

An ACS Perspective::

Making the Right Decisions About Learning Simulations

**An ACS: Expertise In Action™
White Paper**



**Affiliated Computer Services, Inc.
ACS Learning Services**

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Why the Recent Hype About Simulations?

Learning simulations have been used for many years to train people on a wide range of skills, most extensively and predominantly by the military. Simulations have also been effectively used for many years to train business people on an equally wide but different range of skills. However, never has the topic of simulations received so much visibility and hype from the corporate learning community as in the last three or four years. Why is that?

This hype is due in part to three factors:

- The belief that simulations—which once were too hard, too complex, and too costly to develop—are now easier and less expensive to build
 - New commercially available tools simplify design and delivery of technology-based simulations, particularly for software training.
 - The potential to deploy simulations online provides a broad reach to large populations of learners. Gartner’s research analysts expect that simulations “will evolve to become the ‘killer application’ for e-Learning.” (Lundy, Harris, and Logan, 2002)
 - Younger generations entering the workforce see high-tech, virtual reality and gaming environments as the norm—the pervasiveness of this technology sometimes making these environments appear easy to create.
- General frustration that more traditional learning interventions have not generated the desired business performance improvement
- Recent interest in creating global learning communities that leverage team collaboration to solve common business problems

Despite the hype, discussions regarding simulations should not center on whether this delivery channel is the next killer application in learning, the next technological innovation, or the next panacea to attract and engage Generation Y learners. Discussion should center on the fact that well-designed and well-executed simulations, whether technology-enabled or facilitated in a classroom, help close performance gaps and achieve higher levels of sustainable performance than many of the more traditional training approaches. The discussion should center around why, when, and how to use learning simulations effectively, and where to set priorities.

These are the questions our clients are asking us, and these are the questions this paper will address.



What Is a Simulation?

Definition: To start this discussion, it helps to have a common understanding of what a simulation is and is not. There is no commonly accepted definition, and the perception of what constitutes a simulation also varies widely.

For our purposes, we define a simulation in the context of what makes it effective. We define simulations as learning experiences that provide learners with a safe opportunity to:

Realistically practice skills, perform tasks, apply knowledge, test judgment, solve problems, arrive at appropriate conclusions, and make choices and decisions in a setting that is as close as possible to (if not the same as) their actual job environment

See or experience the consequence or result of that performance

Receive feedback on the consequence or result that is tied directly to the learners' performance

An effective simulation consists of four key elements: realistic practice, choice, consequence, and performance-based feedback.

Format: Simulations can take many forms. Frequently, simulations are assumed to require software that replicates a situation or technology. However, learning simulations can be viewed on a continuum that varies significantly in ease and cost of designing, building, delivering, and more importantly, in terms of business outcomes to be achieved. Simulations can be enabled by computer technology and built using electronic authoring tools for Web or CD deployment, or they can be deployed through a Web portal. Simulations can be as complex as flight simulators and computer-enabled war games, they can be conducted in a lab environment, or they can be as low-tech as facilitating classroom scenarios with nothing more than paper handouts. They can be as straightforward as scenario-based role-plays with observation, expert feedback, and coaching, or as complex as a total immersion team leadership experience that is essentially a “turnkey” operation—the simulation is started and continues to run in a simulated environment, without interruption, until all tasks and assignments are completed and outcomes achieved. **Appendix 1** provides some examples of simulation options along this continuum, which include:

- Case scenarios that build and form the core of a training process
- Threaded case studies, frequently requiring team collaboration
- Basic simulated performance (processes and procedures)



- Complex simulated performance (business applications, complex business processes, and/or attitudinal shifts)
- Virtual reality
- Managed experiences

By our definition, these options are “simulations” if they meet the four basic criteria: 1) It is realistic and specific to the job tasks. 2) Learners have a variety of choices or decisions they can make regarding the best way to respond to the situation, and they are required to make a choice or decision. 3) The consequence or result of each possible decision is made clear to the learners. 4) Learners get feedback on the decisions they made that is tied to the results and that differentiates the quality of their decision. These criteria represent a more stringent instructional design requirement than for a common case discussion, in which learners read a scenario and discuss possible outcomes with their table teams and with the facilitator.

Types: Simulations can be used to teach a wide array of skills; however, like trying to find a common industry definition of a simulation, there is no one agreed-upon way to classify types of simulations. In the *Handbook of Research for Educational Communications and Technology* (1996), Margaret Gredler categorizes simulations as either experiential or symbolic. In a 2004 article in *CLO Magazine*, Brian Summerfield cited two basic simulation categories used by IBM that work fairly well for our discussion: **soft skills** and **hard skills**.

