

WHITE PAPER

Revolutionizing Learning

Using Games as the Next Frontier



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A large, stylized title "FAR-PUNK" rendered in a metallic, golden-brown font with a glowing, fiery effect. The letters are three-dimensional and set against a dark, smoky background with a bright light source behind the text.



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Introduction

Many organizations find themselves looking for new ways to develop their employees. Serious games offer a challenging, motivating, and engaging method to not only introduce new concepts but also give learners a chance to practice and apply what they are learning. New behaviors are encouraged by putting the learner in unfamiliar scenarios and providing a safe environment to test out new concepts.

This paper outlines the benefits of using serious games in leadership development initiatives and the challenges of creating one.

Why Games?

At the Center for Creative Leadership (CCL[®]), we often are asked by clients for a new approach to learning and development. CCL's worldwide reputation for excellence is founded on developing training that results in impactful behavior change for the learner and for the organization. With the rapid changes in the world, particularly in the field of technology, clients want something to supplement classroom-based learning—something that will engage learners, motivate, and challenge them, and offer an enjoyable experience. Most importantly, they want something that's proven to make the learning “stick.”

To address our clients' needs, we have developed a robust set of e-courses that deliver CCL's research-based content. But how do we take this even further—beyond classrooms and e-courses? What's cutting-edge, different, and effective? We believe it is serious games.

Interactive digital games, including serious video games, are growing as an educational methodology. According to Susi, Johannesson, and Backlund,¹ game-based learning (GBL) “has the potential of improving training activities and initiatives by virtue of its engagement, motivation, role playing, and repeatability (failed strategies, etc., can be modified and tried again)” —in other words, the very qualities that our clients want. Numerous research

studies have verified the efficacy of serious game-based approaches, including two meta-analyses that compared GBL with conventional instructional methods and found GBL to be statistically more effective.^{2,3} In addition, GBL is highly engaging—one only has to look at how many hours people spend participating in video games for pleasure. Further, although serious games are a new learning tool for the private sector, they have been used as an effective teaching tool in the military for many years.

Serious games combine sound instructional design with cutting-edge technology to create new ways for learners to engage with content and demonstrate application of the content in an integrated and holistic methodology. Through the use of serious games, learners can practice new skills in a safe environment, get feedback in real time, repeat play as needed, and demonstrate progress as they master each level. CCL's research reveals that most people learn better by being actively engaged in the learning process, and serious games engage learners in several ways: an engrossing storyline with twists and turns, stellar graphics including 3D animation, and challenges that learners must solve to advance in the game. Furthermore, these serious games provide a practice field that lets participants play with new concepts, thereby increasing the likelihood that lessons will be remembered long after the experience.

Serious games are a proven way to address the documented issue of the declining competitiveness of US workers. Americans rank only in the middle (number 12) of the 21 top industrial countries when it comes to problem solving (OECD, 2013).⁴ There is a widening gap between education preparation and workforce needs in the United States. Similarly, business, social, and education-sector leaders cite critical gaps between educational preparation and the current workforce, especially in soft skills such as **leadership**, **problem solving**, and **critical thinking**—even among those with bachelor’s degrees (Rothwell, 2013).⁵ Present and future baseline workforce soft skills that will be required for success in the twenty-first century include⁶

- leadership, cross-cultural competency
- virtual collaboration
- relationship building
- decision making
- critical thinking
- engaging diverse perspectives
- self-awareness
- understanding differences

Serious games are an excellent way to convey the complex system of relationships that make up any human system. In the game world, a player can manipulate variables, experiment with different responses, analyze the interaction, and get a clearer sense of how parts of the system are connected. Games create an alternate complex environment that allows the practice of many critical workforce skills in a safe and secure setting.

