

# FORWARD THINKING:

*A Decade of Progress*

**GSA  
10  
YEARS™**



➤ **The key folks** who started GSA were really pioneers. It's put everybody on an even playing field. Server-based gaming would not be possible without GSA. They've been laying the foundation for what's going to happen in the future where third-party software entrepreneurs can leave a mark and smaller companies can begin to create niches.

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*Bob Sobczyk  
Corporate VP, Slot Operations  
Ameristar Casinos*

# GAMING STANDARDS ASSOCIATION

## FORWARD THINKING —

### A Decade of Progress

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When a small group of industry manufacturers got together a decade ago, it set its sights on moving an extremely proprietary and territorial slot industry toward open standards that would foster innovation and help bring products to market more quickly and efficiently.

From the sidelines as a reporter and editor, I've watched the Gaming Standards Association navigate many twists and turns on its long journey. It's been a mix of positive steps and setbacks, goodwill and hardball. But in the end, after all the turmoil, gaming standards won the day. Why? Because they make sense for the industry, and ultimately, for the only VIP who really matters — the player.

## A Decade and Counting

Today, the gaming industry is witnessing the fruits of the association's labors. Its standards are enablers in the best sense of the word. For instance, the Game-to-System, or G2S, protocol, unlocks the potential of networked, or server-based, gaming to offer players more innovative features and games at a time when competition for their dollars is growing.

Think back 10 years ago when new games were introduced to a gaming floor, and slot directors crossed their fingers and held their breath, waiting to see if products would communicate and would even work. GSA's efforts have resulted in protocols that create an open, level playing field, helping ensure operability and save costly engineering hours to fix communication issues.

GSA has come a long way since it formed in 1998 as the Gaming Manufacturers Association with eight member companies and several affiliate members. Today, the association has grown

to more than 70 members from around the globe. Its membership is a who's who of the industry — from large and small slot machine manufacturers and technology and peripheral providers to casino operators such as Ameristar Casinos, Foxwoods, Harrah's Entertainment, MGM MIRAGE and MotorCity Casino.

It wasn't always so. GSA had plenty of naysayers along the way who questioned the association's ability to complete its ambitious task and expressed doubt about whether members would be able to protect their individual intellectual property.

Its eyes on the prize, the association soldiered on, paying close attention to concerns and addressing crucial issues that had stalled progress.

One of GSA's greatest accomplishments has been its role in providing a channel for manufacturers and operators to share their challenges and frustrations, resulting in products better tailored to meet operator needs. The association also has reached out to regulators to get important feedback along the way in creating the standards.

Ultimately, GSA has helped the industry understand that open protocols are the keys that will enable the gaming industry to keep pace with technological change and allow innovators to create new and exciting products for the networked-gaming environment. That will help the industry compete with the ever-increasing entertainment options vying for customers' attention and offer a more rewarding, tailored experience.

The entertainment landscape is changing. Thanks to GSA, the gaming industry now has the foundation to keep pace.

Now the real fun begins. It's up to game designers, manufacturers, operators and entrepreneurs to come up with new applications and games and environments that will turn the heads of a new generation of players, as well as delight the existing customer base.

"May you live in interesting times" — so goes the popular fortune cookie saying.

Thanks to GSA's work, the gaming industry is doing just that. **GSA**



**Marian Green**  
Editor

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*May your positive impact on the gaming industry  
continue for many years to come.*

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When Gaming Standards Association forerunner GAMMA brought manufacturers to the table to start a dialogue on gaming standards, the movement marked the beginning of an unprecedented era of communication and cooperation within the industry.

Back in May 1998, the movement was greeted skeptically at first, as manufacturer representatives tried to grasp how competitors would be able to work together to come up with standard protocols that would allow different gaming machines and systems to talk with one another.

At that time, manufacturers had to spend inordinate amounts of time and money to figure out how to make their game or system products work with another vendor's games and systems.

## Common Ground

*Coming together to create a solid foundation for gaming innovation*

Casino operators would find out the hard way that these protocol incompatibilities existed when they opened new floors and found a number of games wouldn't work, causing them lost revenue opportunities and forcing them to pay for expensive IT patchwork.