Soft skills that lend themselves to simulations include leadership, decision-making, problem-solving, negotiating, customer service, and selling. Soft skills simulations tend to focus on interpersonal interactions, should reflect a realistic social environment, and should be role-specific to provide the business context for performance.

Hard skills that lend themselves to simulations include flying an airplane, operating equipment or machinery, driving a car, performing specific steps in a manufacturing process, or developing a software program to perform an automated task. Hard skills simulations tend to employ technology and fall into two categories: physical simulations (like flight simulators) and computer-based simulations (like procedures, software applications, operating systems, and equipment maintenance procedures).

Tools: As mentioned earlier, tools are available that enable simulation design, but it is not our intention in this paper to compare one tool to another. We have, however, included information in **Appendix 2** that contains an excerpt from the eLearning Guild 2007 Member’s Choice Awards for simulation and game tools. These awards are based on the eLearning Guild’s investigation of market share for the tool and on customer satisfaction with it.



Why Are Simulations Effective?

Research tells us that adult learners want learning that is timely, engaging, and directly applicable to their work. Adults must believe their time is well-spent and that they can benefit immediately from using the new knowledge and skills on the job. They like to control their own learning process, to experiment, and they respond well to hands-on practice. In addition, we know that adults have varied learning styles and preferences that influence how they learn best.

To get significant results from any training investment, these characteristics of adult learners must be taken into account, and well-designed simulations do that. “Simulations—unlike any other learning tool short of actual on-the-job, trial-and-error experience—leverage the many different ways adults learn effectively.” (Vaughan, 2006)

Much traditional training is either linear or modular—the learner acquires one set of knowledge, concepts, and/or skills after another and is expected to assimilate the pieces and parts into a cohesive performance. All too often this approach does not provide sufficient guidance about on-the-job application of the new knowledge and/or skills, and we frequently err by asking learners to make this leap to on-the-job application without sufficient practice or confidence to overcome the risk of failure.

On the other hand, simulations enable people to learn by doing, in a low-risk setting. In simulations, learners gain experience and confidence, and their practice moves learning from short-term to longterm memory. In turn, this approach enables the transfer of knowledge and the application of learning to the job by creating an optimal learning environment. Simulations can be designed to:

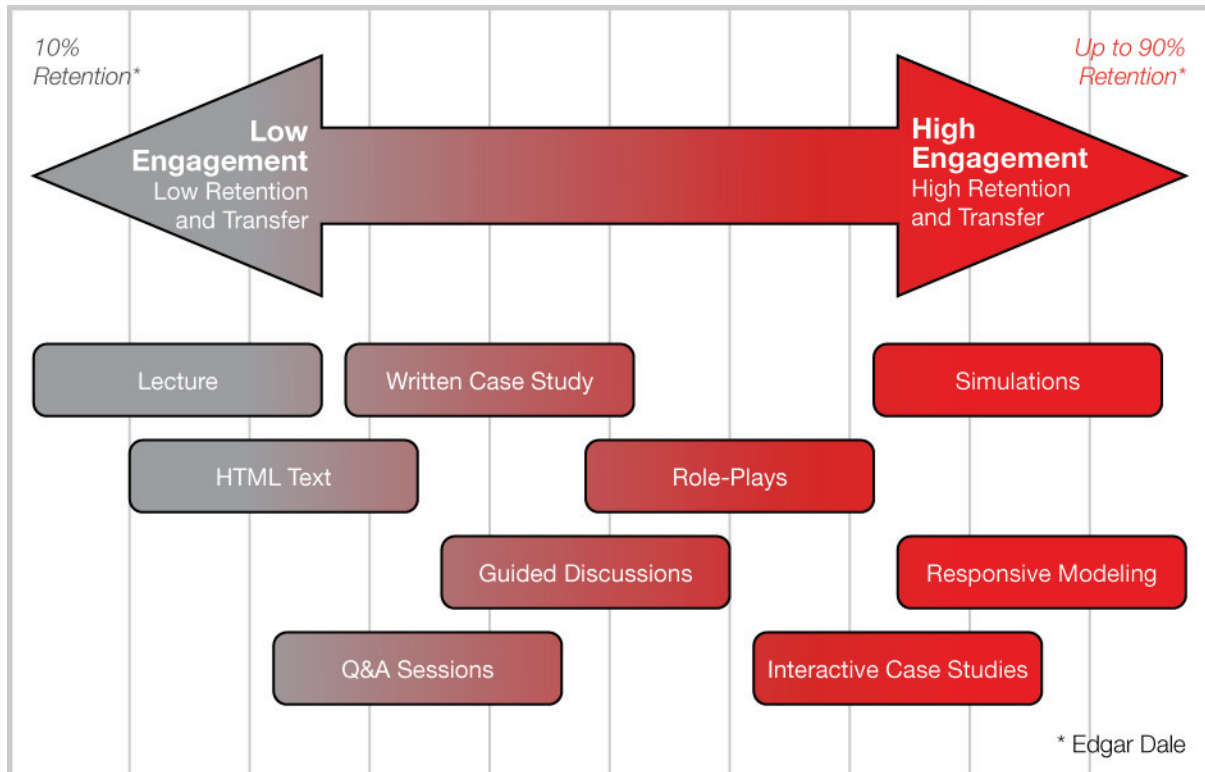
- Engage multiple senses
- Drive both cognitive learning (knowledge and skills) and affective learning (attitudes, emotions, appreciation, and values)
- Create situational awareness by replicating real-life experiences and work settings
- Draw on what learners already know and effectively apply that knowledge in different ways to new situations
- Drive concepts from the abstract to the specific and practical so they can be acted upon
- Promote systemic thinking and the ability to recognize and act on patterns



