



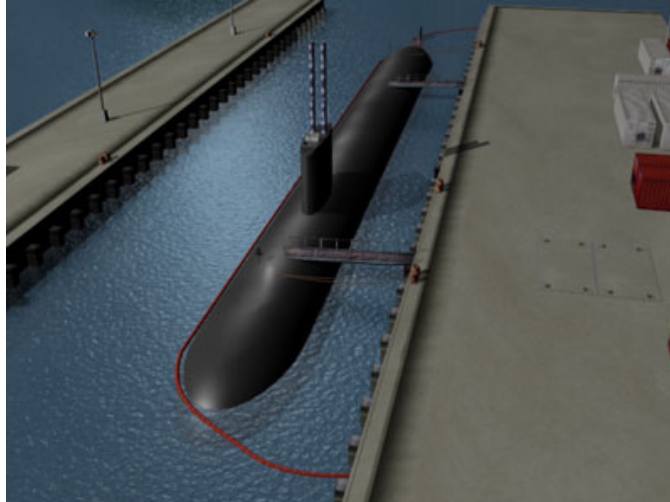
3Dsolve Inc.
Business Background &
Level IV Interactive Multimedia Instruction Capabilities

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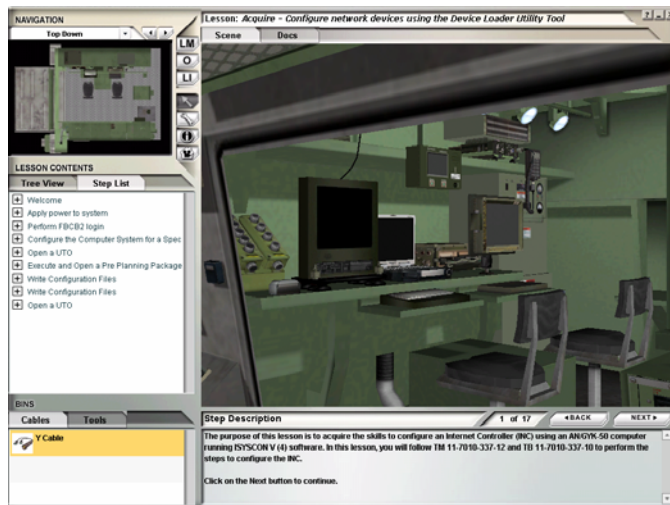
*A view of a Los Angeles-class submarine from **3Dsolve** courseware for the US Navy Submarine School.*



***3Dsolve** aseptic cleanroom training tool.*



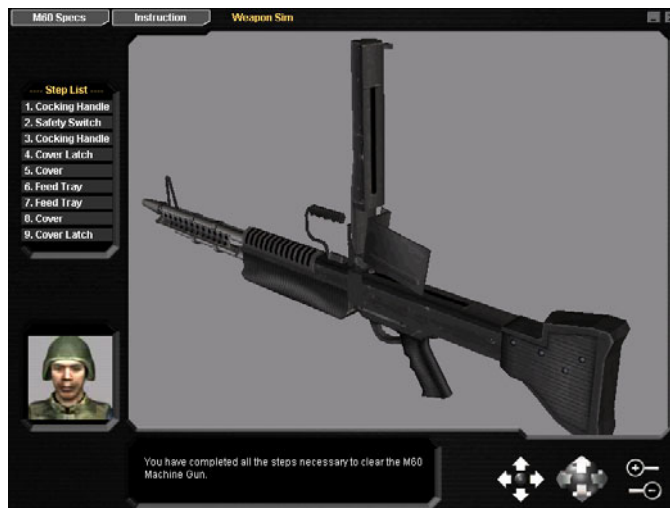
*Simulated equipment from **3Dsolve** courseware for the US Army Signal Corps.*



3Dsolve courseware under development for the US Army Signal Corps.



3Dsolve tactical combat simulation tool.



3Dsolve Special Forces equipment training courseware.

Introduction

3Dsolve, The Simulation Learning Company, is working to become the leader in simulation learning for government, military, and corporate applications, a market estimated to reach \$6.1 billion by 2006. Our collaborative simulation learning solutions enable the widespread deployment of highly engaging and interactive training applications across organizations. Unlike existing e-learning solutions, our simulation learning products use realistic, interactive 3D graphics that enable learning by doing, yet are based upon industry standards and run within Web browsers whenever possible.

Simulation Learning

The Problem

The problem with simulation learning today is that it is comparable to manufacturing before the advent of the Industrial Revolution. There is little or no reusability or recombination of components, and there is certainly nothing approximating an assembly line for smart content. Significant projects become islands to themselves, capable of interacting with other applications only in the simplest of ways.

As a result of the highly idiosyncratic and divergent methods of developing simulation learning, the value of the resulting content is reduced for both developers and customers. Developers find it expensive and time-consuming to create simulation learning content, and customers find that they typically cannot reuse their deployed content in any sort of meaningful way.

The Solution

3Dsolve's solution to this problem is to develop software tools and technologies to improve the development of simulation learning content. Specifically, our software will accelerate development time and reduce development costs for such content, while simultaneously increasing in-the-field flexibility through reusability.

To achieve this, we utilize a combination of open standards / open source on the one hand and our own internally developed commercial off-the-shelf (COTS) software on the other.

The Benefits

The benefits of moving to simulation-based training are significant, measurable, and well-documented:

- **Flexibility.** Instead of being tied to a facility, training can take place anywhere. Instead of occurring only during the workday, training can take place at any time.

