

PROFOUND PROJECT KNOWLEDGE

Bringing together the *PMI® Talent Triangle*, changes in the Sixth Edition of the *PMBOK® Guide*, and Edward Deming's seminal System of Profound Knowledge, this presentation will highlight the importance of Leadership, Strategic Project Knowledge, and Team Development using multiple case studies in large, medium, and small projects.

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Presentation Outline

PMI® Talent Triangle and New Adjustments – Why?

Principles of Profound Knowledge (Deming)

1. Appreciation for a System
2. Knowledge about Variation
3. Theory of Knowledge
 - Knowledge about Individuals
 - Knowledge about Teams
 - Knowledge about Programs
4. Knowledge of Psychology
5. *Added: Knowledge of Leadership*

Examples of Knowledge Capture

Summary: Reflections on Profound Knowledge

PMI® Talent Triangle

“The description of the areas of **competence**, in which a project manager can act safely, in order to **optimally** fulfill his role.”

“ ‘Strategic **knowledge** and industry **knowledge**’, which improve the project implementation and promote better corporate results.”

PM as Business Expert →

← **“Methodical project management **knowledge**.”**

PM as Thinker and Integrator

“Ability to lead and develop a team and to show a **situationally appropriate behavior** in dealing with the various stakeholders.”

PM as Leader

Why did PMI make the following changes to the *PMOBK® Guide* 6th Edition?

- Added: Manage Project Knowledge (Executing | Integration Mgmt)
- Added: Control Resources (Monitoring and Controlling | Resource Mgmt)
- Added: Implement Risk Responses (Executing | Risk Mgmt)
- Changed: Control Stakeholder Expectations > Manage Stakeholder Engagement
- Added: *Agile Practice Guide*
- Increased?: *Common tools grouped: Data gathering, analysis, representation, etc. (ITTOs 618 > 722)*

Sources:

- PMI’s Pulse of the Profession In-depth Report: *Navigating Complexity*. (Effective 1 December 2015.)
- Markus Klein, “The Talent Triangle – PMI has Changed the Re-certification Modalities, www.ProjectManagement.com/blog-post, Posted 15 Dec 2015.

14 Key Principles for Management

1. **Create constancy of purpose toward improvement** of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. **Adopt the new philosophy.** We are in a new economic age...must awaken to the challenge...learn responsibilities...take on **leadership** for change.
3. **Cease dependence on inspection** to achieve quality.
4. **End the practice of awarding business on the basis of price tag.** Instead, minimize total cost. ...relationship(s) of **loyalty** and **trust**.
5. **Improve constantly and forever the system** of production and service... .
6. **Institute training on the job.**
7. **Institute leadership.** The aim of supervision ... to help people and machines and gadgets to do a better job. Supervision...in need of overhaul... .

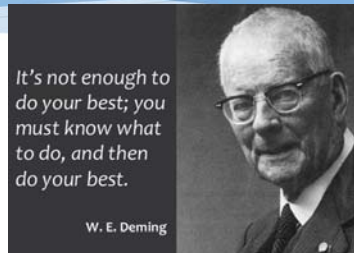
William J. Latzko, David M. Saunders, *Four Days with Dr. Deming: A Strategy for Modern Methods of Management*, 1st Ed., Prentice Hall, February 1995.

14 Key Principles for Management

8. **Drive out fear**, so that everyone may work effectively for the company.
9. **Break down barriers between departments**. People...must work as a team, to foresee problems... .
10. **Eliminate slogans, exhortations, and targets for the work force**...only create(s) adversarial relationships...the bulk of the causes of low quality/productivity belong to the system... .
 - a. Eliminate work standards (quotas) on the factory floor. **Substitute leadership**.
 - b. Eliminate management by objective. Eliminate management by numbers, numerical goals. **Substitute leadership**.
11. **Remove barriers that rob the hourly worker of his right to pride of workmanship**.
12. **Remove barriers that rob people** in management and in engineering of their **right to pride of workmanship**.
13. Institute a **vigorous** program of **education and self-improvement**.
14. Put everybody in the company to work to accomplish the transformation. **The transformation is everybody's job**.

Profound Knowledge

System of Profound Knowledge® (SoPK) is the culmination of W. Edwards Deming's lifelong work.



1. **Appreciation for a system**
 - Leader should understand the system thoroughly.
 - To fix or alter must realize: the whole is greater than the sum of the parts.
2. **Knowledge about variation**
 - Common cause: Within the system structures (often consistent) that can be predicted.
 - Special cause: Occurs unexpectedly with/without a known change.
3. **Theory of knowledge**
 - How do we know what we know? Are our facts correct?
 - What other ways should we look at things?
4. **Knowledge of psychology**
 - How do we best motivate people? How do we best resolve conflicts?
 - In what ways are people and their behaviors predictable and knowable?

