(TS//SI//REL) MHS and GCHQ "Get in the Game" with Target Development for World of Warcraft Online Gaming

(TS//SI//REL) Although online gaming may seem like an innocuous form of entertainment, when the basic features and capabilities are examined, it could potentially become a target-rich communication network. Online gaming represents a technology that is rapidly growing in popularity worldwide. World of Warcraft (WoW) is one with an impressive following of gaming enthusiasts. With over 10 million users worldwide, WoW may be providing SIGINT targets a way to hide in plain sight. Targets have been spotted receiving "no reply" emails from gaming providers and GCHQ analysts have correlated known SIGINT targets to online gaming events. The New Mission Development Center at MHS, the Global Network Exploitation (OPD-GNE) and the Applied Research Special Topics (B18) organization at GCHQ are working together

to filter the FORNSAT survey environment for this traffic and extract various types of WoW metadata for SIGINT development and network knowledge enrichment.

(U) World of Warcraft

(U) Communication is at the core of online gaming and in WoW there are many ways to communicate and interact in the virtual world. A player has a character ID and can join different groups. A "party" brings players together for a common, defined purpose or quest. It is temporary and task-oriented. "Guilds," on the other hand, are for characters with persisting relationships and can take on an organizational structure with ranks and positions. The guild is more permanent and ideological. Characters can communicate verbally and non-verbally and may set up different types of channels to talk within a guild or privately, character to character.

(TS//SI//REL) GCHQ recently asked MHS's New Mission Development Center (NMDC) to support an online gaming research effort focusing on WoW. Eager to assist in a new potential area of target development, the NMDC discussed metadata needs with GCHQ in order to enable WoW target and network research in the FORNSAT arena. The NMDC engaged SNORT, an open source packet-sniffing software, which runs on all FORNSAT survey packet data, to filter out WoW packets. GCHQ provided several WoW protocol parsing scripts to process the traffic and produce Warcraft metadata from all NMDC FORNSAT survey. These logs are now being forwarded back to GCHQ for additional analysis, target development and network knowledge enrichment. By fusing information from different systems, databases, and resources GCHQ has correlated target entities to WoW logon events and continues to uncover potential SIGINT value by identifying accounts, characters, and guilds related to Islamic Extremist Groups, Nuclear Proliferation and Arms Dealing.

(TS//SI//REL) WoW certainly provides entertainment for a large number of people worldwide, but its gaming format can provide a virtual organizational platform for potential SIGINT targets as well. Furthermore, this technology can assist the target and simultaneously assist the SIGINT community in tracking that target. The WoW gaming infrastructure provides ample information for network development through the data passed during WoW messages, such as country and time zone information, local IP addresses and realm server addresses. In terms of active target development, there are clear parallels: traditional SIGINT development may follow emails, chat and buddy lists, whereas WoW target development may follow character IDs and logons, gaming communication channels and guilds.

(TS//SI//REL) MHS and GCHQ will continue to develop and collaborate on this potentially lucrative venue.

(S//SI) **Topic: Exploiting Terrorist Use of Games & Virtual Environments**

(TS//SI) **Issue:** We know that terrorists use many feature-rich Internet communications media for operational purposes such as email, VoIP, chat, proxies, and web forums and it is highly likely they will be making wide use of the many communications features offered by Games and Virtual Environments (GVE) by 2010. The SIGINT Enterprise needs to begin taking action now to plan for collection, processing, presentation, and analysis of these communications. With a few exceptions, NSA can't even recognize the traffic, and therefore it is impossible to even say what percentage of the environment is GVE; let alone determine how targets are using the communications features of GVEs. However, GVEs offer a SIGINT/HUMINT opportunity space and more research is needed to figure out effective exploitation.

(S//SI) GVEs today allow individuals to gather with like-minded others online. Many GVEs offer communications such as private chat (P2P), group chat, chat to an alias, and broadcast chat –both text and voice. Also many GVEs allow convergent technologies to intermingle such as XboxLive! which can be run via an Xbox360 gaming console and/or connect via a PC to normal MSN chat. Second Life offers the ability to anonymously text to a GSM phone (SMS) and soon they will offer anonymous voice calls so that phone numbers do not have to be known by either party and won't show up in collection. Some GVEs allow third party interfaces which allow limited functionality from a web browser. This overcomes obstacles such as a high-bandwidth requirement and or not being allowed to download software (think Internet café usage). In addition, many GVEs are able to be used via mobile devices connected wirelessly (phones, handhelds, laptops). Connected to the GVEs, specialized forums and other social networking sites have sprung up to provide an additional place to interact, connect, or share. These sites and any others can be advertised in the GVEs, so that if a terrorist web forum has to move locations it can be found by its members again. Areas/groups can be access-restricted, member-only. They are essentially private meeting places, and can be used for planning, comms, and training, etc. GVEs are used for collaboration; Forterra's 3D world is coming to JWICS to do this IC-wide.

(U//FOUO) GVEs have been made that reinforce prejudices and cultural stereotypes while imparting a targeted message or lesson both from the Western point of view and in the Middle East. America's Army is a U.S. Army produced game that is free download from its recruitment page and is acknowledged to be so good at this the army no longer needs to use it for recruitment, they use it for training. The Lebanese Hizballah has taken this concept and the same basic game design and made its own version of the game called Special Forces 2 (SF2), which its press section acknowledges is used for recruitment and training in order to prepare their youth to "fight the enemy", a radicalizing medium; the ultimate goal is to become a suicide martyr. One cannot discount the "fun factor" involved—it is important to hold your target audience's attention-- and makes ingesting the message not even noticeable. SF2 features multi-player, on-line text and voice chat for up to 60 players simultaneously, effectively acting like a VPN or private chat forum. SF2 is offered at $10 a copy and so also goes to fund terrorist operations.

(S//SI) These games offer realistic weapons training (what weapon to use against what target, what ranges can be achieved, even aiming and firing), military operations and tactics, photorealistic land navigation and terrain familiarization, and leadership skills. While complete military training is best achieved in person, perfection is not always required to accomplish the mission. Some of the 9-11 pilots had never flown a real plane, they had only trained using

Microsoft's Flight Simulator. When the mission is expensive, risky, or dangerous, it is often a wiser idea to exercise virtually, rather than really blow an operative up assembling a bomb or exposing a sleeper agent to law enforcement scrutiny. Militaries around the world use virtual simulators with great success and the Hizballah has even hooked up a Playstation controller to a laptop in order to guide some of its real missiles. Kuma Wars is a U.S. owned company that offers realistic battle simulation of real battles in Iraq usually one month after they actually happened. The player can re-do maneuvers in a lessons learned way for training, or you can switch sides and see how it works from the opposite side. It also provides real terrain features, such as real road signs from real roads in Iraq, and a simulated night-vision goggles environment.

(TS//SI) Al Qaida terrorist target selectors and GVE executables have been found associated with XboxLive, Second Life, World of Warcraft, and other GVEs in PINWALE network traffic, TAO databases, and in forensic data. Other targets include Chinese hackers, an Iranian nuclear scientist, Hizballah, and Hamas members. GCHQ has a vigorous effort to exploit GVEs and has produced exploitation modules in XboxLive! and World of Warcraft. After beta testing, they expect reporting to begin in April 2008. The FBI, CIA and the Defense Humint Service all have HUMINT operations in Second Life and other GVEs and are very interested in forming a deconfliction and tipping group that would be able to collaborate on operations.

(TS//SI) GVEs are an opportunity! We can use games for: CNE exploits, social network analysis, HUMINT targeting, ID tracking (photos, doc IDs), shaping activities, geo-location of target, and collection of comms. It has been well documented that terrorists are OPSEC and tech saavy and are only getting more so over time. These applications and their servers however, are trusted by their users and makes an connection to another computer on the Internet, which can then be exploited. Through target buddylists and interaction found in the gaming and on gaming web sites, social networks can be diagramed and previously unknown SIGINT leads and connections and terrorists cells discovered. GVEs can contain on-line presence indicators, geolocation, and ID tracking can be gleaned and used in apprehension operations.

(TS//SI) **Recommendation:** The amount of GVEs in the world is growing but the specific ones that CT needs to be methodly discovered and validated. Only then can we find evidence that GVEs are being used for operational uses. Protocol Exploitation, SFL, and TAO should begin profiling their databases and the GVEs for collection and exploitation possibilities. Open source (APSTARS) produced GVE lists and selectors should be used to run against UTT and other databases to check for cross matches to develop target selectors. CT SIGDEV along with CT TOPIs will study the collected traffic to find and track targets of interest. There should be a concentrated effort to conduct research into target use of GVEs, and signatures for survey collection should be developed. Targets and specific apps should be chosen to exploit to ensure that terrorists' GVE/social site usage is covered by SIGINT and the system is not left behind the times. All avenues should be taken to develop PES and CNE exploits as GVEs are found on target computers. We need to develop a viewer/db that allows linguist/analysts to view/experience voice/text/video traffic together and archivee the GVE data associated with reporting. which will also be essential for Yahoo, Skype, webcam, VTCs and Biometrics.

(S//SI) CT SIGDEV/SSG should establish a process to deconflict IC-wide ops in GVEs and to develop strategy for collaboration. Members from at least CIA, FBI, DIA, NSA and GCHQ should participate to make the coordination significant. Members should have ability to check tasking, traffic, and status of current operations.

Games: A Look at Emerging Trends, Uses, Threats and Opportunities in Influence Activities

Table of Contents

FORWARD

Video games are a media platform that has become part of daily activity for many around the world. Whether it is casual gaming on a cell phone or PC, or a virtual world where individuals are connected via the Internet, interaction in and around games is increasing. Games entertain, encourage interaction, enable financial gain, and teach lessons. While many of these activities are meant to be harmless, they also have the potential to be exploited for malicious activities.

Over the course of a year, extensive study was done on the common use of games and their applicability to terrorist activities. Academic journals and papers, newspaper and magazine articles, textbooks, non-fiction works, in-game exploration and personal interviews on games, psychology and sociology, as well as attendance at seminars on these issues (for example the Serious Games conference or SAIC's Cyber-Influence Conference series) represent the main sources for this report.

The report was written in five stand-alone papers that are compiled here as a comprehensive primer for the current and potential future of game usage. A majority of the information contained in this report identifies facts and trends and applies them to the realm of IC concern (Chapters 1, 2, and 4). In addition, the paper contains examples of fictitious scenarios that terrorists or extremists might employ (Chapter 3), technology advancements and trends that might enable those scenarios (Chapter 4), and recommend steps to ensure that those hypotheses are not realized (Chapter 5).

CHAPTER 1

Exploitation and Function of Games: An Interactive Influence Medium

Photo from a *Second Life* Gathering

Gaming Markets: Why We Care

Demographics

The gaming population crosses age, gender and cultural boundaries, making inroads into previously untapped markets and providing terrorist organizations with a powerful platform to reach core target audiences.

- The core demographic for gaming is 18 – 35 year-old males. However, the average age of the typical "gamer" increases by one year each year and women now comprise nearly one-third of all adult gamers.[i]

- The online gaming population is expected to grow rapidly in the near term, resulting in an estimated 10 million online game players in the U.S. (i.e. the equivalent of the entire population of New York City) and 30 million online game players worldwide (i.e. the equivalent of the entire population of Shanghai, Bombay and Karachi combined).[ii]

- While the majority of online gamers originate from U.S. and Asian markets, the rapid expansion of Internet cafes and broadband technologies will enable the growth of online gaming populations in other regions. For example, the fastest growing gaming markets are occurring in Europe, the Middle East and Africa.[iii]

- Gaming sales continue to increase by a compound annual rate of 19.1%. Sales surpassed 23 billion USD in 2003 and are estimated to reach 56 billion USD by 2008. In turn, revenues reached approximately $6 billion in 2004 and are projected to reach $14.3 billion by 2009.[iv]

Popularity

Gaming has emerged as the preeminent form of entertainment among 18 – 35 year-old males. Consequently, the gaming industry now rivals traditional entertainment industries, including the film and music industries in terms of growth, revenue, and consumption.[v]

- For example, the gaming industry is growing by 20% compared to 7.5%, 7.1% and 2% growth rates in the film, television, and music industries during the same period. Furthermore, AC Nielson predicts that within four years, the film industry will be just one-third the size of the computer game market.[vi]

- Game users typically spend 20-30 hours per week on online games and more than 20% of online gamers identify themselves as residents of virtual worlds.[vii]

- The stereotype of the lonely gamer spending long hours in social isolation is no longer tenable. While some games are played by singular or a group of isolated players, computer gaming now is increasingly social with the growth of Local

Area Network (LAN) games played in Internet cafes and the expansion of massively online multiplayer games (MMOG). Users are now interacting with others in the game (i.e. guilds), online in other cyber media (i.e. web sites, message boards and social networking sites) and in cybercafés providing a fertile ground for terrorist activities.

- It is widely thought that online gaming may have a similar cultural, political, and social influence on today's gamers that music, religion and politics had on earlier generations.[viii]

Global Patterns in Game Play: Time Spent, Social Interaction and Reach

Games consume a great deal of time and effort by a significant number of players around the world. In a study done by Nick Yee at Stanford University on Massively Multiplayer Online Role Playing Games (MMORPG) users, 50% of the 30,000 respondents worked full time, with only 22% as full-time students. The average age of the respondents was 26.5, (women tended to be older than me) and on average the respondents spent 22.71 hours per week in their chosen MMORPG, a time involvement which suggests that there is a substantial level of emotional investment in the MMORPG environment.

Global Market *Counter-Strike* is considered the most popular online first-person shooter (FPS) game in the world with the more than 200,000 players playing simultaneously and contributing more than 5.5 billion minutes of playing time each month on the official network consisting of more than 100,000 servers.[*] *Counter-Strike* is played extensively throughout Central, Southeast, and Southwest Asia in addition to the core U.S., European and Asian markets.[*]

Palestinian Market Reportedly, more than 25% of children between the ages of 6 and 17 in the Palestinian territories access the Internet through Internet centers that have emerged in refugee camps, rural villages, and urban areas. Palestinian Internet center managers and computer lab owners have reported that most children spend most of their time playing online games, including "pro-Arab" games like *Special Force* and *Under Siege*.

Southwest & Southeast Asian Markets Kuma Games produces and distributes episodic games depicting real life military operations. These games are played throughout Southeast and Southwest Asia. During the height of media coverage on Middle East networks like Al-Jazeera, 20% of Kuma's total audience originated from the Middle East region with significant amounts of game traffic coming from Egypt and a notable number of players originating from Iran and Iraq. [*See:* End Note xxvii]

Functionality of Online Games

Games are platforms on which participants may communicate, coordinate, socialize, train, learn, simulate, experiment, build, proselytize and even barter virtual goods. Such functions indicate that the line between the 'virtual' world and the 'real' world is blurring, and to some users may be non-existent.

- That virtual worlds are becoming synonymous with the real world, provides and interesting opportunity for terrorists to conduct a range of activities with anonymity.

As virtual worlds become more popular, pervasive, and sophisticated, so too will terrorist opportunities to exploit them.

- For example, as gaming becomes increasingly popular across multiple demographics and access to various gaming platforms increases (i.e. access to personal computers, Internet cafes, and mobile platforms), it will become easier for terrorist groups to reach core target audiences. For these reasons, many expect that terrorist groups will increasingly leverage online and computer based games to support their activities in the future.