- Create pressure to perform and to try new skills and make an emotional commitment to outcomes
- Force learners to synthesize and practice multiple, complex skill sets that interact with each other
- Provide practice and experimentation until improvement occurs and becomes internalized, driving learner confidence and capability
- Enable anticipatory learning where learners can try new approaches, predict outcomes, and see potential future impacts
- Provide opportunities to practice dealing with unforeseen events and unintended outcomes
- Provide opportunities to leverage team or peer learning when appropriate
- Create real-time results that enable real-time evaluation, immediate feedback, and corrective action

Ultimately, simulations that provide learners with experience are intended to drive high levels of learner engagement, whereas more traditional learning approaches like lecture and class discussions result in lower levels of engagement. Because of high learner engagement, simulations improve the probability that new knowledge and skills will be transferred to and applied on the job. **Table 1** depicts how various training approaches compare relative to learner engagement.



Table 1 – Engagement

What Are the Business Benefits of Simulations?

From a business perspective, there are many benefits of incorporating simulations into the learning portfolio. Because well-designed simulations improve the sustained transfer of knowledge and new skills to the job, they can be targeted to:

- Accelerate performance improvement in critical business areas
- Accelerate speed to proficiency for employees in areas of the business that drive specific competitive advantage or where new systems are being implemented
- Drive corporate initiatives
- Mitigate risk of failure
- Improve integration and alignment across the organizational value chain
- Drive problem resolution around strategic issues

- Support achieving specific business goals

Appendix 3 includes several short case descriptions highlighting simulations that delivered on these types of business benefits.

When Should a Simulation Be Considered?

Simulations vary in cost and complexity, depending upon the outcome to be achieved (as depicted in Appendix 1), and they are not necessarily appropriate for all circumstances. For the most part, a simulation should be considered one part of a learning system, not something that can necessarily stand alone. And most fundamentally, the simplicity or complexity of simulation design depends upon the performance objectives that are established for the learning and the criticality of that performance to business success. More complex simulations should be considered under these conditions:

- A high level of risk is associated with failure to use new skills, tools, or systems appropriately.
 - For example, a complex simulation of responding to a hazardous situation, such as a natural disaster, chemical spill, plant accident, etc., could provide for team collaboration and problem-solving, practice drills, rapid decision-making, responding quickly to the unexpected, and anticipating unintended future outcomes. A simulation like this would likely be the culminating learning experience for learners who have already had a substantial amount of training on core knowledge and skills.
 - Another example would be implementation of a new operating system on which parallel systems cannot be run after cutover. Everyone associated with operating and using the system must be ready to perform on the cutover date, and tolerance for error is low. A variety of learning solutions are necessary and could include instructor-led training, Webbased courses, virtual classes, Web-based simulations that demonstrate and teach the software in a “sandbox” environment, a variety of documentation and performance support resources, and intensive lab sessions that provide advanced training and practice for people responsible for troubleshooting system problems.
- Behavior change is critical to the success of a key business initiative and requires quickly synthesizing and applying a new, complex set of knowledge and skills.
 - For example, a new marketing strategy requires moving to a consultative selling model. This model requires sales people to shift from a product-



selling focus to a consultative model where they have to identify customer needs, consult on best solutions to solve the customer's problem, and accurately match products and services to achieve that solution in a team selling and presentation environment. In this case, a blended learning system could be designed to teach the new knowledge and skills in a traditional classroom or Webbased course. This learning is then combined with an instructor-facilitated sales simulation where, through several rounds of activity and practice, participants meet with "clients" to identify client needs, work as sales teams to match client needs to products and/or services, and prepare and present a proposal to the client. More importantly, they receive expert feedback on their performance based on whether they demonstrated the competencies required for successful consultative selling and whether they won the business over other competing teams in the simulation.