1. Appreciation for a System

Organizations and Projects as Systems

“The goal of **systems theory** is systematically discovering a system's dynamics, constraints, conditions and elucidating **principles** (purpose, measure, methods, tools, etc.) that can be discerned and applied to **systems** at every level of nesting, and in every field for achieving optimized equifinality.” [The principle that in open systems a given end state can be reached by many potential means.]

System Goal

Necessary Conditions

Measures of Success

Undesirable Effects [UDE]

What's happening that we DON'T LIKE with respect to the "benchmarks" of our system?

Current Reality Tree (Focusing Tool)

Root Cause

Sources:

- https://en.wikipedia.org/wiki/Systems_theory
- Adapted from: Dettmer, H. William, "Thinking Processes Workshop," Goal Systems International, 2000.

Case Study: Common Root Causes

Role: *Developer*

1. What Profound Knowledge is gained from this view?
2. What would you do with this insight?
3. What might be the results?

200 Developer personnel assigned to this project do not have the necessary experience.

205 Developer personnel assigned to this project do not have the necessary skill.

210 Developer personnel assigned to this project do not have the necessary training.

215 The developer does not have well defined correct processes for this project.

220 There are no other qualified sources for providing support to developer personnel assigned to the project.

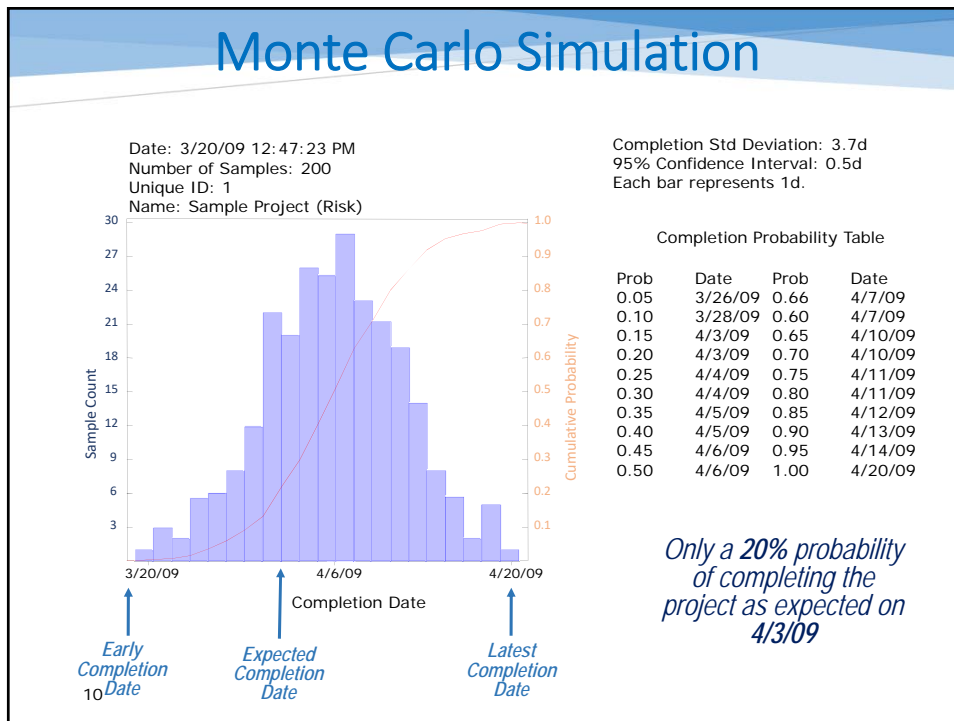
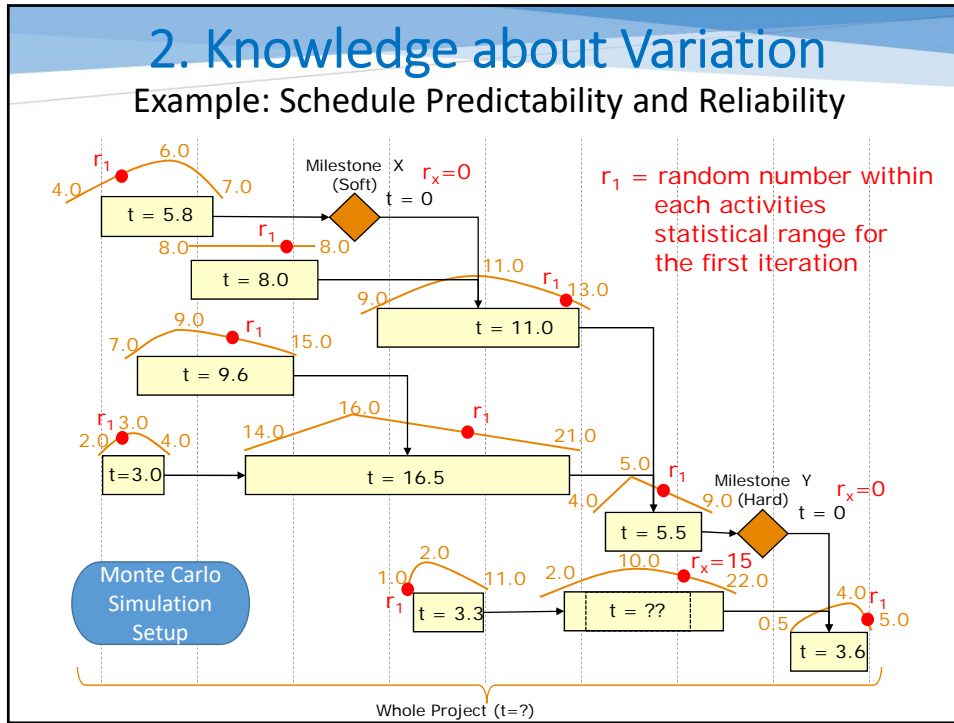
225 Developer personnel are not well prepared to accomplish their assigned project responsibilities.

