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EagleRacing:

Addressing Corporate Collaboration Challenges Through an Online Simulation Game

by Albert A. Angehrn and Katrina Maxwell

The ability to collaborate productively is critical for individuals and organizations in order to operate effectively in today's global environment. Effective collaboration allows corporations to identify and replicate operational best practices and to optimize business activities such as cross-selling and providing integrated solutions. Effective collaboration can also produce innovation, a key driver of organizational renewal and success (Damanpour and Evan 1984; Damanpour, Szabat, and Evan 1989; Dyer and Singh 1998; Loof and Heshmati 2006). However, many collaboration initiatives fail to deliver the value expected (Labianca, Brass, and Gray 1998; Miles and Snow 1992; Shenkar and Yan 2002), at least in part because individuals may resist collaborating. People resist collaboration for many reasons: because they do not see any advantage for themselves; because they do not have the same objectives as those with whom they are asked to collaborate; because they believe the cost in time will outweigh benefits; because they have had bad prior experiences; because they do not trust collaboration partners who have different cultural beliefs or attitudes toward risk; or because they see that their corporate culture does not reward the sharing and co-creation of information, experiences, ideas, or perspectives (Ashforth and Mael 1989; Brewer 1993; Huxham and Vangan 2005).

Given that the collaboration of co-located teams is already mined with such potential sources of breakdown, the additional complications introduced by geographical and cultural distance make the collaboration of distributed teams even more likely to fail. Clearly, there is a need for systems that can help individuals develop the ability to collaborate productively despite distance and diversity. In response to this need, we created [EagleRacing](#), a collaborative decision-making simulation that requires participants to work in teams to make crucial decisions and then allows them to see the consequences of those decisions play out. Designed with consideration for multiple theories about collaboration behavior, the simulation stimulates learning about collaboration by allowing participants to experience the challenges of collaboration and group decision making firsthand.

Background

EagleRacing is a video-based collaborative simulation that provides participants with the opportunity to experience group collaboration in a business context, allowing them to develop a better understanding of the factors influencing the success or failure of a collaborative effort. Its design is based on a number of models from different disciplines related to the theory and practice of collaboration, including motivation and cultural models, knowledge integration models, and distributed technology-supported collaboration models (Angehrn 2006).

Challenges to collaboration

Individual cognitive and psychosocial factors may present a significant barrier to effective collaboration. Individuals who are not motivated to collaborate or do not trust potential collaborators will perceive collaborative knowledge sharing as a threat (Ashforth and Mael 1989; Brewer 1993). A person's value system can also shape their goals and objectives for collaborative endeavors (Cherrington 1989); such influences can also act at the level of groups and organizations where competitive pressures can lead to noncollaborative cultures (Fulk, Schmitz, and Schwarz 1992; Locke and Schweiger 1979). Factors such as

group diversity (Van Knippenberg, De Dreu, and Homan 2004; Levine and Moreland 2004) and collective identity (Hardy, Lawrence, and Grant 2005) are also important factors in the success or failure of collaborative efforts.

A second significant barrier to effective collaboration is the difficulty faced by individuals and teams in integrating information from various sources (Cohen and Levinthal 1990) as they must determine what knowledge from a specific context could be relevant in a different context (De Vries, Roe, and Taillieu 1998); this is complicated by the fact that members of a collaboration team may have different understandings regarding the meaning of particular words or phrases (Dougherty 1992). This is particularly relevant when individuals have very diverse backgrounds and cultures and the knowledge they need to share has a strong tacit component (Hansen 1999). This can cause collaboration breakdowns resulting from assessing the collaborative situation incorrectly and consequently choosing the wrong process to deal with it (Carlile 2004). Workgroup dynamics may present a third challenge to collaboration, especially when participants are working in distributed groups (Hogg and Abrams 1993; Poole, Holmes, and DeSanctis 1993).

