

Verteidigung – Sicherheit – Transport – Luft- und Raumfahrt



## Erfahrungen mit CryTek im Simulatorbau

Effiziente Modellbildung und Simulation durch neue Methoden und Werkzeuge (17.01.2012)

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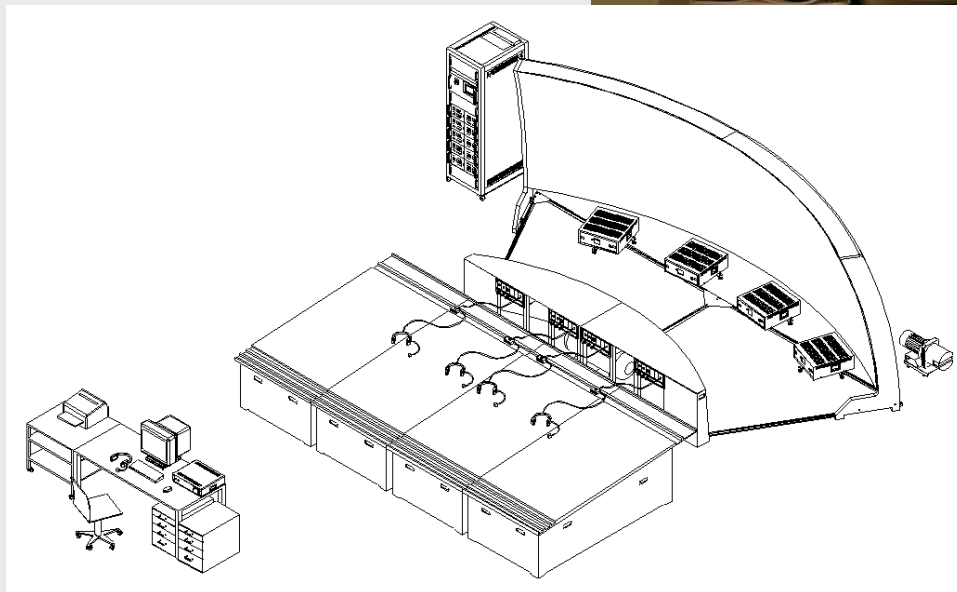
Sicherheit und Mobilität in einer vernetzten Welt.

## Agenda

- > Why? Motivation
- > CryEngine3
- > Advantages
- > Licensing models
- > Modules and functions built by THALES Koblenz
- > Constraints of CryEngine3
- > Roadmap of CryEngine3
- > Technology Demo Video



exemplary picture





## Changes & Challenges

- ◆ Complex scenarios
- ◆ International composition
- ◆ Technology boost
- ◆ Contribution to Network Centric Operation (NCO)
- ◆ Civil & military actors
- ◆ Asymmetrical threat
- ◆ ...





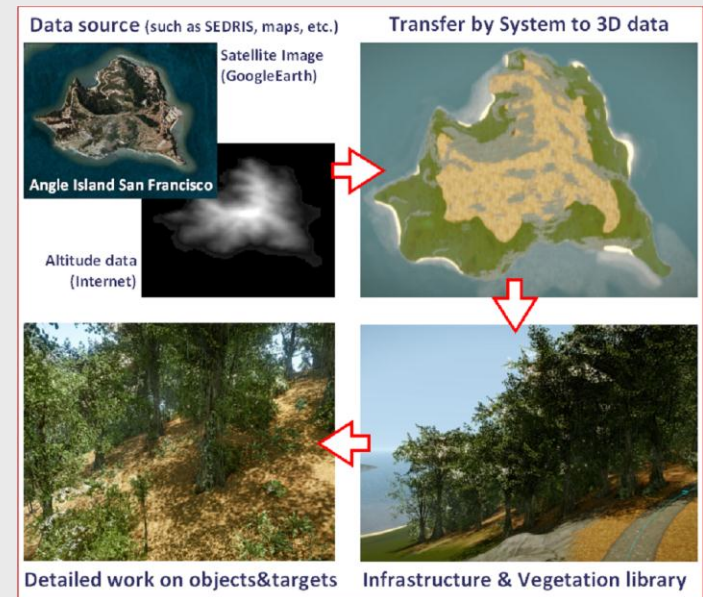


## Characteristics, Tasks & Equipment

- ◆ Junior non commissioned officer
- ◆ Managing his / her personal gear
- ◆ Fighting as an individual
- ◆ Being a military leader, executing command & control
- ◆ Acting as a sensor in the sense of NCO
- ◆ Acting as an effector in the sense of NCO
- ◆ Dependant on data & voice communication
- ◆ ...


## Requirements

- ◆ Realistic scenarios with cutting edge technology (physics, sound, models)
- ◆ Full 3D customized scenarios
- ◆ Full freedom of movement for trainee, including walkable multi storeys buildings
- ◆ Artificial Intelligence
- ◆ Geo-typical and geo-specific terrain generation
- ◆ able to be part of distributed simulation exercises



Inhouse: **Thales View** Its main function is the real-time image generation based on a data base (DB) in the framework of either civilian or military training simulations.

## Serious Games / Game engines

Open source: Crystal Space, OGRE, Panda3D ... 

Commercial (COTS): ESP, VBS2, Cryengine...

The slide features a blue background with a subtle pattern of diagonal lines. A horizontal band of darker blue is positioned across the middle. A green dashed line with a small green triangle at its right end is located just below the middle band.