230 Senior management does not eliminate the root causes.

235 The developer must rely on the capabilities of assigned personnel for project success.

240 The developer exhibits immature software development behavior.

A **C**



Variation by Modeling and Simulation

Modeling

- The technique of a building a model of a real or proposed system so that the **behavior** of the system under specific conditions may be **studied**.

Simulation

- “The technique of **imitating the behavior** of some situation or system (economic, mechanical, etc.) by means of an analogous model, situation, or apparatus, either to **gain information** more conveniently or to train personnel.” (Oxford English Dictionary)

Power of Simulation:

- Accurate (as possible) depiction of **reality** to make more accurate decisions/solutions
- Systems: Important to understand; **complex**, meaningfully represent randomness (reality)
- Advanced Optimization: Test multiple experiments and **behaviors**
- Insightful systems evaluations at real time or compressed **time**
- Animation: Visual model for verification and **training**


Current vs Future | Static vs Dynamic

- **Static Current State VSM**
 - “Boring!”
 - Unable to assess, verify, make adjustments quickly
 - Unable to envision and consider more useful Future State
- **Static Future State VSM**
 - “That’s fine, but...”
 - Unable to check basic validity of ideas
 - Buy-in reduced

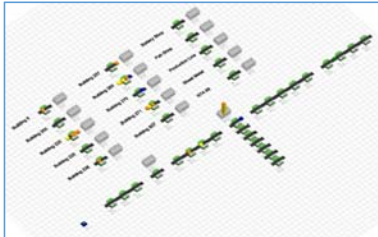
Versus → **Dynamic!**

System Simulation: Profound Knowledge

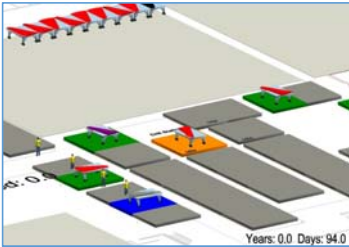
Enterprise Aircraft



Routed Parts (Back shop)

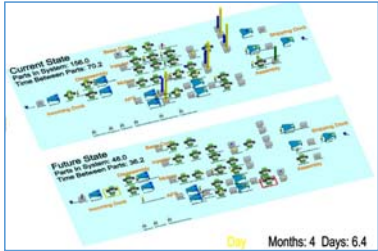


Wings and Flight Controls



Years: 0.0 Days: 94.0

Refurbishment



Current State
Parts to Assemble: 146.0
Time Balance: 70.2

Future State
Parts to Assemble: 48.0
Time Balance: 26.2

Months: 4 Days: 6.4

Benefits: Modeling and Simulation

Modeling

- Ability to consider the future of the future by stepping into the future
- Highlight potential problems that may occur during the transition from current to future state
- Provided a forum for thorough debate and hence a quicker resolution of key issues

Simulation

- “The technique of **imitating the behavior** of some situation or system (economic, mechanical, etc.) by means of an analogous model, situation, or apparatus, either to **gain information** more conveniently or to train personnel.” (Oxford English Dictionary)

