Achieve Tactical & Real Time Decision Support for Mission Management & Operational Effectiveness

Novotel Clarke Quay Hotel, Singapore • 26th-28th November 2008

Cognitive Analysis & Situational Awareness

TESTIMONIES

“Excellent tools to ensure complete definition and analysis of human intensive systems.”
“The workshop exceeded my expectations.”
“I found the workshop interesting and will use some of the ideas in my future work”


“Very informative, a wealth of information.”
“I now understand the topic much better than before, I will have a foundation for understanding the additional reading”

~ Participants of “Cognitive Work Analysis For Design” conducted for Human Factors & Ergonomics Society, October 2007

Capitalize On Expert Knowledge To Gain Maximum Value On These Vital Issues:

- **GAIN** sensitivity to cognitive issues relevant to mission management and command and control
- **UNDERSTAND** how the latest ideas on decision-making and situational awareness can be employed to advantage in mission-critical, information-intensive work environments
- **EMBRACE** insights on decision-making and situational awareness to enhance your own cognitive performance
- **APPLY** these insights to your teams and organization to improve their cognitive performance
- **EMBRACE** the human centric approach to developing effective strategies for cognitive work
- **BECOME FAMILIAR WITH** simple analytic tools that can help you focus on the leverage points for facilitating cognitive work
- **RECOGNISE** the common issues that limit the effectiveness of cognitive work
- **GAIN EXPERIENCE WITH** strategies for enhancing decision-making and situation awareness in mission-critical, information-intensive work environments

UNI training courses are thoroughly researched and carefully structured to provide practical and exclusive training applicable to your organization.

Benefits include:
- Thorough and customized programmes to address current market concerns
- Illustrations of real life case studies
- Comprehensive course documentation
- Strictly limited numbers

Course Facilitator:
Gavan Lintern
Chief Scientist, Cognitive Systems Design

- 30 years of related experience in the defence and aviation sectors
- Renowned expert in Cognitive Analysis & led many projects on cognitive system engineering capabilities as well as human systems design aspects of large Command & Control systems integration
- 34 publications in reviewed journals and over 80 symposium papers, book reviews/chapters and technical reports

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Workshop Overview

This training workshop, based in the emerging discipline of Cognitive Systems Engineering, will show you how to incorporate contemporary insights related to naturalistic decision-making and situational awareness into your own work environment. Case studies will be used to illustrate how you can deploy the ideas embedded within these concepts to improve cognitive performance for mission-critical, information-intensive work.

The insights you develop in this course will help you improve your own cognitive performance. You will learn how to use these ideas to improve how you make decisions and become situationally aware. As a team leader or manager, you will also learn how to improve the way you and others make team or organizational decisions and how your team or organisation can build and maintain situation awareness. You will be assigned simple design exercises within the workshop so that you learn through hands-on experience how to implement the lessons of this training course.

Much of what you will learn in this workshop will help you structure a systematic view of how the principles underlying cognitive work are relevant to your own workplace. While the ideas to be discussed can be applied to a wide range of work environments, the workshop will emphasize the application of these new ideas to mission-critical, information-intensive work environments such as command-and-control and mission management.

DAY 1 | 26th November 2008

WORKSHOP INTRODUCTION

- Introducing your trainer: his experience in human systems analysis and design and in human systems workshops, the goals for and learning strategies of this workshop.
- Attendee introductions: your educational background, your professional experience.
- General issues in mission management & operational effectiveness: development of a concept map of human systems problems seeded by examples you have encountered in your own workplace and further developed by your trainer.

CENTRAL CONCEPTS FOR THIS WORKSHOP

- Tactical decisions: An introduction to naturalistic decision-making as contrasted to rational decision-making and a discussion of the distinctive roles of naturalistic and rational decision-making in the modern, information-intensive workplace (command-and-control, technical operations, business management, systems acquisition, flight operations, health care, etc.).
- Tactical planning and mission planning: A contrast of tactical to strategic planning. An introduction to the naturalistic planning model as contrasted with the rational planning model. A discussion of the role of situation awareness and naturalistic decision-making in tactical planning, mission management and operational effectiveness.

FAILURES OF SITUATION AWARENESS AND TACTICAL DECISION MAKING

- Fallacies of safety management: An introduction to technically inspired tools for safety management (human error, root cause analysis, human reliability analysis, defense in depth) and illustrations of the limitations of each of these in ensuring safety.
- Robust approaches to safety management: An introduction to safety management approaches inspired by analysis of human behavior in the conduct of cognitive work (mindfulness and sense making, human coordination and communication, workplace integration) and their implications for development of robust safety-management systems.