- **Cost savings.** For many types of training, students may not need to travel at all, but take the entire course of instruction at their office, base, or other home facility. For other types of training, travel time may be greatly reduced. Education-related travel expenses will drop significantly.
- **Better students.** When in-person participation is required, students can arrive pre-trained (and certified as such). In-person training can then focus on the highest value subjects instead of teaching the basics.
- **Better graduates.** The average knowledge retention rate from a lecture is only 5 percent. For a demonstration, this rises to 30 percent. For hands-on practice, the retention rate climbs to 75 percent—an improvement of 2.5 times over demonstrations and an amazing 15 times over a lecture.¹ Simulation learning offers hands-on practice in a virtual environment.
- **Sustainment.** With anytime, anywhere training, the same materials used before and during schooling will continue to be available to personnel after training is completed, providing an instant refresher course, available whenever and wherever it is needed—the lifelong learning demanded by the realities of the modern world.

A recent paper from the US Army’s Training and Doctrine Command (TRADOC) observed:

The dispersed nature of our forces today and in the future requires new and innovative training approaches for the networked environment. To train collaboration skills while maintaining crucial digital proficiency, these new approaches to training must capitalize on the potential of distributed-learning technologies. Exploiting advances in training technologies—such as interactive simulations available over the Internet, providing realistic scenarios—will result in better-quality individual and collective learning of network-enabled decision-making skills.²

About **3D**solve

Background

The **3D**solve team consists of experts with many decades of experience in applying rich media and 3D interface technologies to the computer gaming, engineering, architectural design, television and motion picture, and IT training industries. Now, using computer game engines and Internet technologies pioneered by our team over the last decade, we are solving critical problems in a way that cannot be replicated except by other companies with our unique expertise.

¹ Meister, Jeanne C., *Corporate Universities: Lessons in Building a World-Class Work Force*, McGraw-Hill, 1998.

² http://www.tradoc.army.mil/pao/Web_specials/lifelong_learning/intro.htm.

Members of the **3Dsolve** team created the world's first 3D computer adventure game, the first set of 3D Internet tools, one of the most successful game franchises in the world, and the software rendering technologies in Shockwave 3D, the leading standard for 3D on the Internet today.

Achievements

In the past 18 months, **3Dsolve** has amassed an impressive series of achievements:

- We **closed and completed two contracts** with US Department of Energy laboratories at Los Alamos, NM and Oak Ridge, TN to study next-generation software tools for site security safeguards and planning using tactical combat simulation.
- We **closed and completed two contracts** with the North Carolina Global TransPark at Kinston, NC to provide sales tools enabling both organizations to work together to close new Global TransPark customers requiring both classroom and e-learning training.
- We **closed and are executing a \$1,800,000 contract** with the US Army Signal Corps at Fort Gordon, GA to provide comprehensive simulation-based training for new recruits in the Information Systems Operator-Analyst (MOS 74B10) course.
- We **closed and are executing two contracts** with the US Navy Submarine School at Groton, CT to provide port security training courseware for force protection and anti-terrorism.
- We have **assembled a world-class advisory board**, including a member of the World Economic Forum, a founder of PayPal, and one of the world's leading academics in the field of instructional design.
- We have been **named to the board of the leading 3D standards organization in the world**, 3DIF,³ along with representatives of Intel, Adobe, Boeing, and other top-tier firms.
- We have been **named to the advisory council for PDF/E**, an extension of Adobe Systems' ubiquitous *Acrobat* file format to accommodate engineering data.
- We have been **named as one of *Military Training Technology* magazine's Top 100**, the "companies that have made a significant impact in the military training industry."

Key Personnel

Richard Boyd, Chief Executive Officer

Prior to co-founding **3Dsolve**, Richard Boyd served as the CEO of 3dvillage, Inc. a company he helped found that was acquired in September of 2001. Prior to that, he was General Manager and VP of Sales for Virtus, where he worked for nearly a decade. In addition to these duties over the years, Boyd has become a highly sought-after industry speaker, logging numerous appearances at key industry conferences such as Comdex, MacWorld, Windows World–London, NCGA, Web3D and the Meckler Virtual Reality conferences. He also spearheaded the effort to use 3D visualization technologies to create virtual environments for movies such as Warner Brothers'

³ See 3DIF on the Web at <http://www.3dif.org>.

feature *Fearless*, a John Hay film titled *The Steal*, as well as during the pre-production phase of Brian dePalma's blockbuster *Mission: Impossible*. With David Smith, Boyd co-wrote an industry-leading book on VRML technologies that was widely distributed and translated into three foreign languages in 1995. He currently serves on the board of the 3D Industry Forum. Boyd is a graduate of the University of North Carolina at Chapel Hill.

Frank Boosman, Chief Marketing Officer

Frank Boosman has over 17 years' experience in a variety of high technology companies. Prior to co-founding **3Dsolve**, he served as VP of Product Marketing for QDesign, a leading vendor of audio compression and security technology. Prior to joining QDesign, Boosman was VP of Marketing Communications for Be Incorporated, a vendor of software platforms for Internet appliances. During his time at Be, he also served as VP of both Business Development and Developer Relations. He was a co-founder of Red Storm Entertainment, an entertainment software firm created by noted author Tom Clancy, where he served as VP of Product Development and was a co-creator of *Tom Clancy's Rainbow Six*, the first realistic tactical shooter game. He has also served as VP and General Manager of Virtus Studios, where he designed the submarine simulation game *Tom Clancy SSN*, and as Senior Product Marketing Manager at Adobe Systems, where he was a founding team member of the *Acrobat* project. Boosman is a member of the board of directors of Ludicorp R&D Ltd., a social networking software firm based in Vancouver, BC, and a member of the board of advisors of Lulan LLC, a for-profit social venture based in Charleston, SC.