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3. Theory of Knowledge

Knowledge of Individuals | Teams | Programs

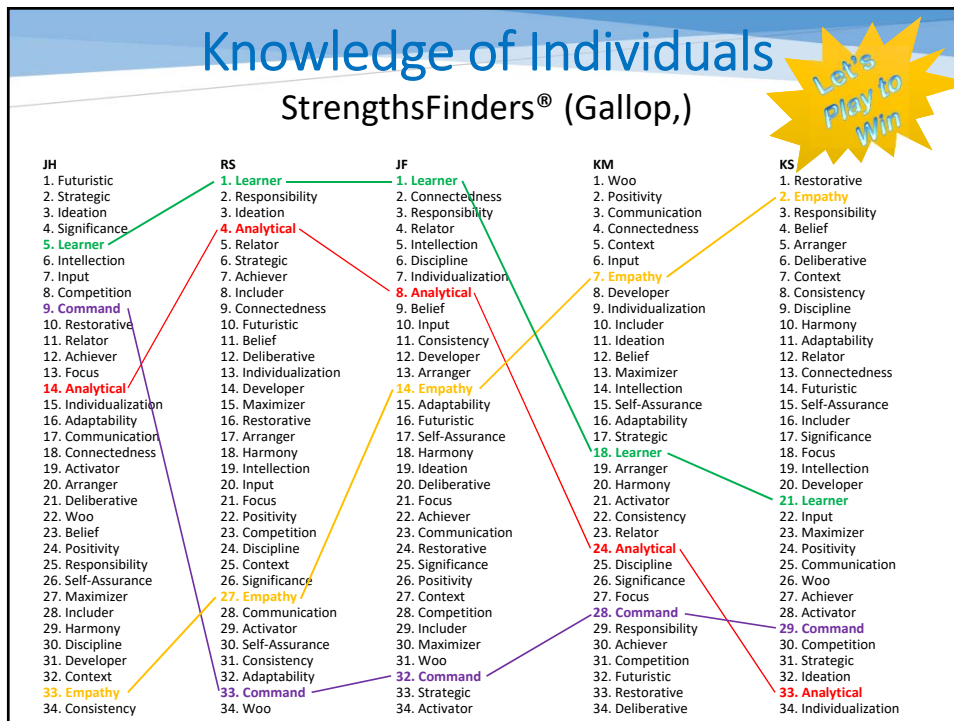
Core: "Importance of understanding how people think—and act—based on what they believe they know to be true."

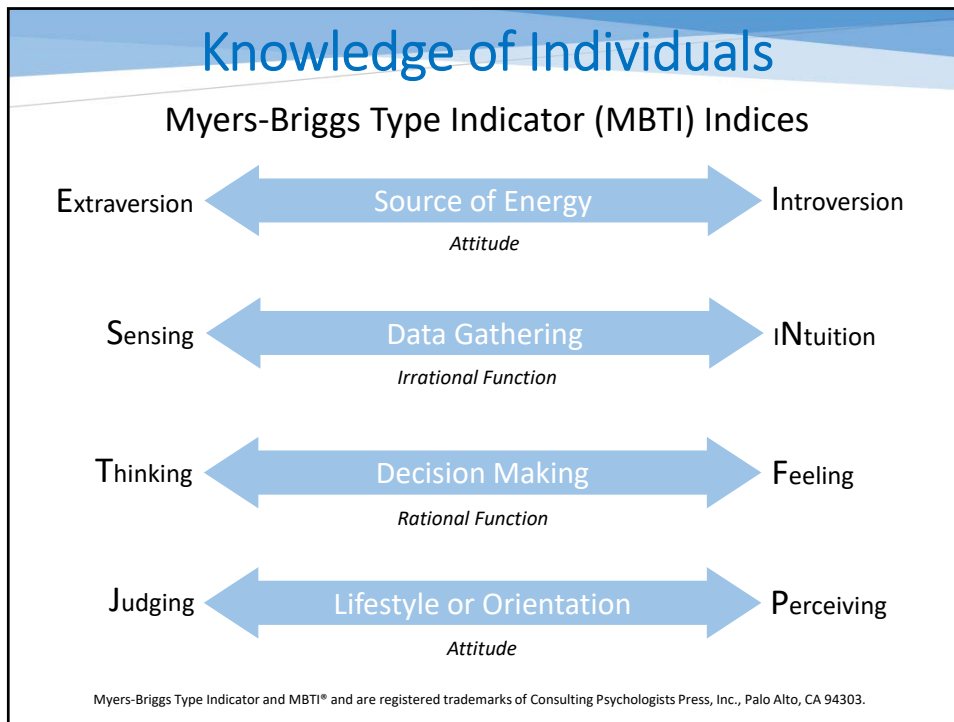
1. *What do we know that isn't so?*
2. *How can we avoid the mistakes we are in danger of making in our thinking?*
3. *How can we improve the learning process?*
4. *How does the source of an idea affect my evaluation of the idea?*
5. *Are my judgments clouded by unimportant factors?*

Other Issues:

- Confirmation Bias: Seize on what evidence we believe, like, or supports us; reject or ignore evidence that does not support us
- Experiment: Plan-Do-Check-Act
- Prediction: Learn more from thinking deeply about system, etc. (Risk Analysis)
- Misunderstandings and Misinterpretations
- Value Judgments: Operational definitions and data

Reference: John Hunter, *Theory of Knowledge*, W. Edwards Deming Institute Blog, December 12 2012.





