

# FREEDOM OF CHOICE

MAXIMIZING CASINO PROFIT WITH STANDARDS-BASED  
INTEROPERABILITY



TRUE  
INTEROPERABILITY  
AHEAD!

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## EXECUTIVE SUMMARY AND KEY TAKEAWAYS:

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- Vendors may attempt to “lock-in” casino operators into proprietary systems and products through deliberate incompatibility with the games, networks, servers and software from other vendors.
- “Lock-in” means less competition, higher prices, lower quality and ultimately fewer choices and alternatives.
- A true Open Standards approach will enable operators to build a unique, highly-competitive floor using hardware, software and applications from multiple vendors, without worrying about compatibility.
- Operators can eliminate lock-in by supporting broad based industry standards and by demanding vendors adhere to an Open Standards approach—not just in marketing speak, but in the actual solutions they deliver.
- True interoperability means industry growth. Vendors and operators can innovate more if we stop allowing proprietary and closed systems to proliferate and embrace the real essence of what interoperable architecture can enable.
- Interoperability occurs at three levels: the protocol level, the software and application level and the hardware level. A product may very well be interoperable at one or two of these levels, but if it is not interoperable at all three levels, the product is not truly interoperable.
- Good News: The computer industry and the Internet fought many of these same battles and Open Standards won out over proprietary systems. Best practices already exist and casino operators can learn from that experience.

## THE TOWER OF BABEL

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Imagine a crowded room in which nobody speaks the same language. Or a world in which you could only e-mail people who used the same brand of computer or operating system as you. What would it be like if your phone couldn't dial everybody's number, just those with your same carrier? That's how the computer world used to be!

In the old days, you could communicate with Prodigy, Genie, or CompuServe, but those systems were islands to themselves. The Internet today is very different: no one company owns it and the Internet works as an integrated whole. Why? Because industry-backed Open Standards let different companies communicate as if they are all speaking the same language. You can email anybody, you can play any MP3 music file on any player or device and you can access any Web page, all because of Open Standards.

In this age of fast pervasive Internet access, with the vast sum of human knowledge made easily searchable, millions of songs and movies available for instant download on iTunes and YouTube, it is utterly absurd to contemplate that world as the first system operators built it - fenced and guarded from outsiders with deliberate incompatibility. The Internet has transformed how we work and live because open and interoperable systems unleashed the power of the network that allows billions to find, use, share and buy information and content in entirely new ways. There's no going back and who would want to?

“Technology’s ceaseless forward march has always been fraught with battles for control, strategic missteps and near-fatal dead ends that have slowed progress, annoyed users and cost some businesses dearly. Companies still try to use incompatibility to their own advantage. Eventually, after realizing the restrictions and inefficiencies of deliberate incompatibility, the market rejects it. Now, the casino gaming industry is going through its own period of technological change and advancement. We can learn from those who came before us.”

Bruce Perens is a pioneer, expert and global thought leader in the open source software community. Perens was the person who announced Open Source to the world and co-founded the Open Source Initiative. Perens is best known as the creator of the *Open Source Definition*, which is both the foundational visionary platform of the Open Source movement and the specification for open source software licensing.

## **THE TALK IS ABOUT “OPEN”**

“Open” is the buzzword of the day, tossed about whenever the topic of networked gaming is discussed. Everybody says they’re developing an “open system,” and never have so many espoused the virtues of open with more vigor nor defended their opinions with more conviction. But are these systems really open, or is this just marketing-speak aimed at protecting vendors and their legacy systems from the competition that comes with real openness?

The critical issue facing the casino gaming industry today is whether we can get to **true open standards and interoperability** where protocols, applications and hardware can all talk to one another with the same ease and transparency that characterizes the Internet, DVDs and ATMs. If by saying “open,” vendors mean secure and compatible access to data regardless of which systems, applications or devices produce and/or consume that data, then we’re headed in the right direction.

## **CAVEAT EMPTOR: LET THE BUYER BEWARE**

As the old joke in technology goes, “The best thing about standards is there are so many to choose from.”

