12th ICCRTS

"Adapting C2 to the 21st Century"

Human Performance Technology: A Discipline to Improve C2 Concept
Development and Analysis

Tracks:
Track 1: C2 Concepts, Theory, and Policy
Track 6: Metrics and Measurement
Track 2: Cognitive and Social Issues

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Abstract

Human Performance Technology (HPT) is not a device but a rich discipline committed to improving performance using a systematic and holistic approach. A basic description is humans, working within a system to get desired results. The relevance to C2 is unmistakable – information age C2 is increasingly focused on all aspects of the human in the loop. The processes used, while powerful and rigorous, are easy to comprehend. Understanding the important difference between the means and ends, HPT is characterized by efficiently addressing a performance gap with a thorough cause analysis in order to address causes and not just symptoms. During this presentation, the audience will be introduced to HPT history, the ten principles of HPT, several models associated with HPT, and areas where HPT methodologies are useful to a C2 analyst.   Military staff officers and other professional analysts can develop their HPT analytical skills through research, leading university graduate programs, and a professional organization, the International Society for Performance Improvement. While these programs are focused on dynamic business and social processes, the principals readily transfer to the C2 arena and powerfully compliment the current tools available to C2 concept developers and analysts.

On the following pages is draft outline followed by descriptions of HPT standards and representations of key models to be discussed.

Outline

1. Introduction

2. History of HPT

3. The ten principals of HPT

4. HPT Models

   - Human Performance Technology Model

   - Harless' Front End Analysis

   - Gilbert's Behavior Engineering Model

5. Natural Compatibility between HPT and C2 Concept Development and Analysis

6. The benefits of a HPT awareness in the development of military and civilian C2 analysts.

6. Academic and professional resources available on HPT tools and research.

Principles of Human Performance Technology (www.ispi.org, 2006)
(note: The descriptions of the standards are focused on business outcomes. The standards themselves easily and effectively transfer to C2 analysis and development),

Human Performance Technology (HPT) has been described as the systematic and systemic identification and removal of barriers to individual and organizational performance. As such, HPT is governed by a set of underlying principles that serve to differentiate it from other disciplines and to guide practitioners in its use.

1. **HPT focuses on outcomes.** Focusing on outcomes, that is results, allows for questioning, confirming, and reconfirming that people share the same vision and goals, the job procedures support productivity, efficiency, and quality, and that people have the knowledge, skills, and motivation they require.

   Where is there an opportunity or a performance gap, a difference between the present and the desired levels of performance? Outcomes or results of an intervention will be measured to determine whether or not performance has improved. Sometimes it is necessary to challenge the assumed answer to a problem or the expected event or activity of an intervention and instead focus on the accomplishment or business need that is the client's true priority.

2. **HPT takes a systems view.** Taking a systems view is vital, because organizations are very complex systems that affect the performance of the individuals that work within them.

   It is important to distinguish a systems approach from a process model. A process contains inputs and outputs with feedback loops. A system implies an interconnected complex of functionally related components. The effectiveness of each unit depends on how it fits into the whole and the effectiveness of the whole depends on the way each unit functions. A systems approach considers the larger environment that impacts processes and other work. The environment includes inputs, but, more importantly, it includes pressures, expectations, constraints, and consequences.

3. **HPT adds value.** While HPT requires a focus on intermediate goals (such as improving quality, customer retention, and cost reduction), its success is measured in improvements in desired business outcomes (such as sales, profitability, and market share). Alignment of individual performance to intermediate and business outcomes is critical to the HPT methodology. Measurement of results at both of these levels serves two important purposes, that of communicating the importance of what is being done while also assessing the amount of performance improvement.

4. **HPT establishes partnerships.** Performance improvement professionals work in partnership with clients and other specialists. A collaborative effort involves relevant stakeholders in the decision-making process and involves working with specialists in their areas of expertise.

Working collaboratively includes sharing decisions about goals, next steps to take in the process, and implementation strategies as shared responsibilities. Partnerships are created from listening closely to clients and colleagues, trusting and respecting each other's knowledge and expertise.

5. **Be systematic in the assessment of the need or opportunity.** Analysis occurs in the beginning of the project. Needs or opportunity analysis is about examining the current situation at any level or levels (society, organizational, process, or work group) to identify the external and internal pressures affecting it. This process will determine the deficiencies or performance gaps that are to be remedied. The output is a statement describing the current state, the projected future state, and the rationale or business case for action or non-action.