Propaganda and Influence

Terrorist groups and sympathizers could use games to twist historical context, demonize enemies, disrupt the social moral compass, and desensitize users to violence.[ix]

- Games designed to appeal to terrorist sympathizers leverage salient political themes and typically exploit "pro-Arab" and "anti-Israel" sentiment. Such games attract players because they provide them with a consonant message and an opportunity to take part 'virtually' in "resistance movements."[x]

- *Special Force,* developed by Hezbollah*,* plays on the common themes of "Israeli occupation" and "Palestinian victimization," and offers players the opportunity to 'fight back' by 'digitally' reenacting various elements of the Intifada. For instance, the introductory level of *Special Force* involves target practice and shooting exercises, using images of Israeli Generals as the mark. Later levels involve the 'digital' reenactment of battles that have occurred between the IDF and Palestinians during the Israeli occupation.[xi]

- *Special Force* was intentionally designed by Hezbollah to reinforce and disseminate the group's values, concepts, and ideas among supporters and sympathizers, while giving passive supporters the opportunity to experience the viscera of the front lines.[xii] *Special Force* is available in Arabic, French, English, and Farsi, and thus is widely available to traditional Hezbollah audiences and others.[xiii]

- *Under Ash* and its sequel *Under Siege* were published by the Syrian company Dar al-Fikr. The player takes the role of a Palestinian national opposing the occupiers from Israel. *Under Siege*, in particular, is based on actual events, but is presented from the Syrian perspective. The game employs visceral imagery and sound, including scenes of Palestinian children being murdered, summary executions being held in public streets, high-speed chase scenes and sounds of gunfire and heart pumping music. The scenes too are designed to evoke outrage and to play on common themes, including "Israeli occupation," "Injustice," and "Revenge".

- The Iranian Islamic Students Association has also developed an online game, *Commander Bahman*, in which users play the role of a special-forces unit tasked with protecting Iranian nuclear capabilities from American aggression. This game was developed in direct response to a Kuma Reality Games release, *Assault on Iran*. Kuma has subsequently developed another installment, *Assault on Iran, Pt.3*, in the hopes that this international dialogue, sparked by the depiction of global affairs in the game space, will continue. *Assault on Iran, Pt. 3* is planned be released in Arabic, English, and Farsi.[xiv]

Video games make particular assumptions within their environment that can transcend a specific message to users.

- For example, the games *Ummah Defense* and *Ummah Defense II* (free for download on the Internet), are set in the future, based on the premise that at some point in history Muslims will have conquered the world and killed or converted all non-Muslims. Users act as a member of the Intergalactic Muslim Council, working to protect Earth from the sole disbeliever and in his army of robots sent to destroy the Earth – it was necessary to construct robots as all other humans believe in Islam. The overarching message is that establishment of the caliphate is possible.[xv] Playing games within this context allows users to experience this reality in a sensory way that makes the message "real."

Video games are an ideal influence platform because they incorporate imagery, narrative, camaraderie, and action.

- This combination works because advanced imagery and graphics can be used to engage the senses, storylines can be used to provide a context and group goals, camaraderie in the form of multiple players facilitates higher levels of engagement, and action in the form of participation is required.[xvi]

Radical groups are using gaming platforms to propagate religious ideology. This can take place in a number of different ways. For example, a FPS game can help demonize a declared enemy, while educational games can offer manipulated religious doctrine as scripture.

- For example, Innovative Minds, Inc. has developed a series of six 'multi-level' downloadable games, entitled "Islamic Fun" which are aimed at "teaching children between the ages of 5 and 11 years of age about Islam." "Islamic Fun" is marketed as a "faith-based" alternative to "secular" games and includes many age appropriate game titles, including *Fishing Bear*, *Tree Hop*, and *Two Bunny Race*. However, embedded in this game package is another game, entitled *The Resistance,* in which users assume the role of farmers in Southern Lebanon who join the Islamic Resistance against invading Israelis.[xvii] Many believe that these types of games encourage anti-Semitism and promote terrorism.[xviii]

Communications

Games provide attractive communications channels for terrorist groups and sympathizers because in-game conversations often are difficult or impossible to monitor.

- Many games contain capabilities like VoIP, chat, and file transfers that allow real-time communications to take place, and few sites monitor such traffics or keep log files as would traditional Internet service providers (ISPs).

- Massively Multiplayer Online Games (MMOG) are ideal locations to support secure terrorist communications because of the enormous scale on which they are played. At a given time thousands of subscribers can be connected to a virtual world on various game servers. Potentially complicating matters are that some games can be hosted by gamers on their own dedicated server or PC.

- In-game communication channels would be difficult to collect by current Internet control methods, because speech and text mingles with data from the game. This increases the chances that authorities will overlook communications they would normally prohibit.

Recruitment

Online gaming can serve as a recruiting tool. This has already proven true in the US, as the *US Army* found that 28% of players logging on to play its, "America's Army" online game also visited the corresponding recruitment site.

- Monitoring strategy games like *Counterstrike* can be an effective way to track individual skill levels in firearms, tactical operations, group cohesion, leadership, etc. This information can then be used by interested parties to evaluate qualifications for military or insurgent recruitment.

- Participation in virtual communities can facilitate off-line activity. Members of terrorist groups could enter or monitor online game environments with the intent of translating 'virtual' skills and actions into real world commitments and activities.

Training and Simulation

Games can supplement field training by familiarizing recruits with the tactics, weaponry, and skills needed to conduct operations. Military type games can be used to help acquire skills in team work, communications, leadership, and operational tactics. This trend is likely to manifest itself in the near future, as games are increasingly leveraging real time data from the battle field.

- Culturally accurate games can help foreign terrorists avoid profile raising mistakes and assist in assimilation.

- Combat simulators, such as those developed by BBN Technologies as part of the Pentagon's DARWARS project, are used to help soldiers bound for Iraq prepare for combat. Among the offerings: *DARWARS Ambush!* a combat simulation game designed to train up to 24 soldiers at a time in military convoy operations.[xix]

- Increasingly realistic virtual environments further blur the lines between the virtual and real worlds – these environments create immersive environments that draw users into the game world. This results in more true-to-life training grounds, and enhances a game's underlying message as the user experience becomes more immersive.

- The US military is currently using games as a tool to equip personnel with training in numerous key areas including, tactical planning, mission rehearsal, incorporating lessons learned, and tactical language training. [xx]

- COTS programs used to develop combat simulators are inexpensive, widely available, and could offer terrorist groups the opportunity to simulate attacks prior to their execution. Such programs could enable fairly accurate damage assessments and provide insight into necessary course correction to limit risk and unintended consequences associated with a particular attack. For example, the Maya Unlimited fluid simulation software, available for $159, offers users the ability to re-create the mushroom cloud caused by a nuclear explosion. Users can control the influence of fuel and other attributes, and add key ingredients such as temperature scale, buoyancy, dissipation, turbulence, and diffusion.

- Games could also be used as part of the attack plan itself. With the rise of mobile gaming, terrorist groups can use the platform to its advantage; instead of planting a bomb near a crowd of people, for example, it can place one at a random location and lead game players to the bomb.[*]

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[*] This is speculative based on flash mobs and mobile gaming use. Flash mobs are groups of people that converge in public places for brief periods of time and dissipate quickly there after. Flash mobs have occurred worldwide and are frequently organized around political protest efforts. The French riots of 2005 were organized largely through flash mob efforts. Paired with mobile scavenger hunting location based or mixed reality games, flash mobs have the potential to concentrate people rapidly at the site of the "win." See stories on flash mobs: http://www.ynetnews.com/articles/0,7340,L-3056735,00.html; http://in.rediff.com/netguide/2003/oct/05flash.htm. Some examples of location based games include:

Fundraising

Newer games offer greater opportunities for terror groups to raise and distribute funds. Funds used in online games can be uploaded in one location and downloaded in another, which is particularly easy if multiple users can access a single ID.

- The goods, services, and currencies of virtual worlds have real-world impact. In 2005, E-bay category 1654, "Internet Games," had $30 million dollars in sales in the United States. Similarly in Asia, real-cash virtual item trade exceeds $100 million annually.[xxi] Current estimates indicate that intangible goods in digital worlds are worth $1-$2 billion.[xxii]

- Because users are able to create their own content in games, entrepreneurs profit in real-world dollars by selling professional services or goods. One virtual real estate mogul in *Second Life* makes nearly $150,000 per year in real-world dollars.

- Fund raising efforts are already happening in virtual worlds. In 2006, American Cancer Society (ACS) held its second virtual Relay for Life in *Second Life*. ACS collected over $40,000 and attracted nearly 1,000 participants.[xxiii]

- Individuals organize to raise funds for charitable efforts. After Hurricane Katrina, some individuals banded together to hold live fundraising events in *Second Life* to help victims.[xxiv]

- Organizations could use virtual worlds as a vehicle for generating income. While the money raised might not be enough to fund a sizable organization, it could be a revenue source for smaller cells.

Ease of Production of Games

The growing availability of middleware or mods drastically lowers the barriers of entry for game development, allowing almost anyone to become a game builder. Middleware products are available for a marginal fee (usually the cost of a game) or can be downloaded free from the Internet.

- Mods are typically used to create additional content to games (partial conversions) or new games (total conversions). Popular middleware products include 3D world building packages such as Genesis 3D, Quake, Unreal, and Half-Life; multiplayer adventure games like Aurora Toolkit; and systems for handling massively multiplayer games like BigWorld, Butterfly.net, and Terazona.

Botfighter series, Gunslinger series, Mogi, UnderCover series, Swordfish and Torpedo Bay, ConQwest, The Journey II, and Treasure Hunt. See a research paper of mixed reality mobile gaming: http://research.microsoft.com/~shahrami/papers/tech02.pdf#search='mixed%20reality%20gaming.

- Middleware products have been used to create popular commercial games such as *Counterstrike* (Half-Life) and *America's Army* (Unreal); as well as several games of a more questionable nature, including *Ethnic Cleansing* (Genesis 3D), *Under Ash* (Genesis 3D) and *Special Force* (Genesis 3D).

Mods not only provide a developmental shortcut, but also enable game producers to "improve" existing games, whereby increasing their popularity.

- Mods can be used to transform existing games. For example, unidentified gamers modified the FPS game *Battlefield 2* enabling players to take on the role of extremists whose home village in Iraq suffered collateral damage during a fictional US operation.[xxv]

- Another prime example of the use of mods is the CD-ROM game *Ethnic Cleansing,* produced by Resistance Records, to promote the white supremacy agenda. The game promotes the killing of "sub-humans" (other races and Jews) in a setting similar to New York City. The game is patterned after popular mainstream video games *Quake* and *Doom*, turning racially motivated violence into a form of "entertainment." Users are given the option of assuming the role of a KKK Member or a Skinhead.

- Kuma Games develops free, episodic games for their users based on recent real world events. With the assistance of the Valve's Source game engine,[xxvi] modular software that provides enhancements in several key areas of game production, including character animation, advanced AI and real-world physics, Kuma is easily able to produce immersive, realistic games in little time. Additionally, in an effort to make the games more easily downloaded by users in the Middle East, Kuma has developed a Persia Disk that can easily be copied and redistributed. Using the disk, once the game design is loaded onto the user's PC, no Internet connection is required to play, although a low-band connection is adequate to attain new episodes.[xxvii]

- Terrorist groups likely could reduce development costs further by soliciting sympathizers with the required skill sets to work for free or reduce costs as their contribution to the Jihad analogous to how religious game developers operate to reduce costs.[xxviii] College students provide a plausible target for recruitment.

Machinima is film making within the real-time 3D virtual environment of a video game. It's the use of video game graphics technology to create animated films. Machinima combines aspects of film making, animation and game design to transform an interactive medium, a video game, into a production studio complete with sets, props, special effects and virtual actors. All that is required is a game and a desktop computer.[†] Like traditional movies, machinima allows for character development and the creation of plot lines.

[†] For a machinima example that uses military characters and explains machinima, see Machinima! With Officer Dan at http://www.machinima.com/films.php?id=4676

- Software to make machinima productions costs little or nothing. Websites like www.fraps.com provide trial versions of machinima software, such as the one used to produce "Sonic Jihad[xxix]," and allow users to create quality machinima productions. Productions, such as "Sonic Jihad," which are made with trial versions of machinima software frequently place their websites directly in the center of the screen in order to drive people to their sites to purchase full versions. Productions like "Sonic Jihad" not only can promote propaganda, but direct sympathizers who wish to create similar productions to the software needed.

- In 2005, a machinima, "French Democracy" depicted the views of the minorities during the French riots. The well-developed story carries a political message allowing one to sympathize with the minority position in the riots. The machinima was produced on November 22, just 5 days after the riots ended.

- Similar to using mods to develop games, real-time video capture software, like Fraps, allows users to record video of the activity taking place on one's PC, during game play, for example. Once downloaded, this software "records" to capture audio and video bits up to 1152x864 and 100 frames per second.[xxx] The use of such software in games like Kuma/Wars would allow users to develop machinima productions of recent combat events adding their own twist.
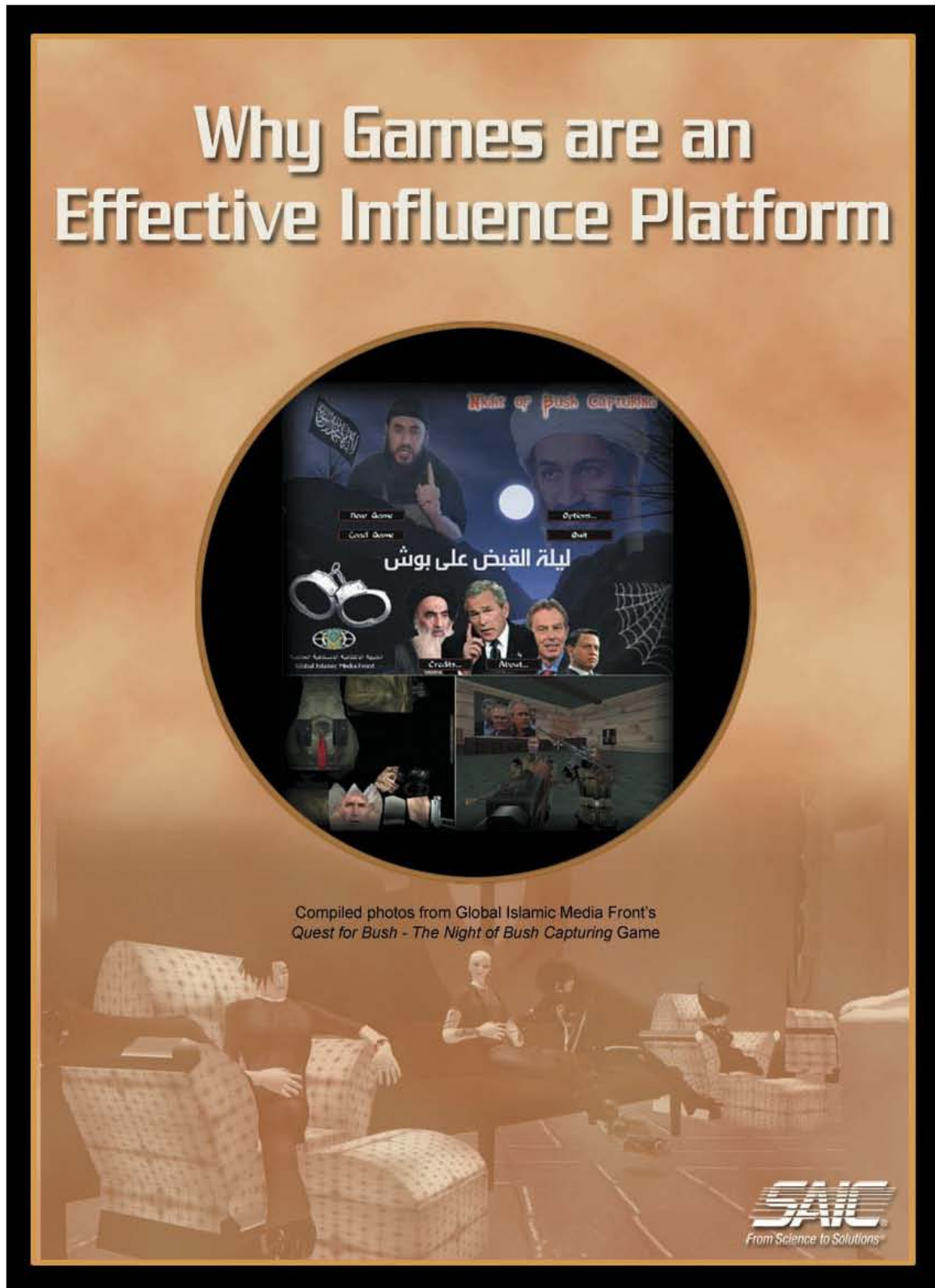

Features of Fraps Real-time Video Capture Software

Screen capturing – Digital images taken by the software recording the visible items on the monitor as a screenshot in formats such as BMP, PNG and JPG.

