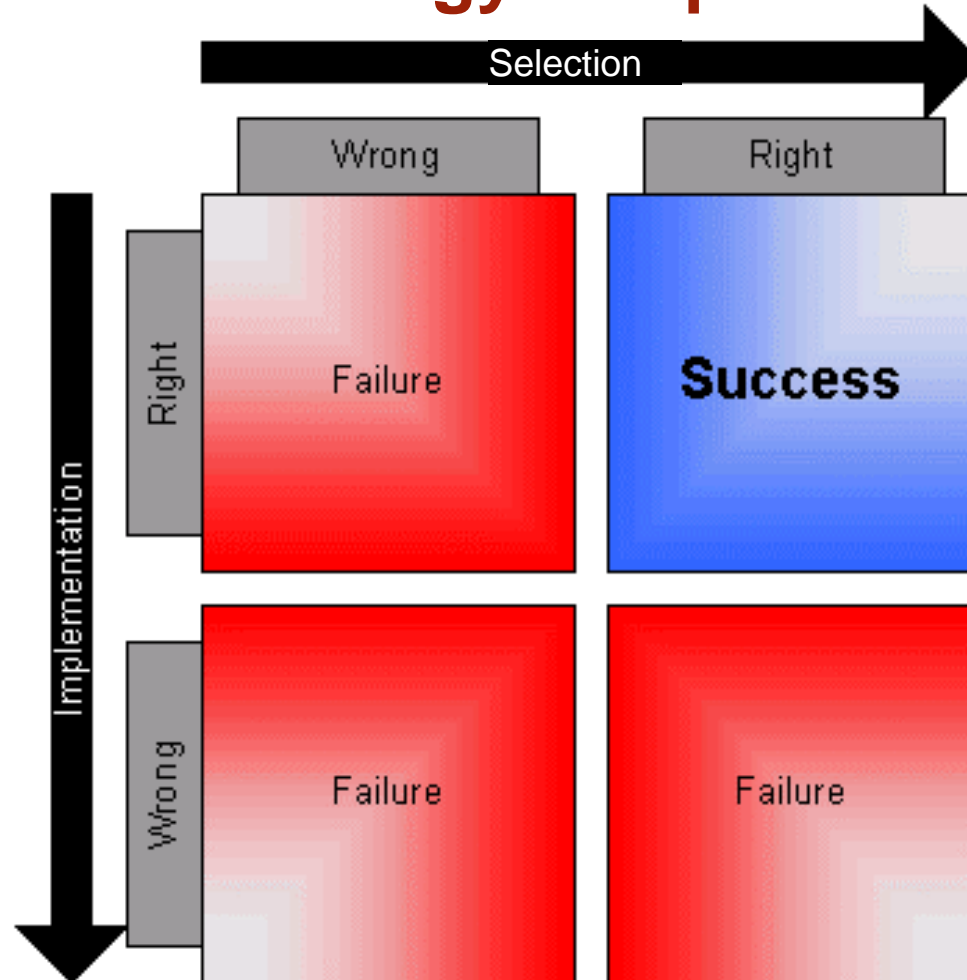
It is:

- multidimensional
- subjective
- a work in progress



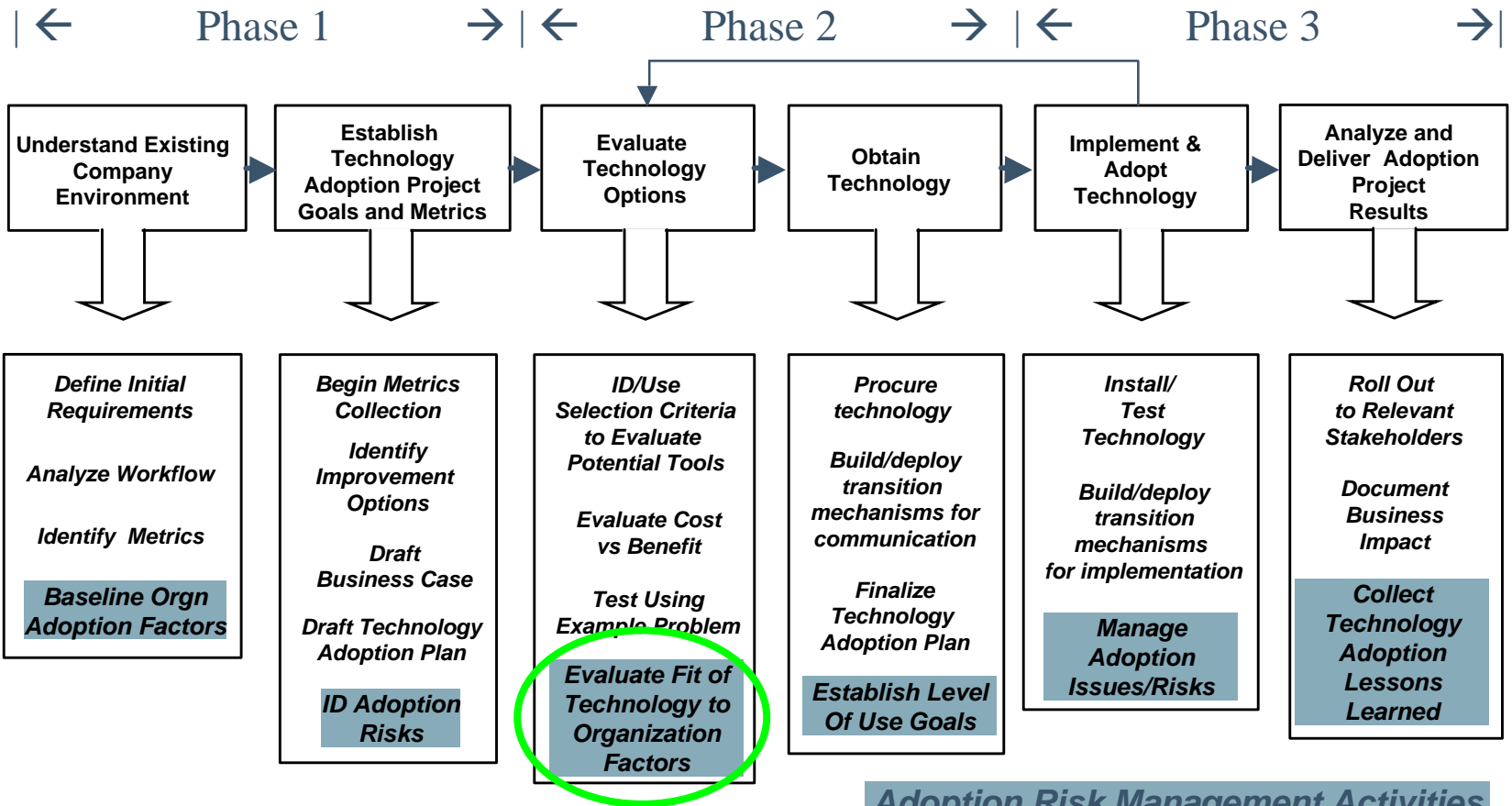


75% of Technology Adoptions Fail





A Notional Selection/Implementation Life Cycle



Adoption Risk Management Activities



The Challenge – Installation Does Not Equal Adoption! ₁

Technology **installation** is when

- the technology gets physically installed into the work environment
- a few people (usually the implementation team) get formal training in how the system works, which may or may not be related to how they want to use the system in their environment
- the technology may or may not achieve its usage goals (it usually doesn't)



The Challenge – Installation Does Not Equal Adoption! ₂

Technology **adoption** is when the people who need to use the new technology

- know the technology is there and what status it is in (installed, tailored for use, etc.)
- have appropriate access to it
- are trained in how they need to use it
- get support for using it
- actually **DO** use it to support their work tasks!



What is Transition Fit?

SEI is developing Transition Fit to help manage risk in technology selection and implementation.