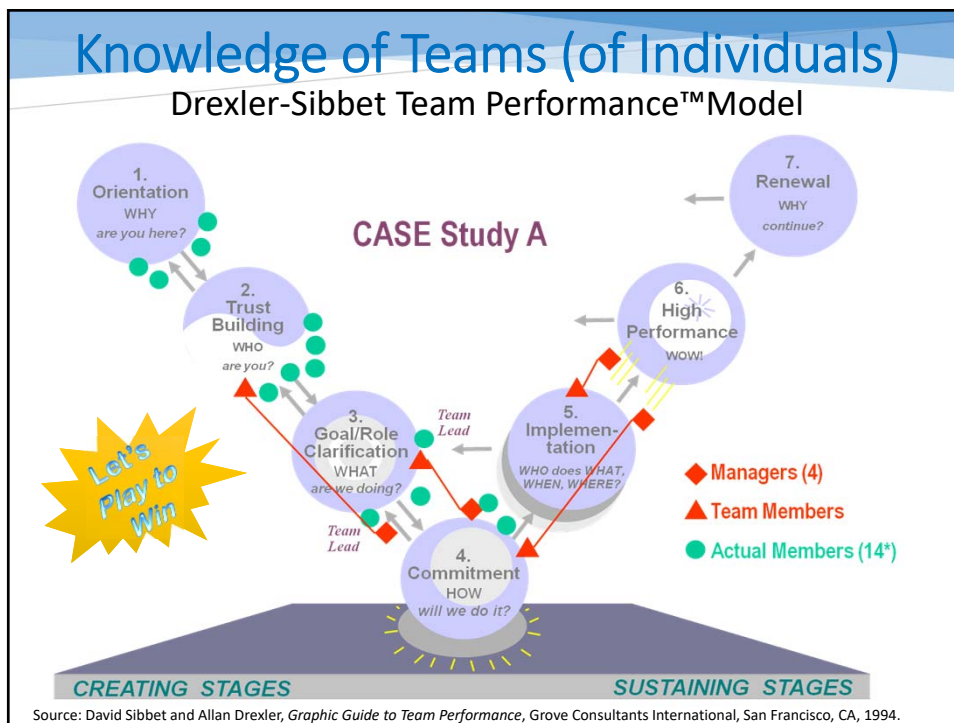
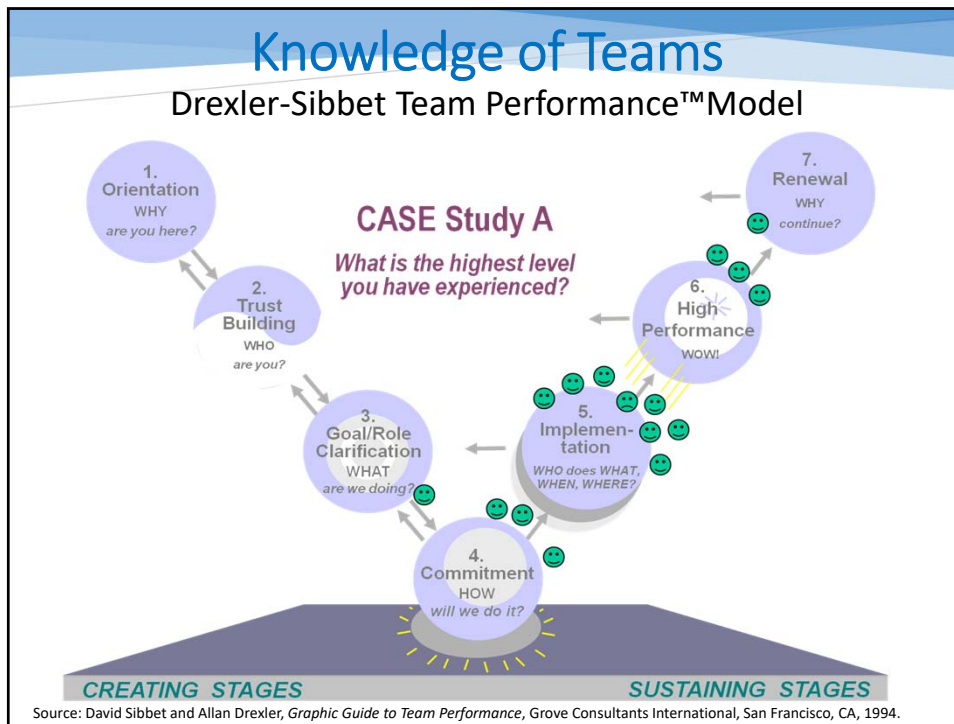
Knowledge of Individuals (on Teams)