Real-time video capturing – Digital images taken by the software recording the visible items on the monitor (or another visual output device) over an extended period of time, as the action is taking place, to form a video file.

Screencast/Screen Recording – Digital recording of a computer screen output, often containing audio narration.

CHAPTER 2

Why Games are an Effective Influence Platform

Compiled photos from Global Islamic Media Front's
Quest for Bush - The Night of Bush Capturing Game

Chapter Introduction

Games are an effective influence platform because they promote both "active" and "passive" learning, and are highly attractive pursuits for specific target audiences.

Games, by nature, are learning experiences. Playing a game involves building skills in order to advance to new levels in the game.

- Traditional teaching and conditioning methods are used to teach and develop the player.

- Learning is central to a player's in-game success.[xxxi]

Learning in games can be transparent (e.g. helping to refine a player's shooting technique) or hidden (developing a predisposition in a player toward a particular cause or message).

- The latter often involves the promotion within the game of a particular set of values or ideologies *via* the storyline or setting, and the use of emotional "tools" to elicit particular reactions.

Finally, games can be effective influence platforms because they are popular, captivating players and encouraging them to return for more.

> Video games are "weaponized" texts, or disrupters of psychic stability…I mean to say that games perform what Pierre Bourdieu calls "symbolic violence"—in other words, that "gentle, invisible form of violence, which is never recognized as such."… Like educational institutions, video games are instances of symbolic violence in the sense that they inflict themselves on players. The world of the video game is nothing more than the on-screen rendering of programmed instructions and decrees. Players are "schooled" by an aggressive bombardment of pixellated images and sounds. Every moment is a direct imperative, an attack that demands a response.
>
> -- Matt Garite,
> *The Ideology of Interactivity (or, Video Games and the Taylorization of Leisure)* [xxxii]

Active Learning

Games can serve as a place to learn, imparting knowledge and teaching skills. The structure of games promotes learning through a rewards system.
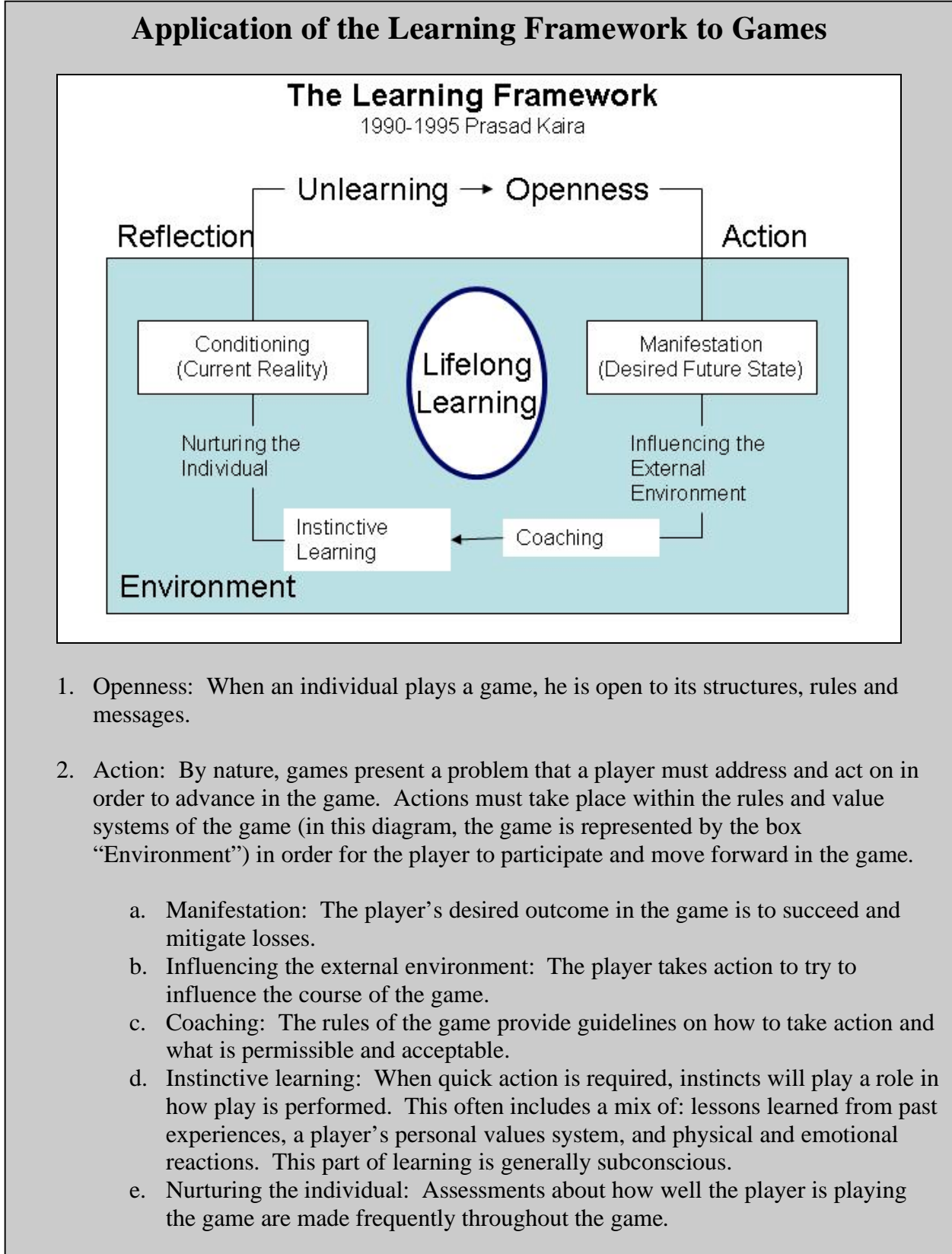
- Often, games require action without expertise, forcing players to experiment and learn.

- Games also can reinforce previous learning experiences by allowing players to interact with issues, ideologies, products and events in active and passive ways.

Knowledge and Skills

Games can serve as a place to learn, imparting knowledge and teaching skills.

- During prehistoric times, hunting games were used to teach young people how to handle dangerous situations in the wild.

- Today, games are often more complex, involving dynamic platforms, sophisticated storylines, and diverse goals.

- Individuals progress through an entire learning cycle when playing a game, beginning with openness to new situations and rules, then taking certain actions and reflecting on them, and finally "learning" how to operate successfully in the game (see Figure 1).

- Often the learning process continues outside the game in such ways as conversations with friends, participation on fan websites, reading about the games, and player meet-ups online.[xxxiii]

Exhibit 2-1: The Learning Framework[xxxiv]

Application of the Learning Framework to Games

1. Openness: When an individual plays a game, he is open to its structures, rules and messages.

2. Action: By nature, games present a problem that a player must address and act on in order to advance in the game. Actions must take place within the rules and value systems of the game (in this diagram, the game is represented by the box "Environment") in order for the player to participate and move forward in the game.

   a. Manifestation: The player's desired outcome in the game is to succeed and mitigate losses.
   b. Influencing the external environment: The player takes action to try to influence the course of the game.
   c. Coaching: The rules of the game provide guidelines on how to take action and what is permissible and acceptable.
   d. Instinctive learning: When quick action is required, instincts will play a role in how play is performed. This often includes a mix of: lessons learned from past experiences, a player's personal values system, and physical and emotional reactions. This part of learning is generally subconscious.
   e. Nurturing the individual: Assessments about how well the player is playing the game are made frequently throughout the game.

> f. Conditioning: The player's actions result in an outcome, which can be the desired outcome, a different yet positive outcome, or a negative outcome.
>
> 3. Reflection: In the wake of the outcome, a player consciously or subconsciously makes an assessment about what worked, what didn't work, what could be improved, and how to take action differently in the future.
>
> 4. Unlearning to Openness: Reflection enables the "unlearning" of decisions and actions taken in the previous game and creates openness to trying again to succeed. This completes one learning cycle and starts another.

The structure of games promotes learning through a rewards system.

- Video and other games teach a "correct" course of action by providing immediate feedback on a player's initial action. As discussed with regard to the learning cycle, players then reflect on their initial action in an effort to achieve a better outcome the next time they are faced with a similar situation in the game.

> **Learning = Action + Feedback + Reflection[xxxv]**

- Players advance to higher levels in games by learning appropriate responses during earlier stages of the game. Games have reinforcement and punishment mechanisms such as gaining or losing points for desired responses (i.e. operant conditioning).[xxxvi]

- The chainsaw model of video games visually represents the accumulation of knowledge and/or skills that leads to advancement to a higher level in a game. Players move through a series of micro-challenges that, when combined, lead to advancement.

Exhibit 2-2: The Chainsaw Model of Video Game Story Structure[xxxvii]
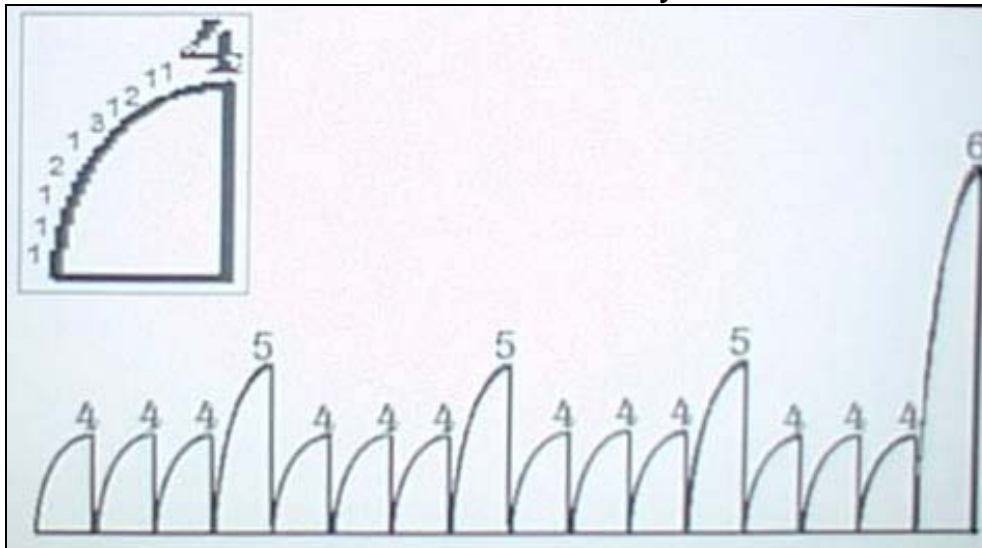
Games often require action without expertise, forcing players to experiment and learn.[xxxviii] Such learning experiences often involve role exploration, project execution, and operating within a game producer's version of facts and history.

- Role exploration – or choosing a virtual persona and acting out this role in the game – teaches players the challenges and limits of that role.[xxxix]

- Multi-player games which require numerous individuals to carry out a mission teach players how to become leaders and execute a collaborative project in its entirety.[‡xl]

- Immersion in a game producer's version of facts or history teaches players how to operate in the defined socio-political environment. This can result in player empathy toward a particular cause.[xli]

Applied Teaching Tool

Games can reinforce previous learning experiences by allowing players to interact with issues, ideologies, products and events in active and passive ways.

- Studies have shown that players who interact with messages, products and the like have higher recollection levels of those messages.

- Active participation elicits emotional responses, helping the message to resonate more strongly with the player.

- Often used following other types of learning about a specific environment, simulations teach users how to operate in environments *via* virtual participation in them. Effective simulation experiences result in particular responses when players are faced with similar situations in the physical world.

Schools, private businesses and governments are investing in simulations, advergames and in-game promotions to reach and teach their respective target audiences.[xlii]

- Schools are increasingly using games in their curricula. Students report feeling like learning is not "work" with games, and spend more time with the subject matter than if they were reading a book about the topic. Some studies indicate that students retain information from games more effectively than from books because of the "immersion" factor of games.

- Many companies believe advergaming is an effective way to market and "brand" their product. Advergames target younger, tech-savvy consumers.[xliii] Yankee

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[‡] For example, in *World of Warcraft* players learn how to plan and execute missions. Players meet prior to a mission to develop a strategy, determine what roles they will play and how they will execute them. Often leaders keep statistics on their players. Following the mission, individuals will review the mission's success and player performance.

Group estimates the in-game advertising market will reach $732 million annually by 2010.[xliv] Already, the names or products of multinational companies such as Coca-Cola, Pepsi, Panasonic, Viewsonic, Motorola, Castrol, Nokia, McDonalds, Sprite, LG and HP have appeared in international game titles in an effort to promote their brands and products.[xlv]

- Governments are using games for military training. Games such as *Delta Force 2*, *Steel Beasts* and *Falcon 4.0* have been adapted by various armed forces to enhance their relevance to military training. Singapore Armed Forces' Defense Science and Technology Agency has been adapting the games *Chain of Command* and *Operation Flashpoint* to suit its needs. The Singapore School of Combat Engineers and School of Armor have modified *Operation Flashpoint* to their specific missions, including the use of booby traps, wire and mines.[xlvi]

Passive Messaging and Conditioning

The structure of games promotes winning through a set values system. The strong emotions that games can elicit deepen these learning experiences.

- Games that elicit strong emotions can predispose a player toward a particular viewpoint or cause, or provoke specific reactions on the part of the player.

Value Systems

The structure of games promotes winning through a set values system.