"Back in those days, SAS was just an absolute nightmare for us," said Gregg Solomon, a former GSA chairman and former Mandalay Resort Group senior vice president of operations who is now chief executive officer of Detroit Entertainment LLC, operators of MotorCity Casino. "We never knew what was going to happen when a new game got plugged into the floor or when we started up a new slot system."

Solomon recalled the problems associated with manufacturers having games using different versions of IGT's SAS protocols.

"At any one given moment, we had manufacturers delivering SAS 3.0 games, and 5.0 and everything in between. And even then, whatever you may have thought 5.0 was, there was a different flavor of implementation for every manufacturer, because there was no standard, and companies had to take their best shot interpreting what they meant," he said.

Because of the absence of a standard protocol, every manufacturer tried to use their proprietary protocol as a weapon, said John Acres, founder of Acres Gaming and the industry person credited with starting the standards movement in the gaming industry.

"And they were failing in the larger sense because their weapon wasn't compatible with a bunch of stuff," but the manufacturers' short-sighted vision was "just buy 500 of our machines, and you've got compatibility," Acres said. That, of course, didn't happen, because operators wanted variety on their floors, he added.

Recognizing the need for integration of gaming products and systems, GSA forerunner GAMMA, the Gaming Manufacturers Association, set about the business of developing gaming standards promising seamless communication and interoperability.

In those early days, GAMMA began to find its footing, but it wasn't until operators, such as Solomon and then-Harrah's executive Bruce Rowe, came aboard that the association really took off.

Now called the Gaming Standards Association, the organization has more than 70 members from throughout the gaming industry — manufacturers, casino operators, lottery operators and test labs.

And they are united by the association's common goal: to facilitate the identification, definition, development, promotion and implementation of open standards to enable innovation, education and communication for the benefit of the entire industry.

GSA's accomplishments to date are many. But front and center are its landmark protocols: Game-to-System (G2S), System-to-System (S2S) and Gaming Device Standard (GDS).

Each is an open protocol, creating interoperable, affordable solutions and a level playing field. In turn, that means lower costs for developers, manufacturers and gaming operators.

The standards are designed to help grow the market and offer the operators a wider choice of games, platforms, systems, software and peripherals. They lay the groundwork for innovative development because, with them, manufacturers won't have to spend valuable time and energy on protocol interfaces and instead can concentrate on adding features and services to improve the player's experience and, in turn, the casino's bottom line.

Standards enable communication between components on three levels.

On the first level, the Gaming Device Standard (GDS) links peripheral devices, such as a printer, coin acceptor, touch screen, bill validator and coin hopper, to the game.

Secondly, the Game-to-System (G2S) stan-

dard, which is the merged BOB/SuperSAS standards, enables secure communication between the game and the gaming systems that slot managers use to track player activity and manage the slot floor.

On the third level, System-to-System (S2S) enables operators to link their various casino systems together as well as exchange information with point-of-sale (POS), food, beverage and lodging systems.

Implementation of standards ensures portability between different manufacturers' equipment, which leads to more and better choices for the casino operator. Buying decisions can be based upon quality, options and cost effectiveness rather than adherence to a proprietary solution or the prohibitive cost of switching vendors.

Open standards also tend to be more robust than proprietary ones because the association developing them includes many stakeholders, resulting in a much richer protocol.

In addition, gaming standards will continue to evolve as customer demand changes and more manufacturers incorporate the standards. This is important because it gives operators a smooth migration path to achieve new functionality while protecting existing equipment investments.

"Standards simply say, 'Look let's put asphalt down, and come up with all the signage, and we'll have all these definitions of green means go and red means stop and octagonal signs and all this other stuff, and you can go clear across the country,' and it really works out great," Acres said. "These road rules, these standards in the casino, are going to let a lot more people travel a lot more freeway at a lot less cost."

And just like in the computer industry, he said, innovation follows interoperability.

"As consumers, we want those things to interoperate, and if they do, we buy more, because we have better solutions by mixing and matching," he said, referring to the computer industry.

In the gaming industry, "the casinos will get better solutions because of the existence of GSA."