Benefits of Serious Games for Learning

Immerses the learner—creates “flow”—losing yourself in the learning

Cutting-edge way of learning

- Instruction built into gameplay
- Intuitive navigation
- Auto-assessment and feedback

Pushes learners outside of their comfort zone—easier to change behavior

Safe practice field

Scalable and therefore cost-effective

Transfer of concepts to workplace situations

CCL and Serious Game Development

CCL interviewed its Leading Insights Panel of past participants in leadership development programs, which comprises human resources, nonprofit, for-profit, and government professionals. We asked this panel a series of questions to get their thoughts on creating a serious game that would teach CCL's Boundary Spanning Leadership content. We were particularly interested in learning how participants regarded

1. the use of serious games as teaching and learning tools, and
2. the likelihood that they would use a serious game format for teaching and learning in their organizations.

More than 300 people responded to the survey, which provided useful data. The results are summarized below.

Demographics of Respondents

41% work in human resources
73% had never played a serious game
58% Males
42% Females

The age range of respondents varied.

18-34	05%
35-44	15%
45-49	09%
50-54	12%
55-64	13%
65+	03%
No Response	43%

The respondents further shared the following: Of the respondents,

90% expressed interest in using serious games for development.
57% have no preference in the gender of the main character.
91% believe benchmarking to show how well the concepts are learned is important or very important.
93% believe that using research-based content is important or very important.
94% believe that content must apply to learning objectives is important or very important.
91% believe that it is important or very important for the game play to be fun.

Between the compelling research on the benefits of serious games for learning transfer, requests from clients, and interest from the Leading Insights Panel, CCL is moving to add serious games to its portfolio of educational solutions.



Partnership Between CCL and Triad Interactive Media

To meet our goals, we needed a partner with expertise in developing high-quality educational games that could be paired with CCL’s research-based content. Our partner became [Triad Interactive Media, Inc. \(TIM\)](#). TIM is an award-winning interactive media firm and software development company that specializes in innovative educational software—combining knowledge in pedagogy, design, and technology to create interactive educational products that engage and motivate learners and enhance student performance. TIM’s digital products are known in educational technology circles for stunning entertainment-quality graphics, a focus on deeper learning, data gathering that provides useful feedback to learner and instructor, and the inclusion of blended-learning experiences. Their recent products have won a number of awards, including the 2013 SIIA CODiE Award for Best Educational Game or Simulation.

Through this partnership, we have begun developing Far-Plane, an adventure-based serious game that teaches CCL’s research-based Boundary Spanning Leadership content in the fictional world of Muria. Jennifer Martineau, CCL’s vice president for Research, Innovation, and Product Development, summed up the partnership between CCL and TIM this way:

“For more than four decades, leadership has been CCL’s sole focus. During this time, we have introduced many best practices in the industry, including 360-degree feedback, experiential learning, leadership as a social process, and the evaluation of leadership development. In recent years, we have shifted our approach from designing a “training event” to designing ongoing learning experiences. One of our new applications of ongoing learning is Far-Plane, which will give leaders a chance to learn and apply a proven research-based leadership framework in a fun and engaging way. We believe a “serious game” such as Far-Plane, which is highly memorable and has significant “stickiness”, may be one of the next best practices we introduce into the market. We are thrilled to play a role in bringing together CCL’s proven approaches to leadership development with Triad Interactive Media’s cutting-edge gaming capabilities.”



Introducing the *Far-Plane: Beyond Boundaries* Game

Far-Plane: Beyond Boundaries is a single-player online role-playing game designed as an instructional environment for the Center for Creative Leadership's Boundary Spanning Leadership model. The implicit in-game learning experience is augmented with video lessons and activities that provide explicit instruction in the leadership model. Debriefing exercises with trained Boundary Spanning Leadership facilitators make it possible for participants to work collaboratively with peers to expand what they've learned in-game to inherently diverse real-world discussions. *Far-Plane* provides an innovative and unique approach to leadership development by adapting a proven research-based leadership model to an online interactive game environment that will engage and teach a twenty-first century digital audience.