David Smith, Chief Technology Officer

David Smith has more than 20 years' experience founding and running companies in the graphics and wireless software fields. Smith's technologies have won multiple industry awards. In 1998, Smith co-founded Neomar, a wireless technologies company that provided the browser for RIM's BlackBerry. In 1990, Smith founded Virtus to create real-time 3D based modeling and visualization applications for desktop computers. He is well known for creating *The Colony*, the world's first interactive first-person 3D adventure game. With Tom Clancy, Smith also co-founded Red Storm Entertainment, a jointly-owned venture with Virtus. He was also CEO and co-founder of Timeline Computer Entertainment, a jointly-owned venture between author Michael Crichton and Virtus. Smith is a graduate of the University of Chicago.

Tim Murray, Vice President, Sales & General Manager, Technical Training

Tim Murray has over 15 years' experience in sales, marketing, operations and business development for a variety of technology start-ups. Most recently, as VP of Sales at Periscope3, an interactive 3D training solutions company, Murray was responsible for closing the company's first strategic deals with Hewlett Packard and Agilent Technologies. From 1992-1998, Murray was a key member of the management team of Seer Technologies, an enterprise application development solutions provider, from a start-up with \$1 million in revenues to a public company in 1995 with \$110 million in revenues. Murray started his professional career as a commissioned officer in the US Navy in the Submarine Force and was an instructor and master training

specialist in submarine tactics at the US Submarine Officer School in Groton, CT. He holds a BS in Electrical Engineering and Computer Science from Villanova University.

Christophe Madier, Vice President, Research & Development

Christophe Madier has over 13 years' experience in software engineering, with a particular focus on advanced 3D modeling and rendering systems. Prior to joining **3Dsolve**, he served as Senior Software Development Manager at Discreet, a division of Autodesk, where he managed two teams of engineers responsible for the core modeling and animation capabilities of Discreet's flagship product, 3ds max. Prior to joining Discreet, Madier was Director of Engineering at Animation Science Corporation, where he oversaw the company's engineering team developing tools based on particle system technologies. He has also served as a Software Engineer at ArSciMed, the headquarters of the French Army, and Hewlett Packard, all in France. Madier holds a BS in Electronics & Computer Science and an MS in Computer Science with Highest Honors from the University of Paris.

Development Overview

At **3Dsolve**, we leverage our leading-edge 3Dnerve collaborative e-learning delivery technology and industry-leading authoring tools to create engaging, interactive training and presentation applications. Whether a simple conversion from PowerPoint to the Web, interactive computer-based training, or sophisticated interactive 3D models and simulations, **3Dsolve** produces high-quality, engaging, and entertaining solutions that are based on your business objectives and are within your budget.

We believe in a team approach, working hand-in-hand with our clients to understand their learning objectives and design and budget parameters. Using a proven step-by-step methodology—Analyze, Design, Develop, Integrate and Evaluate—the **3Dsolve** project team guides the content development process from interviewing and understanding a day in the life of the student audience, to evaluating the end product with end-users upon completion. Our mission is to create custom content that meets client objectives. Our process ensures content is created according to our customers' design specifications with frequent project reviews, Alpha and Beta testing, and evaluation. Much like creating and producing a film, we go through a rigorous process of laying out the various alternatives to our client for the introduction of rich multimedia appropriate for the project.

Service Offerings

Custom Content Development

3Dsolve can create a full spectrum of fully interactive, multimedia e-learning content delivered as Computer-Based Training (CBT), Web-based applications, or via video. **3Dsolve** has extensive experience building Sharable Content Object Reference Model (SCORM)-compliant, Learning Management System (LMS)-based training applications.

Courseware Development

3Dsolve will provide complete project management, from requirements analysis through production. Instructional designers and graphic artists work with clients to determine the proper blend of advanced multimedia based on learning objectives and the project budget.

Courseware Development Methodology

Analyze

What is the need for this e-learning product? Through a comprehensive set of interviews, a profile of the target audience is created and the features and benefits of the content redesign are identified. The needs analysis establishes the objectives, requirements and benefits for the project that is underway.

Design

An instructional design document is created for the e-learning project. It is analogous to an architect creating initial blueprints for a building. It provides the framework for the course outline with course title, modules, lessons and objectives. This framework also includes an initial storyboard for one lesson to ensure our design approach is in keeping with client objectives. Once our client approves the blueprint, we move into the course development stage.

Develop

The develop stage features the integration of artwork and instructional design. This is where the magic happens. Lessons are created from the design storyboards culminating in an Alpha version of the product.

Integrate

The integration stage features the creation of the beta version of the product. The beta version of the product includes integration of content such as video, audio, Flash, animation, and 3D simulations. The beta test phase includes end user testing and feedback. This feedback is incorporated into the final gold master candidate. The courseware will be delivered on the desired platform, which can include **3Dsolve**'s multi-user 3D4M, stand-alone CD-ROM for CBT, or other popular Web-based learning management platforms.

Evaluate

Upon the client's request, **3Dsolve** can gather feedback from end users on the product. This can include:

- Level 1: Participants' reaction to the learning product.
- Level 2: Measurement of learning through assessments.

- Level 3: Assessment of student’s performance on the job or performance on a certification test.