- Players often must adopt a specific set of values in order to achieve a "win" or positive outcome in the game. Sometimes, these values form the context of the game.

- *Ethnic Cleansing*, which was released in 2002 by Resistance Records, is an example of a game in which a particular set of "values" form the context of the game and players are rewarded for adhering to this value system. Players choose the role of a Skinhead or KKK member, and "take out" as many black, Latino and Jewish avatars as possible. Racial slurs are made throughout the game, which also portrays negative stereotypes.[xlvii]

- Teams or "clans" in massive multiplayer online role-playing games (MMORPGs) which are formed at advanced levels of games to allow players to achieve greater status, ranking and advancement , adopt their own value systems, rules and cultures.[xlviii] At this level, players can only be successful by adopting the clan's *modus operandi*.

Emotions

The strong emotions that games can elicit deepen learning experiences.[xlix]

- Video game play is rich in sensory experiences, engaging motor skills and promoting visual experiences like artistic characters and a compelling environment and auditory experiences like music.

- Advancements in graphics have made characters and settings look more "real", strengthening the emotions they induce.

- The rewards system of games that ultimately results in a reward or punishment for the player, also can elicit formidable emotions. Rewards and punishments are central to "stimulus-reinforcement" learning and "stimulus-response" learning.[l]

Games that elicit strong emotions can predispose a player toward a particular viewpoint or cause, or provoke specific reactions on the part of the player.

- For example, the game, *Dafur Is Dying*, evokes sympathy for the people of Darfur. Players assume the role of a refugee from Dafur facing overwhelming challenges and dangers. If the player is captured in the game by militiamen, a caption on the screen reads: "You will likely become one of the hundreds of thousands of people already lost to this humanitarian crisis," and includes a warning about the possibility of rape.[li]

- The white supremacy propaganda game *Ethnic Cleansing* mentioned above includes blaring racist hate music to help the game's message resonate on an emotional level with players.[lii]

- *Foreign Ground*, a first-person training game, has been developed for the Swedish military to simulate peacekeeping operations. Graphic images of local conditions provoke an emotional response and develop peacekeepers' sense of duty (see Figure 3).

Exhibit 2-3: Scenes from Foreign Ground[liii]

The "Return for More" Factor

Games are effective influence platforms because they can captivate and engage target audiences, and encourage "return" learning and conditioning.

- Games can provide significant social interaction, as well as the opportunity to live alternative virtual lives.

- Games can be additive and lead to dependencies by players.

Engagement

Games can engage and captivate players by providing the opportunity to live alternative virtual lives.

- Players can live a virtual existence as someone of a different race, religion, sex or socio-economic status.

- The limitations and challenges in players' real lives can be erased.

- Studies show that 20 percent of virtual game players feel like they live in virtual worlds.[liv]

Games provide significant social interaction easily and enjoyably.

- Many of today's entertainment games allow players to go beyond shooting and "lone soldiering" to developing relationships with other players.

- In fact, games nurture social networks similar to those in the physical world.

- Games also fulfill a need for "third places" – a place that is neither home nor work[lv] — to meet and interact with others.

- Games can be more effective social connectors than other media because they provide significant breath and depth of experience, combining the visceral and the social while encouraging exploration and discovery.[lvi]

- Games can result in social networking outside of games: serious game players often are part of a game "fan club" or trade tips with other players on websites or in person.

Addiction

Games can be additive and nurture dependencies among players.

- Emotional, social and technical rewards from play sometimes result in an addiction to a particular game.

- Many MMORPG players spend over 20 hours per week in-game. For some players, participation in MMORPGs becomes an obligation, with MMORPGs representing a "society" with a unique culture and rules. Interactions and obligations online often mirror those in real life, blurring the line between the virtual and real world.[lvii]

- Addiction recovery programs have been established to help wean people off of video game dependencies.[lviii]

Chapter Addendum

As a result of the research material acquired and reviewed for this report, SAIC is well-positioned to assist the client populate its games database with articles and other literature on:

- why games represent good influence platforms, including sociology and psychology literature
- existing and soon-to-be-released games on the market internationally and for specific target audiences

CHAPTER 3

Plausible Scenarios for the Use of Games in Terrorist Activities

Scene from the United Nations Game *Food Force*

Chapter Introduction

Games can serve sophisticated purposes beyond entertainment, providing terrorist organizations with a powerful medium analogous to the internet to support its operational objectives. Games have already been exploited by terrorist extremists and sympathizers. Emerging trends within the game space suggest greater opportunities will exist for future exploitation enhancing a range of terrorist operations, from supporting strategic propaganda and influence activities, to more highly instrumental uses such as communication, fundraising and recruitment.[lix] Such activities warrant concern given the increasing popularity of gaming which seems to be transcending age, gender and cultural boundaries.

Potential Uses of Games for Terrorist Activities

- *Propaganda and Influence* - Terrorists and sympathizers use games to twist historical context, demonize enemies, disrupt the social moral compass, and propagate ideology.

- *Communications* - Games provide attractive communications channels for terrorist groups and sympathizers because in-game conversations often are difficult to monitor.

- *Recruiting* - Online gaming can serve as a recruiting tool. For example, the United States Army found that 28% of players logging on to play its *America's Army* online game also visited the corresponding recruitment site.

- *Simulation, Practice and Team Management* - Games can supplement field training by familiarizing recruits with the tactics, weaponry, and skills needed to conduct operations and planning.

- *Money Laundering and Fundraising -* Funds used in online games can be uploaded in one location and downloaded in another by using a single avatar to which multiple people have access via ID and password. Alternately, virtual "sweat shops" can be organized to

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Several plausible scenarios exist where terrorist organizations could leverage the power of the gaming medium to achieve operational goals with minimal training and expertise. This paper will outline the current capabilities and potential scenarios by game genre demonstrating how a terrorist organization might exploit the game space. The extent to which games can be used by terrorist groups to supplement their other activities depends on a variety of factors, to include:

- Internet connectivity of game users
- Cost and availability of hardware and/or software required to play game
- Level and kind of interaction between players that the game allows
- Ease of use of game
- Degree of game skills transferability to real-world activity
- Degree of realism in game design (such as graphics and programming sophistication)
- Barriers to game production

The effectiveness of carrying out terrorist activities through games varies by genre. Each of the scenarios presented offers the most effective use for its respective type of game. The following chart gives an overview of each game genre and its effectiveness for enabling a specific terrorist objective:

Exhibit 3-1: Best Uses of Game Genres in Influence Efforts[§]

Genre of Game	Enable Communication	Simulation and Training	Money Laundering/ Fund Raising	Propaganda and Influence	Tool for Recruitment
First-person Shooter	Yellow	Green	Yellow	Green	Green
Educational	Red	Yellow	Red	Green	Yellow
Simulation	Red	Green	Red	Green	Yellow
Mixed or Alternate Reality	Green	Green	Red	Yellow	Yellow
MMORPGs or MUVEs	Green	Green	Green	Green	Green
Strategy Games	Yellow	Green	Red	Green	Green

- 🟢 Ideal or good use
- 🟡 Could be used but requires moderate effort and would be only somewhat effective
- 🔴 Could be used but would not be an effective choice from a cost/benefit standpoint

*Note: **THE SCENARIOS PRESENTED IN THIS PAPER ARE FICTITIOUS**. They represent plausible uses of games for terrorist influence, planning, recruitment and training purposes.*

[§] A qualitative assessment on the effectiveness of different game genres in enabling terrorist operations was based on information gleaned from research, industry conferences, and gaming experts.

Possible Terrorist Use of Different Game Genres

First-person Shooter Games

First-person shooter (FPS) games involve the player taking on a first-person character role, giving him a sense of "being there." These games usually pit players against each other or the computer to test their strategies and reflexes in a static, arena-like environment.

- Some of the more popular FPS games include *Doom, Half-Life, Counterstrike, Unreal Tournament, Halo, Night of Bush Capturing* and *Under Ash.*

Half-life. Give blood. Generously...

Exhibit 3-2: A view from the FPS game Half-life as the opponent is shot. [lx]

Producers often sophisticatedly incorporate various weapons in their FPS games. For example, *Alliance[lxi]* allows the user to choose an historic or contemporary weapon for use in game play. The game accurately portrays the benefits and drawbacks of the chosen weapon, as well as the correct velocity and trajectory of the ammunition.

First-person Shooter Scenario
This scenario is fictitious. A Sudanese Islamic extremist group develops a FPS game as a tool to influence audiences, train forces and raise funds. The game portrays local warlords as corrupt. Players must take up arms to help defend their towns.

- The player must choose the correct weapon to fight the enemy and calculate when to reload the weapon, as well as how to move through the town safely and whom to trust. If the player shoots a civilian, the civilian will make a commotion and in moments, the player will be shot – always.

- At the end of the game, when the player has either won or lost a round, a message reads, "Real heroes are those who take action in everyday life. What have you done to support your brothers and sisters today? Search the Net for the truth and

join the cause at www.youcanbeaterrorist.com, or by texting a message to cell phone number (98)22-123-4567 that includes the best way to contact you." The game also offers postal and PayPal addresses if players would like to contribute financially to the cause.

MMORPGs and Virtual Worlds

Massive Multiplayer Online Role Playing Games (MMORPGs) are online computer role-playing games in which a large number of players interact with one another in a virtual world. MMORPGs are distinguished from Role Playing Games[**] by their "persistence", i.e. the virtual world continues to exist and evolve even when the player is not playing the game.

- Leading titles include *EverQuest, Star Wars Galaxies, World of Warcraft, Lineage, Mu,* and *The Legend of Mir*.

Guild In-game ≈ Team at Work[lxii]

"…A guild is a collection of players who come together to share knowledge, resources, and manpower. To run a large one, a guild master must be adept at many skills: attracting, evaluating, and recruiting new members; creating apprenticeship programs; orchestrating group strategy; and adjudicating disputes. Guilds routinely splinter over petty squabbles and other basic failures of management; the master must resolve them without losing valuable members, who can easily quit and join a rival guild. Never mind the virtual surroundings; these conditions provide real-world training a manager can apply directly in the workplace…"

--Taken from:
You Play World of Warcraft? You're Hired!
by John Seeley Brown and Douglas Thomas
Wired Magazine

While MMORPGs involve undertaking missions that are eventually "won" or "lost," virtual worlds focus on daily activities and social interactions.

- Virtual world environments allow users to communicate and participate in activities simultaneously with other users regardless of the physical distance between them.

- Typically producers establish a virtual world and allow users to develop space and design items within the world.

[**] RPGs require players to undertake a role and play out a narrative in simulated 'worlds' with pre-programmed characters and quests. Players can customize their characters and then interact with other players to complete goals or quests. RPGs have been produced using both first-person and third-person perspectives. Some popular examples of this genre are *Ultima*, *Final Fantasy*, *Diablo*, and *Fallout*.

- Many organizations currently use the virtual world of *Second Life* to conduct training workshops. A few organizations have used the virtual world to fundraise and build up groups with similar interests.

- Popular examples of virtual worlds include *Second Life, Cybertown, Habbo Hotel, There,* and *Virtual Magic Kingdom.*

Exhibit 3-3: Users are able to socialize in the virtual space *Second Life*.[lxiii]

Virtual World Scenario
This scenario is fictitious. A sophisticated terrorist network joins *Second Life*. On a password-protected island of the virtual community, they construct replicas of sites that they are interested in attacking, and carry out realistic, virtual dry runs of their attacks.

- They consider expanding their network and developing an on-going virtual terrorist training camp, complete with lessons on the manufacture of bombs, the proper use of artillery, and basic lessons on the most effective places to shoot a person to mortally wound them.

Because virtual worlds can serve as a platform for hard-to-trace communications and private, sometimes password-protected meetings when members are separated by distance, the terrorist network also utilizes the virtual space for cell management and meetings.

- The meetings help ensure that members are accounted for on a regular basis while drawing little attention to the gathering or the members' association.

- Virtual interaction helps team members become familiar and develop trust with their teammates long before they meet face-to-face.

- Working together in games or virtual worlds build teams cohesion which translates into better synergies in real-world situations.

Frequent interaction with his network helps the leader monitor the level of his team members' commitment to the cause and ensure that they do not waver from the group's tactical and strategic missions. This also helps the leader prevent members from "defecting" or otherwise becoming a threat to the cell.

Some of the terrorist network members living in a remote location with Internet access raise funds via "gold farming," a virtual form of the "sweat shop." Their laborers play games to develop the best, strongest in-game characters which are then sold online for a profit at sites like E-bay.[††]

- Because of the games' entertainment value, terrorist network members encourage players to "work" for them or raise funds themselves by simply playing games and then selling items.

Other network associates participate in traditional fundraising. *Second Life* allows players to contact the organizer of like-groups, perhaps "humanitarian" organizations that support particular causes, and send mass emails to encourage participation in special interest events. Donations are laundered to fund terror activities.

- Terrorist groups are introduced to new sympathizers in this way.

- Other associates hold invitation-only "town meetings" or "group meetings" to impress viewpoints upon potential recruits.

Virtual Worlds and MMORPGs as a Film Set
Machinima: From Game space to Video

Gaming can serve as a platform for propaganda video production. For example, machinima is filmmaking within the real-time 3D virtual environment of a video game. All that is required is a game and a desktop computer.[lxiv] The combination of machinima software and a virtual world or video game such as *Planet Battlefield*, allows one to film their in-game activities as they play to develop a film which is easily distributed over the Internet.

Terrorists could easily exploit this technology. Through the use of virtual characters and audio mash-ups a terrorist could anonymously create machinima films that included speeches, updates, and briefings. He could use the technology of virtual communities to create target sites to convey to cell members the next planned attack, use games to give a visual plan of how the attack should be carried out, and familiarize teammates with the terrain of the intended site with the technology of *Second Life*. Additionally, one could use machinima to create a likable, militant hero with whom their target audience could identify.

[††] During the month of December, SAIC analysts periodically checked e-Bay for characters and items for sale. It was common to see a high-level character with special skills in *World of Warcraft* or *Everquest* on sale for approximately US$2,000 with only minutes left in the auctions.

This technology, combined with audio mash-ups, also could be easily used to incorporate the voices of key heads of state, the US President for example, into anti-US propaganda. An original speech could be tampered to craft new, unfavorable messages.

Exhibit 3-4: Planet Battlefield; universal resource link located at:
http://planetbattlefield.gamespy.com/fms/Image.php?image=http://pnmedia.gamespy.com/planetbattlefield.gamespy.com/images/bf2news/shot7.jpg

Mixed or Alternate Reality Games

Mixed and alternate reality games involve the use of mobile technology, GPS and online communication in a real world environment. Because these games exist in both cyberspace and the real world, the boundaries between virtual and real worlds are blurred.

Alternate Reality Gaming

Alternate Reality Gaming (ARG), sometimes also called Immersive Gaming or Interactive Fiction, is an emerging genre of online gaming and one of the first true art and entertainment forms developed from and exclusively for the Internet. ARGs are played in real-life spaces under fictitious auspices, usually using a cell phone, camera and/or handheld GPS device, and the Internet.

- The Internet serves as a "base" for information on the game, calculating individual or team points, and managing the game.

- Technically, ARGs are a kind of MMORPG because of the important role of the Internet in the games.