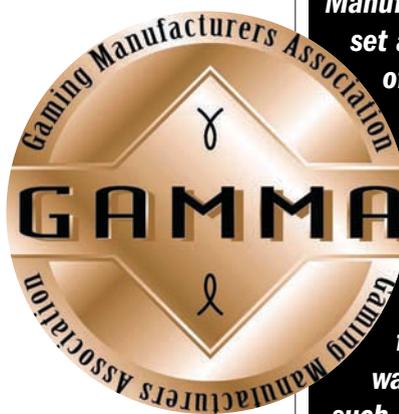
And that is what matters to the operators.

"I think everyone is realizing that a standards-based approach will help grow the actual size of the pie," said MGM MIRAGE CIO Tom Peck, a GSA board member.

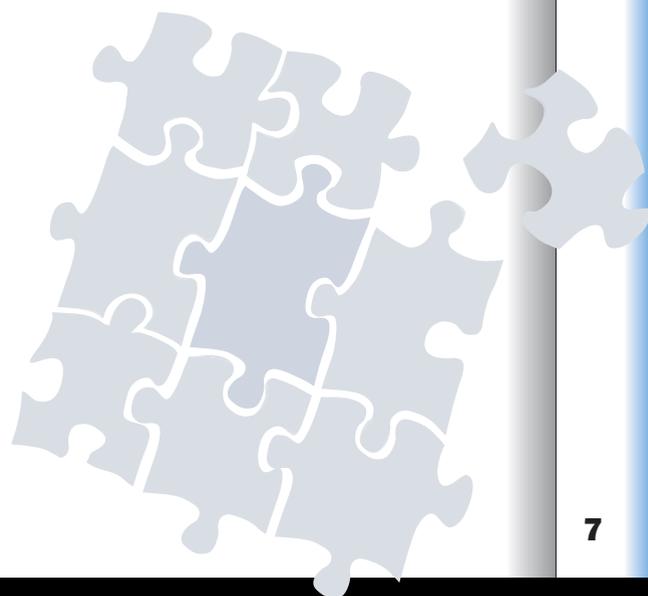
GSA board member Tim Stanley, CIO and senior vice president of innovation, gaming and technology for Harrah's Entertainment, said the organization is laying important groundwork for the industry.

"I'm not one of these open source zealots, but I do believe that interoperability and some degree of openness and getting out of this proprietary set of networks and protocols must happen for us to keep growing and doing all the stuff we want to do," Stanley said.

"We want more collaboration among vendors and we also want more openness," he added. "We should be able to increasingly select some best of breed and still allow us to innovate and differentiate ourselves." **GSA**



**Recognizing the need for integration of gaming products and systems, GAMMA, the Gaming Manufacturers Association, set about the business of developing gaming standards promising seamless communication and interoperability. In those early days, GAMMA began to find its footing, but it wasn't until operators, such as [Gregg] Solomon and then-Harrah's executive Bruce Rowe, came aboard that it really took off.**



Witnessing the inefficiency of proprietary protocols firsthand, John Acres first drew attention to the issue at the 1997 World Gaming Congress & Expo, encouraging manufacturers and others to attend a meeting that ultimately led to the creation of today's Gaming Standards Association.

He recalled his frustration at "literally a tower of Babel" associated with all the versions of, and interfaces to, proprietary protocols in the industry.

"We're off trying to sell our new bonusing system, which is player tracking and accounting, and one casino wants SAS and another casino wants SDS, and this one wants SAS 3.0 and another one wants SDS 2.9, and it just became this incredible alphabet soup of different communication languages," Acres said. "And the cost of adhering to these different standards and different protocols is incredible."

## The Acres Factor

### *Planting the seeds for gaming industry innovation and growth*

But Acres realized something one day as he connected his new computer to a printer. "I plugged it in and it worked, and I thought, 'How come [gaming] machines can't do that?' Here's a [computer] manufacturer and here's a [printer] manufacturer, and they've defined how the printer is going to talk to the computer, and it's open for everybody. And so I started looking at how the computer industry set these standards and thinking this would be good for us."