It helps by:

- assisting in selecting among candidate technologies or products
- assisting in developing mitigation strategies for implementation risk

It is currently comprised of 8 key dimensions (factors).



The Dimensions of Fit

- business strategy
- work practices
- reward system
- sponsorship
- values
- skills
- structure
- history (with technology adoption success/failure)



Things to Think About for *Strategy Fit*

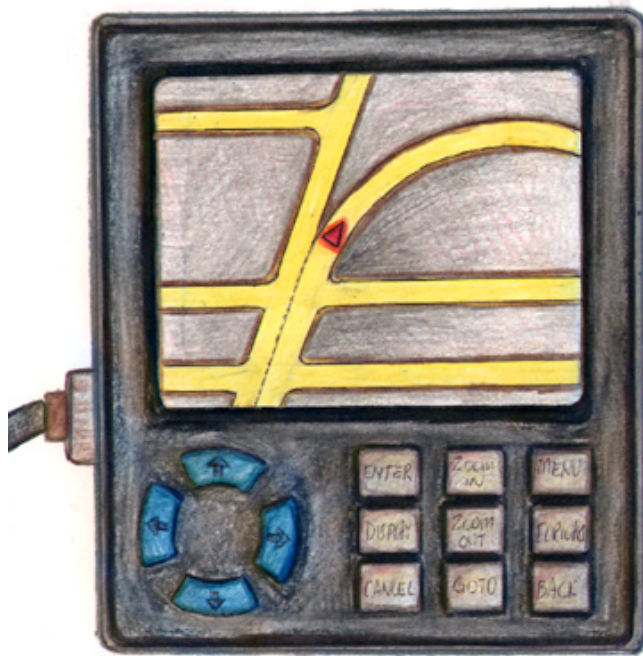
Is the technology intended to provide support to operations (producing products/services) or sales/marketing (finding more/better markets for our products/services)?

Where is the adopting organization's strategy focused? Improving operations or generating more customers for existing products?

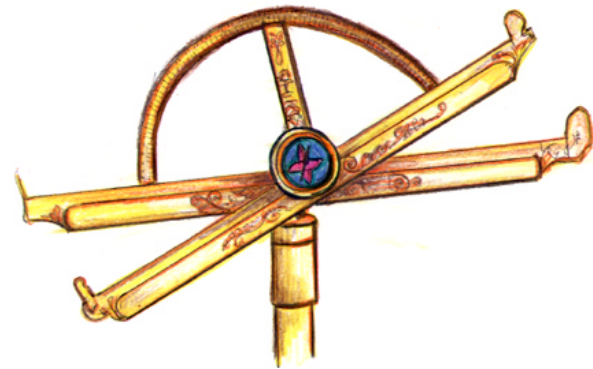
What other strategies is the organization engaged in that may affect fit with the implied strategy for the technology?



Things to Think About for *Work Practices Fit*₁



OR





Things to Think About for *Work Practices Fit* ₂

Both these technologies can be used to understand “where you are” but

- do they use the same practices, methods, techniques, inputs to get you that information?
- do they both make the same assumptions about the data you have available to you?

Every technology has implied processes, procedures, or work practices that it “assumes” and often depends on for its success.



Example: SEI Analysis of Selected MES/Scheduling Work Practice Requirements/Assumptions

- Organized, decomposed job description throughout the jobs
- Manufacturing intent is communicated through engineering drawings
- Master scheduler is an implied role for scheduling system
- Scheduling system is primary reference point for capacity planning

There are probably others; these are ones that are easily observed without having vendor-specific knowledge of the technology.



Things to Think About for *Skills Fit* ₁

Technical Skills

Do all workers in all roles have the technical skills they need to do what they need to do and the confidence to do it?



Things to Think About for *Skills Fit 2*

Do **managerial skills** include

- scoping the work
- resourcing the project
- planning the work
- communicating the plan and schedule
- tracking performance
- dealing with issues before they become problems



Things to Think About for *Skills Fit* ₃

Do **people management** skills include ability to recognize the difference between

- a skill problem
- a behavior problem
- an understanding problem
- a motivation problem

and the wisdom to know how to deal with each?