Far-Plane is conceptualized as three game levels with an overarching narrative that carries the player from one level to the next. We choose a narrative that is based on an alien world, rather than in a more familiar setting, to get learners outside of their comfort zones where it is easier to experiment with new behaviors. The game introduces key concepts and six distinct steps at the core of the Boundary Spanning Leadership model to accelerate collaboration between the groups involved in the learning initiative. Each level in the series will present discrete sets of strategies and practices that, when partnered together, teach the complete Boundary Spanning Leadership model. Level 1, *Managing Boundaries*, will be followed by Level 2, *Forging Common Ground*, and Level 3, *Discovering New Frontiers*. Each level can be completed in a short span of time making it accessible for both school schedules and corporate or government training sessions. Players may play the three levels over a period of time, but they must work through all three levels in linear fashion because the understanding gained in one is essential to being successful with the other levels.

The Target Audience

The average age of game players is 35 years old, and both females and males are gamers. As millennials enter the workforce in record numbers, with Generation Z not far behind, these digital natives naturally gravitate to a different type of learning. Far-Plane is designed to meet the needs of the twenty-first-century learner and, like the content, spans the boundaries between many audiences. Far-Plane is designed for multiple audiences that range from high school to adults in the workforce. It is appropriate for any organization interested in working more collaboratively and effectively with diverse groups. These may be workers in companies that are moving to a more collaborative culture, such as a matrix organization, or students who must get different groups to work together. The real insights, regardless of audience, come when the learners apply the Boundary Spanning Leadership concepts to a real-world challenge.



Possible Uses of Far-Plane:

- As **an illustration of the Boundary Spanning Leadership method** in a story so learners can see what it looks like in action. In this approach, the game introduces the framework to learners.
- **As a practice** field for Boundary Spanning Leadership tools. In this design, the game is played after learners have been introduced to the Boundary Spanning Leadership framework and can practice using the model in the story.
- As a **developmental activity** for youth groups. In this case, groups of students will navigate the game together and debrief how lessons learned apply to solving challenges in their lives.

Strengths, Challenges, and Lessons Learned in Developing Far-Plane

The strengths of Far-Plane mirror what we learned through reviewing the latest research and surveying clients. Far-Plane is built on research-based leadership content; it accommodates multiple learning styles, has strong analytics, and is accompanied by a debrief session that is contextualized to specific settings and learning objects. Most importantly, as a single console game, it is easy to use. These elements, in tandem, make Far-Plane a unique learning experience.

Research-Based Content

The Boundary Spanning Leadership Model emerged from 10 years of research involving more than 2,800 surveys and nearly 300 interviews with leaders from across six world regions and diverse organizations, including businesses, government, education, nonprofits, and the military. The model is described in the book, *Boundary Spanning Leadership: Six Practices for Solving Problems, Driving Innovation, and Transforming Organizations*⁷ (Ernst and Chrobot-Mason)

and has been tested with thousands of individuals across the globe. In addition, CCL has developed classroom training and activities and a Boundary Spanning Leadership toolkit for this frequently requested topic. Adding a serious game to this portfolio allows us to create new blended-learning solutions and also to have a stand-alone option, thus meeting the needs of a wider range of audiences.