6. **Be systematic in the analysis of the work and workplace to identify the cause or factors that limit performance.** Cause analysis is about determining why a gap in performance or expectations exists. Some causes are obvious such as new hires lack the required skills to do the expected task. This step in the systematic process will determine what should be addressed to improve performance. The output is a statement of why performance is not happening or will not happen without some intervention. Job task analysis includes the identification of the important tasks that employees must perform and the knowledge, skills, and abilities to perform them. The output is performance objectives that describe the desired performance, delineate the conditions under which the performance is done, and identify the criteria for successful performance.

7. **Be systematic in the design of the solution or specification of the requirements of the solution.** Design is about identifying the key attributes of a solution. The output is a communication that describes the features, attributes, and elements of a solution and the resources required to actualize it.

8. **Be systematic in the development of all or some of the solution and its elements.** Development is about the creation of some or all of the elements of the solution. It can be done by an individual or a team. The output is a product, process, system, or technology. Examples include training, performance support tools, a new or re-engineered process, the redesign of a workspace, or a change in compensation or benefits.

9. **Be systematic in the implementation of the solution.** Implementation is about deploying the solution and managing the change required to sustain it. The outputs are changes in or adoption of the behaviors that are believed to produce the anticipated results or benefits. This standard is about helping clients adopt new behaviors or use new or different tools.

10. **Be systematic in the evaluation of the process and the results.** Evaluation is about measuring the efficiency and effectiveness of what was done, how it was done, and the degree to which the solution produced the desired results so that the cost incurred and the benefits gained can be compared. This standard is about identifying and acting on opportunities throughout the systematic process to identify measures and capture data that will help identify needs, adoption, and results.

Performance Technology Model

1. Used as a performance improvement tool.
2. Use to determine an organization's performance requirements.
3. Use when there are indications of a performance problem.
4. Use when there are indications of internal and external factors affecting performance.
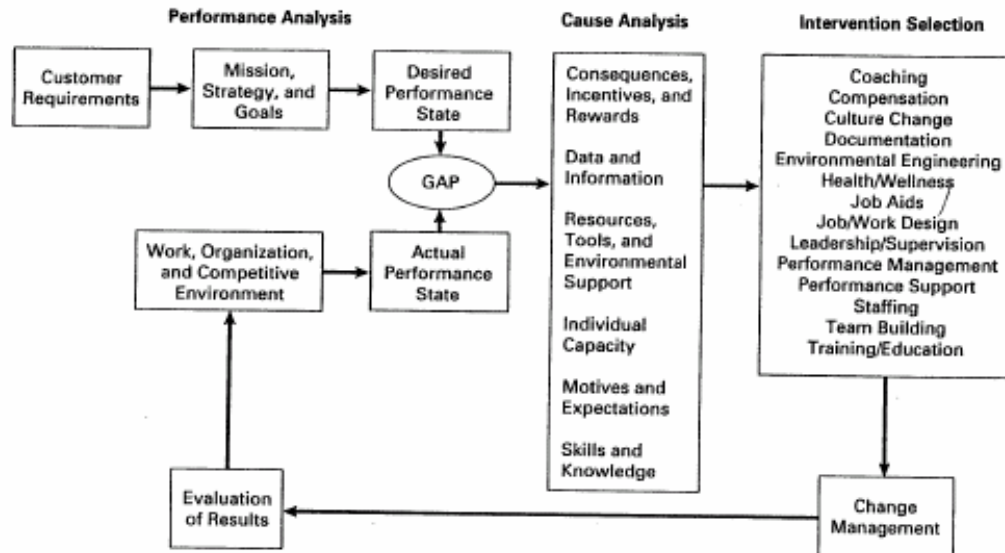
Rosenberg's Performance Technology Model, (1996)

How

1. Use the PT model in sequential systematic manner while seeking to identify systemic problems. Focus on results.
2. Be prepared to identify performance improvement opportunities separate from any perceived problems.
3. Do a Performance Analysis and identify the Performance Gap.
4. Adopt a holistic viewpoint in conducting the Cause Analysis. Look beyond the obvious to identify all significant impacting factors.
5. Identify and select (multiple) intervention(s). Usually there is more than one useful intervention that as a package will optimize performance. ROI needs to be considered when selecting interventions.
6. Be prepared to act as a change agent to facilitate organizational support during implementation.
7. Evaluate the results of the intervention implementation.