These types of simulations may require more investment, but the risk or cost of failure will normally far outweigh the cost of designing and deploying a learning system that incorporates complex simulations which will get people performance-ready, faster. In addition to the business situations described above are a host of other circumstances where simulations of varied complexity should be considered and integrated into learning systems. These can be categorized into several areas.

Certification and Assessments

Simulations can be used to:

- Certify performance readiness before a learner applies new skills on the job
- Periodically recertify performance capability and competence to meet safety or compliance requirements
- Evaluate performance in a realistic context, relative to specific objectives
- Enable learners to evaluate themselves or their team performance against a specific competency model or set of standards
- Motivate learning and future development through self-discovery of individual strengths and weaknesses. (This can be particularly effective when combined with 360-degree assessment feedback.)



Creativity, Teamwork, and Problem-Solving

Simulations can be used to:

- Create structured learning environments in which teams work collaboratively on real tasks designed to meet company-specific goals or find creative solutions to company-specific problems, while using new tools, skills, models, or approaches
- Drive cross-departmental communication and problem-solving
- Drive innovation by providing a learning environment that forces participants to get out of their comfort zones

Decision-Making and Judgment

Through participation in simulations, learners can:

- Develop and practice critical thinking skills that will raise the level of judgment being applied to decision-making
- Improve judgment in identifying and differentiating between important and less important information
- Demonstrate the ability to establish appropriate priorities within the context of competing demands
- Practice making challenging decisions where the consequence of error is significant
- Develop and practice critical thinking skills to arrive at optimal decisions when faced with situations where there is no single best answer
- Practice anticipating outcomes, making predictions about future events based on knowledge and experience, and evaluating results, which is particularly helpful for developing contingency planning skills
- Analyze and respond effectively to a complex set of circumstances
- Practice making decisions in the context of whole systems that are interdependent, where decisions can have an impact on the organizational value chain and operational effectiveness, vertically, horizontally, and externally



- Practice making decisions using varied scenarios that impact business operations and financial results, such as financial modeling exercises or designing and implementing new go-to-market strategies
- Improve ethical decision-making skills and judgment
- Build overall confidence in decision-making

Business Processes and Procedures

Through simulations, learners can be taught how to:

- Efficiently perform a series of interrelated, complex process tasks simultaneously
- Effectively implement and follow new processes or procedures in their particular areas of responsibility
- Design new business processes or improve existing processes and procedures, such as improving the speed with which new products are brought to market

Technology and Equipment

Simulations can be used in a wide range of work environments to:

- Improve proficiency in the use of tools and operation of equipment or machinery
- Improve proficiency using software applications to support data gathering, organizing, reporting, and decision-making, in the context of work processes and performance standards

Interpersonal Skills, Attitudes, and Beliefs

Although underutilized for this purpose, simulations can be designed to:

- Improve leadership skills
- Drive change in employee attitudes and beliefs
- Drive team cooperation and a sense of community
- Improve interpersonal communication and presentations skills



- Improve conflict resolution skills, in the context of real work situations
- Improve time management skills and management of tension and stress

How Does ACS Global Learning Assist Clients to Select, Design, and Build Simulations?

Some real-world considerations: The list of simulation opportunities above is long, although not exhaustive, and it is easy to believe that simulations can be a cure-all for many organizations. As previously mentioned, they are best used as a component of a broader learning system, and it is important to have a clear business outcome and performance objective before investing in learning simulations. Some can be relatively simple and easy to implement and, wherever possible, integrated into more traditional classroom and Web-based courses to raise the probability of on-the-job application for learners.

More complex simulations take time, analysis, high-level collaboration with client subject matter experts, skilled instructional design, and thoughtful testing and implementation to achieve a high impact. Simulations can be facilitated in the classroom, technology-based, or a blend of the two. They can be expensive, particularly for hard skills simulations, but if they are well-designed and executed, they are also well worth the investment. In these cases, it is vital to choose priorities wisely, teach only what the learners must know and do to be performance-ready, and keep them as simple as possible to get the desired performance impact. Teams involved in designing simulations can sometimes be easily enticed into over-designing or over-engineering a simulation, adding costs for implementation and administration that do not add value for the learner. These are things to guard against: the simpler the better, as long as the learning environment and tasks mirror reality as much as feasible.