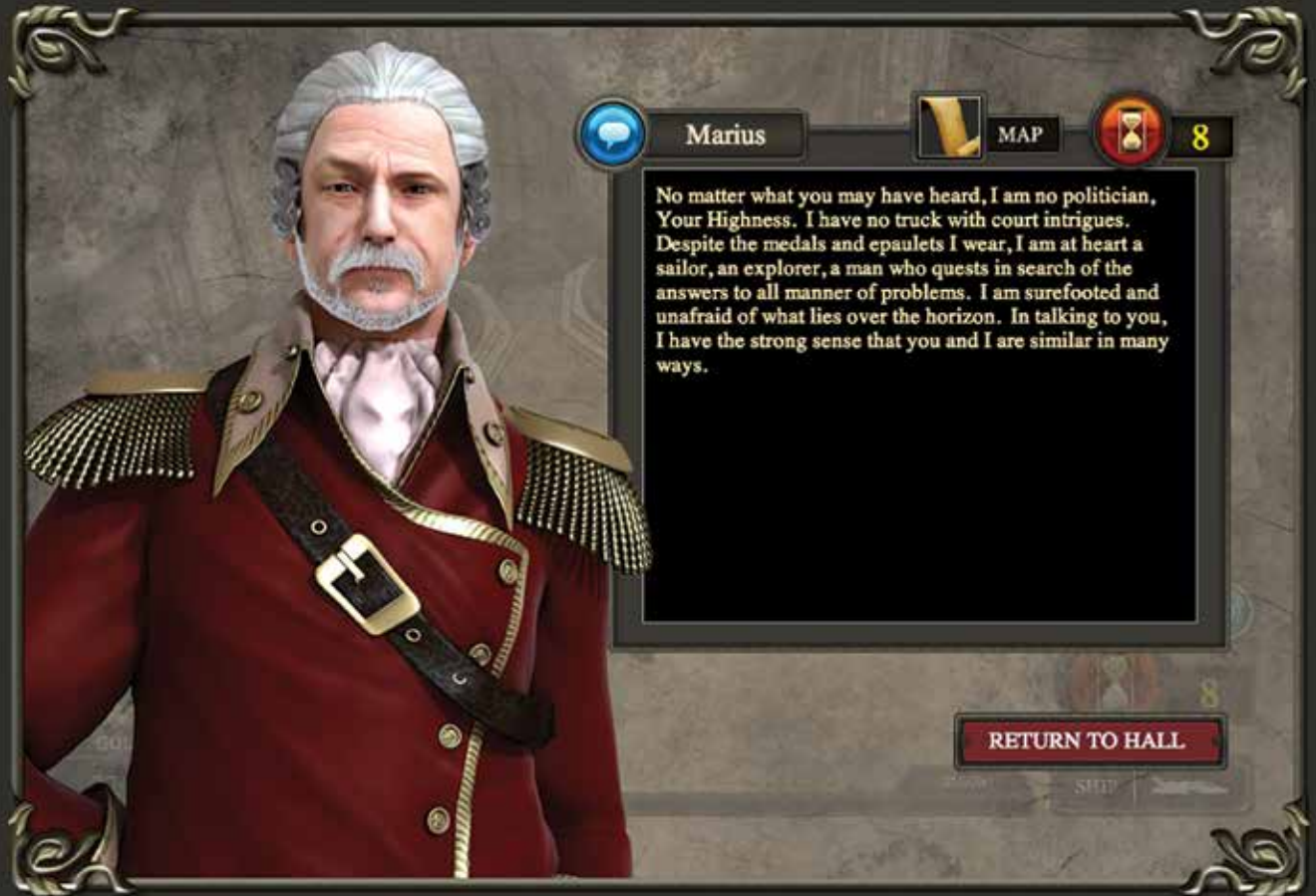
Active Engagement in Learning

There is a tremendous difference in understanding between people who have merely read about something and those who have experienced it. Serious games provide a safe environment for experimentation, and their user-centered content helps reinforce the learnings. By making decisions and seeing the direct consequences of those decisions, a serious game environment creates an understanding that transfers to real world situations. Far-Plane includes all three primary learning styles—auditory, visual, and kinesthetic. By listening to videos, viewing stunning graphics, and engaging in the gameplay, learners involve all three modalities.

Debrief Questions Are Adapted for the Audience

Debriefing activities are central to all CCL leadership training program designs; therefore we have built them into our Boundary Spanning Leadership game-based version. Far-Plane will include a synchronous facilitator-led debriefing session. The debriefing session exercises will be led by trained Boundary Spanning Leadership facilitators and customized to the particular audience and their specific intended learning outcomes. At CCL, we know that putting learners outside of their comfort zones often makes it easier to enact new collaborative behaviors. By pairing the game experience with a facilitator-led debrief session, we provide a mechanism to make the learnings more explicit and concrete. This connects the serious game to the learning objectives needed by a specific client and transfers the game's learning to the workplace.