Project Management

3Dsolve is in the business of forming long-term relationships with our clients. We facilitate this through strong project management to help guide and organize resources internally and externally to meet project objectives

Advanced Multimedia Development and Integration

3Dsolve can create advanced interactive 3D models of hardware, manufacturing process simulations, animations, Flash presentations, and narrated marketing and sales promotions.

With over a decade of experience pioneering 3D simulation for computers and game consoles and the Internet, **3Dsolve** is uniquely qualified to create immersive, compelling simulation content for the next generation of computer-based training. When we say “next generation,” we mean technologies and content that take full advantage of the human and machine interaction resulting in courseware that will truly stand the test of time and have a long shelf life.

It has long been known that doing rather than reading about or observing a task results in better information transfer and longer retention. It stands to reason that the more senses one engages the more brain synapses are recorded. **3Dsolve**’s immersive, collaborative e-learning courseware requires a small premium over the page-turning courseware that sometimes passes for e-learning today, but is more effective and pays greater dividends over a longer time span.

3Dsolve art teams are experts at creating 3D computer environments, objects, and characters. To capture real-world places and objects, we use a well-defined process that includes conversion of CAD data or direct capture using 3D scanners or digital photography.

3Dsolve interactive 3D simulations are composed of:

- 3D geometry created by artists or captured from laser scanning or converted from existing CAD drawings.
- Texture imagery created by artists or converted by artists from photographs of an object or place.
- The multimedia interactions and animations that define how the user interacts with the simulation.

Estimating Pricing for E-Learning

Background

3Dsolve has gained a wealth of practical experience in estimating the scope of highly complex Interactive Multimedia Instruction⁴ (IMI). In developing IMI that will include simulations of job performance tasks such as operating or maintaining equipment, the scope of developing simulation learning has two major scope components:

- **E-learning development.** Converting classroom materials to web-based or PC-based e-learning or the development of new e-learning content.
- **Level IV simulation lab development.** The development of physical exercises into a web-based and/or PC-based simulations.

The e-learning component is designed to present information to students such that the student can demonstrate mastery of the learning objectives identified during the analysis phase of the project. The simulation lab component is designed to provide a series of exercises that correspond to the job performance requirements identified during the analysis phase of the project. The e-learning component provides the instruction (facts, rules, terms and conditions) providing the student with the knowledge to perform the physical job performance tasks simulated in the lab component. The e-learning knowledge is validated or tested through modular assessments and end of course testing. The lab component is broken up into lab exercises. Each lab exercise typically has four modes of learning, popularly known as the FAPV model:

- Familiarize
- Acquire
- Practice
- Validate

The student has the option to go through all four modes of lab exercises or, if the student chooses, jump to the validate mode. The validate mode is the test mode. The student is timed and must accomplish the set of tasks in the allotted time. Student performance is tracked and recorded in an After Action Review (AAR) file. This data can be uploaded to a SCORM-compliant LMS for tracking.

Estimating Cost for Interactive E-Learning

The requirements for Level III and IV IMI have evolved to the point that advanced multimedia is a *de facto* requirement in courseware development. The inclusion of interactive learning aids such as Flash animation, 3D simulation, 3D interactive models, and similar media has further complicated the process of developing an early cost estimate for courseware that includes these aids. Understandably, customers want to know what it will cost them to convert an instructor-led

⁴ Level I-IV IMI definitions can be found in US Army Training and Doctrine Command (TRADOC) Pamphlet P350-70-2, *Multimedia Courseware Design Guide*.

classroom curriculum to e-learning. This leads to a number of questions, summarized in the “Customer Courseware Survey” at the end of this document.

In summary, developing superior e-learning is analogous to creating and producing a film. During the process of creating a film, storyboards for each scene are created and each scene may have various special effects from low-budget (none) to high-budget. In evaluating the script for a film, a cost-benefit analysis occurs to determine the level of special effects implemented.

Successful content development companies are those who approach e-learning with the above mindset. When developing a cost model for the project, the final price will be based on answers to the questions outlined in this document. Ultimately, the technique or multimedia aid selected must meet the learning objective.