Other than entertainment, ARGs can be produced for education and training, grassroots activism, and promotional campaigning.[lxv]

- Titles of popular ARGs include *Orbital Colony, Perplex City, Studio Cyphers, Who is Benjamin Stove, The LOST Experience,* and *Ocular Effect.*

Exhibit 3-5: Sopranos Alternate Reality Game
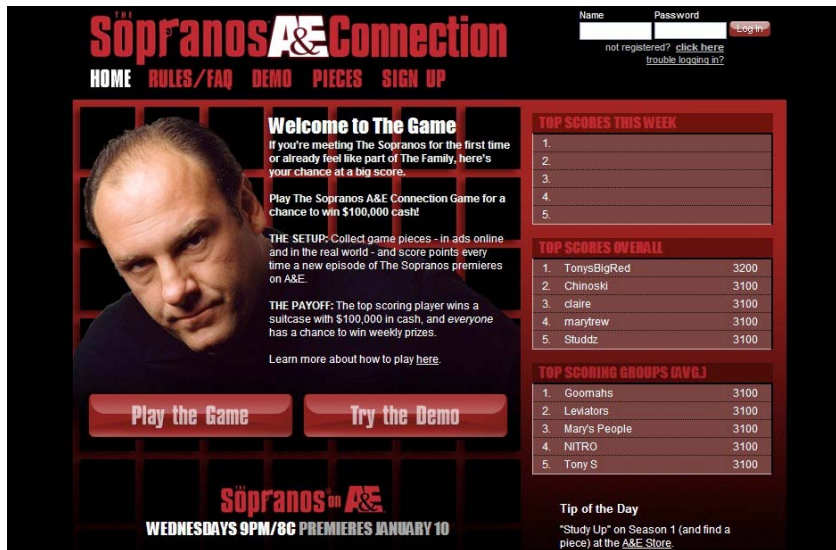
Many alternate or mixed reality games begin as promotional efforts. Some of the most elaborate cost more than $500,000. To promote the premiere of the Sopranos, A&E has developed a mixed reality game played both on the Internet and in the real-world and involving searches for particular advertisements and other "sightings."

Alternate Reality Scenario #1

This scenario is fictitious. A terrorist cell is planning to bomb the US embassy in Jakarta. Alternate or mixed reality games allow the cell to practice the attack in a realistic environment with unexpected people, noise, and obstacles.

- During the dry run, cell members communicate through the operations coordinator, who has access to the Internet and a telephone.

- As the members communicate during the dry run in the real world, it looks to other people like they are innocently talking on their cell phones, looking at their palm pilots, or sending text messages to friends. In fact they are calling headquarters with information on security cameras, wiring, security guards, power sources, crowd congregation locations and other data, following maps on their PDAs, and communicating with team members.

- With location tracking devices, the coordinator could track GPS positions of cell phones or capture team members' movements with other members' cameras and video phones.

- The cell carries out its mission in the same manner that it had practiced using mixed reality gaming tools.

Alternate Reality Scenario #2

This scenario is fictitious. A terrorist cell wishes to draw a crowd to a specific location in Seattle, and then distribute a contagious biological agent. A cell develops an alternate reality game and posts it on the alternate reality game network on the Internet.

The game encourages parents to take their children to famous landmarks in Seattle and teach them about Seattle's history and culture. With each landmark visit, they will gain a certain amount of points. Whoever collects 1,000 points will receive free entry to a popular local attraction on a particular day. The cell persuades the Seattle Science Museum to grant free entry to winners in exchange for publicity.

- Parents and children tour the city, collecting points when they take photos of particular landmarks or barcodes pre-posted around town. When they collect 1,000 points, they are sent a text message that says they have won a free day at the Seattle Science Museum on February 15.

- With a near-guaranteed crowd at the Science Museum, cell members distribute the biological agent on February 15. The "winners" and others there return home and spread the biological agent to families, friends and schools.

Geocaching

Geocaching is another treasure hunt-type game. Using hand-held GPS devices, the players use the information on the Internet to search for the treasure in real-life.

- Many times the caches are not worth a significant amount of money, but it is the sense of adventure and accomplishment that draws people to the game.
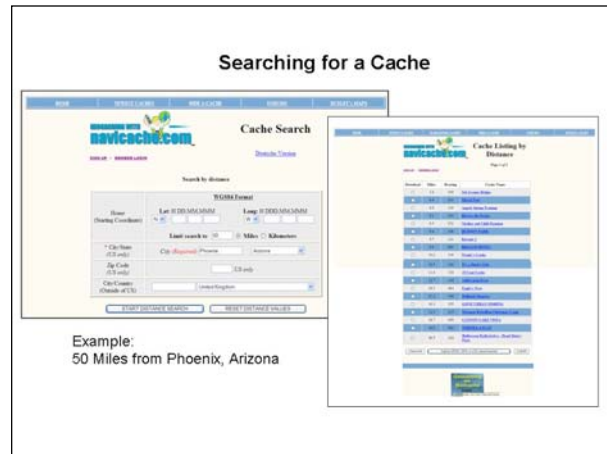
Exhibit 3-6: Screen Shots for Searching for a Cache

To participate in geocaching, one needs a place to post geocache locations (typically, the Internet), a hand-held GPS component, and a "treasure." Typically, geocachers sign up for an account on a geocaching site. Once on the site, they can search for geocaches that others have left.

- Similarly, they can hide a cache and post its coordinates for other people to find.

- Geocaching's popularity has spread across Europe and the United States.

- Asia and Africa also are home to many participants.

The caches are ranked in terms of difficulty to find, the terrain, and the type of cache. Once a cache is found, the geocacher typically will sign a log book at the site or via the website to inform people that it has been found.

Geocaching Scenario

This scenario is fictitious. A terrorist cell leader has cell members build and transport a bomb to a detonation spot –a naval watch station between Los Angeles and San Diego – using geocaching.

1. Cell member #1 buys a component of the bomb near Reno, Nevada. He then stashes his purchase for the next member to find in south-central Nevada.

2. Cell member #2 knows only the code name of cell member #1. He knows that #1 will be hiding a partially built bomb that requires the component that he has bought. He watches and waits for a posting by #1 of a location within the predetermined 100 miles from his base. When #1 posts, he rushes out to find the cache, takes the developing bomb, adds his component, and takes it to a place within 100 miles of the south-eastern Utah-Nevada border.

3. Cell member #3 repeats the same process as cell member #2. This process continues until the bomb is completed.

4. The final cell member takes the bomb to the naval watch station and detonates it as planned. No red flags were raised because the transport and purchase of the bomb components were spread out across four states.

Exhibit 3-7: Geocaching Construction and Transportation Scenario
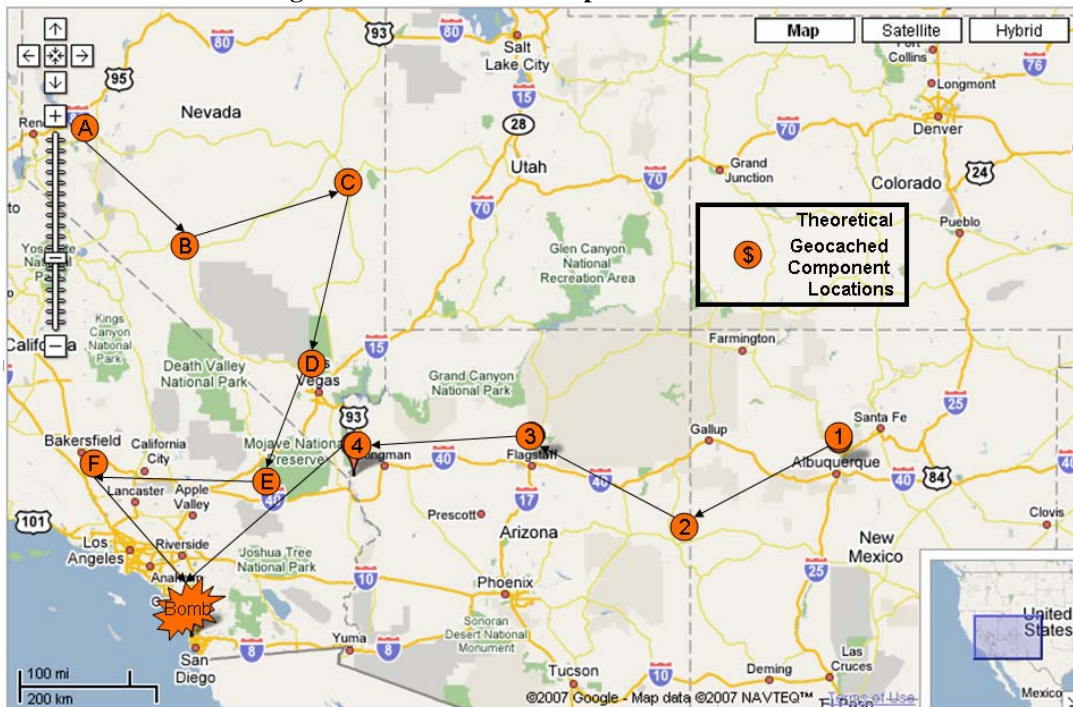
Simulation Games

Simulation games allow gamers a chance to experience and practice a role, activity or skill in the safety of the virtual world. Popular experiences in these games include flying, racing, sporting, and building.

- There are many kinds of users of simulation games. For example, to train soldiers the United States military uses simulation games including flight simulators, urban warfare simulations, and even communication simulations for deployment in foreign countries.

- Likewise, terrorist cells could use simulation games for communication, recruitment and team management as well as for dry-runs of missions.

- Some of the most successful titles include *Microsoft Flight Simulator, Gran Turismo, Madden NFL,* and *SimCity*.

Simulation Scenario
This scenario is fictitious.   A terrorist leader wants to stage a biological and chemical attack on several Washington, DC, Metro stations simultaneously. The cell leader would like to simulate all stages of such an attack including the construction, transportation and implementation of the plan. Basic benefits of a simulated attack include:

- Cell members use virtual simulation to monitor times and locations to carry out an attack across multiple stations.

- Cell members use virtual simulation to case the environment prior to the attack in order to identify and mitigate potential obstacles.

- The cell leader is able to integrate digital imagery and simulated sounds to acclimate operators in order that they execute the attack more effectively.

Mapping programs such as Google earth can be integrated into online simulation games to reconstruct streets, buildings and other topographical features near potential attack sites.

- The cell leader integrates information provided by the city inspector's office, including actual building codes and utility locations to generate more accurate game construction.

A software program that simulates hospital and laboratory environments is uploaded into the game space. The software is intended for training medical staff and laboratory technicians about safe handling and storage of dangerous chemicals and biological agents. It also trains first responders on containing spills. Cell members use this program to learn safe handling, transport and deployment of the chemical and biological agents they will use.

Utilizing actual plans for the Metro system provide insight into tunnel and station structures. Such plans accurately portray the location and significance of key power sources, ventilation ducts, and other infrastructure features critical to an effective biological attack.

- The cell leader utilizes software that scans the structural and architectural plans of key structures to create a 3-D virtual metro system. He then places the virtual Metro system on a password protected island in a virtual world and shares the password with other cell members.

Additional details are entered into the virtual metro station using the same techniques. Cell members casing the 'real' metro system identify security checks, including camera and video installations and then program their locations.

- By integrating these systems into the simulated metro system, the cell members identify and overcome obstacles through trial and error. Identifying and inputting passenger traffic patterns through the Metro system further enables accuracy in planning and executing attacks.

- The breadth of data and sophistication of the software programs allows the cell to perform damage assessments against each scenario to help predict which conditions would be most effective in delivering a chemical or biological infections.

Through their dry runs, experimentation and practice, the simulation, in its entirety, determine the optimal operation while maximizing the effectiveness and impact.

As the scenarios are being planned and practice, the cell leader obtains sensors to monitor cell members' biological responses. Further, some games have features that allow leaders to monitor player statistics.

- He hooks the cell members up to these sensors and has them perform various tasks related to the simulation and monitors their responses.

- This helps the cell member determine the roles of the members based on their natural responses.

- It also helps identify training or conditioning that must occur before the mission.

- The cell member also tracks player performance and time spent in the simulation through in-game player performance statistics.

Through the cell's dry runs, the team becomes comfortable with their roles during the mission, thereby reducing the margin of error.

- Each member knows their roles and what their colleagues will be doing simultaneously.

- They practice scenarios that may occur during the mission and determine how to act.

- They are now less susceptible to surprises.

Through research and in-game simulation, it is determined that maximum impact can be expected using three bombers in each of four Metro stations -- Metro Center, Gallery Place, Union Station, Capitol South, and L'Enfant -- at 8:45 AM on a Tuesday in late-March. Each cell member knows their responsibilities and the timing on their movements.

Knowledge-Based Games

Knowledge-based games are a proven success in teaching. Many organizations have begun to develop video and other games to teach children about their work or mission.

- The United Nations, for example, provides *Food Force* for free via the UN website. The game aims to teach children about global hunger and food aid.

- Likewise, Middle Eastern groups have attempted to influence children via games. The *Islamic Fun* suite contains the game *The Resistance* which carries the following introduction to the game, "You are a farmer in South Lebanon who has joined the Islamic Resistance to defend your land and family from the invading Zionists."

- Other popular titles include *Where in the World is Carmen Sandiego?*, *Blue's Clues: Blues Big Musical* and, one of the first educational video games, *Oregon Trail.*

Knowledge-Based Game Scenario
This scenario is fictitious. Al-Aqsa Martyrs Brigade would like to teach children about the Israeli-Palestinian conflict. The group knows that vivid, interactive games are likely to entertain children while providing an effective education platform. They develop a game from the Palestinian point-of-view that distorts history by embellishing atrocities committed by the Israelis, and minimizing culpability of the Palestinians.
- In order to win the game, the young player must answer questions correctly to save his family and friends.

- A correct answer, as deemed by the sympathizer, gets the child one step closer to Paradise.

- During each scenario, there are questions about religion, Israeli beliefs and moral responsibility [see below].

In-game Quiz Example:

The Israeli military on the Palestinian border is positioned there to:

A.   Provide protection for all non-military citizens crossing the border between Israel and Palestine regardless of nationality or religion.
B.   Protect all Christian non-military citizens.
C.   Protect all Christians and kill Muslims, including women and children to prevent the creation of more Islamic people and to slowly claim land that is not theirs.

- When children answer three quiz questions right, they progress to the next moral dilemma in the game - they are presented with a scenario out of "history." Based on the scenario presented, they must choose the right moral action to continue on with their journey towards Paradise [see Interactive Story Example below].

Interactive Story Example:

Israeli soldiers came to your home last night. You saw the men coming in time to take cover behind the house with your three-year-old brother. Your mother, older sister, and father where brutally attacked and killed. You and your younger brother survived the attack.

Later, your neighbor's brother has come to pay his respects. He is a member of the Islamic resistance and offers to help you avenge the murder of your family. He assures you that if you choose to join the jihad you will have the opportunity to fight and should you sustain any injury, he promises you that your youngest brother will be cared for. Time is of the essence, however, and the freedom fighters are expecting your decision tonight. What will you do?

Your options are:
A.   Refuse their offer.
You thank the freedom fighter, but resign yourself to live under Israeli occupation. Your father would understand. You are trying to protect yourself and younger brother, although you know that the Israeli forces could come again at any time.

