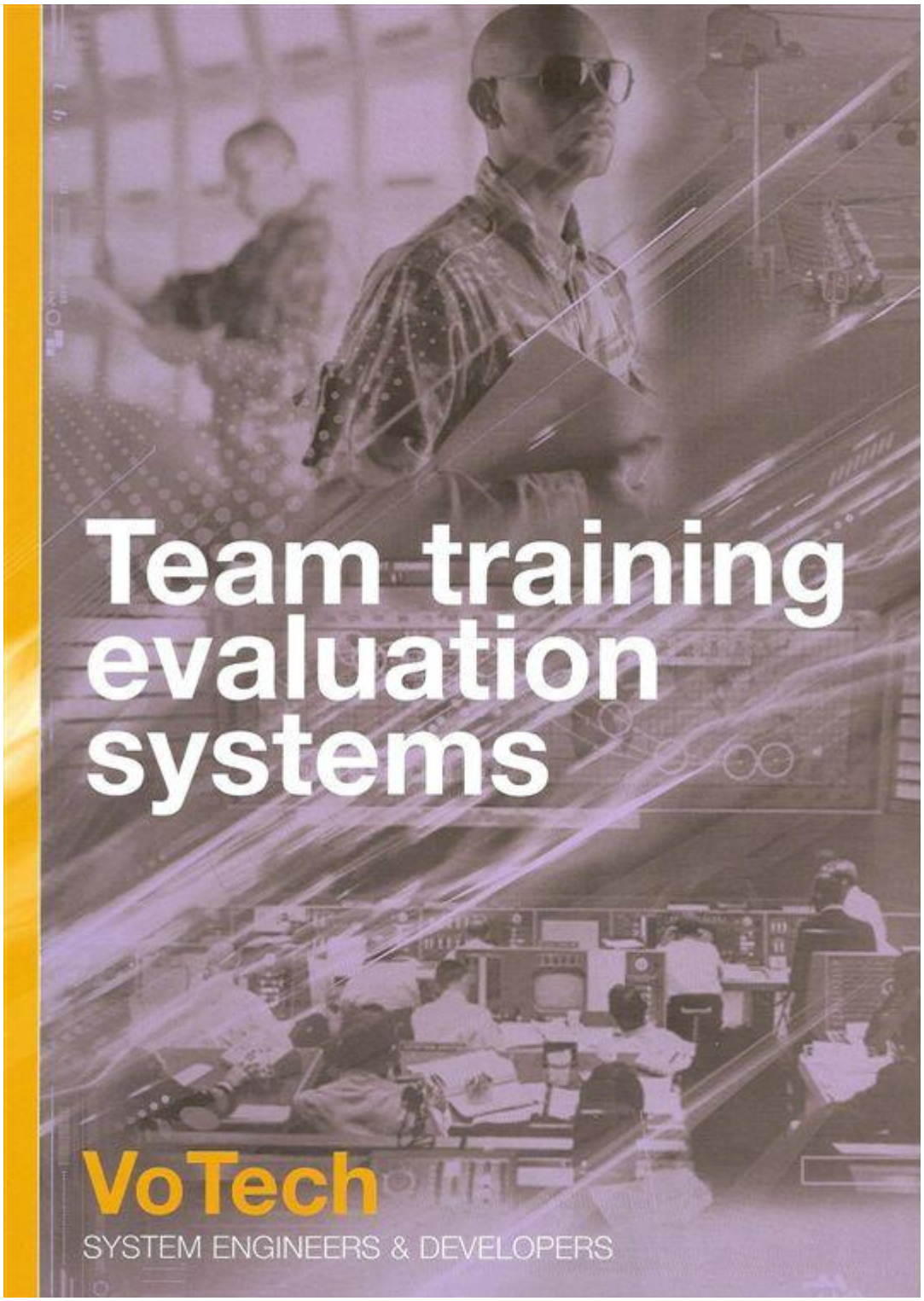
Team training evaluation systems
VoTech
SYSTEM ENGINEERS & DEVELOPERS

NON-TECHNICAL SKILLS – THE BASIS OF HIGH PERFORMANCE TEAMS

What are behavioural markers?

- Observable, non-technical behaviours that contribute to superior or substandard performance within a work environment
- Observable behaviours of teams or individuals
- Usually structured into a set of categories

How are behavioural markers derived?

From analysis of data from multiple sources regarding performance that contributes to successful and unsuccessful outcomes (e.g., accident investigation, confidential incident reporting systems, incident analysis, simulator studies, task analysis, interviews, surveys, focus groups, ethnographies).

What makes a good behavioural marker?

It describes a specific, observable behaviour, not an attitude or personality trait, with clear definition (enactment of skills or knowledge is shown in behaviour). It has demonstrated a causal relationship to performance outcome,

- It does not have to be present in all situations.
- its appropriateness depends on context.
- It uses domain specific language that reflects the operational environment.
- It employs simple phraseology.
- It describes a clear concept.

What are the domains of application?

Behavioural markers presently tend to be found in occupations where safety is prime and high fidelity simulators are used for training and assessment, e.g., in aviation, nuclear power generation, military settings, and, to a lesser degree, in medicine (anaesthesia and surgery), where simulation is less widely employed.

Improve

What are the uses of behavioural markers?

- To enable performance measurement for training and assessment, evaluation of training, safety management, and research.
- To highlight positive examples of performance.
- To provide a common vocabulary for training, briefing and debriefing, communication, regulation, research and to connect different domains of safety (e.g., incident analysis and performance tracking).
- To build performance databases to identify norms and prioritise training needs.
- To compare sub-groups in organisations (e.g., aircraft fleets, etc.)
- To give feedback on performance at individual, team, organisational, and system level.
- To establish co-operation between safety/quality, training, and operations.