The casino gaming industry has operated with closed standards since games were first computerized and gained the potential to communicate. In the 1980’s, as casino gaming expanded within North America, we saw a duel between two proprietary protocols: Bally Extended Simple Serial (BESS) and Slot Accounting System (SAS). As is typical with closed standards, both owners chose third-parties to provide the specification for their protocols – but with significant non-disclosure agreements, caveats and restrictions to ensure that control remained securely with the owners. This made expanding or improving the protocols cumbersome and thus no broad base of third-party developers ever emerged for either protocol. A few adventurous developers sought to create applications that could work with others, but without the broad support, good engineering and fairness of process that comes with Open Standards, we saw numerous interoperability and interconnectivity issues.

These issues surfaced on the casino floor, displeasing customers, inhibiting revenue generation, constricting the players’ experiences and placing the hapless casino operator between vendors, each pointing fingers at each other.

The two communication protocol owners justified their lack of compatibility by claiming these protocols represented differentiating intellectual property. This was actually “false differentiation” as the two protocols were kept incompatible largely because that would lock out a competitor, and that was actually a negative from the casino’s perspective.

The real business differentiation is not in the protocol but on the unique content applications running on them, as well as the number of devices and users that can connect to the network. Just as the Internet beat the “gated communities” of its predecessors, Open Standards will win over proprietary protocols in the gaming industry.

Who lost that duel? We all did. Neither protocol was based on interoperable or open standards, and while we argued about which was better, everyone in the industry paid the price for systems, games and networks that do not work with other systems.

Perhaps even more significant was the fact that gaming industry vendors applied this same closed and proprietary methodology to the applications they developed. This effectively locks an operator into a specific vendor’s solution and eliminates the operator’s ability to choose best of breed applications and integrate them into a customized solution to meet their specific needs.

This situation is akin to needing three separate telephones to make calls to friends, co-workers and family on AT&T, Sprint and Verizon, a situation that would effectively stifle innovation and limit the market for cell phones. If armies of handset makers and network engineers didn’t have free and unfettered access to telephony protocols to design new products and services, innovation and mass adoption of cell phones could have never occurred.

A recent and painful example of the lack of cooperation and coordination stemming from closed systems and lack of interoperability was the deployment of Ticket-In/Ticket-Out (TITO). Industry-wide TITO deployment was considerably slowed due to different protocols being used and the lack of industry-wide interoperability. Casino operators were left to piecemeal the deployment while all of the interoperability issues were addressed.

## THE ROAD TO STANDARDS-BASED INTEROPERABLE SYSTEMS

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Long-term survival in a network-centric world requires interoperability based on a well-documented open standard that is embraced by all – only then can your systems truly be considered Open Systems.

The casino industry is no different. Standards-based interoperability provides casino operators with the assurance that products from any vendor adhering to the standards will interoperate with other vendors' products that also adhere to the standard. But standards shouldn't be cast in concrete. Any standard we accept must provide a path for all parties involved to extend them without harming interoperability and for those extensions to themselves be shared without being tied to intellectual property considerations. In this way, we can create standards that evolve over time. Any process that restricts evolution can not be called "open." This is a critical point that is often not well understood and easily overlooked by those evaluating casino gaming systems and technology.

It is important to note that interoperability occurs at multiple levels: at the communication protocol level, the software and application level and the hardware level. A product may be interoperable at one or two of these levels, but if it is not interoperable at all three levels, then the product is not truly interoperable. A truly open interoperable product is characterized by the following:

- Use of Open Standards that are developed and adopted by recognized industry standards bodies using a process that is fair and equitable for all wherever possible. Where formal standards are not available, publicly documented protocols should be used. Both must be made available for all to use without discriminatory licensing.
- Clear definition of all system interfaces facilitating new or additional systems capabilities for a wide range of applications.
- Explicit provisions for how it can be expanded or upgraded through the incorporation of additional or higher performance elements, with minimal impact on product compatibility.

“Open standards happen when an industry creates and adopts detailed specifications regarding the way data is written and read and agree on the result using a process that is fair and equitable for all. These are then adopted by the majority of the industry. Good standards swiftly build vigorous markets. Consider the case of Bluetooth as the standard for short-distance networking between consumer electronic devices, which spawned an entirely new (multi-billion dollar) industry of hardware, applications and services designed to work seamlessly with each other.”