Simulation-based learning as an aid to collaboration

The design of the EagleRacing learning experience is based on practical experiences with collaboration management in different organizations (Huxham and Vangen 2005; Katzenbach and Smith 1993). The multimedia narrative of the EagleRacing simulation is built on the classical Carter Racing case (Brittain and Sitkin 2006), a case study that illustrates how difficult it is for individuals to make decisions under the conditions typically found in organizational contexts.

Simulation-based learning like that provided by EagleRacing is particularly suited to the way adults learn. Kolb's (1984) theory of experiential learning holds that adults learn through a process that involves a set of sequential steps: (1) obtaining concrete experience; (2) observing and reflecting upon this experience; (3) formulating abstract concepts in response to this reflection and observation; and (4) experimenting to test the validity of these concepts. Simulation-based learning invokes this cycle, allowing participants to gain both the awareness of a complex situation and the experience of resolving the situation; the simulation allows them to experiment with various solutions to a problem in a safe environment, and the feedback and reflection opportunities that a well-facilitated simulation experience provides ensure that participants solidify their learning (Aldrich 2005; Begg, Dewhurst, and Macleod 2005; Faria 2001; Rogers 2003). In a teamwork scenario like EagleRacing, grouping individuals with different experiences and problem-solving approaches ensures that participants encounter difficulties in reaching consensus and provides a good game dynamic as the interaction of divergent opinions triggers debate and engages all participants more effectively in the game scenario (Lainema and Lainema 2007; Nonaka 1994; Van der Vegt and Bunderson 2005).

What is EagleRacing?

EagleRacing is based on an interactive, branching episodic structure; the decisions participants make determine which episode they see at a given juncture ([Figure 1](#)). By the end of the game, each participant will have watched four of the simulation's fifteen possible episodes; the story that emerges in those episodes follows Gianluca Paraneli, a high-level decision maker in EagleRacing, a car-racing company, as he faces three crucial dilemmas:

- **Dilemma 1** - He must decide between two very different, mutually exclusive sponsors whose funding is desperately needed to guarantee his company's future.
- **Dilemma 2** - He must decide whether to pull EagleRacing out of a race at the last minute given a possible risk of car engine failure and in the face of top management pressure, experts' disagreements, and the knowledge that the potential sponsor will be present and plans to sign the contract after the race.

- **Dilemma 3** - He must decide if he should openly share information about problems with the car's engine with the prospective sponsor or hide potentially damaging information.

Each dilemma is complex and multidimensional and has potentially serious consequences. Dilemma 2, in particular, is modeled on the well-documented group decision that led to NASA's disastrous launch of the Challenger in 1986 (Maier 2002). In addition to the videos, supplementary information is made available online, including an [organigram](#) of the cast, an overview of the main facts of the situation, graphs of the relationship between engine failure and air temperature, an e-mail from the engineer to the chief engineer discussing the engine problem, and a defamatory newspaper article about one of the potential sponsors.

Participants, who assume Paranelli's role, work in teams to resolve each dilemma; each team must reach consensus in order to move on to the next step in the simulation. This is not an easy task as teams must analyze and consider different types of information and conflicting opinions expressed by video characters as the episodes unfold and by team members as they express their opinions. The story and each team's collaboration experience will unfold differently, depending on the decisions the team makes at each juncture. Of the eight possible outcomes, only one represents the "best" solution—signing the sponsorship contract on the initially proposed terms. Three other paths lead to less than optimal results, such as keeping the sponsor but on less favorable financial terms, and four paths lead to financial disaster and the end of the company.

EagleRacing helps participants to address the collaboration challenges presented by workgroup dynamics and incorporates the use of technology by injecting both asynchronous and synchronous collaboration technologies, such as e-mail and [group decision support systems](#), into the learning experience.

