Serious Solutions with Serious Games

Straining with complex systems
Surrounded by complex systems that affect almost everything in our lives—the economy, the environment and the global movement of supplies—we continue to be challenged by the vast amounts of data they produce. Organizations are straining to interpret and apply this data to make the best-possible, information-based decisions.

Analytics are gaining increasing attention, and executives are realizing analytics can help make information come to life and deliver insights that span infrastructure, assets, processes and technology. They also know they have a shortage of analytics-trained people. An approach is needed that allows data to be viewed in a different way—one even non-experts can understand, contribute to and act on.

Interpreting data deluge
Contextual simulations can be used to help sort and interpret data but they often fail to keep peoples’ attention. However, a technique called ‘Serious Games’ may be the answer. ‘Games’ are the center of this method but not as a leisure activity—Serious Games focus on actual situations that require thoughtful conclusions on organizationally-important topics.

Participants sort and understand real data, analyze real issues and test real potential solutions, applying variables that can be adjusted and readjusted for different approaches. Game play preserves engagement yet focuses players on important concerns, generating real learning and helping transform assumptions, skills, and behaviors. Games also can establish a path to achieving a goal. This enables non-experts to help address real problems.

Serious problem solving
Played by individuals or by teams, Serious Games can be applied to generate a broad range of innovative solutions. They can help visualize and explain complex systems via principles of video and online gaming, engaging participants through competition, teamwork, intrigue, curiosity and problem-solving. This attracts participation, encourages creativity and helps establish a path to collaborative work and analysis.
Some elements of Serious Games include:

- Scenarios can be played and replayed, modifying real-life variables to test changes in components and outcomes.
- Action is video simulation so current work and processes are not disrupted.
- The interdependence of components and processes, and advantages of interaction and collaboration becomes very clear.
- Participants 'learn by doing’—seeing the ‘how’ and ‘why’ is enduring.
- Gaming systems can accumulate learning from users that builds on itself, and incorporate it into subsequent rounds.

Military and emergency services organizations were early adopters of Serious Games, using them in military and emergency services training, health care, and various other areas. The coordinated and cooperative nature of their work requires team building, and prepares for specific and highly synchronized missions. Also, potentially hazardous work benefits from simulations in which mistakes can be made without causing actual damage or endangerment, and then evaluated for future learning.

Serious Games also can be found at schools and universities around the world, and in corporate education. They increasingly are used to test business scenarios and to conduct training. Additionally, business gaming can be used to motivate and lead large global, virtual teams, and to encourage creative problem solving, load balancing and complex systems (such as supply chains) optimization. This can save money, time and resources.

**IBM and Serious Games**

IBM employees, business partners, clients and future clients (students) already are using our games to learn and to plan. IBM INNOV8, a free online game that teaches the complex systems of Business Process Management (BPM,) makes a complex (and potentially boring) topic into something intriguing and engaging. It is in use at more than 1000 universities.

IBM's CityOne game displays how municipal systems connect, how industries evolve, and how IT investment impacts people, profit, and the planet. This game shows the effects of selected actions, then leads to the new challenges these actions have brought about.

As popular as INNOV8 and CityOne have been, like most Serious Games, they contain fixed data within canned scenarios. But unlike other companies, IBM also produces games with real data flowing through them. Our games go beyond skill training to directly affect the work environment.

We utilize our base cloud infrastructure and applications we sell commercially, to incorporate adaptive analytics (such as our Watson system,) business process management, learning management systems and social business applications. These work together to provide a motivating, contextual environment for people to collaboratively solve problems.

**IBM helps clients use games as a means for collective intelligence in many venues for many purposes including:**

- To help public school systems motivate students with self-paced digital curriculum;
- To help municipalities learn, and convey insight into infrastructure investments, applying real city data to city sims to vet public policy
- To help test inter-agency disaster response scenarios;
- To integrate the Games for Health movement into legacy infrastructures and enable physicians to track patient behavior changes;
- To help the military go beyond skills training at the platoon level to finally tackle complex strategy and operational use.

IBM also uses Serious Games to optimize supply chains. We can help make supply chains work better by creating real-time strategy games that can be ‘played’ to examine how unforeseen events might affect real-world components. Business partners also can be included to tap insights from everyone involved. The end-product would be a new, executable supply chain process pre-vetted by the broader value chain.

One of the key differentiators of IBM's Serious Games approach is our concentration on process optimization. We look at the most efficient and effective ways to improve procedures via iterative collaborative gameplay, applying Six Sigma principles. This helps improve processes and may also increase ROI. With even the smallest percentage in process improvement, results can include:

- 20% margin improvement
- 12 - 18% increase in capacity
- 12% reduction in employees
- 10 - 30% capital reduction
Creating the games

Working with clients, IBM constructs games to address their complex elements, examining current state versus desired state. We coordinate with staff and stakeholders to review components, assessing what they need and what will succeed based on organizational structure and staff expertise. We establish individual goals and group goals and determine progress measurements.

IBM assists in building contextual scenarios, helping to vet and question underlying assumptions and models, and to establish incentives and techniques that motivate teams to participate and contribute. Employing ‘what if’ situation testing and evaluating different outcomes, we help apply real data, manipulating timelines and variables. This swapping out process helps achieve better insight into cause and effect and demonstrates benefits of collaboration and negotiation to the outcome. Currently, IBM is the only company making process optimization games with real data.

In addition, we can provide the following services for our games solutions:

- Cloud-enabled scalable infrastructure
- Commercial-grade Decision Analytics and Optimization; Collective Intelligence applications
- Engine-independent Service Oriented Architecture (SOA)
- Access to legacy systems, making integration work easier

Game example: Supply chain for logistics agency

- Create digital, contextual environment model
- Test model’s agility by initiating events in this environment with broader value chain
- Apply same system to formulate and teach best practices ‘play book’
- Utilize system for real time visualization as data maturity levels develop
- Optimize business process models associated with various supply chains.

Game Outcome: Collectively define new, more agile process (effectively blurring line between training and real time optimization)

Taking a quantum leap

To date, Serious Games have typically been used for ‘just training’. With IBM’s cloud-enabled infrastructure, organizations can now use Serious Games to actually improve business processes. Our games help organizations to:

- Solve complex problems collaboratively
- Make business processes more efficient
- Achieve predictive modeling and real time visualization
- Increase ROI: Vast improvements in processes save money, time, resources, and lives.

Business process improvement has been responsible for reducing cost and cycle time by as much as 90% while improving quality by more than 60% (Gartner)

As organizations intensify their efforts to engage with their workforce, Serious Games offer a powerful, effective approach to learning and to skills development. IBM’s Serious Games go one step further: they help achieve smarter organizations and businesses by creating engaging contextual environments that make processes more efficient. Our gaming systems tap employee and customer insights, promote collaboration with business partners, and make our organizations more agile.

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Sources