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Bruce Perens  
Co-founder of the  
Open Source Initiative

**Data Transparency:** An interoperable system must be characterized by a high degree of data transparency. This is defined as the ability to easily understand, access and process the data no matter where they are located or what application created them and the assurance that data being reported are accurate and are coming from the official source.

The lack of standards-driven data transparency has forced a number of major casino operators to use either home grown solutions or Enterprise Application Integration (EAI) tools to consolidate vast amounts of data from different systems into a central data warehouse. These approaches require the commitment of tremendous human and financial resources. Often the effort is duplicated from one casino to the next, since intellectual property restrictions have left the casinos with few legal paths for sharing their work. While EAI can provide a great deal of functionality and has helped operators achieve their integration goals, it is necessary because of the lack of standards-driven data transparency. The adoption of standards and interoperable systems will eliminate the need for EAI applications while simplifying and dramatically reducing the operational cost of delivering data across the enterprise.

But even if an application is interoperable, unless the operator is vigilant, the system may leave them totally dependant on the vendor. Imagine if a vendor created a proprietary communications protocol to be used by applications that delivered highly desired features and functions and that this protocol was intentionally engineered to be overly complex, including message structures with large byte sizes, for example. The vendor would then be in a position to dictate the requirements of the physical network needed in order for the applications to work. The vendor might even suggest that this be a proprietary network and that he be the one to install and operate it in order to ensure the applications “run correctly.” A strategy such as this, if allowed to succeed, would give the vendor an undue degree of control and influence over his customers, their customers’ systems and capabilities, and potentially the entire industry.

**Application design:** For data transparency to exist, developers must create applications that are designed to share and utilize data over the network with other applications the developers have never seen. To achieve this high level of interoperability, standards (preferably Open Standards) are necessary. But should it be up to the consumer to verify that a prospective purchase delivers the level of interoperability and data transparency that its developers claim? That’s a complex, expensive and arduous task. To do it well, economically and to avoid duplication of effort, most industries establish processes to independently test and certify applications as compliant from both a standards and interoperability perspective.

While the environment within the casino is highly regulated and therefore more predictable than a typical enterprise network, it is imperative that the ownership, design and operation of the network rest with the casino operators and that they have the **freedom of choice** to select and control the technology and content that is best for their specific operation. The computer industry has taught us that the use of proprietary networking architectures should be avoided in favor of off-the-shelf enterprise-class networking equipment using the Ethernet and TCP / IP protocol stack, which is designed to be highly interoperable and scalable over wire and fiber transports.

**Networked Gaming and Interoperability:** While many still debate the value of networked gaming, there's no question that standards-based interoperability is essential to implement it. We can foresee several inevitable changes the industry will face:

- Remote configuration and download capability will become more practical with open standards. They will be deployed in casinos over an extended period of time, most probably measured in years.
- A robust networked environment on the casino floor will allow for direct two-way communication with patrons right at the EGM using its main display. While patrons will appreciate being "recognized," savvy operators will temper the level of interaction lest it be considered by the patron to be intrusive.
- Marketing, IT and slot operations will have to work as one cohesive unit in order to ensure that the network is healthy, that the content being displayed at the EGM is player initiated and value-adding," and that the patrons' engagement and gaming experience is enhanced, not distracted.
- Tools allowing casino operators access to real-time data will replace legacy systems that support only access to historical data or provide small snapshots of near real-time data.
- Customer Relationship Management (CRM) applications will support a 360-degree view of the patron, specifically their worth to the casino operator across the entire casino resort, not just on the casino floor. Along with business analytics, business intelligence and data visualization capabilities, these operators will maximize revenues and customize the patron's full experience.
- Game concepts will utilize the network to deliver higher levels of interactivity and personalized excitement and capabilities similar to the high-end simulation systems, PCs and console games.

Despite the bright future of gaming, the standard practice in our industry is more akin to the computer mainframe purchases of the 1970s, where casino operators selected a single systems supplier selling a suite of applications, as this was the only way to ensure applications being purchased will interoperate with each other.

Casino operators deserve to be empowered to choose individual best-of-breed applications from their vendor of choice with assurances that they will all interoperate. This sounds revolutionary, but it is common place in the computer industry and many others. A common set of protocols exist, allowing millions of users across many networks to connect without ever worrying about which server is running which application – it just works.