Acres started talking about the concept with manufacturers but got a cool reception everywhere he went. "I wasn't getting anywhere with any of the manufacturers because they were saying, 'We're proprietary; everything's gotta be this way,' and you could see that the second part of that paragraph was, 'Because then they have to buy all of our stuff; they can't buy anybody else's.' But you could also go into the casino and see that nobody was buying all of anybody's stuff. Nobody's going to win 100 percent, so you're better off to having standards that allow one device to interoperate with another."

Making no headway with manufacturers, he took another tack. "I thought the only people that can make this happen are the customers of the manufacturers. So it was coming up on one of the gaming shows [the 1997 World Gaming Congress and

Expo], and I wrote a letter explaining why I wanted standards, and I sent that to every casino I could imagine and all the people I knew. And then I just had copies of that letter, and walked around the floor, and when I saw somebody, I handed it to them and it was an invitation to come to a meeting that was held just a couple of weeks later to pitch the idea of standards."



**John Acres**

Acres had rented a conference room at a Las Vegas hotel. "And we were hoping to have about 10 people show up and were worried there would be only two, and the room was packed," he said.

Acres gave a short speech about why he believed in standards — "how everybody would benefit, and also how standards wouldn't happen unless there was an independent organization to do it because that was the model."

He received backlash from one manufacturer skeptical of Acres' motives, believing Acres would somehow turn the standards around and make them proprietary to bolster his own business. "What we found there was a tremendous reception to the idea of standards, but because I was one of the gaming manufacturers and because I was perceived as having an ax to grind, it was better for me to step away, so we, as Acres Gaming, became a founding member, and we put up some money and a few others did, and they used that money to start hiring people."

That meeting created enough critical mass to get the Gaming Manufacturers Association, later GSA, off the ground. "Then it took on a life of its own."

Acres downplays his role, saying those who followed did the real work to take the association where it is today.

"I am beside myself to get credit as the originator because I did about a quarter-inch of work and Peter [DeRaedt] and these other guys did yards of it," Acres said. "They have just worked themselves patiently over the years to do some incredible documentation. And they not only did the documentation, which was my vision of the standard, but then they realized that we need testing systems around this; we need some way to authenticate this."

He said he realizes it was no easy journey. "Acres managed to survive by remaining politically palatable while always pulling everyone into the future. And that's just great."

Today, the GSA body of work is so substantial that no manufacturer can stand in its way. And, he said, "Now it is cheaper to build to that standard, and the tools are there for testing, the tools that the manufacturers never delivered for testing their own proprietary protocol. On top of that, I think the manufacturers are saying, 'You know what? We're better off.'" **GSA**

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The Gaming Standards Association and its forerunner GAMMA have had three chairmen over its first decade who have been driving forces for the establishment of common protocols in the gaming industry. Peter DeRaedt, Gregg Solomon and Lyle Bell have tirelessly led the organization through its share of ups and downs.

### **Peter DeRaedt** Current President

Peter DeRaedt became the president of the Gaming Standards Association in October 2002. DeRaedt holds an electrical engineering degree from the University of Antwerp, Belgium, as well as a Business Management diploma from Executive Education, a large educational institute in South Africa. He started in the gaming industry in 1986 for TCS. As systems manager/general manager, DeRaedt ran the systems division for UK-based TCS from Belgium, and he also later served as vice president of technology for Aristocrat.



**Peter DeRaedt**

"I can't tell you what a pleasure it is to have Peter as president because I think he has given every bit of his all," said Lyle Bell, GSA's current chairman. "He still has the same level of passion that he had for it right when he started. He is totally dedicated to it. He's just done a great job for us."

Through his years of involvement in the Gaming Standards Association and its forerunner Gaming Manufacturers Association, DeRaedt has made it a priority to ensure the organization's fairness and impartiality.

"You need an organization that has a level of integrity and can actually demonstrate that over the course of years a level of integrity that everybody feels comfortable in," DeRaedt said. "And I think GSA has built up to that level, and has the respect that we do things in a fair way, and we're here for the industry, not for anyone's sake."

One of the most significant achievements for the organization was the involvement of gaming operators on the organization and its board, he said.

"One of the pivotal moments in getting success is defining what needs to be there, who needs to be there, and make sure they get a seat at the table," DeRaedt said. "Those were pioneer days."