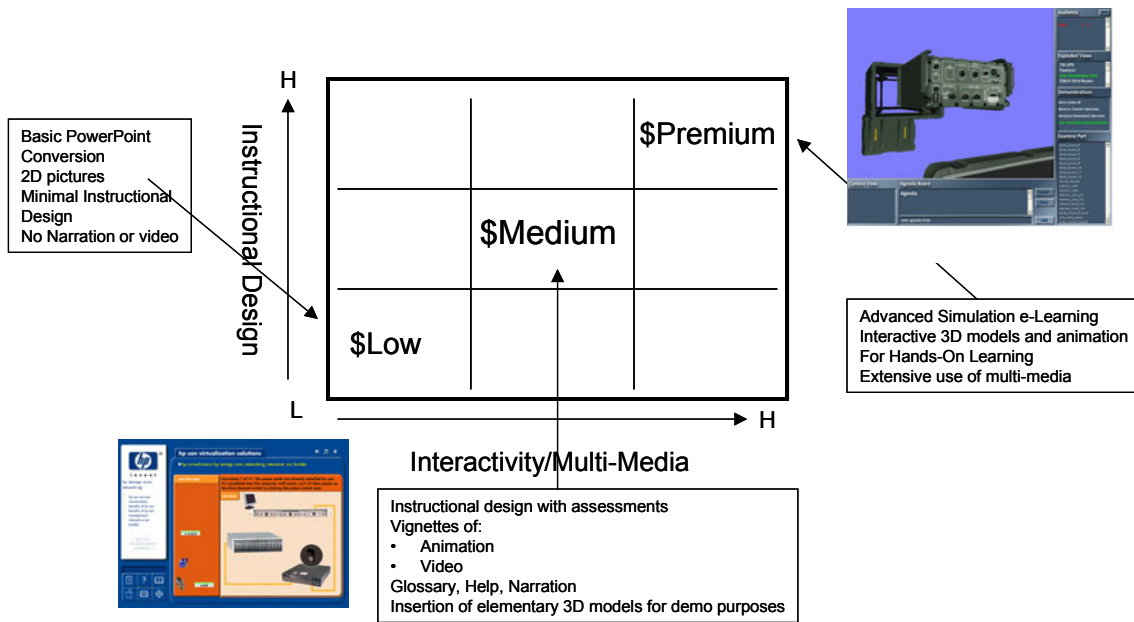
Courseware Development Approach

3Dsolve has developed a courseware development model that gives the customer the flexibility to choose the various learning techniques and level of interactivity (video, animation, and 3D) based on budget and the learning style of the target audience. **3Dsolve** projects have ranged from basic conversion of existing instructor-led courses, usually text and pictures, to a basic Web-based e-learning course, to building highly interactive, multimedia courseware that typically includes audio narration, video vignettes, animation, and interactive 3D simulations.

The figure below provides an illustration of the pricing model⁵ developed by **3Dsolve**. There are two key factors in the calculation of development time and cost:

- Instructional design sophistication
- Multimedia and interactivity

⁵ The price per e-learning hour is a competitive advantage of **3Dsolve**. The prices have been removed for this version.



Instructional Design

Our customers frequently ask us to take material and modify the content to make it a true e-learning experience. We help design the various learning techniques used to meet the learning objectives. Techniques range from simple text and pictures to video, an animation or a multimedia-rich 3D model simulation where the student interacts with an object as if it is the real thing. Typically, we take documentation or PowerPoint slides with little or no training design and structure and engineer instructional design into the content. The first part of the process is to establish learning objectives and each module of the training will start with learning objectives. The content is then designed to meet and/or exceed objectives. Assessments are added at the end of each module to test what the student has learned.

The first quadrant includes minimal instructional design. Projects in this category involve a straight conversion of instructor-led training content, with no requirement to enhance or change instructional design.

The second quadrant infuses instructional design into the content. When incorporating multimedia aids such as video vignettes and animation, instructional design is required to smoothly integrate content with these aids. It involves a detailed process of storyboarding the learning module integrating content with these techniques

The third quadrant involves extensive ground-up instructional design. Projects in this quadrant are typically new and have a requirement for extensive use of multimedia. They also typically mandate both pre-testing and post-testing for learning experience measurement, self-mentoring so that if a student needs assistance in a simulation lab they have an option to obtain the answer or bridge to the content teaching the step.

Multimedia Integration

Price and development time will scale upwards as the level of multimedia and interactivity increases. Without interactivity or multimedia, we are displaying text and static pictures. Projects of this type are very straightforward and can be done very quickly. Our real value in e-learning is combining instructional design with multi-media with the objective of creating an engaging and challenging product. Creating engaging material becomes critical if the courseware will be taken without a live instructor. Adding video, animation, narration, and 3D model simulation scales time and cost up.

First-quadrant projects require bare bones multimedia. These may have elementary Flash animation and 2D still images.

Second-quadrant projects are higher quality engaging e-learning. Typical e-learning products in this category include:

- Audio narration
- Extensive use of animation
- Some vignettes of video
- 3D models for demonstration and exploration

Third-quadrant projects include the integration of 3D models and simulation with lecture. The e-learning product will include areas where a lab exercise is required to certify the student understands and can perform the required job performance step.

Instructor-Led Training Development

3Dsolve can also develop instructor-led training (ILT) in addition to e-learning. A general rule of thumb is a 2:1 ratio from instructor-led training to finished hour of e-learning. However, the ratio, to which we sometimes refer as the *compression ratio*, will vary based on the quality of the instructional design of the current ILT. In some cases where the ILT is of poor quality the ratio could be low as 1:1. If the ILT is of high quality and the use of multimedia is generally light, the compression ratio could be as high as 3:1.

The table above reflects a range to where some projects require a transformation of ILT to e-learning and do not require a tremendous amount of instructional design and multi-media. Other projects require additional instructional design and start adding elements of multimedia. Our development team is prepared to take on transformation of ILT to e-learning and new courseware development.

Project Methodology (ADDIE)

The real world is based on fixed time scales and tight budgets. When we develop our initial statement of work, we establish an estimated project cost based on the courseware discovery

survey. This survey and the questions we ask our clients during the first step of our process enable us to establish an approximate cost to develop the courseware with a high level of accuracy. We offer this estimate as a firm number that we will go no higher than unless the client authorizes changes after we complete the Analysis and Design phases. We create a statement of work outlining the following subsequent phases:

- **Analyze and Design.** During these two phases the functional specification for the e-learning course is created. It is at this point that our clients have the opportunity to choose the level and sophistication of multimedia usage.
- **Develop.** Courseware is developed.
- **Integrate.** Integrate all the components into the final product for Beta and final gold master acceptance testing.
- **Evaluate (optional).** Interview and analysis of users of the course.