This level of interoperability is exactly what most casino operators have wanted. Unfortunately, it has not been available. In fact, each EGM today still has a Slot Machine Interface Board (SMIB) developed by the system provider, allowing the EGM to communicate with their system. An operator would potentially have to purchase and install multiple SMIBs in order for that one EGM to communicate with multiple systems. This adds cost and complexity and makes functionality that seems trivial on a PC and nearly impossible to achieve on an EGM.

What if an EGM cabinet's screen could be used to display content from a variety of applications, just as a PC can display a spreadsheet, a word processor and e-mail simultaneously? One would think that this would be a trivial task given that at the heart of each EGM is a computer motherboard typically running the same hardware as a PC, if not more robust and capable. However, it is anything but trivial to achieve multiple content-source display on today's deployed gaming systems, due in large part to closed proprietary products and legacy thinking.

Today, the Game Theme and Operating System running within the EGM, and by association the publisher, owns the high-definition touch-screen display exclusively to display the game content. In the future, the Game Theme/Operating System will be just one application that shares the EGM screen with other applications – in some cases simultaneously and in other cases exclusively. The data used and created by those applications will be exposed to other applications using standard PC conventions. This level of application and hardware separation and data transparency is critical if casino operators are to have the level of real-time data and real-time application control they'll need to dynamically change the casino gaming floor experience.

## STATUS OF INTEROPERABILITY AND OPEN STANDARDS IN THE GAMING INDUSTRY

In the late 1990's the gaming industry took the first steps toward establishing an industry-wide standards group with the formation of the Gaming Manufacturers Association (GAMMA), which at the time was comprised of only manufacturers. In early 1999, membership was expanded to include casino operators, gaming industry suppliers and regulatory bodies. Renamed the Gaming Standards Association (GSA), it has become the gaming industry's standards body publishing three key standard protocols – System to System (S2S), Game to System (G2S) and Game Device Standard (GDS).

- **S2S** was the first protocol to be implemented in the field and has been a successful first step towards delivering on the promise of true system to system interoperability and interconnectivity. S2S was influential in bringing together the various disparate and proprietary systems used in Class II gaming and allowing those systems to interoperate through the use of an open standard.
- **G2S** was recently implemented in both EGMs and systems, providing the first proof points on the promise of open protocol standards.
- **GDS** is lagging behind these first two protocols, perhaps because the industry's pain points were not in connecting devices within the gaming cabinet, but with external connections. Therefore, the industry appropriately focused first on the other two standards.

GSA has also devised a means to allow innovation to occur using these open standards through the creation and publication of Extensions. GSA will review extensions to standards submitted in order to determine if the extension should be accepted. The criteria for an extension to be included in the core standard are:

- **Need** – Is an extension the only way to accomplish the functionality desired?
- **Adherence to the basic structure** – Is the extension in keeping with the main standard's format?
- **Suitability** – Does the extension improve the standard?

The goal is to support innovation where a real need exists for the extension, while simultaneously preventing extensions being created as veiled efforts by vendors to “embrace and extend” standards ultimately leading back to proprietary systems.

## **SUMMARY**

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It is critical that casino operators understand the characteristics of an interoperable system based on Open Standards. With proprietary systems, the industry at large, and casino operators in particular, will have to continue to make do with antiquated technologies that are cobbled together in a costly and cumbersome manner and have limited potential for scalability and efficiency.

Operators deserve the freedom to choose the applications that best fit their needs. To ensure that only the best applications are available, we need an industry that fosters free and open competition. This is only possible if the systems are truly open and interoperable – assembled using standards-compliant applications designed to support data transparency over standard networking topologies.

Other industries have proven that innovation and acceleration occurs when closed standards are rejected and open standards are widely adopted. Now it's our turn. Casino operators will determine the future state for their operations by demanding systems that live up to the highest level of interoperability, open standards and flexibility. Vendors still believe they can lock the market into incompatible systems, and this won't change without prompting from operators. The time for change is now.

## **STAND-UP AND BE COUNTED**

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As a leader of the gaming industry, we encourage you to vote for interoperable standards for the casino gaming industry. Go to [IWantFreedomOfChoice.com](http://IWantFreedomOfChoice.com) or [IWantFreedomToChoose.com](http://IWantFreedomToChoose.com) to make your voice heard. It's your choice! The time is now!