B.   Not respond to the offer.
Your family has already been destroyed and you do not want to worsen the situation. Beware, however, as your failure to join the Islamic resistance essentially means that you are complying with the Zionist occupation.

C.   Join the resistance and offer yourself as a suicide bomber.
   You begin training today.
You volunteer to serve the jihad as a suicide bomber. This is an honorable post. You will be rewarded and your family will be protected. You will be a hero in your community.

When you carry out your mission, you cause the death of the Israeli soldiers who killed your mother, sister and father. You are celebrated as a hero throughout the neighborhood. Your brother is taken care of and respected for your sacrifice.

Strategy Games

Strategy games focus on careful planning and resource management in order to achieve victory. Many of these games can be likened to traditional tabletop war games, occurring in either a turn-based or real-time situation.

- Real time strategy games (RTS) have become the predominant game in this genre.
- Popular titles in turn-based or real-time strategy games include *Starcraft, Warcraft, Civilization, Master of Orion, Command & Conquer,* and *Age of Empires.*

Traditionally, strategy games have focused on military movements. In today's information technology environment however, strategy games teach business management and negotiation skills.

- Terrorists might use strategy games to teach new leaders fundraising techniques, mission planning, and how to manipulate cell members into complete missions.

Strategy Game Scenario
This scenario is fictitious. A terrorist group would like to engage younger players and distribute propaganda to a segment of the population that will be important in future Jihad efforts. The group would like to also determine if there are any players that fit the profile of their recruiters.

The terrorist group develops a game that simulates the duties and camaraderie of their Islamic brothers in Jihad. The terrorists build into the game lodging, rank and file roles, benefits of those roles and a weapons structure that allows players with higher status to have better weapons. The strategy in the game is to not only overcome their enemies (in this case a corrupt official police force) but they must also become leaders of their brothers to obtain better weapons and benefits within the group. The setting of the game begins when a young, strong Iraqi sees neighbor after neighbor murdered by corrupt police.

- The player must build citizen armies to counter the corrupt police forces.

- The player must train his troops, as well as raise funds.

- He must avoid the crowd turning against him.

The game is distributed for free to reach the greatest number of people and can be played amongst other members by connecting to the Internet. Members of the terrorist group

which produced the game also play the game and assess other players' strategy skills and commitment to the cause. Cell members engage the players in conversation to determine information about them and ultimately determine if they would be a good candidate for recruitment.

Chapter Addendum

This paper discusses possible terrorist use of different types of games in training, planning, recruiting, communications, fundraising, and propaganda efforts. While all of these scenarios are possible in many areas of the world, only some may be possible in areas where Internet connectivity, hardware, or other dependencies are limited.

- *A follow-on study might discuss location-specific scenarios in target areas.*

CHAPTER 4

Photo from General Motors 3-D Virtual
Reality Technology Press Release

Chapter Introduction

Emerging trends in the gaming space will have profound effects on the industry, fueling its expansion into previously untapped markets and affording terrorist organizations greater opportunities to reach and target core audiences.

- *Emerging trends in the gaming industry will be used to the advantage of groups committed to terrorizing societies to achieve their goals.* [‡‡] Terrorist organizations have already demonstrated the capability to utilize technological advances to enhance their operations as demonstrated with their extensive use of the Internet[lxvi]. As emerging trends come to fruition in burgeoning markets, it is only a matter of time before terrorist organizations further exploit these trends in the gaming space for similar purposes.

- *The multiple uses of an expanded game space will be numerous, and from the terrorists' perspective, invaluable[lxvii].* Terrorist will be able use the enhanced game space to conduct a range of operations, from supporting strategic propaganda and influence activities, to more highly instrumental uses such as communication, fundraising and recruitment. [§§]

Emerging trends in the gaming industry will continue to drive culture, technology and creativity in both mature and previously untapped markets. They are expected to serve as a catalyst for the gaming industry's rapid growth across age, gender and cultural boundaries.

- *Many emerging gaming trends are enabled by the spread of existing technologies and the advent of new ones.* Three major technological drivers propelling the gaming industry into untapped markets will be the diffusion of broadband Internet access, the maturation of the mobile platform, and the fruition of reliable wireless communication networks such as Third Generation (3G) and Fourth Generation (4G) networks. Collectively, these trends will improve access and make online gaming in nascent markets a reality.

- *Emerging trends will continue to spur the gaming space ensuring its growth continues at near exponential rates.* [***] Evidence of trends spurring the gaming industry can be seen in the growth of virtual worlds like *Lineage*, *Everquest, World of Warcraft (WOW)* and *Second Life*. Hugely popular, these virtual worlds have evolved due to technological advances such as the evolution in Computing Processing Units (CPUs) and Graphics Processing Units (GPUs), peak throughput

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[‡‡] Gabriel Weimann makes this point regarding the Internet but his argument can be extended to the game space due to many similarities between the two mediums. For more information, see Weimann, Gabriel. "www.terror.net: How Modern Terrorism Uses the Internet" *United States Institute of Peace*, Special Report 116.

[***] Online gaming has been growing at rapid rates in both mature and nascent markets, in particular within Virtual Worlds. Evidence can be seen in both the revenue generated by the gaming industry and the sheer number of gamers which cross cultural, gender and age boundaries.

power, the spread of broadband Internet access, and the integration of communication technologies. Newer technologies and emerging consumer usage patterns are expected to continue to spur growth in the future within the gaming sector.

- ***Changes have occurred at a rapid pace within the gaming space and emerging trends indicate more changes are forthcoming[lxviii].*** Many trends will change how players interact with games and with each other through games as trends come to fruition. As interactive gaming changed how an entire generation saw itself in relation to the world in mature markets, it will also likely change how generations see themselves in nascent markets.[†††]

- ***The overall impact of emerging trends in burgeoning markets is expected to mirror the experience of more mature markets, though marked differences will exist.*** Gaming will become a powerful medium, playing an important host to a range of ordinary human affairs, particularly in the online space. [‡‡‡] Like the United States and Asian experience, the line between the virtual and real world will blur for some and become non-existent for others[lxix]. However, noticeable differences will emerge, particularly in consumer usage patterns such as gaming platforms (i.e. personal computers, consoles, and handheld devices) and access methods (i.e. Internet Cafes and wireless networks) due to the limitations associated with existing infrastructures and costs of deploying new ones.[§§§]

[†††] The impact of interactive gaming has profound effects beyond the game space. Evidence can be seen in how gamers learn, problem solve and relate to the real world. For more information on this trend see Will Wright's piece "Dream Machines." Wired Magazine, Issue 14.04 April 2006 and the following Cyber-Influence Conference Series Proceedings - Perspectives from the Entertainment Industry, SAIC, May 2005; Insights from Silicon Valley: Enabling Technologies. SAIC, March 2006; and Insights from Entertainment and Gaming: The Convergence of Narrative, Imagery, and Cyber Media, SAIC, September 2006.
[‡‡‡] For an excellent analysis on the range of activities that are occurring in online gaming, particularly virtual worlds, see Castronova, Edward. *Synthetic Worlds: The Business and Culture of Online Games*.
[§§§] Market analysts predict strong growth in new regions on different gaming platforms and access methods in new markets due to existing infrastructures. For more information see, "Global Entertainment and Media Outlook: 2006-2010. Price Water House Coopers and The 2006 Middle East Telecoms, Mobile and Broadband Report.

Emerging Trends

The following trends are expected to significantly extend the gaming space in mature and nascent markets, creating a powerful medium analogous to the internet for terrorist organizations to reach and target core audiences.

- While forthcoming trends in the gaming space have been separated into various sections for analysis, there is considerable overlap between them in that one trend often enables the other or is dependent on the other to come to fruition.

Broadband Diffusion

The spread of broadband internet access will be a major enabler for online gaming and its expansion into previously untapped markets.

- One of the most reliable historical indicators for the growth of online gaming is high speed Internet access.[lxx] Broadband growth rates in the United States and Asia have paralleled similar growth rates in online gaming, making the experience in mature gaming markets informative of what can be expected in growing markets.

- European, Middle Eastern, and African (EMEA) markets are expected to see the biggest growth in online gaming with the increased penetration of high speed Internet access.[lxxi] Market analysts expect the number of online game participants in the EMEA market to more than quadruple from 4 million in 2005 to 18 million in 2010 growing at a compound rate of 35.1%.[lxxii] The projection of broadband access is a major reason industry analysts see the EMEA as the fastest growing market in the gaming industry increasing by a compound annual rate of 13 % surpassing US$7.6 billion in 2005 and reaching US$13.9 billion by 2010.[lxxiii]

- EMEA markets will mirror the expansion of broadband Internet access and online gaming in more mature markets, however, its adoption will have some marked differences. Industry analysts expect the growth of high speed Internet to initially be more limited to Internet Cafes in the Middle East and Africa as opposed to individual households due to the expense associated with deploying fixed-line or 'wired' infrastructures. Consequently, industry analysts expect broadband wireless solutions to play a larger role in driving gaming in these markets, particularly with the launch of Third Generation (3G) wireless services.

Broadband Growth Drives Online Gaming[lxxiv]										
	2002	**2003**	**2004**	**2005p**	**2006p**	**2007p**	**2008p**	**2009p**	**2010p**	**CAGR***
Broadband Subscribers - U.S.	62.0	45.1	38.3	22.2	17.6	15.2	11.5	11.3	9.9	**13.10**
Online Video Game Subscribers - U.S.	77.8	75.0	50.0	38.1	32.8	24.7	20.8	16.4	14.8	**21.7**
Broadband Subscribers – Asia	84.6	54.2	62.2	38.3	26.5	27.6	22.4	16.5	13.6	**21.2**
Online Video Game Subscribers - Asia	133.3	71.4	66.7	50.0	33.3	25.0	32.0	24.2	19.5	**26.7**
Broadband Subscribers - EMEA	105.8	75.7	113.3	31.2	26.4	20.0	16.3	12.6	10.9	**17.1**
Online Video Game Subscribers - EMEA	150.0	180.0	78.6	60.0	50.0	50.0	33.3	25.0	20.0	**35.1**
*CAGR = Compound Annual Growth Rate										

Exhibit 4-1: *Comparison of Broadband and Online Gaming Growth Rates in US, Asia and EMEA markets.*

The advent of high speed internet access fundamentally transformed gaming into a truly networked experience making gaming an online social experience.

- Broadband connectivity makes the stereotype of the lonely gamer spending long hours in social isolation no longer tenable. What once was a relatively stand alone application on the early personal computers and console gaming platforms is now becoming increasingly social with the growth of Local Area Network (LAN) games and the expansion of Massively Multiplayer Online Games (MMOG). Gaming is now a social experience with users interacting with others in the game (i.e. teams, clans, and guilds), online in other cyber mediums (i.e. web sites, message boards and social networking sites), and in cybercafés.

- Evidence is emerging of a budding online gaming culture in Central, Southeast, and Southwest Asia powered by broadband Internet access. Many older but enduring titles are being played by gamers at numerous Internet cafes. *Counterstrike* is played extensively throughout the region with gamers participating from Pakistan, Uzbekistan, Kazakhstan, Turkmenistan, United Arab Emirates, Kuwait, Saudi Arabia, Jordan, Egypt, Iran, Malaysia and Indonesia.[****] Also, *Kuma Games* indicated that 20% of its total audience originated in the Middle East region with significant amounts of game traffic coming from Egypt

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[****] Counter-Strike is considered the most popular online first-person shooter (FPS) game in the world with the more than 200,000 players playing simultaneously and contributing more than 5.5 billion minutes of playing time each month on the official network consisting of more than 100,000 servers. Counter-Strike is played extensively throughout Central, Southeast, and Southwest Asia in addition to the core U.S., European and Asian markets.

and a notable number of players originating from Iran and Iraq during the height of media coverage on Middle East networks like Al-Jazeera.[††††]

Exhibit 4-2: *Kuma Wars Game Play Distribution in EMEA Markets*

Third Generation (3G) and Beyond

The emergence of reliable broadband wireless technology will make mobile gaming a reality in mature and nascent markets in the mid to long term.

- The movement to 3G networks will facilitate the development of 3D mobile games and spur demand due to increased access speeds of up to 2 Megabits per second (Mbps).[lxxv] While more mature markets in Europe and parts of Asia have well developed 3G networks, many parts of the world are more limited with 3G just in its infancy or stuck on older 2G networks.[‡‡‡‡]

- Similar to the connection between the growth of online games and broadband Internet access, the maturation of wireless gaming will depend on the spread and development of high speed wireless networks. Based on anticipated growth in the wireless sector, EMEA markets are expected to see the biggest growth in wireless gaming. Market analysts project wireless gaming in the EMEA to expand from 792 million in 2005 to 2.7 billion in 2010, representing a compound annual growth rate of 27.9%.[lxxvi]

[††††] Kuma Wars is made by Kuma Games, who develops free, episodic games for their users based on recent real world events. Kuma is easily able to produce immersive, realistic games in little time with the assistance of the Valve's Source game engine, modular software that provides enhancements in several key areas of game production, including character animation, advanced AI and real-world physics.
[‡‡‡‡] For an overview of wireless generations, see CNET Review: Quick Guide to 3G Cell Phone Service. CNET. Available for download at . For more information, also see Mr. Huang's article, "Evolution from 3G to 4G and Beyond (5G)." June 2005. Available for download at http://www.daniweb.com/techtalkforums/post180324.html#post180324

- More mature markets that have achieved reliable, high speed wireless access represent what the mobile gaming space could look like with the diffusion of more advanced wireless networks. Mobile gaming has flourished in these markets with Japan representing the benchmark of mobile gaming where nearly 90% of its cell phone-owning population plays video games.[lxxvii]

Wireless Growth Drives Online Gaming									
	2003	2004	2005p	2006p	2007p	2008p	2009p	2010p	CAGR*
Wireless Telephony Subscribers - U.S.	-3.6	-33.3	-23.8	-14.0	-24.7	-15.6	-21.4	-9.6	**7.5**
Wireless game subscribers - U.S.	-36.0	14.8	-38.3	-30.9	4.2	-18.9	-26.5	-17.3	**37.1**
Wireless Telephony Subscribers - Asia	-46.4	-6.7	-25.0	-33.3	-25.0	28.0	-24.2	-19.5	**12.6**
Wireless game subscribers - Asia	-28.4	49.7	-72.5	-15.2	-24.3	-18.5	-22.6	-13.5	**31.8**
Wireless Telephony Subscribers - EMEA	20.0	-56.3	-23.6	-16.7	0.0	-33.3	-25.0	-20.0	**4.0**
Wireless game subscribers - EMEA	100.0	155.9	79.3	67.9	43.9	32.1	25.5	21.1	**37.1**
*CAGR = Compound Annual Growth Rate									

Exhibit 4-3: *Comparison of Wireless Networks and Online Gaming Growth Rates in US, Asia and EMEA markets.*

Fourth Generation (4G) wireless networks will enable reliable high speed wireless gaming surpassing many of the current broadband access speeds

- Even though 3G has yet to fully emerge in many parts of the world, more sophisticated networks are already being hypothesized and tested to move beyond 3G. Testing in Japan on a 4G prototype proved data transfer speeds could be achieved reaching 100 Megabits per second while moving and 1 Gigabyte per second while static. [lxxviii] Such speeds would enable a user to download a DVD within one minute.