Estimating Scope and Cost for Level IV IMI

As a result of **3Dsolve**'s contract with TRADOC to develop the first Level IV IMI simulation for the US Army Signal Center and Fort Gordon 74B10 MOS, we have developed a methodology to analyze the physical tasks for the 74B10 MOS and modularize the tasks in FAPV simulation lessons. The first step in estimating the scope of the simulation project is to perform a detailed task analysis. During the task analysis it is important to clearly define measurable parameters in order to accurately analyze the scope of this project. **3Dsolve** utilizes the following taxonomy for its development purposes:

- **System (Course).** The highest level of content organization.
- **Module.** Courses will contain one or more modules, e.g., TIMS, DTOC, Network Academy.
- **Lesson (Exercise).** Each module will contain numerous lessons. At the beginning of the projects, the unit of instruction was an exercise. Each exercise combines F, A, P, and V modes of instruction. The Acquire mode contains supporting learning content in addition to the step by step instructions. Therefore, 3Dsolve feels that the best title for this unit of instruction is the lesson.
- **Task.** Each lesson provides instruction on one or more tasks.
- **Sub-Task.** A task may contain several sub-tasks, each requiring several steps.
- **Step.** The lowest level of student interaction; describes what occurs on a single frame of instruction in the lesson.

After identifying each task's sub-tasks and steps, the instructional design team then organizes the tasks into an FAPV lesson matrix that best sequences the content into a logical instructional flow. Each task was analyzed to determine the following:

- Level of complexity in performing the task
- Number of discrete steps required to perform each task (including sub-tasks)
- Degree of interaction with the 3D environment where the step is performed
- Terminal and enabling objectives for the task

- Estimate of time for performing each task based on the level of complexity

3Dsolve applied prior industry parameters and a sound instructional design principles in calculating the student “seat time” estimates for the courseware. Four factors were considered:

In Level III IMI, the accepted benchmark for estimation of seat time is two frames per minute. In the FAPV model of instruction, the Acquire mode of instruction closely follows the Level III format of linear instruction. The two frames per minute benchmark can serve as the starting point for determining an Acquire mode lesson’s seat time estimate. In the 3D environment and with the simulation of the equipment’s operation, many steps require the completion of equipment operation before the student can proceed to the next step in the lesson. As an example, pressing an initialize button on a unit may take 10-15 seconds to complete before the student may proceed to the next step. This factor may increase an Acquire lesson’s seat time over a similar Level III IMI lesson.

In the Acquire mode lessons, navigation between steps occurs automatically as the student successfully completes a step. However, in the Practice and Validate mode lessons, students must manually navigate between each step. There are several navigation methods available to the student, but that time must be accounted for in the estimation of the learning experience. Depending on the complexity of the task/step, the amount of 3D scene navigation could be considerable. **3Dsolve** believes that the time required to complete Practice and Validate lesson modes will always be greater than the Acquire mode for that lesson.

Acquire mode lessons provide the student with instructional and action text that directs the learning activity. However, in the Practice and Validate modes, students are required to perform the steps in the lesson without any guidance from the lesson. Students are expected to open the associated technical manual for that lesson, typically in a separate window, and find the place in the technical manual that lists the tasks and steps for the lesson. In the Practice mode, students may also access the hint button to receive a hint for a particular step. This activity will add to the time students will spend in Practice and Validate lessons, and thus will further increase the seat time for those lesson modes.

Each lesson’s cognitive skills requirements could effect the seat time of that lesson. **3Dsolve** believes that lessons that teach simple procedural steps that don’t require the student to comprehend data, make application of previous learning content, or analyze results of previous steps will take less time than lessons that involve higher levels of cognitive skills.

The **3Dsolve** instructional design team determined that there are typically three levels of complexity for tasks and developed time estimates for each of the three complexity levels based on consideration of the target audience, complexity factor, and benchmark figures for calculation of Level III IMI student seat time as a base.

| Complexity Factor | Required Interaction with 3D Scene | Competency | Time Estimate per Step |
|-------------------|------------------------------------|---|------------------------|
| Low | Minimal interaction | Simple procedure | 20 seconds |
| Medium | Moderate interaction | Some procedural, some conceptual | 45 seconds |
| High | Significant interaction | Some procedural, some conceptual, some analysis | 90 seconds |

The time estimates for each step took into account the time a student would need to perform the step in all three modes of instruction: Acquire, Practice, and Validate.

Using this model for creating simulation lab lessons, **3Dsolve** created a pricing model which is based on a per-lesson cost basis. The cost per lesson is derived from the complexity factor table above. This calculation is much more accurate when compared to the traditional US Army Distance Learning XXI (DLXXI) IMI estimates based on anticipated student “seat time.” During the course of the TRADOC 74B10 project, **3Dsolve** presented qualitative data to show how seat time is a subjective calculation. Calculating scope and price based on simulation lesson complexity is a more accurate method. **3Dsolve** can more precisely calculate cost per lesson based on our Level IV IMI development process and automation tools. Our development cost process takes into account the lesson complexity as it equates to using various multimedia objects such as Flash and 3D. The price per Level IV simulation is based on a FAPV design and an objective to design the acquire lab to equate to approximately 30 to 40 minutes of instruction. The price per lesson will vary based on whether the lesson is classified as a low, medium or high complexity lab and the number of tasks/steps for each lab.

The absolute key to accurate scope and price forecasting is sound client-furnished information for the courseware, based on a thorough task analysis.