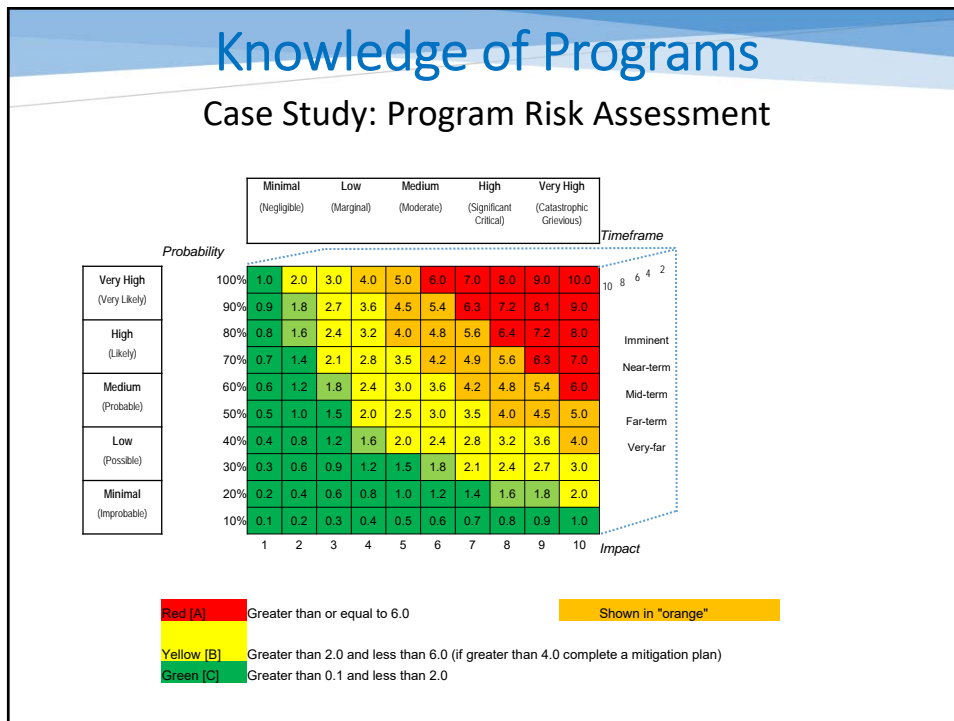
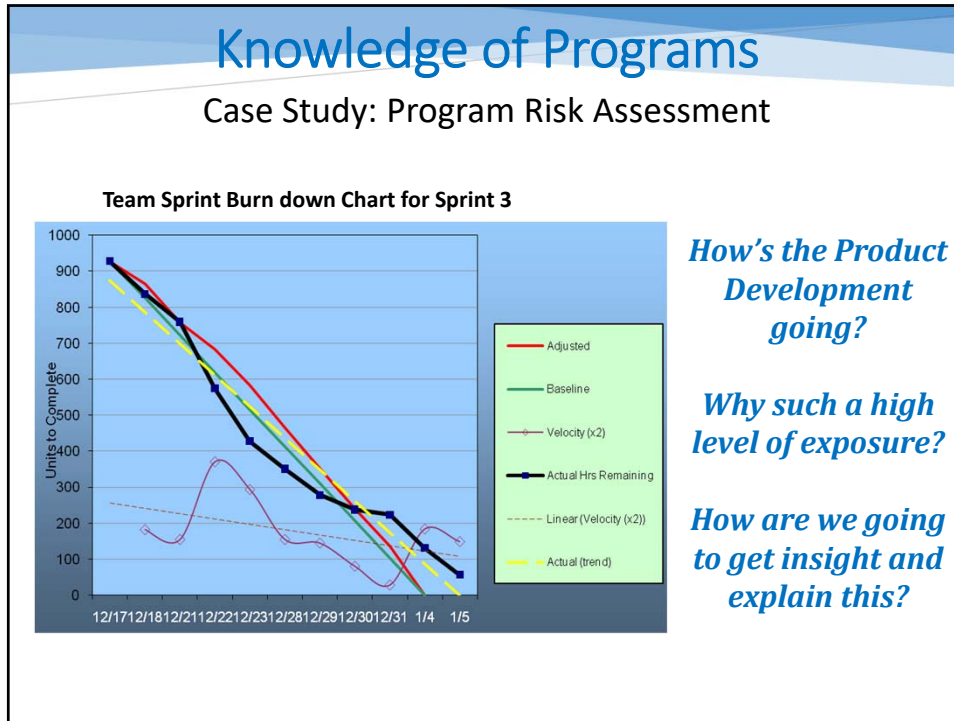
Case Study: MBTI Preferences

Team Size: 16 members Group Type: INTJ

ISTJ Contracts Manager (F) Team Lead (F) Programmer-Technician (M)	ISFJ	INFJ Hardware Support (M) Systems Analyst (M)	INTJ Project Manager (M) Quality Assurance (M) Systems Analyst (M)
ISTP	ISFP	INFP	INTP Programmer-Technician (M)
ESTP Programmer-Technician (F)	ESFP	ENFP	ENTP Programmer-Technician (M)
ESTJ Senior Project Manager (M) Programmer-Technician (M)	ESFJ	ENFJ	ENTJ Team Lead (M) Programmer-Technician (M) Systems Analyst (M)