Selecting a Simulation

ACS offers a broad array of simulation options and identifies and works with existing software simulation products appropriate to the learning design. A systematic process is required to effectively select, design, and build learning simulations. ACS uses its proprietary Content Development Methodology to evaluate each client's unique training needs and deliver solutions. This methodology proceeds through several phases essential for high-quality design: identifying specific learner and performance needs, as well as metrics to measure results; designing learning solutions appropriate for the client outcomes, environment, and culture; effectively developing engaging learning experiences; ensuring learning effectiveness and quality by working closely with client subject matter experts; and testing, launching, and deploying the learning solution.



When asked by clients to design and build a learning solution that includes simulations, we start in the first phase of our methodology by asking a few key questions:

- What is the business outcome or result you want from the training?
- What is the specific performance level that you believe is required to provide that outcome?
- What behavioral changes or what new behaviors do you think will lead to that performance level and why?
- What are the consequences for learners if they do not achieve that performance level? For the organization?
- Why do you think a simulation is the best learning solution?

Our purpose here is to understand the end game and provide thoughtful advice. It frequently is not worth investing in simulations, particularly more complex simulations, unless a clear business purpose and learner performance requirements warrant it. Simulations, for example, are not intended to present content or achieve lower-level comprehension learning objectives. There are many other appropriate and less expensive learning solutions that can be used in those circumstances. Simulations are

intended, at the very least, to achieve on-the-job application of specific knowledge and skills that drive **improved** performance or application and use of **new** knowledge, skills, tools, processes, and/or technologies.

Designing a Simulation

Once the expected outcomes for the business and the learners are determined, we recommend the most appropriate approach, the best strategy to measure the impact of the learning solution on the target population and the business, and the most effective delivery method and technology. For example, instructor-led simulations with facilitators acting as expert observers and coaches may be best for institutionalizing core values, changing attitudes, improving business decision-making and judgment, or strengthening teamwork. Technology-based simulations can be very effective for new processes, tools, operating systems, or software applications. When both affective and cognitive learning experiences are needed, we might recommend a blended instructional strategy that includes several approaches and media; for example, instructor-led or coached activities in a classroom or virtual environment along with team learning assignments. These may be enabled by interactive spreadsheet applications for business scenario



planning or by a Web-based simulation portal to provide a responsive business modeling environment.

At this point we complete a reality check with our clients with regard to budgets, organizational and technological constraints, measurement of impact, and sponsorship. As much as we would always like to build the ideal, we have to take into account and balance a variety of factors, including budgets, availability of subject matter experts and facilitators, dispersion of target populations, access to technology or equipment, costs for instructor-led versus Web-based deployment, and a variety of other considerations that will influence the final investment and design.

Even selecting an appropriate technology may not be as straightforward as it appears. A variety of computer-based technologies and software are available to efficiently guide design, development, and operation of high-end simulations. If, based on the instructional design, some form of computer technology is required to build a simulation or to enable learner performance during the simulation, we recommend the best options. Many vendors are promoting simulation technologies, some better than others; but lack of infrastructure and cost are still obstacles that may need to be overcome.

Another common failing of technology used in simulation design is that the learning is designed to the features of the authoring application selected, rather than to the desired learning objectives.

At a fundamental level, it is the quality of the instructional strategy and design that ultimately leads to a high-impact simulation. The technology that enables task performance during a simulation is secondary to the learning process. In many instances the technology should be transparent to the learner—unless, of course, the simulation is intended to have learners practice using that specific technology. ACS employs design techniques that drive learner engagement and performance. We ensure that each simulation activity, regardless of its complexity, incorporates some variation of the elements uniquely blended to create simulations:

- A realistic playing field that mimics the learners' culture, social environment, technology, tools, and work setting as closely as feasible
- Real-world task assignments that require learners to evaluate options, make choices, and take appropriate action
- Consequences or business results based on learner choices and actions
- Feedback specific to those consequences and learner performance
- Team collaboration and peer feedback if appropriate



- Competitive scenarios, where necessary to drive involvement, achieved through varied gaming techniques and scoring strategies
- Optimal tension levels to mirror real-world requirements, reflecting elements such as distractions and interrupters, business constraints, time compression, intense multitasking demands, unexpected events, challenging standards, and high thresholds for task completion
- And most importantly: practice, practice, practice