.References:

Chyung, Y. (2003). *Week 5: Human Performance Technology*. Retrieved May 2, 2004, from IPT
536 452/458 course database.

HPT – Human performance technology. Retrieved May 4, 2006 from
http://www.ispi.org

Rosenberg, M. (1996). Human performance technology. In R. Craig (Ed.), *The AST training &
development handbook* (4th ed.)(pp. 370-393). New York: McGraw-Hill

HUMAN PERFORMANCE TECHNOLOGY (HPT) MODEL
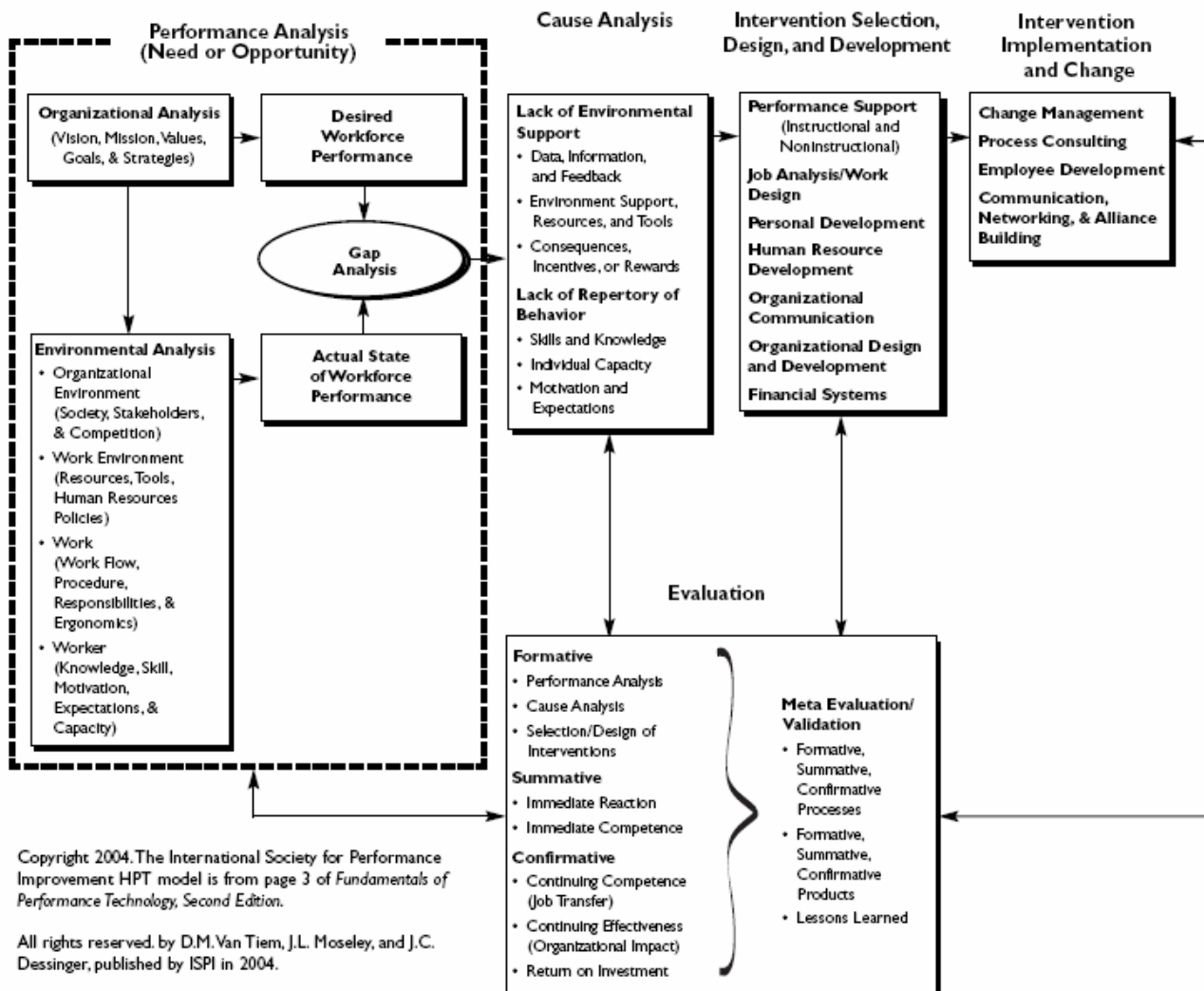
1. FEA is a Human Performance Technology tool.
2. FEA is a tool used to find the most efficient way to correct a performance problem.
3. Used to identify performance problems that will have a significant positive impact when corrected.
4. Used to isolate the root cause of the performance problem rather than the symptoms or effects of the problem.
5. FEA includes the assumption that training is not always the answer.
6. Used to optimize performance while avoiding other more costly strategies that would not work as well.