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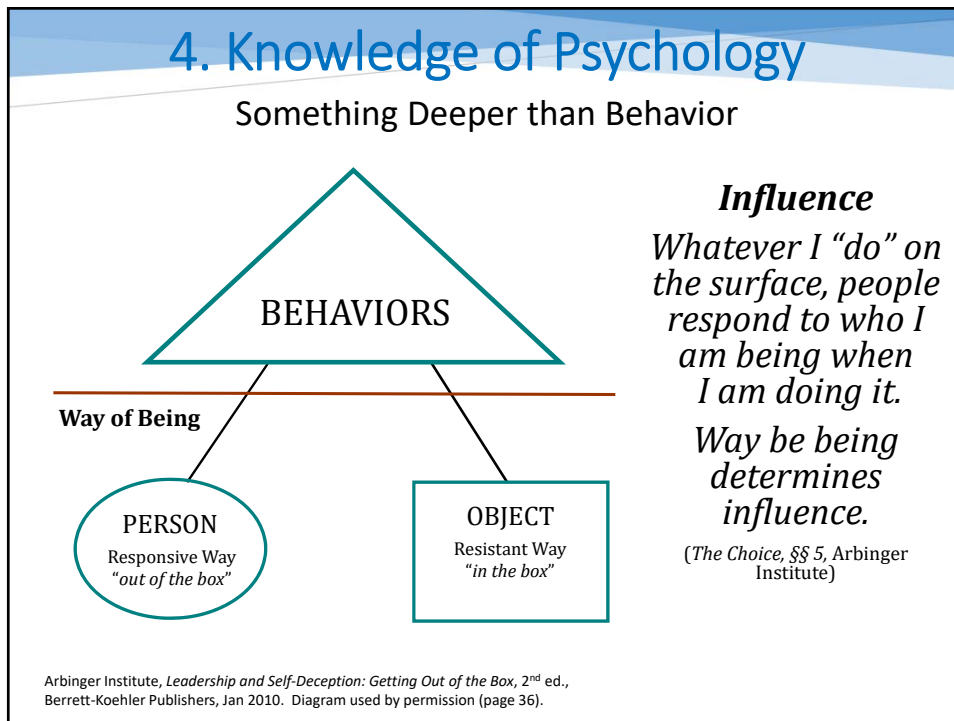




Knowledge of Programs

Risk Assessment: Results for Open Discussion


Risk ID	Condition	Consequence	Current Probability (Likelihood)	Current Impact (Severity)	Risk Rating (Current)	Action to Mitigate	POC	Risk Category	Mitigation Due	\$	Context and Notes
C014	If funding is not received with enough lead time to allow for contract/mod award before current funding runs out;	Then the schedule will be delayed and key individuals will be lost requiring effort to be spent on the hiring and assimilation processes.	90%	10	9.0	In the short term, work to resolve the immediate funding shortfall. Note: [] is working at the [] level both [] to provide funding in increments until [] is established in PB.		Funding			The [] funding is expiring; requires external funding to continue product development. [] limited to [] or less. To meet schedule deadlines the [] must be mitigated first.
C015	If operational requirements continue to change with only partial agreement by key signatories;	Then the delivery date will continue to be delayed.	90%	9	8.1	Create a [] where any proposed changes must go through the [] and be agreed upon by the [] before a [] will be considered.		Requirements			Similar to E005. The [] requirements were finalized []. However, only one of the three key signatures are present.
E001	If the [] product development and testing team does not include a Subject Matter Expert (SME) from each service or using community;	Then the user interface will not be validated, operational usability will not be acceptable, [] will not recommend it and [] will be suspect as a beneficial tool.	80%	10	8.0	Place Subject Matter Experts (SMEs) on the development team as soon as possible. [] to request [] via [].		Resources			[] has requested a [] multiple times at the [] Meetings for participation in []. A SME has not yet been provided.
E010	If a 24/7 Help Desk is not available for the user community (whether the user understands the product and its purpose or not);	Then [] the user community will increase until the product is not considered worthwhile.	80%	10	8.0	Coordinate a Help Desk requirement with the funding sponsor and the user community.		Support			The level of sophistication of the user must be taken into account in a critical system.





Knowledge of Psychology

Influencing Relationships

What kind of influence am I likely to have on someone I'm seeing as:

a Vehicle?
 



an Obstacle?
 

an Irrelevancy?
 