A Word About Feedback

An otherwise well-designed simulation is inadequate unless feedback is well-structured and given high priority. If a simulation gives learners an opportunity to practice different skills or make decisions but performance feedback is not well-articulated or time allowed to process the results of the simulation is inadequate, the training has taken the learners only part of the way to successful performance. A common error in the design of experiential learning is inadequate feedback, where learners participate in one activity after another without the key learning points being transitioned and connections being made on what constitutes good or poor performance. To guard against these situations, ACS designs a variety of feedback strategies into its simulations. For classroom-based simulations, some feedback types designed by ACS include:

- Expert observation and coaching (frequently based on behavioral checklists)
- Peer feedback
- Facilitator feedback
- Quantitative results (using tests/assessments/different scoring strategies)
- Qualitative results (using algorithms)
- Small and large group debriefing
- Rewards and recognition

For technology-based simulations, some feedback types designed by ACS include:

- Quantitative results (using tests and different computer-based scoring strategies)
- Qualitative results (using algorithms or specific demonstrations of performance failure)



- Feedback text that explains why an answer or performance was correct or incorrect
- Feedback text that also provides remedial guidance before allowing a second attempt to correctly perform a task or answer a question
- Slider bars that indicate successful or unsuccessful progress through a simulation
- End-of-simulation reports that provide summaries of all answers or performances, with feedback on what was correct or incorrect and why

A Note About Designing Software Application Training

It is a common error to teach software applications by only providing demonstrations of the software functionality. This cannot be considered a “simulation” unless the learner also has the opportunity to practice the tasks after the demonstration and to get feedback on that performance. Another common weakness in software application training is to teach software functionality without putting that software function into the context of the work-related task for which the software is to be used. It is easy to get caught up in describing what happens when you click a button or a field on the screen, or describing all the whistles and bells that a software application offers, without teaching how you use those functions in a practical, integrated way to perform job tasks.

Building a Simulation

In addition to the above design elements, ACS uses different development tools and technologies, depending upon the simulation deployment strategy. If a simulation is intended to be Web-based, we frequently use our proprietary authoring tool, which accommodates complex branched learning and in which we embed audio, video, Flash, and Captivate simulation files. We also use other authoring tools with embedded simulation files, when feasible, such as Lectora, Eedo, Virtual Professor, Dreamweaver, and RoboHelp (for performance support environments). ACS has also built high-end Web simulations with custom programming. For other technology options we partner with selected vendors as needed, particularly for simulation portal or sandbox environments. For classroom facilitated simulations, we have incorporated technology-enabled activities using CD-ROMs, Web sites, spreadsheet modeling, and interactive audio and video scenarios.

Summary

Simulations are a highly effective learning solution when all components—practice, choices, consequences, and feedback—are integrated and considered as one part of a



comprehensive learning system. Simulations improve the probability that new knowledge and skills will be transferred to and applied on the job, in many respects due to leveraging other foundational learning, selecting the appropriate risk-based situation, and creating real situations for the learner and/or learning team. Most fundamentally, the simplicity or complexity of simulation design depends upon the performance objectives that are established for the learning and the criticality of that performance to business success.

When all the elements—a clear understanding of the business needs and desired outcomes, a solid instructional strategy, ACS's Content Development Methodology, and appropriate tool selection and use—come together, the real-world business environment mimicked by a business simulation becomes a change agent to drive business outcomes.

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Appendix 1: Simulation Options

Type (1) & Application	Fidelity	Learning Outcome		Learning Investment				Scope
		Learner Engagement	Transfer and Application	Performance Model	Design	Infrastructure	Build	
<i>Simulated Performance – Basic</i>								
<p>Simplest true simulation. Imitates the situation by having the learner build, review, and/or view the information and environment. Applies knowledge and judgments by responding to questions or performing a series of requested actions. May involve demonstrating specific, targeted behaviors.</p> <p>Feedback may be provided throughout or at completion of the decision models.</p> <p>May leverage modeling/simulation software.</p>	Moderate	High	Moderate-High	Moderate	Simple-Moderate	Low	Low-Moderate	Typically targets a portion of a process or reinforces a broader process. Greater leverage of organization's tools, team structure, Web sites, etc. May involve some complex roleplay activity.
<i>Simulated Performance – Complex</i>								
<p>This is the paradigm most people think of when they think of simulations. Imitates the situation by having the learner build, review, and/or view the information and environment. Applies knowledge and judgments by responding to questions or a series of requested actions. May incorporate complex team collaboration and decision-making and anticipatory learning activities. Feedback may be provided throughout or at the completion of the decision models.</p>	High	High	High	Moderate-Complex	Moderate-Complex	Low-Moderate	Moderate-High	Typically targets a portion of a process or reinforces a broader process. Greater leverage of organization's tools, team structure, Web sites, etc.