- A major inhibitor of deploying 3G networks has been the emergence of too many standards within the industry leading some countries to cooperate on one standard. Japan and China recently signed a memorandum to cooperate on

	Technology	Speeds	Features
1G	AMPS	n/a	Analog (voice only)
2G	GSM CDMA iDen	Less than 20Kbps	Voice; SMS; conference calls; caller ID; push to talk
2.5G	GPRS 1xRTT EDGE	30 Kbps - 90 Kbps	MMS; images; Web browsing; short audio/video clips; games, applications, and ring tone downloads
3G	UMTS 1xEV-DO	144Kbps - 2 Mbps	Full-motion video; streaming music; 3D gaming; faster Web browsing
3.5G	HSDPA 1xEV-DV	384 Kbps - 14.4 Mbps	On-demand video; videoconferencing
4G	Standard not set	100Mbps - 1Gbps	High-quality streaming video; high-quality videoconferencing; Voice-over-IP telephony

Exhibit 4- 4: *Wireless Generations: Technology, Speed and Features*

developing and rolling out a common
standard with a goal of deploying a 4G
network by 2010. [lxxix]

Wireless gaming will be more predominant than 'wired' gaming in some markets where existing cellular infrastructures are more prevalent.

- Wireless networks are faster and cheaper in Europe and Asia where cellular networks are more abundant than fixed line infrastructures, leading many industry experts to project significant growth in the wireless gaming industry. As such many countries will build upon existing cellular networks taking market share from declining fixed-line markets. This trend can already be seen in parts of the Middle East, especially in Saudi Arabia, Oman and Qatar where they are testing 3G services following its successful introduction in Bahrain and Israel.[lxxx]

- The emergence of Wi-Fi hot spots are also an important development for gaming. In many parts of the world, cities are deploying Wi-Fi hot spots to increase network connectivity and in some instances gaming companies are partnering with telecommunications firms. For instance, Nintendo recently partnered with BT Openzone to establish hot spots in the UK to enable mobile gaming.[lxxxi]

The Maturation of the Mobile Platform

Rapid growth of the mobile market in mature and emerging regions will expand the reach of the mobile gaming space exponentially.

- Strong growth is expected in the mobile sector with expansion rates ranging from 30% to 35% a year, bringing the industry's value to an estimated worth of US$6 billion by 2010.[lxxxii] Rapid growth in the mobile industry will continue to be spurred by the explosion of 'data' applications (i.e. text, ring tones, streaming video) to include gaming and the further convergence of these applications, transforming the cellular phone into an integrated mobile platform moving well beyond voice. [lxxxiii] Such growth will expand both the mobile market and in turn the mobile gaming space.

- Gaming has already become a major player in the mobile space competing with other popular data applications. Last year marked the first time consumers spent more downloading games than ringtones, a significant milestone considering the popularity of ringtones worldwide.[lxxxiv]

- The expansion of the gaming industry in emerging and new regions is also expected to drive the growth of the mobile gaming sector.[lxxxv]

The penetration of next generation game enabled devices with internet access capabilities and enhanced graphics will facilitate the growth of wireless gaming.

- The number of game enabled devices is expected to grow rapidly from about 40% of the 2 billion devices available worldwide today to about 97% of all mobile devices sold in 2008.[lxxxvi] There were 600 million mobile devices sold last year alone compared to 300 million consoles sold in the 25-year history of the videogame industry.[lxxxvii]

- The increasing sophistication of new handsets will make for a more enjoyable and immersive gaming experience, thereby expanding wireless gaming. Currently, most mobile games are simple and are similar to games developed for consoles a decade ago because the graphics capabilities of handsets are still relatively limited. However, next generation devices are now being designed and marketed to highlight their gaming features like the Samsung SGH-B450.[lxxxviii]

- In addition to mobile phones, portable gaming consoles like the Nintendo DS (Dual Screen) and Sony PSP will increasingly become an important part of the mobile gaming space.

Exhibit 4-5:
Samsung SGH-B450

The expansion of the game space will be driven in a large part by mobile gaming.

- A huge latent demand exists for mobile gaming with only 5 % of people who own a phone ever downloading a game and 50% actually ever playing a game.[lxxxix] Such percentages suggest a huge untapped market segment that is very encouraging to the future of mobile gaming given the number of subscribers and handsets available worldwide.

- Evidence of the how the game space will be driven by mobile gaming occurred recently when for the first time more games were played on mobile devices than on console games in 2006.[xc] In terms of revenues, of course, console gaming is far greater, but the importance of this event in mobile gaming cannot be underestimated given that the gaming industry is largely driven by console gaming. More games being played on mobile devices represents a shift in what factors will drive the expansion of the game space in years to come.

- The significant difference in the mobile gaming market, as oppose to the personal computer and console sectors, is that the 'would be gamer' already owns and carries the platform on which they can play the game. Mobile devices also tend to be more intimate devices to their users, always available and always on.[xci] As newer, more advanced technologies are deployed, market analysts expect traditional sectors like the personal computer to lose ground to mobile platforms.[xcii]

The availability and range of mobile gaming content will increase in the coming years.

- The industry is now moving away from preloaded games to models where games are required to be downloaded over the Internet from carriers and third party providers. Such a move should enable more third party mobile game providers and distributors to enter the market space, increasing both the availability and range of mobile gaming content. Moreover, it will allow organizations to directly market mobile games to end users.

- An examination of more mature markets suggests that gaming will move beyond casual gaming leading to further growth in the industry. Japan represents the current benchmark where many users are playing more than just casual games on their mobile devices.[xciii] An exceptionally large number of games are aimed at what would be considered console and hard core gamers, making the mobile phone in Japan as much a games platform as any console.[xciv]

- Some gaming experts suggest that multiplayer games are the next big thing in mobile gaming as they attempt to recreate virtual worlds for mobile devices, while other analysts suggest that the next big breakout game would be a mobile game that leverages the power of mobile networks and devices integrating features like voice and GPS into the game.[xcv] While industry leaders have different views, all are searching for the mobile game that will drive the mobile platform similar to how the Halo, Madden Football and Zelda franchises drove sales of the Xbox, Play Station 2 and Nintendo gaming consoles respectively.[xcvi] Such a game would prove invaluable to expanding the mobile gaming market.

- The skills required for a successful mobile game programmer are not insurmountable and include knowledge of Java and J2ME, BREW, Symbian OS, OpenGL ES, and/or Mophun. While a skilled programmer would currently be required to develop a mobile game using one of the aforementioned programs, the introduction of middleware or game modification software in the coming years should enable a broader group to create compelling content for mobile games.

The Rise of Virtual Worlds

Virtual worlds will provide the greatest opportunities to support terrorist operations, particularly in the areas of communication, coordination, recruitment and fundraising activities.[§§§§] As virtual worlds expand, terrorist opportunities to exploit them will also increase.

[§§§§] For a more in depth look at the various ways terrorist organizations can exploit the game space see an earlier paper produced in this series "Exploitation and Function of Games: An Interactive Influence Medium." SAIC. September, 2006.

- Virtual worlds will become a powerful medium in nascent markets mirroring adoption and consumption patterns in more mature markets. As virtual worlds expand, they will increasingly play an important host to a range of ordinary human affairs in which participants may communicate, coordinate, socialize, train, learn, simulate, experiment, build, proselytize and even barter virtual goods.[xcvii]

The emergence of virtual worlds has significant consequences because events within the virtual space at times cannot be isolated from the real world, leading some to suggest that the line between the "virtual" and "real" world is blurring, even becoming non-existent. This phenomenon can best be seen in a virtual world's social interactions, experimental learning and value of virtual goods and services.

- Social interactions occurring in virtual worlds are not simulations of human interactions, rather they are human interactions merely extended in a new forum.[*****] Virtual worlds are places people identify with and where real and lasting bonds form, for many becoming an important source of material and emotional well being. Avatars become a representation of ones identify and immersion into the virtual world increases the identity that one feels to the virtual self. This connection with the virtual world invokes many of the same psychological triggers as in the real world[xcviii]. For instance, reciprocity and liking extensively come into play in relationship formation[xcix] and the process of developing ones avatar seems to invoke exactly the same risk and reward structures in the brain that are invoked by personal development in the real world.[c] As virtual worlds become more immersive and expand into newer markets, the number of gamers who identify with and form relationships within these spaces will expand.

- The expansion of virtual worlds will provide a space for experimental learning to develop knowledge or hone a particular skill set with practical applicability in the real world. For instance, becoming an effective leader of a guild amounts to a "total-immersion" course in leadership – guild leaders are required to be adept at many skills to include "attracting, evaluating and recruiting new members; creating apprenticeship programs; orchestrating group strategy; and adjudicating disputes."[ci] Absent the virtual surroundings, these skills are prerequisites to managing and leading any organization.[cii]

- Virtual goods, services and currencies have real world value exceeding US$100 million globally. Trades occur in games among players, between players and the preset game vendors, and on third party sites like E-Bay, IGE and numerous other sites. Current estimates indicate that a large demand for intangible goods exists within the digital world valued in the range of US$1 - $2 billion making the value of virtual goods quite real. For instance, a *World of Warcraft (WOW)* gold piece is

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[*****] Edward Castronova originally makes this point in regards to communication occurring the virtual space, however, it is appropriate to extend his argument to all forms of social interaction that occur within virtual worlds.

valued at .46 cents to the US Dollar, meaning a *WOW* gold piece is traded at higher rates to the US Dollar then real world currencies like the Algerian Dinar, Iraqi Dinar, Egyptian Pound, Syrian Pound, Pakistani Rupee, Indonesian Rupiahs, and Chinese Yuan Renminbi.[†††††]

Virtual World*	US Dollars	British Pounds	Euro	Algerian Dinars	Indonesian Rupiahs
Dark Age of Camelot	0.71	0.362	0.546	**50.802**	**6,416.55**
World of Warcraft (US)	0.46	0.235	0.354	**32.914**	**4,157.20**
World of Warcraft (EU)	0.033	0.0168	0.0254	**2.361**	**298.23**
Second Life	0.014	0.00711	0.0107	0.998	**126.07**
Auto Assault	0.013	0.00663	0.0100	0.930	**117.49**
Everquest	0.000237	0.000121	0.000182	0.017	**2.14**
Dungeons and Dragons	0.00015	0.0000765	0.000115	0.0107	**1.36**
Everquest II	0.000148	0.0000755	0.000114	0.0106	**1.34**
Final Fantasy XI	0.0000269	0.0000137	0.0000207	0.00192	0.24
Star Wars Galaxies	0.00000104	0.00000053	0.0000008	0.0000744	0.01

Virtual World *	Syrian Pounds	Iraqi Dinars	Egyptian Pounds	Pakistani Rupees	Chinese Yuan Renminbi
Dark Age of Camelot	**37.625**	**937.058**	**4.048**	**43.257**	**5.543**
World of Warcraft (US)	**24.377**	**607.108**	**2.622**	**28.0255**	**3.591**
World of Warcraft (EU)	**1.749**	**43.553**	0.188	**2.0105**	0.258
Second Life	0.739	**18.411**	0.0795	0.8499	0.109
Auto Assault	0.689	**17.157**	0.0741	0.7920	0.101
Everquest	0.0126	0.313	0.00135	0.0144	0.00185
Dungeons and Dragons	0.00795	0.198	0.00086	0.00914	0.00117
Everquest II	0.00784	0.195	0.00084	0.00902	0.00116
Final Fantasy XI	0.00143	0.0355	0.000153	0.00164	0.00021
Star Wars Galaxies	0.0000551	0.00137	0.000006	0.0000634	0.00000812

Exhibit 4-6: *Exchange Rate between Leading Virtual Currencies and Real World Currencies[‡‡‡‡‡]*

Virtual worlds are expanding at exponential rates rivaling the growth of email fifteen years ago. Expansion in newer markets will further spur the growth of existing and new virtual worlds.

- Populations in leading virtual worlds such as *Lineage II*, *EverQuest II* and *World of Warcraft* are growing at phenomenal rates with many worlds exceeding 100,000 subscribers and some even one million.[ciii] Also, the rate at which new virtual worlds are appearing in the game space is an almost exact match to

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[†††††] Exchange rates for virtual currency are subject to the same supply and demand rules that effect real currencies with some variations such as the game type, the server where the virtual currency resides, and the website or exchange bank a gamer uses to exchange the currencies.

[‡‡‡‡‡] SAIC utilized current rates for virtual currencies from IGE to calculate the exchange rates between virtual currencies and real world currencies were calculated on January, 11, 2007.

Moore's law with many worlds exceeding 100,000 subscribers and some even one million.[civ]

- The diffusion of newer CPUs and GPUs coupled with the expansion of broadband Internet access in emerging markets will fuel continued growth, particularly in virtual worlds. Projections indicate rapid growth in virtual worlds during the coming years with more than 10 million online game players in the U.S. (approximately the size of New York City) and 30 million gamers worldwide (approximately the size of Shanghai, Bombay and Karachi combined).[cv] The biggest market for virtual worlds remains Asia closely followed by the United States; however, it is only a matter of time before other markets become more active in online gaming.

- The expansion of virtual worlds and the growth rate of its populations lead some to suggest that virtual worlds may soon become the primary venue for all online activity.[cvi] The immersive, persistent and interactive characteristics of virtual worlds would enable communication, socialization, and coordination in more effective ways then other mediums.

The Explosion of User Generated Content

User generated content will emerge as a driving force in the gaming space. It will be enabled by the increased availability of software products and programming features, lowering the barrier of entry for users to alter, modify and create games.

- The growing availability of middleware or modification programs enable individuals to modify content (partial conversion) or create an entirely new game (a total conversion). Popular middleware products include 3D world building packages such as Genesis 3D, Quake, Unreal, and Half-Life; multiplayer adventure games like Aurora Toolkit; and systems for handling massively multiplayer games like BigWorld, Butterfly.net, and Terazona. These middleware products have been used to create successful games like *Counterstrike* (Half-Life) and *America's Army* (Unreal); more dubious games have also been created such as *Ethnic Cleansing* (Genesis 3D), *Under Ash* and *Under Siege* (Genesis 3D) and *Special Force* (Genesis 3D).

- Third party software products are available and can be purchased for a marginal cost, allowing users to create a fully-customizable and easy to design game. Preloaded design packages allow a user to click and select from a multitude of gaming scenarios to design their own game. Many of these types of packages are simulation packages designed to train users on given subjects. One such package offered by Mosbe enables a user to create a simulation to provide a platform strategy development, experimentation, and rehearsal. The package includes preloaded military, civilian, and environmental settings in Iraq, Syria, and the

Korean Peninsula, as well as hundreds of vehicles (air and ground combat, as well as civilian) and weapons for even more accurate and realistic simulations.[§§§§§]

- An emerging trend within content generation is using 3D video game graphics technology to create animated films known as Machinima. Combining aspects of film making, animation and game design, Machinima allows users to create their own film complete with sets, props, special effects, plots and virtual actors at a minimal cost. Software products also allow users to capture game video to produce and edit in game events. One of the more popular political Machinima pieces is *French Democracy*, a depiction of the 2005 French riots from the Muslim perspective.