Microsoft® ESP™

## A New Era in Visual Simulation

Scott Andersen

Business Development Manager

Microsoft



Microsoft

## ESP Overview

Microsoft® ESP™ is a visual simulation platform that brings immersive games-based technology to training and learning, decision support, and research and development modeling for government and commercial organizations.

Microsoft ESP®

# ESP Roadmap

Version	1.0	2.0	3.0
Focus	Aviation Scenarios	Core Technology & Land Scenarios	Indoor / Undersea Scenarios
Market Segments	Military, Civil, and Commercial Aviation	<ul style="list-style-type: none"> <li>• Military Ground Operations</li> <li>• Railway, Trucking Industries</li> <li>• Heavy Equipment Operators</li> <li>• First Response Readiness</li> </ul>	<ul style="list-style-type: none"> <li>• Military Air, Land &amp; Sea</li> <li>• Academic – K-20, STEM</li> <li>• Warehouse / Seaport load crew training</li> </ul>
Product Evolution	<ul style="list-style-type: none"> <li>• Flight Training</li> <li>• Visualization</li> <li>• Coordinated Exercises</li> <li>• Rich Aviation Content</li> </ul>	<ul style="list-style-type: none"> <li>• Curriculum Builder toolset</li> <li>• Cockpit designer</li> <li>• Pluggable physics engine</li> <li>• Visual overlays</li> <li>• Stealth Viewer</li> <li>• Integrated Toolset</li> <li>• Real-time data integration</li> </ul>	<ul style="list-style-type: none"> <li>• Marine surface, undersea</li> <li>• Indoor rendering</li> <li>• Collision Detection</li> <li>• Damage modeling</li> <li>• Avatars</li> <li>• End-to-end Toolsets</li> <li>• Streaming Content</li> </ul>

Microsoft ESP®

## What is CryEngine3

- > All-in-one development solution out of the box
  - > DX9, DX10, (DX11) ready
  - > Physics engine integrated
  - > 3D-Sound
  - > AI system integrated
  - > Real time level generation and editing



## High resolution

- > CryEngine3 is a high resolution image generator
- > Easy to built virtual environments
- > A lot of weapons, vehicles characters are available
- > Oriented towards military use cases



## Physics engine

- > Including a full integrated physics engine in all parts (i.e. vehicles and characters) of the image generator
- > Enhances realistic representation
- > Most objects can be destroyed in a physically correct way





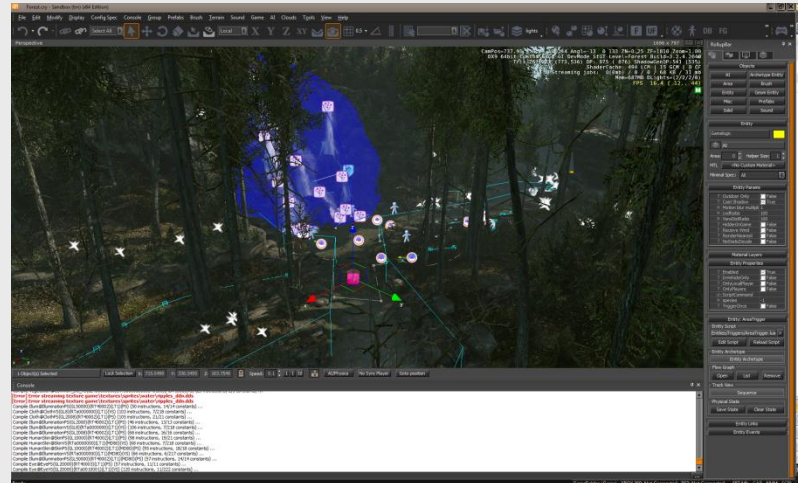
## Facial editor

- > Creation of individual facial mimics, substituting video exercises in the field of small arms and judgemental training



## Sandbox editor

- > Real time level creation and editing
- > WYSIWYP – „What You See Is What You Play“
- > Sets AI behaviour
- > Allows combination of scripting and interaction



## Licensing models

- > Full source code license
- > SDK license without engine source code

## SDK license without engine source code

- > compatibility to future further developments by Crytek (new releases)
- > entry to developer forum and documentation
- > as of 2012 special "Simulator SDK" of RTI (Realtime Immersive) independent SDK, based on Crytek SDK
- > Further developments to engine core flow in RTI-SDK, but not mandatory inverse
- > customer engaged developments into engine core by Crytek possible  
e.g. Record & replay, multi-IG rendering, realistic sensor simulation, 2 D Map
- > At present, RTI opens model shop purchase of ready-to use models

### Built modules by THALES Koblenz

- > Next generation small arms trainer
- > JFST demonstrator
- > Doorgunner demonstrator
- > Convoy demonstrator
- > Post traumatic stress disorder demonstrator

### Functions included

- > Laser range finder
- > Genuine sights
- > Indirect fire support with selectable and scaleable effects
- > C2 system
- > Real weapon integration
- > Weapon tracking interface
- > Instructor operating station
- > Pilot station integration
- > Integration of different character damage models

## Constraints in the CryEngine3 related to simulation systems

- > No support for streaming terrain, therefore no large databasis
- > No support for dynamic terrain
- > No support for HLA (DIS integration as module available)
- > No integrated 2D Map for displaying the simulation members
- > No support for advanced after action review and during action review (simplified recording available)
- > No support for the SEDRIS data format



## Roadmap for the CryEngine3 development related to simulation systems

- > Integration of streaming terrain
- > Implementation of HLA
- > 2D map available as a customer funded module
- > Advanced after action review and during action review available as a customer funded module



Technology Demonstration

# TECHNOLOGY SHOWCASE





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