What are characteristics of good behavioural marker systems?

VALIDITY: in relation to performance outcome.

RELIABILITY: inter-rater reliability, internal consistency.

SENSITIVITY: in relation to levels of performance.

TRANSPARENCY: the observed understand the performance criteria against which they are being rated; availability of reliability and validity data.

USABILITY: easy to train, simple framework, easy to understand, domain appropriate language, sensitive to rater workload, easy to observe.

Can provide a focus for training goals and needs.

Extracts from proceedings of the Behavioural Markers Workshop, sponsored by the Gottlieb Daimler and Karl Benz Foundation, Koileg Group Interaction in High Risk Environments (GIHRE), Zurich, July 2001

data entry

Speed

TeamTalk VOTECH AFTER ACTION REVIEW SYSTEM – THE MEANS TO CAPTURE AND REVIEW BEHAVIOURAL MARKERS

TeamTalk:

- Enabling structured, rapid and facilitated capture of team performance assessments and associated debriefs
- Pre-defined comments - no free form data entry
- Comprehensive adoption of Variable Action Button/Fixed Action Button interface schemes - no scrolling
- Designed to accommodate finger/glove interaction - no stylus
- PDA form factor to minimise weight and maximise flexibility
- Current screen appearance optimised for Naval Operations Room environment but adjustable
- Minimises assessor head down time

MODES OF OPERATION:

Set Up

Provides the assessor with the option to select assessment data sets or part of a data set for training exercises that have been downloaded to the hand held. The assessor name and team being assessed form part of the record of assessment.

Set Up also provides options to vary the brightness, set the clock to the training exercise time and display the battery level and memory use.

Data Entry

During the training exercise behaviours are observed and entered using comments and qualifiers. Predefined comments that assess competency for one or more roles are entered for specific phases of the training exercise using context sensitive buttons. For each comment there is a set of qualifiers that provide further detail on the observed behaviour. The comments are time stamped and automatically recorded, along with the phase of the training session, the roles, competency, comment and qualifier.

marker navigation

Context

Debrief

At the conclusion of the training session, the observations can be viewed on the hand held to provide direct and timely feedback to personnel under assessment. Observations can be filtered by the phase, a role or roles, or the competency to allow quick access to specific aspects.

Two forms of display are available for viewing observations in debrief mode. One is the short form version using key words, as selected during data entry. The other is an expanded version that uses standard sentences.

Report

The assessment data is exported as comma separated text with an option to provide the database keys. The database keys permit the data to be quickly analysed, as it is not necessary to enter or filter text fields. The expanded description of the observations provides an efficient basis for preparation of a formal assessment report.

ADVANTAGES:

The context driven user interface provides the operator with the relevant assessment criteria choices based on the assessors selection of competency and personnel being assessed. As selections are made, the remaining choices are filtered based on these selections so as to present the appropriate choices for further selections.

Data entry is not constrained or presented in a hierarchical structure and allows the operator to enter data in a manner that is best suited to the assessment environment.

TeamTalk:

- Reduces the number of key presses
- Provides a consistent user interface behaviour
- Reduces the on screen clutter
- Reduced knowledge required to use the system.

domain appropriate language

Customise

VOTECH SYSTEM ENGINEERS AND DEVELOPERS – THE CAPABILITY TO CUSTOMISE AND INTEGRATE TEAM ASSESSMENT SOLUTIONS

CORPORATE BACKGROUND

VoTech has extensive experience in system engineering of complex systems, principally in the defence domain.

In recent years, VoTech has acted in technical support of large scale integrators such as Boeing Defence Australia as they developed and delivered projects of the complexity of Project Vigilare (a comprehensive ADGE system for Australian operations) and High Frequency Modernisation Project. Services have included test engineering of SIM and TADIL subsystems (Vigilare), and requirements management (HFMOD).

As well, VoTech has provided a wide range of system engineering services to the Commonwealth of Australia through support to AIR5333, where a diverse set of data feeds are interfaced with the ADGE system provided by the prime contractor (Boeing Defence Australia).

The work has focussed on developing the functional and performance specification for AIR5333, and originating segment specifications for (operations centre) power and environment, independent radio system (of delivered ADGE system radios) and the Virtual Air Environment.

CUSTOMISATION OF **TeamTalk**

VoTech developed the team assessment capability as a highly configurable framework, realising that no two users are likely to have the same requirements.

For example, there are several types of training and assessment events with differing aims:

- One for quantitative and constructive feedback to students, where the emphasis is on learning and improving, often over several sessions.
- One for qualification or accreditation for entry into specific roles, such as active duty in the military domain or pass/fail for a promotion to higher duties.

Whichever aim is relevant, the process of customisation of **TeamTalk** has two aspects that require addressing:

- conduct the analysis of data from multiple sources regarding performance - this is typically carried out by specialist human factors associates of VoTech
- take the outputs from the data analysis and configure TeamTalk appropriately - this is a VoTech service.

host systems

Integrate

INTEGRATION OF TeamTalk

TeamTalk takes specific instances of training needs assembled or designed elsewhere, and down loads the context-driven behavioural marker sets to the hand-held for use in assessment sessions. Once assessment and debriefing is completed, the reporting phase of the training normally involves interfacing with the user's host systems at various levels. In fully integrated solutions, there may be many other interfaces to **TeamTalk** that need to be properly engineered and commissioned.

VoTech takes the role of systems integrator in the application of **TeamTalk**-based solutions. The after action review system may integrate into the training scenario generators and existing training recording systems such as video and audio. These external inputs allow **TeamTalk** system to provide a total After Action Review system, including individual and team based assessment reports.

The integrated **TeamTalk** facilitates the historical recording of team training assessment reviews, enabling continuous improvement and quality assurance of the training and assessment systems.

Assessor Hand Held Device