The EagleRacing Learning Experience

The EagleRacing learning experience is led by a facilitator whose role is to create teams, to encourage participants to link their experiences to concepts and insights related to collaboration dynamics, and to moderate online and on-site discussions. The EagleRacing simulation is highly flexible and amenable to a range of group sizes and organizational contexts ([Exhibit 1](#)). The simulation demands that users navigate a variety of challenging activities, including making strategic decisions in a high-risk context; negotiating with team members; interpreting data and using evidence from various sources; making and managing choices from both the rational and the emotional perspective; balancing the need for both transparency and diplomacy; and dealing effectively with cultural conflicts, ethical issues, and rumors and reputation concerns.

Nonetheless, the main challenge is collaboration. In particular, the EagleRacing simulation provides users with the potential to gain effective experience-based learning regarding the challenges and opportunities of group decision making. EagleRacing exposes participants to a variety of collaborative challenges; to arrive at a successful decision, they must manage time, social pressure, and different points of view; accommodate arguments; and avoid groupthink. Participants also experience the benefits of working in groups, which include exposure to different points of view and more critical analyses of ideas. This broad exposure increases the range of possible solutions and reduces the risk of selecting bad solutions (Laughlin and McGlynn 1986; Levine and Moreland 1990; Van Knippenberg, De Dreu, and Homan 2004).

Managing different points of view and reaching consensus, especially in a team with diverse members and potentially irreconcilable opinions, is time-consuming; the facilitator can ask teams to reflect upon this reality and thereby generate discussion about the dynamics of team development. For example, the facilitator could point out that groups tend to fall into specific decision-making traps, such as reaching agreement too hastily due to groupthink or, on the contrary, endlessly debating the issues without ever making a decision (Kray and Galinsky 2003) and suggest methods for dealing with them ([Exhibit 2](#)).

The facilitator can also demonstrate, and have participants try, different collaboration and communication

technologies during the simulation. Research suggests that the use of collaboration technology can have a positive effect on the quality of decisions, the number of ideas generated, and the equality of participation among team members, but such technology may cause a team to take longer to reach a decision and may reduce team members' satisfaction with the outcome of their decision (Benbasat and Lim 1993). The costs and benefits of using group decision support systems depends on a number of factors, including the size of the group, the participants' ease with technology, and the type of activity supported (DeSanctis and Gallupe 1987). Allowing participants to experiment with different technologies can help them to elucidate the conditions under which these technologies may be deployed most effectively.

For EagleRacing decisions made online, participants primarily use e-mail with a courtesy copy to the facilitator to collaborate on group decisions. Specific difficulties they tend to face include managing the amount of information generated, keeping up with the correspondence while at work, managing distractions generated by other obligations, and dealing with the time lags involved when group members are located all over the world. However, e-mail provides the advantage of leaving a clear trace of the decision-making process, both for the participants and the facilitator. The experience of reaching consensus online can be discussed during the debriefing session and Hallowell's (1999) "human moment" idea, which argues that although e-mail and voice mail are efficient, face-to-face contact is essential for true communication, can be debated.

If time permits and some teams have not reached consensus, the facilitator can introduce a very important meta-dilemma by asking all participants if they want to continue to work in their individual teams competing with the other teams or form one big group and try to reach a common decision of higher quality, thus collaborating with the entire cohort of participants. This can lead to a discussion about when to collaborate or not and the different processes and technologies needed to manage collaboration among groups of various sizes. Participants usually choose to continue in their original teams for a number of reasons; often, they feel that reaching agreement just within the small group has been hard enough, they do not believe that they will learn anything new by listening to other teams, or they are eager to see the next online episode to find out how the story unfolds.

Stimulating and Supporting Facilitator Collaboration

Effective knowledge exchange is necessary for innovation and learning to occur; however, in a distributed working environment, it is not possible to drop by a colleague's office or meet coworkers at the coffee machine to solicit advice, exchange ideas, or discuss projects. This reality is unfortunate as sharing experiences, ideas, and projects can lead to innovation in and improvements to the learning experience ([Figure 2](#)). Thus, the online exchange of knowledge has become particularly valuable in many situations, for example, when isolated instructors or facilitators deploy new training material. This is why we have developed an online collaboration system for EagleRacing facilitators.