Type (1) & Application	Fidelity	Learning Outcome		Learning Investment				Scope
		Learner Engagement	Transfer and Application	Performance Model	Design	Infrastructure	Build	
Most commonly uses modeling/simulation software (e.g., virtual character within the simulation is given the identity of the learner). May also replicate the actual physical environment and associated tools and processes (such as war games or the cockpit environment in airline pilot training).								
<i>Virtual Reality</i>								
Projection of an environment around the user so the user can interact. May include special tools (helmets, tools, gloves) that create reality by visual, auditory, motion, and other sensory stimulation.	High	High	High	Complex	Complex	High, if not hosted	High	Typically reinforces a broad process. Often requires replication of the organization's environment.
<i>Managed Experiences</i>								
Individuals are placed into real situations in which they are asked to perform and are coached to meet desired performance. May incorporate components of action learning.	High	High	High	Simple-Moderate	Simple-Moderate	Low-Moderate	High	Master/apprentice model, with assigned experiences, coaches.

(1) The fidelity, outcome, and investment scales are presented as a frame of reference. Recognize that the scales will change significantly based upon the specific degree of design and review complexity.

(2) Gaming: Many of the above simulations may be designed in the form of a game and leverage tools as a way of engaging a learner.

(3) There are also various ways to construct the simulation, ranging from **guided** (takes learners down a set of predetermined paths, and learners select the best decision or course of action) to **goal-directed** (more open-ended ways of achieving the outcome) to **responsive** (does not have predetermined paths but evolves to the thinking across interconnected decisions). (Source: *The End of Training – How Simulations Are Reshaping the Business*, Vaughan, 2006.)



Appendix 2: The eLearning Guild 2007

Immersive Learning Simulations (ILS) Member's Choice Awards at www.eLearningGuild.com/360

Simulation Tools – Based on Market Share

- Platinum Award: Adobe Captivate – Adobe Systems, Inc.
- Gold Award: Macromedia Flash Professional – Adobe Systems, Inc.
- Gold Award: Macromedia Authorware – Adobe Systems, Inc.
- Gold Award: Lectora – Trivantis
- Gold Award (tie): KnowledgePlanet Firefly – Knowledge Planet
- Gold Award (tie): ToolBook Instructor – SumTotal Systems, Inc.

Simulation Tools – Based on Customer Satisfaction

- Platinum Award: Raptivity – Harbinger Knowledge Products Pvt. Ltd.
- Gold Award: Lectora – Trivantis
- Gold Award: Adobe Captivate – Adobe Systems, Inc.
- Gold Award: Macromedia Flash Professional – Adobe Systems, Inc.
- Gold Award: Macromedia Authorware – Adobe Systems, Inc.
- Games Tools – Based on Market Share

Platinum Award: Macromedia Flash Professional– Adobe Systems, Inc.

- Gold Award: Macromedia Authorware – Adobe Systems, Inc.
- Gold Award: Articulate Presenter – Articulate
- Gold Award: Macromedia Director – Adobe Systems, Inc.
- Gold Award: Lectora – Trivantis



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- Games Tools – Based on Customer Satisfaction

Platinum Award: Articulate Rapid e-Learning Studio Professional – Articulate

- Gold Award: Raptivity – Harbinger Knowledge Products Pvt. Ltd.
- Gold Award: eGames Generator – Carson Learning Services
- Gold Award: Lectora – Trivantis
- Gold Award: Articulate Presenter – Articulate

Other Products

- Enspric Learning – Specific business content simulation
- Humentum – Simulation design and development
- NexLearn – SimWriter authoring tool
- Regis Learning Solutions – SimPort simulation design and development tool
- SimuLearn – Virtual Leader focuses on specific content topics
- Glass Ceiling Productions – Business game based on situational encounters
- GoVenture – Games and simulations for specific content topics

Appendix 3: ACS Simulation Experiences

Telecommunications: The enterprise wanted to move sales strategy from a product to a consultative model. A simulation was designed to practice consultative selling skills that had been previously learned in classroom workshops—salespeople who participated in the simulation outsold employees who had not taken the training by 70 percent. This classroom-based simulation was combined with coaching tools for sales managers, targeted at reinforcing demonstrated use of new skills.