Initially, manufacturers on the board did not want to include operators and rejected the first request to join as a platinum member and get a seat on the board. That meant he had to drive to Jean, Nevada, and give Gregg Solomon, then senior vice president of operations, Mandalay Resort Group, back his check. "I gave him the check, and he was not happy," DeRaedt recalled. But that event started a dialogue with casinos operators such as Mandalay Bay, Harrah's, Station Casinos and Park Place Entertainment. Eventually, the standards organization decided to allow operator participation.

Today, DeRaedt is focused on further advancing GSA's standards, spreading awareness and education of the standards, and growing the association's international membership.

### **Gregg Solomon** Former Chairman

If Gregg Solomon hadn't flown back to Las Vegas from Tunica on the same plane as an Atronic vice president, GAMMA might have stayed a manufacturers-only association, and the push for standards might have had a more difficult journey to reality.

# Driving Forces

*A look at how three of the Gaming Standards Association's leaders helped shape the organization*

DeRaedt was the founding board chairman of the standards organization, but left that position in 2001 to become corporate vice president of product development and IP for the MIS Group of Monaco. He returned to GSA in October 2002 as the association's fulltime president. He is also the co-founder of a Reno-based engineering corporation active in the gaming industry.

DeRaedt has been steadfastly committed to bringing communication protocol standards to the gaming industry, colleagues said.

"I think Peter's just done an incredible job. It's amazing what he's done," said John Acres, who led the push for gaming standards that resulted in the founding of GSA forerunner Gaming Manufacturers Association and chief executive officer of Acres-Fiore gaming development company.

**Gregg Solomon**

"I was flying back from Tunica, and the gentleman sitting next to me was apparently watching me read my *Slot Manager* and *IGWB* and asked if I worked in the gaming industry," Solomon said.

Solomon related that he worked for Mandalay Resort Group, and the man introduced himself as Dick Vink, vice president of Atronic Americas. "And he said, 'I'm flying out there for a trade association meeting tomorrow,'" Solomon said.

"We'd been talking for a couple hours, and he said, 'It seems like you have a pretty good grasp on the technical side of our business; you might want to just stick your head in.'"

So Solomon did. He showed up at the meeting and just listened. "And they voted to approve in that meeting a new level of membership, and the level of membership was platinum and for \$30,000, that got you a seat on the board."

At the time, he said, there was no discussion about whether or not operators could serve on the board. "There was no discussion about anything. It was just, 'Geez, if we can get somebody to pay 30 grand, yeah, we'll give 'em a seat on the board,' so I just quietly went away

and called [Mandalay CEO] Mike Ensign, and I told him, 'Hey Mike, there's this gaming manufacturers association, and we could get a seat on the board for 50 grand, and we would have the inside track on pretty much everything that's going on with the manufacturers.' And Mike said, 'Well if you think it's important, that's what we'll do.'"

So Solomon sent a check along with his application for platinum membership. "And I got a very uncomfortable Peter DeRaedt on the phone about a week later, saying that he would like to come out to my office to meet with me. He said, 'I have to give you your check back. We had no idea that an operator would want to be a member, and although the bylaws don't prohibit it, when I informed the board that an operator wanted to become a platinum member, there was a huge amount of resistance on some members of the board's behalf.'"

Solomon told him what he thought of that. "I said, 'You keep your check. Fine, we won't sit on the board, but I think it's you-know-what, and so they did [keep the check]. And it took a year, but the following year, they took our check again, and they allowed us a seat on the board.'"

By that time, Solomon said, the organization had been having difficulty getting some manufacturers to respond to the development of the standards, "and they felt that it was actually a good thing that a customer theoretically being

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a member would show their support and possibly influence the manufacturers to support it.”

Solomon became vice chairman, but as the association grew, it became obvious that it needed a fulltime, paid president. That’s when DeRaedt became president, and Solomon became chairman. Other operators also were influential, he said, particularly Bruce Rowe, then a corporate vice president of slots and R&D for Harrah’s Entertainment.

Solomon said the operators and manufacturers were able to learn a lot about each others’ needs and challenges.

“We were there talking with the top people making decisions about technology,” he said. “It was an opportunity to express the operator’s point of view as to what’s important, which was almost always on a divergent path as to where the manufacturers were going.”