Things to Think About for *Reward System Fit*

- Are the current performance measures used consistent with the new technology's requirements?
- Does the current reward system support the change (promotions and bonuses)?
- Does the current system reward the new way (even if the results are NOT perfect)?
- Does the current system penalize the old way (even if the results ARE perfect)?



Things to Think About for *Sponsorship Fit*

- Are leaders willing to visibly change the way they conduct their business to support the change?
- Can/will leaders behave in a way that is consistent with and supports the new technology?
- Will leaders focus a significant amount of their time on activities that directly support the change?
- Are scarce resources allocated in ways that support the change?
- When problems occur, are resources pulled from projects doing it the old way and not pulled from those doing it the new way?
- Is the new reward system established and honored without exception?



Things to Think About for *Values Fit*

- Is data used to make decisions rather than politics?
- Is it okay to talk to people outside your part of the organization to accomplish intergroup coordination?
- Are staff rewarded for highlighting problems “in process” rather than waiting until after the part has moved on?



Things to Think About for *Structure Fit*

- Are hand-offs between people/organizational units clear ?
- Are there clear lines of authority and responsibility to deal with those aspects of the new way that may be the failure points in the use of the new technology?



History—Why Look at History as a Separate Factor?

Without some change in the organizational climate to improve the fit with the technology (or a change in the technology to improve its fit with the current climate), prior success/failure history in implementing a new technology is **one of the best predictors of future performance.**



Things to Think About for *History Fit*₁

In relation to recent technology adoptions...

- are the people who were intended to use the technology actually using it today?
- were the changes in work practices that were needed to make the technology successful understood ahead of the adoption? During? After? Did the work practice changes actually take place?
- did leadership support (or its lack) make it easier or harder to successfully adopt the technology?



Things to Think About for *History Fit* ₂

In relation to recent technology adoptions...

- was authority/responsibility changed to support the adoption?
- were rewards and incentives changed to support the new way and sanction the old way?
- was training/skill development in the new technology effective and timely?



Example: Technology Implications Table for Manufacturing Execution System (MES) 1

Fit Dimension	Dynamic Scheduling Implication
Strategy	<ul style="list-style-type: none">• improving operations is a priority
Work Practices	(see separate list in work practices section)
Reward system	<ul style="list-style-type: none">• rewards participation in overall efficiency over individual dept efficiency
Sponsorship	<ul style="list-style-type: none">• strong, consistent support for "new way"• penalties for avoiding new system consistently applied