Corporate Summary

| | |
|--------------------------------|--|
| Corporate Name | 3D solve Inc. |
| Address | 1140 Kildaire Farm Road, Suite 200 Cary, NC 27511 |
| Telephone | 919 469-9950 (main) 919 469-9954 (fax) |
| Website | http://www.3dsolve.com |
| Number of Employees | 20 |
| Type of Business | Small business |
| Markets Served | Department of Defense, civilian government (federal and state), corporate |
| Corporate Positioning | 3D solve, The Simulation Learning Company, offers military, government, and corporate customer’s collaborative simulation e-learning solutions that enable the widespread deployment of highly engaging and interactive training applications across their organizations. |
| DLXXI Points of Contact | <p>CEO Richard Boyd richard.boyd@3dsolve.com 919 469-9950 x111</p> <p>DLXXI Program Management Tim Murray tim.murray@3dsolve.com 919 469-9950 x113</p> <p>DLXXI Contract Management Greg Rivera greg.rivera@3dsolve.com 919 469-9950 x116</p> <p>DLXXI Instructional Design Steve Reed steve.reed@3dsolve.com 919 469-9950 x123</p> |

Performance Summaries

US Army Signal Corps 74B10 Courseware

| | |
|------------------------------|---|
| Program Title | Distributed Learning Interactive Multimedia Instruction (Level IV IMI) DL XXI |
| Customer | US Army Signal Center and School, Fort Gordon, GA |
| Prime Contractor | Computer Sciences Corporation |
| Contract Number | DABT60-00-D-0004 DO #0102 |
| Contract Type | Firm Fixed Price |
| Period of Performance | 12 months |



Program Description

This project is to design and develop standalone PC-based simulations for the 168 point of instruction hours of classroom lab instruction for the 531-74B10 (531-25B10) Reclassification Course. These simulations will cover the following major areas of instruction:

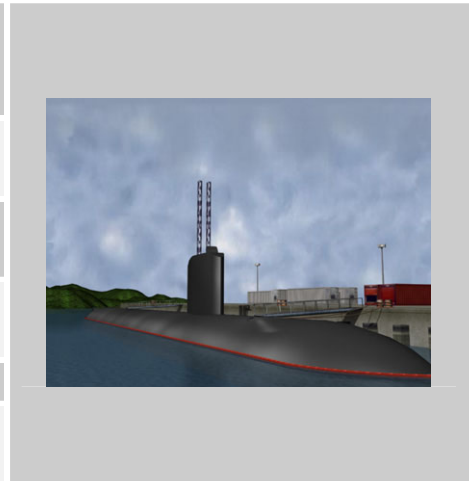
- Digital Tactical Operations Center (DTOC)
- Tactical Internet Management System (TIMS)

3Dsolve-produced simulations (Level IV IMI) will be used to support the 74B10 Reclassification Course conducted by the Reserve Component TASS Battalions. With the ability to access training through the Internet or the Signal Center’s Resource Center, soldiers will save time and Government money by taking the simulations at their assigned unit, rather than having to travel to a training center. These simulations will also be used to support the resident school’s remedial and refresher training, as well as sustainment training.

The PC-based courseware will be delivered as an Internet-accessible and downloadable .zip file that is installed as a player on a personal computer. The Internet-accessible version of the courseware will consist of a downloadable .zip file stored in the Blackboard LMS as a course document. A version of the courseware will also be delivered on a standalone CD-ROM and will comply with SCORM 1.2.

US Navy Submarine School FP/AT Training Tool

| | |
|------------------------------|--|
| Program Title | Submarine On-Board Training (SOBT) Force Protection/Anti-Terrorism (FP/AT) Simulation Training |
| Customer | US Navy Submarine School (NAVSUBSCOL) SOBT, Groton, CT |
| Prime Contractors | Lockheed Martin Information Systems & Electric Boat Corporation |
| Contract Numbers | SOBT SOW IDs 04-0131 and 04-0133 |
| Contract Type | Time and Materials |
| Period of Performance | 12 months |



Program Description


Under SOBT ID 04-0133, **3Dsolve** is designing and recreating the existing SOBT Force Protection/Anti-Terrorism CD-ROM video training (ICW-GT-03009) using 3D simulation techniques and commercial off-the-shelf (COTS) game engine software technology to support refresher training and testing for submarine in-port security.

The goals of this project include:

- Reducing the long-term cost of SOBT training materials development
- Creating a more variable and realistic training environment for submariners
- Increasing the replay value of training materials, encouraging sustainment
- Bringing consumer-oriented interactive game design techniques to SOBT training
- Providing SOBT with a platform for future simulation-based training development

Under SOBT ID 04-0131, **3Dsolve** will design and extend the FP/AT simulation training delivered in SOW 04-0133 to include a 3D model of the forward compartment of a *Los Angeles*-class (688I) attack submarine. The software product in SOW 04-0133 includes FP/AT scenarios involving the general pier area and the topside of the 688I. With the 3D model of the interior of the 688I, five additional FP/AT training scenarios will be developed and packaged with the software product.

