ACE - ADVANCED CD&E ENVIRONMENT

TNO innovation for life

From Concept to Capability:
- Brainstorming
- Serious Gaming
- Virtual Experience
- Live Experience

"It is a lot cheaper to fail in a simulated world than in the real world".

INTRODUCTION

ACE provides a world where knowledge and ideas become tangible. By experiencing new ideas and technology in a challenging scenario, a creative process is started where new concepts are born, developed and applied in an interactive way involving all participants. This process is called Concept Development & Experimentation (CD&E).

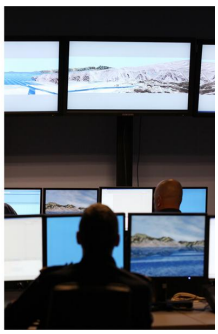
ACE offers easily configurable brainstorming and simulation facilities based on a large set of simulation and analysis tools, and domain knowledge. It provides access to national and international (secure) simulation networks to enhance international cooperation.

CONCEPT DEVELOPMENT & EXPERIMENTATION

CD&E is a methodology that combines thinking and doing, it brings the research and operational worlds together to form practical solutions that work.

The goal of CD&E is to:
- Create insight into complex problems by experiencing the challenges in a simulated setting
- Create a common vision and a change of mindset to come to a solution for a problem that really fits
- Prevent saying after a procurement: “If we had known this beforehand we would have done it differently”

The basis of CD&E is to stimulate creativity and innovation by jointly experiencing new ideas and concepts in a simulated environment. A new concept evolves from brainstorms through experiments to a supported solution for a problem. By documenting new insights and the development of the concept into the concept document, a robust concept description is generated which will form the framework of the final solution. By using the CD&E methodology, the final solution will be of higher quality and follow on acquisitions for missing functionality can be avoided.



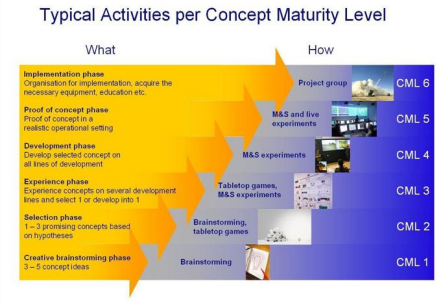
CONCEPT MATURITY LEVELS

CD&E is a creative process which can evolve in many, and sometimes unexpected, directions. To manage the CD&E process a framework of Concept Maturity Levels (CML) is used. The CML framework contains a number of milestones along which the concept evolves.

CML 6: Implemented concept. Requirements are defined and capability is developed and implemented.
CML 5: Proof of Concept. Concept is complete and demonstrated in a relevant operational environment.
CML 4: Refined Concept. Concept refined in all or most lines of development through experiments and demonstration.
CML 3: Selected Concept. Hypotheses tested and application formulated in detail for all or most lines of development.
CML 2: Promising Concept. Promising ideas are selected and reported according to the first draw of hypotheses.
CML 1: Idea of Concept. Basic and out-of-the-box ideas observed and reported in relevant situations and cases.

BRAINSTORMING

Each concepts starts with a good idea. In this first phase the concept needs to be defined and developed by generating ideas and a wide range of spin off ideas though structured brainstorming (CML 1 – 2). TNO ACE offers the Group Facility Room (GFR) and a team of facilitators to organise and manage effective brainstorms.



SERIOUS GAMING

Serious games are used to experience and evaluate new concepts. By playing typical cases and scenarios, insight in the concept is gained in a quick and effective way. This allows adjustments to and further evolution of the concept to be made (CML 2 – 3). TNO ACE offers gaming environments and gaming experts to develop games and evaluate gaming results.

VIRTUAL EXPERIENCE

Interactive human-in-the-loop simulations create a realistic virtual experience to evaluate concepts to a high level of detail. This allows evaluation and further development of concepts in an increasing level of realism (CML 3 – 4). TNO ACE offers several dedicated environments where detailed simulation and evaluation tools are used by simulation experts to create realistic virtual experiences.

LIVE EXPERIENCE

By participating in live events, such as exercises, with simulations or early prototypes, concepts can be tested, evaluated and proven in a larger context. This allows evaluation of the concept on realistic external interaction and shows the readiness of a concept for implementation (CML 4 – 5). TNO ACE and its experts have the experience to embed simulations and prototypes in live networks and provide full exercise support.

FROM CONCEPT TO CAPABILITY

With ACE, TNO has the facilities, the methodology and the experience to develop concepts in a structured way from a good idea to an operationally proven concept ready to be implemented into an operational capability.

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