What

1. FEA consists of 13 "smart questions" used early on as a focused analysis in identifying the cause of a performance problem before addressing a solution. The following table is based on one created by Dr. Chyung (2003) and lists the 13 questions grouped by their intended focus.

FEA	Focus
1. Do we have a problem? 2. Do we have a performance problem? 3. How will we know when the problem is solved? 4. What is the performance problem? 5. Should we allocate resources to solve it?	- Focus on end results (either micro, macro or mega level), not means - Formulate desired - actual = gap - Determine the significance of the issue - i.e., Which one is more expensive - the cost when not dealing with the problem and the cost for solving the problem?
6. What are the possible causes of the problem? 7. What evidence bears on each possibility? 8. What is the probable cause?	Find the cause and the root causes - e.g., use a cause-effect diagram
9. What general solution type is indicated? 10. What are the alternate subclasses of solution? 11. What are the costs, effects, and development times of each solution? 12. What are the constraints? 13. What are the overall goals?	- Be open to more than just training - Think about cost-effectiveness - Think about feasibility - Make sure that the solutions are selected to close/reduce the performance gap

How

1. Identify a performance issue.
2. Apply the 13 "smart questions" to the issue
   - Identify the business need underlying the issue
   - Clarify the desired performance outcomes

- Identify the performance gap.
- Determine the cause

3. Analyze the results in a systematic way to determine the most efficient way to optimize performance.
4. Make decisions based on the results of the systematic analysis

References:

Chyung, Y. (2003). *Week 5: Human Performance Technology*. Retrieved May 2, 2004, from IPT 536 452/458 course database.

Harless, J. (1973). An analysis of front-end analysis [Electronic version]. *Improving Human Performance: A Research Quarterly. 4*, 229-224

Harless, J. (1996, January). Great ideas revisted [Electronic version]. *Training & Development, 50*(1), 52-53.

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Gilbert's Behavior Engineering Model
Third Leisurely Theorem

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1. Used as a Performance Improvement tool.
2. Used to identify the causes of competence and incompetence.
3. Used to determine in what areas that management is performing unsatisfactorily.

What

Environmental Supports (E) and a Person's Repertory of Behavior (P) are the key factors in generating Worthy Performance (W). The following table can be used to track strategies that lead to competence:

	Information	**Instrumentation**	**Motivation**
E: Environment Supports	1. Data Relevant and frequent feedback about the adequacy of performance. Description of what is expected of performance Clear and relevant guides to adequate performance	2. Resources Tools and materials of work designed scientifically to match human factors.	3. Incentives Adequate financial incentives made contingent on performance. Non-monetary incentives. Career development opportunities.
P: Person's Repertory of Behavior	4. Knowledge Systematically designed training that matches the requirements of exemplary performance.	5. Capacity Flexible scheduling of performance to match peak capacity. Prosthesis Physical shaping Adaptation Selection Delegate well.	6. Motives Assessment of people's motives to work. Recruitment of people to match the realities of the situation

<u>How</u>

1. Identify a performance improvement opportunity.
2. Be aware that management is responsible for poor performance.
3. Systematically examine the situation's six components using the BEM table.
4. Maintain the sequence (1 through 6) of the components while determining if they or are not in compliance with the successful strategies listed under each component. (Be aware that there is a school of thought that suggests moving the "Knowledge" component from fourth to sixth place – see Chevalier's reference below)
5. If a component is found not to be compliant with the strategy, determine a solution to make it compliant. Be aware that a correction in one component area will usually have an affect on another component area, often for the better.
6. Be aware that performance problems are often fixed by adjusting the Environmental Support components, and it is not often necessary and/or cost effective to adjust the "Capacity" and "Motives" components.

<u>References</u>:

Chevalier, R. (2003). Updating the behavior engineering model [Electronic version]. *Performance Improvement 42*(5), 8-14. Retrieved May 2, 2004 from http://www.pignc-ispi.com/articles/Vol42_05_08.pdf

Gilbert, T. (1978). *Human competence: Engineering worthy performance*. New York: McGraw-Hill.