Print Manufacturing:

- The organization wanted to assess leadership competencies of all managers from supervisor up to executive level, identify additional development needs, and drive managerial performance improvement to support new corporate strategies. The simulation was launched with 360-degree competency-based



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feedback and an action plan for learning during the simulation, which was a five-day total immersion experience, essentially running a business that closely mimicked the corporation. During the simulation, participants were assessed by expert observers, facilitators, and peers. One outcome of the simulation was a type of action learning that led to significant recommendations for implementing improvement initiatives within the company which were presented to the executive team at the conclusion of each simulation.

- Executives were too focused on short-term, quarterly results. Through a series of rounds, simulating resource investments over a period of five years, executives learned how to better balance their short- and long-term strategic thinking.

Electronics Distribution: This client used numerous classroom-based simulations/workshops over several years. Topics included more effective territory management for sales managers (how do you assign and utilize resources to achieve the desired sales volume and account penetration?), account penetration strategies, consultative selling skills for a highly competent sales force to sell “intangible” services, and effective hiring practices for the Asian market.

Industrial Manufacturing: A series of simulations were designed that developed consultative selling skills and gave learners practice on how to move from a product-focused sales approach (selling features and benefits) to a customer-centric sales approach, addressing specific customer needs.

Chemical Manufacturing: This classroom-based simulation targeted 700 managers, front-line to senior-level. The simulation provided real-life situations for making complex decisions that influence business and financial results. The simulation was enabled by spreadsheet financial modeling that was used to input decisions and provide results to simulation teams. The goal was for participants to improve corporate performance based on four corporate metrics. This was a five-day total immersion simulation, where each day represented a new fiscal year. Company executives participated as expert observers and evaluators during the simulation and assessed the quality of each team’s decision making and judgment. Results from the evaluators and financial data showed significant, progressive improvement in the quality of participant decision-making from Day 1 to Day 5.

Aerospace Manufacturing: This one-day total immersion classroom simulation was targeted for frontline supervisors. It was designed as a culminating experience that provided opportunities for supervisors to practice key supervisory skills they had learned previously in more traditional classroom workshops. Feedback was provided by trained



expert observers, using behavioral checklists. These observers each worked with three participants throughout the course of the day, providing feedback and

assessment information at key intervals.

Financial and Accounting Services:

- The company wanted to improve the quality of analysis and decision-making for approving corporate loans. Two Web-enabled simulations were developed which focused on enterprise credit analysis. These required learners to practice making loan approval decisions and to demonstrate a complex set of knowledge and skills learned in the company's Web-based credit analysis curriculum. The two simulations incorporated interactive spreadsheet analysis using Flash and the ACS proprietary authoring tools.
- The company had grown through large-scale mergers and acquisitions and wanted Web-based courses that would quickly and consistently teach new employees the details of their back-office systems. Seven Web-based learning courses were developed, including baseline learning plus courses by job role. A simulation environment that duplicated actual work experiences allowed both current and new system users to meet the exacting skill requirements without having direct access to the system. Mandatory assessments at the end of each course included simulation based performance questions to confirm the required skill and knowledge levels. The company wanted to improve the quality of executive oversight for audit teams. A one-day total immersion simulation was designed to give executives an opportunity to identify and respond to potential weaknesses in audit team performance. This simulation was a classroom based experience for a large, globally dispersed executive team and incorporated extensive feedback and deep technical debriefing.

Developed Vended Simulation Workshops:

- Half- to one-day short simulations were designed to reinforce (as well as apply) the content contained in an associated off-the-shelf business skills course. A total of 12 simulations were designed, including Managing Difficult Customer Situations, Managing Teams, Negotiating, and Designing/Delivering Presentations, to name a few.
- The ACS Business Skills Web-based learning library contains specific simulation lessons:



Preventing Sexual Harassment – The learner is challenged to determine if sexual harassment occurred. The twist to this simulation is that it deals with a situation where there is no right or wrong answer; rather, it focuses on the process of documenting the progress of a Human Resources investigation.

Workplace Violence – Learners are first trained on the key actions to take in a potential workplace violence situation. They are then, via a simulation, confronted with a situation where a former employee holds another employee hostage. Learners must respond in the role of the manager and decide what to do.

Accessing Decision-Makers – In this sales simulation, learners must identify and evaluate key stakeholders and implement a strategy that will earn them the right to progress to the C-suite.



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