The debriefing process is usually a class discussion, which can be face to face or virtual with learners in different locations. Another option is for learners to write their reflections and post them online. Regardless of the process, the personalized debrief guides will follow Kolb's Learning Cycle and help participants review the experience, help discern the relevant meanings from that experience, and explore how participants can apply those learnings in their workplace.



Analytics

The back-end analytics of Far-Plane are robust. These include game metrics that allow the facilitator to monitor how well learners are performing in the game and how well they are able to implement the concepts. This allows the facilitator to understand what learners are connecting with and modify the training as needed. Analytics are gathered for each individual and can be aggregated across groups of learners providing real-time feedback on their progress.

Ease of Use

Far-Plane is a single-player game, requires no special hardware, can be played directly on a personal computer using major browsers, and is appropriate for young adults as well as experienced professionals. All instruction and Boundary Spanning Leadership theory is included in-game so players stay focused on learning key concepts that will help them build alliances and resolve game challenges. Players are rewarded with points and other incentives to help them stay motivated and engaged.

Challenges

Balancing Instruction and Gameplay

All serious games struggle with the balance between play and didacticism. On the one hand, the gameplay must be engaging and fun; on the other hand, learning is the goal of the program. Our solution was to infuse learning into gameplay. That is, as gamers play, they make decisions and see the consequences of those decisions. These become important learning moments and are just as effective as more direct and explicit instruction.

Meeting Needs of a Diverse Target Audience

Due to the cost and time involved in creating a serious game, we decided to build a game that could be used in multiple ways with multiple audiences, including adults and youth. While many entertainment games are popular across a wide range of ages, adults and teens have very different attitudes when it comes to serious games. Some adults are uncomfortable with the idea of gaming in general and prefer simulations that mimic business scenarios. Youth, on the other hand, prefer games where the learning content is subtly introduced and not overt. They expect the game to be so much fun that they don't even realize it's educational.

Our solution was to build an adventure game that

- a. uses realistic animation,
- b. employs elements of simulation as well as gaming, and
- c. includes a solid debrief that connects the learner's game experience to the real world.

Working on a Diverse Project Team

Our core team consists of staff members from Triad Interactive Media and the Center for Creative Leadership, with other internal and external experts pulled in as needed. Like many cross-functional teams with a broad expertise, we spoke "different languages," had different sets of assumptions going into the project, and used very different work practices.

To resolve these differences, the development team went through the Boundary Spanning Leadership process itself. This process improved how we worked together as a team and deepened understanding of the model for team members who weren't as familiar with it.



Funding the Game Development

Finding funding for new unproven technology can be tricky—especially when the technology is very expensive to create.

We funded this project with a grant from the National Science Foundation (NSF). These funds made it possible for us to experiment with this new learning method and represent a sound endorsement of our concept.

Timeline of Far-Plane Development

- June 2013**—Discovery process with focus groups
- June 2013**—Applied for first NSF Grant
- December 2013**—Received first NSF Grant
- January 2014**—Began development of prototype
- May 2014**—Tested prototype with 150 students
- August 2014**—Completed analysis of prototype
- November 2014**—Placed in serious game conference
- December 2014**—Applied for second NSF Grant
- August 2015**—Received second NSF Grant
- September 2015**—Concept test with over 300 corporate leaders
- February 2016**—Finish game narrative and design
- October 2016**—Complete game development
- Test final version

Next Steps

Far-Plane will be ready for play by the fall of 2016. If you are interested in learning more about the game or testing it out, contact:

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We hope this will be the first of several products coming from the partnership between TIM and CCL.