3D4M Virtual Collaborative Learning Environment

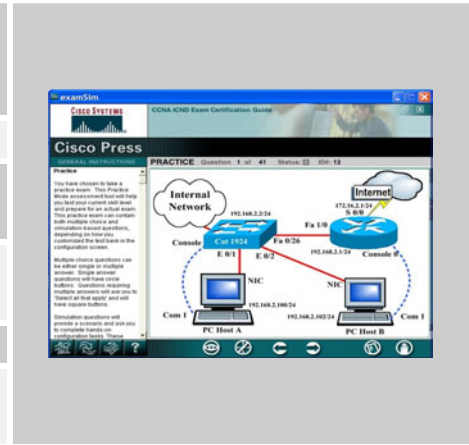
| | | |
|------------------------------|--|---|
| Program Title | 3D4M Virtual Collaborative Learning Environment |  |
| Customer | North Carolina Global TransPark (GTP) Authority, Kinston, NC | |
| Prime Contractor | 3Dsolve Inc. | |
| Contract Number | 04-246-000794 | |
| Contract Type | Firm Fixed Price | |
| Period of Performance | 5 months | |

Program Description

3Dsolve delivered a custom version of 3D4M, 3Dsolve's collaborative tool for the Internet that enables a blended delivery of learning content (asynchronous or live synchronous instruction) and a virtual 3D lab environment for hands-on instruction. 3D4M features a 3D classroom visual metaphor and includes the use of learning objects from a variety of media to be used in the learning experience, such as PowerPoint slides, video, audio, Flash presentations, and interactive 3D models. Performance-based learning is enabled through interactive simulations that can be controlled by the instructor. The instructor also has the option to selectively give control of the simulation to students.

Cisco Prescriptive Exam Simulator

| | |
|------------------------------|--|
| Program Title | Cisco Prescriptive Exam Simulator with Internetwork Operating System (IOS) Command Line Simulation Questions |
| Customer | Cisco Press |
| Prime Contractor | Tech 2000 Inc. |
| Contract Number | Professional Services Agreement dated 16 April 2003 |
| Contract Type | Firm Fixed Price |
| Period of Performance | 6 months |



Program Description

3Dsolve created and delivered a prescriptive Cisco Exam Simulator (CES) for personal computers to Tech 2000, a Cisco Learning Solutions Partner. The Exam Simulator allows a person to take prescriptive Cisco practice exams on a single designated Cisco course featuring Cisco Internetwork Operating System (IOS) command line simulation questions. The product enables prospective Cisco CCNAs, for example, to create on the fly practice exams that include multiple choice, multiple answer questions, and/or Cisco IOS questions. The Exam Simulator scores the students and provides remediation for areas where the students have not met the passing score. The product features interactive IOS simulations as if the student is interacting with real Cisco equipment.

Custom Courseware Survey

This template is designed to guide **3Dsolve** customers in providing basic courseware information that we can use to initially scope a courseware development project. **3Dsolve** will use the information to build an initial estimate of development cost and time frame.

| Item | Description |
|-------------------------------------|---|
| Course Title | What is the name of the course? |
| Course Length | How many hours of equivalent instructor-led training will be provided? |
| Course Objectives and Goals | Upon completion of the course the audience will be able to...? |
| Course Description | Please provide a one-paragraph description of the course. |
| Problems to Be Solved by the Course | Is there a problem that needs to be resolved through this training? If so, what is it? |
| Delivery Time Frame | What is the desired time frame for course delivery? |
| Target Audience | Describe the target audience ⁶ for this training. Please include the following information: <ul style="list-style-type: none"> • Job title • Job function • Education • Skills |
| Course Prerequisites | What are the prerequisite courses or base knowledge level needed for the course? |
| Existing Course Issues | What are the top problems with the current course, if any? What is the most urgent? |
| Existing Information | How does the target audience currently acquire this information? |
| Pre-Test Assessment | Is a pre-and post-assessment required before a person takes the course? Must they pass? Does the customer have a test bank prepared? |
| Assessments | Is it required to have an objective measure of what each learner has learned after completing this e-learning? |
| Delivery Approach(es) | What is the desired delivery method for training? <ul style="list-style-type: none"> • Instructor-led in house training. • CD for computer-based training. • Web-based asynchronous training (no live instructor). • Web-based synchronous training (live instructor). • Blended learning (a combination of delivery methods). |
| Skill(s) to Be Acquired | Will the target audience acquire a psychomotor skill, verbal information, intellectual skill, or an attitude? |

⁶ For example, Technical Sales Engineer, Sales Manager, Product Installation Technician, etc.

| | |
|----------------------------------|---|
| | <ul style="list-style-type: none"> • Verbal information: yes or no; if yes, please describe the information. • Psychomotor skills (teaching a student to physically do something): yes or no; if yes, please describe the skill. • Intellectual skills: yes or no; if yes, please describe the skill. • Attitudes (teaching to choose one behavior over another): yes or no; if yes, please describe the attitudes. |
| Client's Available Resources | <p>What human resources will the client provide?</p> <ul style="list-style-type: none"> • Instructors: The client desires that its instructors be trained by 3Dsolve; these instructors will then teach the course. • Subject Matter Experts (SMEs): The client will provide SMEs to 3Dsolve to assist in developing content. |
| Existing Course Materials | What information ⁷ will the client provide to 3Dsolve to build the course? |
| Course Outline | Please provide the high-level topics the course will cover. |
| Video Requirements | Is there a desire to include video? If so, please describe the content and approximate length of this video. |
| 3D Graphics Requirements | Is it important to use 3D graphics to create real-life hands-on training of one or more products? How many products will require 3D? How much interactivity ⁸ is required? |
| Learning Management Capabilities | Please note specific requirements in the area of learning management. Will the project require integration of course content into an LMS? If so, which LMS? |
| Outsource Requirements | Will the client require the course to be hosted by 3Dsolve ? Will the client require or desire that 3Dsolve teach the course? |
| The Big Picture | What is the one thing the client would like students to say upon completion of the course? |
| Other | Please note any other significant requirements. |

⁷ For example, documentation, existing presentations, online information, artwork, CDs, video, audio, AutoCAD models, etc.

⁸ Interactivity is defined by the student virtually interacting with the model.