DAY 2 | 27th November 2008

THEORETICAL CONSTRUCTS & DEFINITIONS

- Individual cognition: Analysis of individual cognition is founded on the theoretical construct of macro-cognition. This topic will introduce and explain the construct of macro-cognition and show how it links to subsidiary constructs of cognitive expertise and cognitive leverage points as a means of motivating cognitive analysis and design of cognitive support tools. Macro-cognition will be contrasted with micro-cognition and meta-cognition.
- Team cognition: In the contemporary view, team cognition is an analogue of individual cognition. This topic will introduce and explain the idea of a team mind, which has been developed to clarify how the processes of team cognition mirror those of individual cognition. An exercise in brainstorming will be used to demonstrate some of the important processes of team cognition.
- Organizational cognition: In the contemporary view, organizational cognition relies on many of the processes that enhance individual and team cognition. This topic will illustrate how organizational cognition can fail and how it can succeed.

COGNITIVE DESIGN TOOLS

This session will introduce some of the tools commonly used to analyze individual, team and organizational cognition. Simple exercises will be used to give you experience with the use of a selection of these tools.

- Individual cognition: The tools to be described are the critical decision method, applied cognitive task analysis and decision centered design.
- Team cognition: The tools to be described are extensions of those described for individual cognition plus team workload analysis and table-top analysis.
- Organizational cognition: The tools to be described are workflow analysis and communications analysis.

SUMMARY

- A unified system for analysis and design: This topic will illustrate how the ideas and concepts discussed to this point in the workshop can be used to maximize individual, team and organizational potential.
**WHO SHOULD ATTEND**

This training is designed for Directors, Heads of Department, Project Managers, Staff Officers, and Technical Staff who are seeking to encourage high levels of performance within high-pressure, information-intensive work environments:

- **Defense**
  - Operations
  - Intelligence
  - Concept Development
  - C4ISR
  - Air, Land and Naval Weaponry & Platforms
  - Communications & Networked Systems
  - Logistics and Combat Service Support
  - Training & Simulation

- **Commercial Aviation**
  - Air Traffic Control
  - Flight Operations
  - Pilot Training

- **Process Control**
  - Operational Staff
  - Management Staff
  - Design Staff

- **Surface Transportation**
  - Traffic Management
  - Public Transportation Management
  - Systems or Facility Management

- **Financial Systems**
  - Oversight Management
  - Human Systems Organization

- **Hospital & Health Care Professionals**
  - Hospital Management
  - Health Care Professionals

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**DAILY | 28th November 2008**

### WORK-CENTERED DESIGN

- **The technocentric approach to human system design:** This topic will characterize the technocentric approach to human system design and will outline those of its assumptions that are inconsistent with human cognition. The problems of clumsy automation and data-rich/information-poor systems will be illustrated.

- **Work-centered design:** This topic will characterize the work-centered approach to human system design and will outline its foundational assumptions. The fundamentals of the design methodology will be described.

- **Knowledge Management:** A contemporary approach to knowledge management will be introduced as an illustration case of work-centered design. This topic will outline how technological support for natural work strategies can ensure robust and effective individual team and organizational cognition.

### COGNITIVE DESIGN FOR SITUATION AWARENESS AND TACTICAL DECISION MAKING

This session will present a selection of behavioral interventions that can enhance Situation Awareness and Tactical Decision Making.

- **Individual cognition and design for human work:** The behavioral interventions to be introduced are after-action review and cognitive training.

- **Team cognition, teamwork and team design:** The behavioral interventions to be introduced are role definition, goal clarification and coordination through communication and information sharing.

- **Management cognition and management design:** The behavioral interventions to be introduced are structures of effective organizations (hybrid management structures), sense making in effective organizations and organizational mindfulness.

### TECHNOLOGICAL SUPPORT FOR SITUATION AWARENESS AND TACTICAL DECISION MAKING

This session will present a selection of technological interventions for support of Situation Awareness and Tactical Decision Making.

- **Decision support:** The technological interventions to be described are effective displays and effective decision tools.

- **Planning support:** The technological interventions to be described are planning structures and the virtual sand table.

- **Support for situation awareness:** The technological interventions to be described are ubiquitous cognition, large-screen displays and information accessibility.

- **Schemes of modular work:** The technological intervention to be described is communication systems for distributed work.

### FINAL WORKSHOP EXERCISE

- **Design a Mission Management or Command & Control system:** In this session, workshop attendees will, as a group exercise, be tasked to design a system that will enhance Situation Awareness and Tactical Decision Making.