- High costs associated with developing games ($20-30 million per major title) have led many smaller publishers on a path to leverage user generated content, harnessing the users' creativity as a resource to 'populate' the virtual space. Opening scripting options allows users to script events ranging from object control, to avatar behavior, to mini-games and other complex programs making imagination the only limitation of what a resident can create in the virtual space. This provides a unique opportunity for organizations to promote given agendas.

[§§§§§] For more information on MOSBE, see TSJOnline "A Toolkit for the People"

Second Life Case Study: Content Generation as a Driving Force [******]

- *Second Life*'s content creation engine and LSL feature allows residents to create virtually anything, protected by very real intellectual property rights. These tools and subsequent intellectual property protections have spurred the growth of a goods and services industry including entrepreneurs (e.g. real estate moguls), artisans (e.g. architects and fashion designers) and professional services (e.g. notary public), stimulating an economy generating nearly $5 million in trade between residents every month. The *Second Life*'s content creation engine and LSL features also enable residents to be creative and have fun with other residents. One of the more notable examples of unique content is the abductions of residents by aliens whereby abductees receive a T-shirt proclaiming "I was abducted by Aliens."

- *Second Life* enjoys 90,000 hours of use per day, with approximately 25% of that time spent creating. That equates to 11 user/years per day, which would require a 4,100-member content development team costing $40 million per year. In a given week, 5,000 distinct residents wrote original scripts (15%), representing 2.5 million lines of source code.

- *Second Life* allows residents to promulgate any Uniform Resource Locator (URL) audio or video stream to local communities in *Second Life*. *Second Life* also permits users to export XML data from the game to external web sites. Together, this functionality lets users stream "real" events into the virtual world and "virtual" events into the real word.

Advances in Digital Rendering

Advances in digital rendering are forthcoming with improvements in Graphics Processing Units (GPUs) and rendering algorithms that will enable game designers to create more life like images and experiences, further increasing the immersion of users.

- Existing GPUs are extremely powerful in terms of computing power enabling game designers to render life like images in games. Currently, low end GPUs surpass high end CPUs by at least two to five times in a wide variety of computing tasks. GPUs peak throughput power also is growing by a factor of two

[******] *Second Life* (abbreviated to SL) is an Internet-based virtual world which came to international attention via mainstream news media in late 2006 and early 2007. Developed by Linden Lab, a downloadable client program enables users to interact with each other through motional avatars, providing an advanced level of a social network service combined with general aspects of a metaverse. While SL is sometimes referred to as a game, in general it does not have points, scores, winners or losers, levels, an end-strategy, or most of the other characteristics of games. Users, often called "residents", can visit this virtual world almost as if it were a real place. They explore, meet other residents, socialize, participate in individual and group activities, and buy items (virtual property) and services from one another. As they spend more time in the world, they learn new skills and mature socially, learning the culture and manners of a virtual environment. The excerpt on *Second Life* was extracted from the Insights from Silicon Valley: Enabling Technologies Conference Proceedings.

or more every year because of the demands of the video game industry meaning that hardware will not be a limitation in creating life like images in games.[cvii]
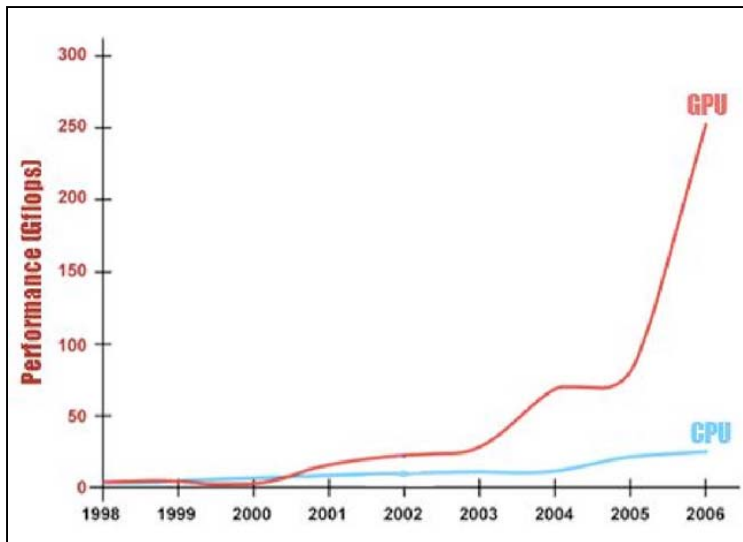
Exhibit 4-7: *GPU versus CPU Performance*[cviii]

- Advanced rendering algorithms and techniques enable game designers to create realistic 3D images within the game environment without sacrificing GPU performance and allow gamers to experience the details of the environment. One such method, parallax occlusion mapping, enables graphic game designers to simulate the illusion of depth on uneven surfaces without increasing the geometric complexity of rendered objects.[††††††] Such innovation will allow games to create 3D virtual environments mimicking real world environments.[‡‡‡‡‡‡]

Advances in the Science of Haptics

Advances in haptics (the study of touch and the cutaneous senses) are expected to grow in the coming years providing sensory feedback and furthering the level of immersion in games.

- Haptic devices allow users to experience a sensation of touch and physical properties when they interact with virtual materials. They exert force in response to a user's action, at the point of action. They enable active 'two-way' interaction with virtual objects, where action and perception are brought together.[cix] Haptic devices have been making inroads in gaming for sometime, but recent and future

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[††††††] For more information on digital rendering techniques, see Practical Parallax Occlusion Mapping with Approximate Soft Shadows for Detailed Surface Rendering Natalya Tatarchuk ATI Research. Available for download at http://ati.amd.com/developer/techreports/2006/I3D2006/Tatarchuk-POM-SI3D06.pdf
[‡‡‡‡‡‡] Some suggest that the sophistication of current computer graphics is already sufficient to enable unconscious immersion in virtual worlds. For more information, see *Synthetic Worlds*, p87.

efforts are moving beyond vibrating gaming controllers and into truly immersive sensory devices.

- Nintendo has been at the forefront of major hardware manufactures and publishers in implementing haptics. Nintendogs is a popular game that elicits emotion through its advanced voice and touch recognition software, helping to create a strong emotional bond with the virtual pets. Users must talk and touch the dog to elicit a response from the virtual pet. Game designer Hideki Konno states, "It is one thing to type in a name and it is an entirely different emotional response to call and see the puppy turn its head and run over to greet you."[cx] Nintendogs has been an international phenomenon selling more than 4 million units worldwide. Also, the Wii, Nintendo's newest gaming console, offers advanced interaction though wireless remotes where users must use the remote like they would use the item in the game. For instance, tennis requires the user to swing at the ball using different swings and techniques. The introduction of the Wii has taken interactive gaming to a whole other level of immersion.

- Future devices employing haptics are not far off with some being marketed in the near term. One device by Novint Technologies, expected to debut later this year, allows the user to feel weight, shape, texture, dimension, dynamics, 3-D motion, and force effects.[§§§§§§] Another product lets users interact physically with virtual objects. For instance, by using a sensor-equipped glove and a force-reflecting exoskeleton, you could literally feel the shape, texture and weight of an onscreen 3-D object.[*******] Such devices are used now for virtual modeling, medicine and the military, but as costs decrease, haptic interfaces could become more widely available in the gaming space increasing immersion tenfold.

Exhibit 4-8: Haptic Devices by Immersion 3D

[§§§§§§] For more information on Haptic devices by Novint, see their webpage at http://www.novint.com/
[*******] For more information on Haptic devices being developed by Immersion 3D, see their website at http://www.immersion.com

Chapter Addendum

Emerging trends in the gaming space will be used to the advantage of groups committed to terrorizing societies to achieve their goals. They will be an enabler of a more mature and expanded gaming space, creating a powerful medium analogous to the internet for terrorist organizations to reach and target core audiences.

- *Emerging trends will drive growth in the gaming space across age, gender and cultural boundaries.* Spread of existing technologies like broadband Internet access and the advent of new technologies like next generation wireless networks and mobile devices will mean greater access to individuals residing in burgeoning markets.

- *Changes within the gaming space will continue at a rapid pace.* While marked differences will exist particularly with access methods, newer markets are expected to mirror the experience of more mature markets in terms of growth and usage patterns. Gaming will become a powerful medium playing an increasingly important role in a range of ordinary human affairs, particularly in virtual worlds, providing an extension and a virtual component to supplement their operations.

CHAPTER 5

Winning Hearts and
Minds Virtually

Night of Bush Capturing
ليلة القبض على بوش

Photo from Global Islamic Media Front's
Quest for Bush - The Night of Bush Capturing Game

Focus Areas

This section identifies and discusses three areas for focusing counterterrorism efforts in the game space: in-game counterpropaganda, new game development, and intelligence collection.

- *These three areas are most effectively pursued concurrently and holistically, with operations in one area supporting operations in the other two, and with all operations feeding into analysis of the counterterrorist threat in the game space, as illustrated below*.

**Compete for Players with
New Games**

Operations

Analysis

**Collecting In-
Game
Intelligence**

Operations

Operations

**Counter In-
Game
Propaganda**

Exhibit 5-1: Holistic Approach to Game Involvement

Countering In-Game Propaganda

   Countering extremist propaganda in the game space can be achieved in part by being an active game player. Establishing an in-game presence allows for virtual interfacing, information exchanges, and developing influential relationships with both adversaries and allies. In-game interaction also can help shape real-life attitudes and perceptions.

- Establishing an in-game presence would enable identification of influential players, their guilds and other common interest groups. ***These relationships can be exploited to facilitate "viral" message spread or in-game dialogue for counterpropaganda purposes.***

- Establishing an in-game presence also would enable identification of important propaganda efforts in the game space. Identification of propaganda allows for working with the game producer to eliminate harmful or misleading information from the game space and/or for developing a counterpropaganda campaign.

- ***Establishing an in-game presence would aid the determination of optimal message placement areas – cued by where propaganda is surfacing and how it is spreading in-game.*** For example, in some games there are large bulletin boards or other communication areas that are exploited.

- In-game assets might form partnerships with "celebrity" avatars or popular game design companies for in-game public service announcements such as "anti-violence" campaigns. Generating in-game public service announcements backed by game producers, NGOs or other public interest groups is a popular phenomenon in some game spaces. For example, the Omidyar Network currently sponsors the *Camp Darfur* campaign, which is run on the *Better World* Island in *Second Life*. The purpose of the campaign is to educate players on the crisis in Sudan.[cxi]

Exhibit 5-2: Snapshot of *Camp Darfur*, sponsored by the Omidyar Network, in Second Life.[cxii]

Competing for Players with New Games

Another opportunity to focus IC counterterrorism efforts in the game space is new game or modified game development to compete with extremist groups operating in the game space. ***Working with commercial partners, students, and others in the game space to develop a competitive game and attract the target audience would aid this effort.***

- ***Market research could provide valuable insights into the interests and habits of game players from a particular target audience.*** Using focus groups throughout the game production cycle also would help to identify the strengths and weaknesses of the story, graphics, and game play.

- ***Partnerships with gaming industry leaders and a gaming advisory board might help the IC direct the development of new games with the best chance for success.*** An advisory board might be comprised of experts from a variety of academic disciplines and commercial industries, including public diplomacy, Silicon Valley, Venture capitalism, NGOs, international relations, game development, and celebrity game players.

- ***Student groups also could fuel new game development.*** Many colleges and universities now host programs that focus on game design and production. Asset-sponsored scholarships and incentives could be used to encourage students to develop appropriately-themed game designs. For example, each year the University of Southern California (USC) sponsors a video game design contest in which students compete for a $25,000 grand prize. Students are asked to develop games that could be used for public diplomacy purposes.

- ***Finally, it is important to highlight that modifying games (or "modding") is a popular and cost effective way to produce new games or additional "chapters" to existing games.*** Many companies allow the codes of their popular titles to surface on the Internet because modding tends to increase a game's shelf life and provides the original game producer time to build a new quality product. An organization can mod a game in-house or encourage a member of the modding community to make mods independently.

Exhibit 5-3: USC promotes diplomacy *via* new media including games.[cxiii]

Collecting In-Game Intelligence

Gaming is an increasingly popular activity among many demographic groups across North America, Europe, the Middle East and parts of Africa.[cxiv] ***Monitoring of in-game activities and related game-devoted areas of the Internet such as blogs, chatrooms, and virtual periodicals, provide significant intelligence collection opportunities***.

Exhibit 5-4: Joystick Gaming Blog[cxv]

For example, game space provides potential opportunities to identify terrorist financial operations by monitoring the flow of money in virtual economies and determining who is involved in the buying and selling of virtual goods and fundraising.

- From virtual real estate to virtual clothing for avatars, the sale of virtual goods is increasing rapidly. Virtual monies hold real-world value and can be cashed-out into hard currency. Game players trade virtual products in exchange for real money via portals such as E-bay and *Second Life*. Intangible goods in digital worlds are estimated to be worth $1 billion to $2 billion.[cxvi]

- Furthermore, players sharing account information may be utilizing game space to transfer funds from one person to another – under the auspices of a single player's account. The ability to upload in-world currency makes this plausible. Studying the activities and profiles of users selling virtual goods might help determine whether or not funds are being funneled by or to terrorists.

- "Gold farming," or game-supported sweatshops in which workers play games to develop the strongest avatars which can then be sold on websites such as E-bay for large profits, could be used for terrorist fundraising purposes. Where gold farming is taking place and who is benefiting from the sale of avatars or goods also represents a useful area of investigation.

Exhibit 5-5: A virtual store in *Second Life*[cxvii]

Game-devoted areas of the Internet such as blogs, chatrooms, online periodicals, wikis, and forums can provide unique insights into hot trends for key target audiences of interest to the IC.

- Intelligence collection of this sort would provide such basic information as which new titles are most popular and best suited for message dissemination.

- Of particular interest would be commentary on games with political messages such as Kuma/Wars.

Chapter Addendum

SAIC's strategic communications division provides unique capabilities to support counterpropaganda, new game development, and intelligence collection in the game space.

1. Tracking terrorist gaming trends using the SAIC Prototype
SAIC's automated processing capability of terrorist Web site content provides a unique opportunity to track terrorist online games. Data processing and reporting might address: (1) current popular online games and associated discourse, (2) social networks emerging in these communities, (3) gaming and community sites that are increasing or decreasing in popularity, (4) the emergence of new terrorist gaming sites in cyberspace or current game sites that have been modified, (5) the online spread of terrorist gaming activity, and (6) Web sites that host material about terrorist games.

2. Organizing a Gaming Advisory Board
Through the Cyber-Influence Conference Series, SAIC has expanded the IC's network of gaming experts with varied academic and technical backgrounds. SAIC might help leverage this network to develop a Gaming Advisory Board.

3. Assist in the development of an IOC institutional knowledge gaming database
Having conducted extensive research on terrorist gaming efforts, SAIC analysts might help facilitate IOC's development of an institutional knowledge gaming database to support operations and analysis.

4. Organize efforts to construct a game
SAIC might also help organize a game construction effort out-of-house. This effort could leverage the network of gaming professionals established via the Cyber-Influence Conference Series as well as SAIC's experience in game development.

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