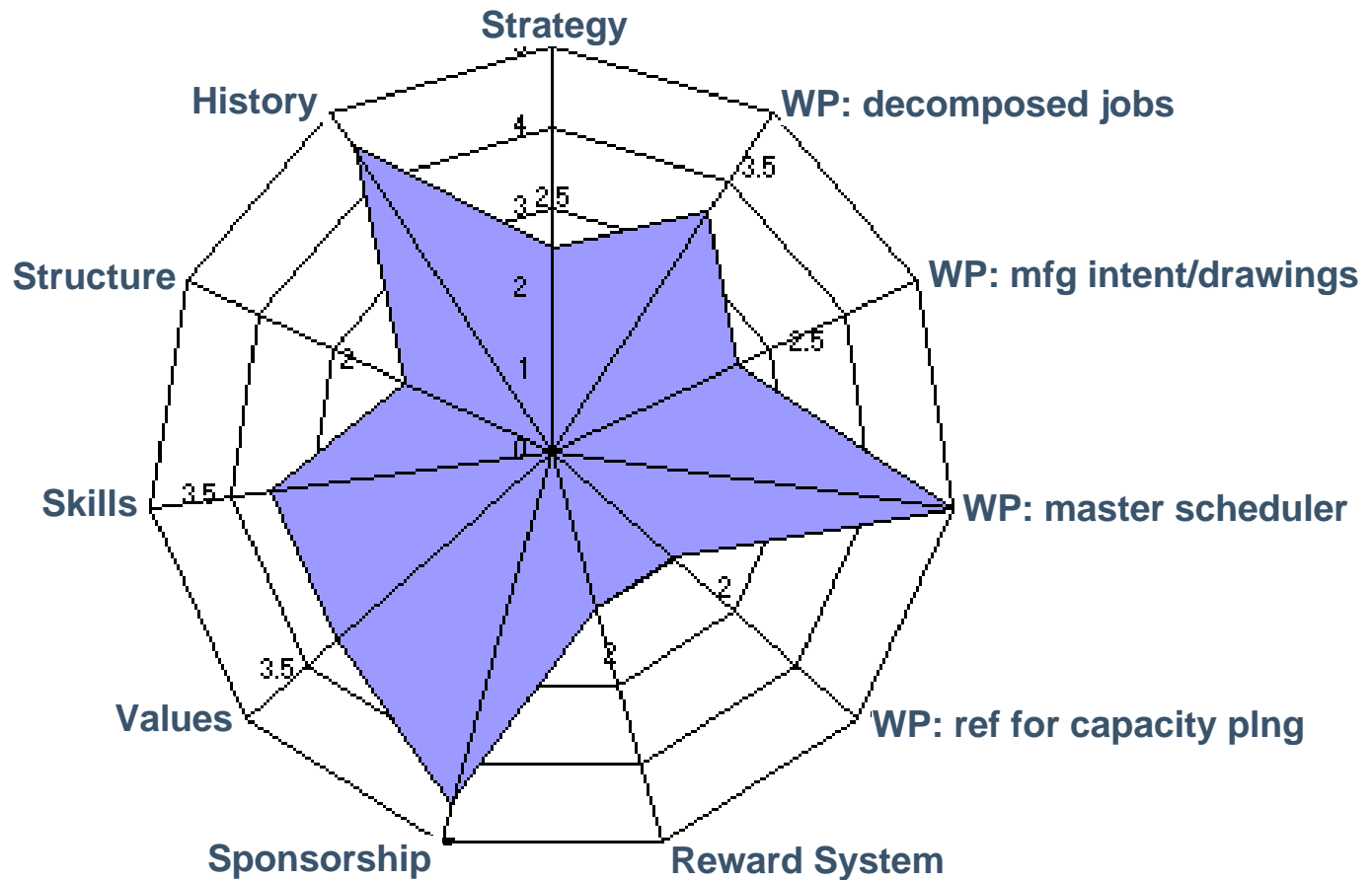


Example: Technology Implications Table for MES 2

Fit Dimension	Dynamic Scheduling Implication
Values	<ul style="list-style-type: none">• shared data used for team decision making• metrics used to improve, not punish
Skills	<ul style="list-style-type: none">• skills to operate the system• project planning/mgmt skills
Structure	<ul style="list-style-type: none">• clear roles/ responsibilities
History	<ul style="list-style-type: none">• helpful if complex technologies successfully adopted with this mgmt team