Conclusion

Far-Plane represents the next evolution of adult-learning methodologies and will pave the way for more serious games as learning tools for for-profit, nonprofit, government, and high school audiences. Based upon a CCL research-based model, it is an immersive learning experience that employs engaging narrative and graphics, includes easy-to-use analytics, and enhances trainees' understanding and retention of leadership concepts. If you are interested in learning more about Far-Plane or being a potential beta tester, please contact Diane Reinhold, 336.286.4259.

References

- ¹ Susi, Johannesson, and Backlund (2007). Serious games: An overview. Technical report HS-IKI-TR-07-001. www.scangame.dk/downloads/HS-IKI-TR-07-001_PER.pdf
- ² Wouters, P., van Nimwegen, C., van Oostendorp, H., & van der Spek, E. D. (2013). A meta-analysis of the cognitive and motivational effects of serious games, *Journal of Educational Psychology*, 105(2): 249-265.
- ³ Clark, D. B., Tanner-Smith, S., Killingsworth (2014). *Digital games, design, and learning: A systematic review and meta-analysis*, SRI Education.
- ⁴ Organisation for Economic Cooperation and Development, Programme for International Student Assessment(PISA), 2012 results.
- ⁵ Rothwell, Jonathan (2013). Brookings Institute's Report, The hidden STEM economy, June 10, 2013.
- ⁶ Roshan & Tesliuc, 2013; Conference Board, 2006; Silva, 2008; Davies et al., 2010; Hampson & Junor, 2009; Adelman et al., 2011).
- ⁷ Ernst, C. & Chrobot-Mason, D (2010). *Boundary spanning leadership: Six practices for solving problems, driving innovation, and transforming organizations*. New York: McGraw-Hill Professional.



About the Authors

Diane Reinhold is design faculty at the Center for Creative Leadership (CCL®). Her work focuses on developing, designing, and packaging the Center's new content into services, programs and tools that engage the user. Diane is a client-focused designer with extensive experience launching training products, programs and large scale-development initiatives. She is able to clarify individual and organizational development needs, and creatively package content in a way that helps the learner absorb and apply the information. Diane focuses on creating blended initiatives, supporting learning transfer, and application toolkits. She has used multiple delivery channels including many online media to deliver content in the workplace when it is most needed. Through design and facilitation, Diane has worked with and supported multiple CCL clients from universities, nonprofits, and corporations.

Laura J. Weber has more than 25 years' experience working with academic institutions, state and federal government institutions, and nonprofit organizations with an emphasis on building individual and organizational capacity for growth and change. For 14 years, Laura owned a consulting business specializing in curriculum development, training, project management and fundraising. In this capacity she has developed large-scale programs and facilitated strategic planning processes focused on growth and sustainability for nonprofit organizations. Laura has trained around the country, and has served as adjunct faculty at both the University of North Carolina at Greensboro and High Point University, where she developed and taught graduate and undergraduate courses, including the first graduate fundraising class for High Point University. Most recently, Laura was a senior project director at CCL and managed multiple and complex projects, including the 2010 launch of the Golden LEAF Scholars Leadership Program. Laura led business development, fundraising, and development of new projects, programs, and products for the Center's Youth Leadership Development Group. She earned her PhD in Education Leadership/Cultural Foundations.

Robert M. Brown is chief executive officer of Triad Interactive Media, Inc. (TIM), which is an educational software firm specializing in the design and development of game-based products for e-learning and training. TIM has successfully completed e-learning contracts with NASA, the US Department of Education, the Department of Defense, and the National Science Foundation. Robert has been a strong advocate of online learning for over two decades and has extensive experience managing teams of instructional designers, game designers, coders, and multimedia specialists. Previously, he worked as a Communications Analyst at The RAND Corporation, held teaching positions at the University of Maryland and Oklahoma State University, and served as dean at the University of North Carolina at Greensboro. Robert has a PhD in literature and is the author of several books, including *Writing for A Reader*.

To learn more about this topic or the Center for Creative Leadership's programs and products, please contact our Client Services team.

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