EagleTube is a video-based Web 2.0 community system aimed at supporting and stimulating experience exchange and innovation-oriented collaboration among EagleRacing facilitators ([Exhibit 3](#)). The system is designed to motivate and enable EagleRacing facilitators to share information about their deployment experiences, innovative ideas, and ongoing projects in an effort to improve the EagleRacing learning experience in different organizational contexts and with different audiences.

EagleRacing Deployment Experiences

EagleRacing is a new simulation, and we are currently experimenting with all of its deployment possibilities in different contexts. After several development, testing, and evaluation cycles carried out over two years in the context of the European Community-funded Learning to Collaborate ([L2C](#)) project, EagleRacing was deployed for the first time in December 2007 in a half-day on-site workshop called the EagleRacing Launch

Event, which was attended by 120 invited Scandinavian managers and consultants. Participants worked through the simulation in teams of six, aided by interactive voting and distributed decision-making technologies such as [ThinkTank](#). After they completed the experiences, participants were asked to provide feedback related to four dimensions:

- effectiveness of EagleRacing as a learning tool,
- quality of the video episodes,
- realism of the collaboration dilemmas, and
- complexity of the simulation.

The feedback was used to guide a number of adjustments, both in the scenario and in the deployment approach. The most important adjustment was to increase the complexity of the third collaboration dilemma (transparency versus diplomacy in a collaboration crisis); to do this, we added intermediate scenes to complicate the scenario and provide additional information.

Since then, EagleRacing has been played, both on site and online, by more than 1,000 managers and students from a variety of organizations, including [IKEA](#), [Novartis](#), the Scottish government, [Havas](#), [Vestas](#), [INSEAD](#), [Fiat](#), [Meriel](#), and the [National Defense University](#); in each context, the simulation has produced a unique set of benefits ([Table 1](#)). EagleRacing has been used in traditional training programs to develop skills and knowledge in a variety of areas, including as collaboration, strategic decision making, and organizational culture ([Exhibit 4](#)); as a team-building exercise for a cross-functional product development team; and as a means to attract visits and contributions in an online community of distributed small- and medium-sized company managers (Nabeth et al. 2008). In post-workshop discussions and course-evaluation feedback that facilitators and program directors collected from participants, EagleRacing has received largely positive reviews with many describing it as an engaging and challenging experience in team decision making and collaboration ([Exhibit 5](#)).

These varied experiences have also demonstrated the very high deployment flexibility of simulations like EagleRacing. It can be used for a half-day learning experience, or the episodes and debriefing can be spread out over several weeks. It can be run on site, played online by distributed teams, or used with some combination of both. In higher education contexts, for instance, this type of simulation can be used to engage participants before a course starts on campus in order to help them get to know each other better through a collaboration experience that is debriefed on site during the course. Alternatively, it can be used to engage participants and keep them connected during the recess between two on-site course modules.

Conclusion

Combined with targeted debriefing, simulations with the features of EagleRacing can provide participants with the opportunity to experience and reflect upon the collaboration challenges presented by face-to-face interaction, e-mail exchanges, advanced collaboration technologies, and Web 2.0 environments as well as decision making at the individual, small team, large group, and virtual community level. The main lessons we have learned from deploying the EagleRacing simulation are that team diversity is necessary to generate debate, that the facilitator should actively observe and intervene to stimulate doubt and discussion in teams, and that a structured reflection process is necessary to move such simulations beyond the pure entertainment value of watching videos to real experiential learning.

Our future research plans include developing and validating scripts to support a brief negotiation role play after each dilemma, developing advanced measurement methods to assess the short- and long-term impact of this type of learning experience, and, as a result of the emotions we have seen emerge as participants play EagleRacing, exploring how simulations can be used to support research and learning about emotions in the workplace ([Exhibit 6](#)). From a data-gathering point of view, online play is especially interesting as all team

e-mail exchanges can be traced and the influence of players' emotions on their decisions is evident.

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