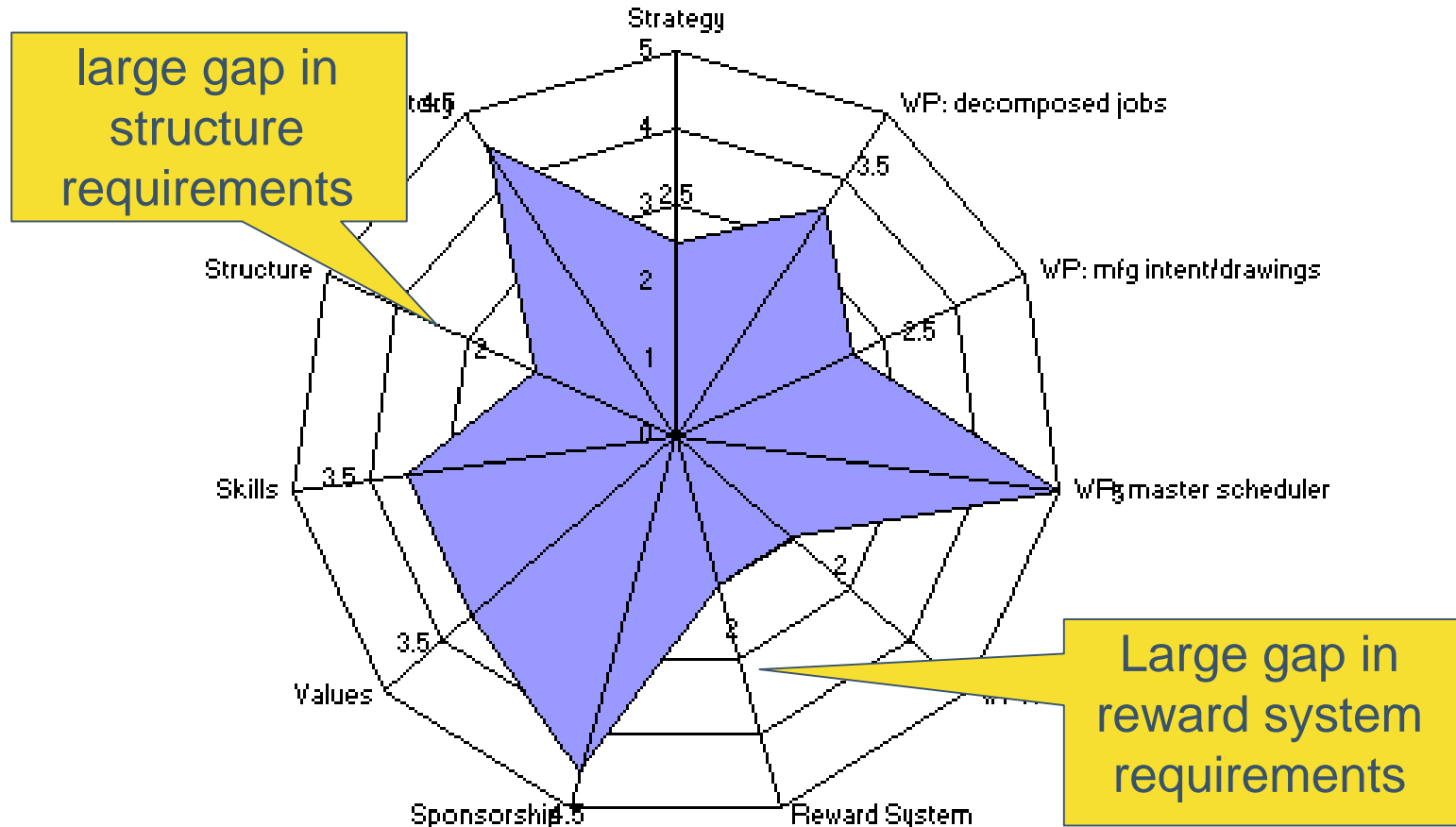


Example Profile for MES





Example Profile for MES





Caution

The diagram provides a very *rough* picture of potential risk areas

It does not normalize the data in terms of weighting/relative importance of the risk areas

It does not provide judgment as to what an objectively “good” outcome would be



What Do You Do Next? ₁

Just because there are risks to your technology selection/implementation does **not** mean that you should abandon the project

Every project has risks—what differentiates successful adoptions from unsuccessful ones is:

- how **realistic** you are in identifying risks
- how closely you **monitor** risks to see if they surface
- how well the implementation **planning** takes account of likely risks



What Do You Do Next? 2

This is a good time to:

- generate a starter set of risks
- discuss your risks with potential vendors (probably just the finalists). It's a great way to find out
 - how well they understand the non-technical risks associated with their customers' implementation
 - how much support you are likely to get from them in dealing with some of the risks that are bound to become problems



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Feedback and Participation Please

Community feedback and participation welcome
(send email to cpg@sei.cmu.edu or smg@sei.cmu.edu)