5. Knowledge of Leadership

Characteristics of an Admired Leader

Characteristics of an Admired Leader					Characteristics of an Admired Leader				
Group Size: 152									
Characteristic	Group Tally	Percentage	Norm	Difference	Characteristic	Group Tally	Percentage	Norm	Difference
Ambitious	39	26%	21%	5%	Honest	140	92%	88%	4%
Broad-minded	43	28%	40%	-12%	Imaginative	12	8%	23%	-15%
Caring	45	30%	20%	10%	Independent	10	7%	60%	-53%
Competent	93	61%	66%	-5%	Inspiring	104	68%	65%	3%
Cooperative	24	16%	28%	-12%	Intelligent	46	30%	47%	-17%
Courageous	24	16%	20%	-4%	Loyal	57	38%	14%	24%
Dependable	79	52%	33%	19%	Mature	23	15%	17%	-2%
Determined	19	13%	24%	-12%	Self-controlled	15	10%	8%	2%
Fair-minded	78	51%	42%	9%	Straightforward	43	28%	34%	-6%
Forward-looking	89	59%	71%	-12%	Supportive	74	49%	35%	14%

James Kouzes and Barry Posner, *The Leadership Challenge: How to Make Extraordinary Things Happen in Organizations*, Jossey-Bass, 4th Ed., August 2008.

5. Knowledge of Leadership

Leadership Practices

Model the Way

- Clarify values by finding your voice and affirming shared values
- Set the example by aligning actions with shared values

Inspire a Shared Vision

- Envision the future by imagining exciting and ennobling possibilities
- Enlist others in a common vision by appealing to shared aspirations

Challenge the Process


- Search for opportunities; seizing initiative; looking for innovative ways to improve
- Experiment, take risks, consistently generating small wins, learning from experience

Enable Others to Act

- Foster collaboration by building trust and facilitating relationships
- Strengthen others by increasing self-determination and developing competence

Encourage the Heart

- Recognize contributions by showing appreciation for individual excellence
- Celebrate the values and victories by creating a spirit of community



James Kouzes and Barry Posner, *The Leadership Challenge: How to Make Extraordinary Things Happen in Organizations*, Jossey-Bass, 4th Ed., August 2008.

5. Knowledge of Leadership

Leadership Practice Inventory (LPI) - SELF

	Model the Way		Inspire a Shared Vision		Challenge the Process		Enable Others to Act		Encourage the Heart
1	7.83	2	6.74	3	7.30	4	8.39	5	8.43
6	6.87	7	5.78	8	7.52	9	7.52	10	7.39
11	8.39	12	6.26	13	6.74	14	8.78	15	7.00
16	6.91	17	5.43	18	6.74	19	7.70	20	7.52
21	7.17	22	7.43	23	7.17	24	8.04	25	7.17
26	6.87	27	7.43	28	7.17	29	7.52	30	8.52
Tot	44.04	Tot	39.09	Tot	42.65	Tot	47.96	Tot	46.04
	7.34		6.51		7.11		7.99		7.67
	High		8.78		Low		Low		5.43

	Model the Way		Inspire a Shared Vision		Challenge the Process		Enable Others to Act		Encourage the Heart
1	8.21	2	6.88	3	7.46	4	8.36	5	8.35
6	6.89	7	5.96	8	7.06	9	7.79	10	7.71
11	8.71	12	6.20	13	6.54	14	8.94	15	6.97
16	6.20	17	5.97	18	6.86	19	7.89	20	7.47
21	6.91	22	7.19	23	6.95	24	8.27	25	7.02
26	7.50	27	7.67	28	7.34	29	7.83	30	8.14
Tot	44.42	Tot	39.89	Tot	42.21	Tot	49.09	Tot	45.67
	7.40		6.65		7.04		8.18		7.61
	High		8.94		Low		5.96		

Group 17:
23 participants

Where are their strengths?

Where are their opportunities?

Cumulative Total:
20 Groups
328 participants

Where do they need coaching?

Where do they need leadership?

Examples of Knowledge Capture

Assessment: Goals, Cause-Effect, Priorities, Metrics, etc.

Large Team

- Multiple Supervisors
- Multiple Team Leads
- Critical Product

Medium Team

- Support Services
- Known challenges (Morale, Training)
- New Leadership

Small Team

- New Team
- Establishing a new Program Management Office (PMO)
- Unproven approach for support

Really Small Team

- Software Support
- Complex System
- Move to Agile, Scrum, Reporting

[Profound] Summary: Reflections

What are we to do with our Profound Project Knowledge ?

...Something Useful

- It is a waste unless we take action
- Can also be put towards lame and harmful means

Opportunities Abound

- Individuals | Teams | Projects | Systems | Customers

Teams

- *What small adjustment would help us team better?*
- *What would help us be profoundly better?*

Questions to Ask

- *What new information will help us do [] better?*
- *If we discovered how to do [], what would that mean?*
- *If we understood [], how would we adjust?*
- *What is our core conflict? What is our core constraint?*

What would be really profound for us?

- Hold a discussion
- Consider the experiment
- Start...Try it out



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