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**Program Schedule**

*(Daily)*

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Registration</td>
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<tr>
<td>09:00</td>
<td>Morning Session Begins</td>
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<tr>
<td>10:40 - 11:00</td>
<td>Refreshments &amp; Networking Break</td>
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<tr>
<td>12:45</td>
<td>Luncheon</td>
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<tr>
<td>14:00</td>
<td>Afternoon Session begins</td>
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<tr>
<td>15:30 - 15:50</td>
<td>Refreshments &amp; Networking Break</td>
</tr>
<tr>
<td>17:00</td>
<td>Course Ends</td>
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"The challenges are not simply learning to physically perform a task and mastering the motor skills required for performance, but rather in perceptual and cognitive task mastery."

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**ABOUT YOUR COURSE FACILITATOR**

**Gavan Lintern** has over 30 years of related experience in the defence and aviation industries. He currently operates his own consultancy, Cognitive Systems Design. He has vast work experience in supporting human systems design aspects of large command & control systems integration as well as developing cognitive systems engineering capabilities. His illustrious previous careers include being the Chief Scientist in General Dynamics, Senior Scientist at Aptima Inc, Head of Human Factors at Aeronautical & Marine Research Laboratories (Australia), Principal Investigator & Program Manager in Canyon Research Group and more.

His primary areas of research are in cognitive analysis and design for development of complex knowledge and information systems for military command and control, and instructional system design for aviation and information-intensive systems. He has over 34 publications in reviewed journals and over 80 symposium papers, book reviews/chapters and technical reports.

He provides workshops and technical support in Cognitive Systems Engineering in France, the US, Australia and South Africa. He has served on panels of the National Research Council and U.S. Navy for development of maritime simulation and virtual training technologies. He is a recipient of awards from the Human Factors and Ergonomics Society and from the American Psychological Association. He serves on the editorial boards of the Journal of Cognitive Engineering and Decision Making and the International Journal of Aviation Psychology and has served for 12 years on the editorial board of the Journal, Human Factors.

He is a fellow of the Human Factors and Ergonomics Society.

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**WHY YOU SHOULD ATTEND**

The training course will help you become sensitive to issues of cognitive work as they relate to everyday performance in mission-critical, information intensive work environments. All of the ideas to be introduced in this workshop have emerged recently from the scientific discipline of Cognitive Systems Engineering and have their basis in a broad program of rigorous research. The presentation within the workshop will cut through the scientific complexity to extract the basic ideas and their implications for improving cognitive performance in today's information-intensive work environments.

You can expect to become a familiar with innovative approaches to improving cognitive performance in the workplace. Many of the recommendations to be drawn from the scientific research within Cognitive Systems Engineering are diametrically opposed to the way we typically think about teams and organizations today. They represent a radical departure from common beliefs and recommendations.

In particular, if you have been party to or merely an observer of previous attempts to develop better cognitive performance in individuals, teams or organizations and have been disappointed with the results, or if you have participated in repeated and ineffective reorganizations of your workplace, this workshop will help you understand what went wrong and how to do it differently.

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**PRE-COURSE QUESTIONNAIRE**

To ensure that you gain maximum value from this course, a detailed questionnaire will be forwarded to you upon registration to establish your exact training needs and issues of concern. Your completed questionnaire will be analysed by the course trainer prior to the event and addressed during the event. You will receive a comprehensive set of course documentation to enable you to digest the subject matter in your own time.
If you are unable to attend, a substitute delegate is always welcome at no additional charge. All bookings carry a 50% liability immediately after a fully completed sales contract has been received by the UNI of

**Cancellations/Substitutions**

Reschedule but the client hereby indemnifies UNI and holds UNI harmless from and against any and all costs, damages and expenses, including attorney fees, which are incurred by the client. The construction, validity and performance of this Agreement shall be governed in all respects by the laws of Singapore to the exclusive jurisdiction of whose Courts the Parties hereby agree to submit.

**INDEMNITY:** Should for any reason outside the control of UNI, the venue or speakers change, or the event be cancelled due to an act of terrorism, extreme weather conditions or industrial action, UNI shall endeavour to reschedule but the client hereby indemnifies and holds UNI harmless from and against any and all costs, damages and expenses, including attorney fees, which are incurred by the client. The construction, validity and performance of this Agreement shall be governed in all respects by the laws of Singapore to the exclusive jurisdiction of whose Courts the Parties hereby agree to submit.

**Sales Contract**

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**DELEGATES’ DETAILS**

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Position: ___________________________
Email: ___________________________
Organisation: ___________________________
Address: ___________________________

**Finance Department Contact Details**

Name: ___________________________
Position: ___________________________
Email: ___________________________
Contact Number: ___________________________

**Authorisation**

Signatory must be authorised to sign on behalf of contracting organisation.

Name: ___________________________
Position: ___________________________
Signature: ___________________________ Date: ______/____/____

This booking is invalid without a signature.