“A lot of great contacts were formed; a lot of great friendships were formed that remain to this day,” he said. “You became much more sympathetic to the manufacturers’ plight, quite frankly, because as an operator, you don’t care what they have to do to get approvals. You were oblivious to that. Ideally, if everything went perfectly in our business, you would never know what protocols were, it would just be totally transparent to the end user.

“We had to become a lot more knowledgeable about things we shouldn’t be involved in because they weren’t working. And in doing so, we started to find out the horrible situation the manufacturers have. And it didn’t take a rocket scientist to figure out that every dollar that they were incurring to get game approvals, all of the things that had to happen to get a game on your floor, that we were bearing the total cost of that.”

Solomon decided to step down in 2005 because of the uncertainty over MGM MIRAGE’s impending acquisition of Mandalay Resort Group.

## Lyle Bell

### Current Chairman

Lyle Bell had been a longtime standards proponent when he went to work for the Seminole Tribe of Florida as senior vice president of IT for the tribe’s new Hard Rock hotel-casino and other properties.

GSA standards would turn out to be crucial to the Seminole project, allowing a Class II casino for the first time to be able to seamlessly operate several systems on the floor without inconveniencing players.

GSA’s System-to-System, or S2S, protocol proved to be the answer to the Class II situation of individual vendors offering games on proprietary systems that didn’t talk to each other. That meant players who wanted to switch play from a game on one vendor’s sys-



**Lyle Bell**

tem to a game on another vendor’s system would have to take a ticket from one machine, cash out, and then move to the other vendor’s game.

“It gave us the ability to operate a casino with class II games, in the same manner that a class III casino had operated,” he said.

“And that was not possible before we did this.

“We did our utmost to make the experience as close as we could to playing Class III games.” Bell said that the implementation “very clearly demonstrated that GSA was capable of developing and rolling out new product that worked.”

Today, Bell noted, the association is in its best shape ever. “All the major players have bought into and are implementing it,” he said.

“They’re on board, and they’re not turning back. I don’t see anybody turning back,” Bell said.

“Now with [Technical Director] Marc McDermott and [Protocol Director] Ethan Tower, we are really, really building strength, and there’s more to come along those lines. We’ve really got absolutely topnotch people making sure that we’re moving forward.”

Bell has several hopes for the association going forward.

“One is to firmly establish an ongoing education program; another one is to establish a credible certification program, and the third would be to be recognized as the truly international standard-setting organization for gaming and to see the protocol adopted by all jurisdictions in the world,” he said.

The gaming industry is in for some revolutionary innovation, Bell said.

“I really think that, fairly soon, there will be a completely new system that will be able to essentially manage the entire casino floor from one dashboard. I’m sure we’re going to see all the major systems and slot machine manufacturers develop some very innovative product for yield management, for providing a personalized experience for players at the game in other words, knowing what a player’s preferences are and what level of player he or she is. The games can be tailored to be attractive to them. There will probably be some interesting new games in terms of interactions between grounds of players,” Bell said.

Bell added he doesn’t think the gaming industry will see any migration to central determination. “I can tell you from experience that having a [gaming] floor based on central determination is not fun when something goes wrong with the network.” **GSA**



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With GSA standards and toolkits in place, casino operators and manufacturers are moving forward with cutting-edge technology, such as networked gaming.

"I don't think anybody can understand how important these standards are going to be in the next 10 years, how much money they're going to save the casinos," said John Acres, chief executive officer of Acres-Fiore, a gaming development firm. "Money saved because they're going to be able to do a much better job of pleasing customers and therefore earn more profits. If GSA is truly successful, it'll be totally invisible. All you'll see is great customer service. You'll see systems that work. You'll see things that communicate."

The Gaming Standards Association has become a key organization in the gaming community and an important contributor to the future of the industry, said T.J. Matthews, chief executive officer, International Game Technology.

## Connecting the Dots

*GSA standards key to unlocking powerful new gaming options*

"GSA protocols are setting the stage for that open-network future and the vast possibilities it will create for all of us," Matthews said.

Dick Hadrill, Bally Technologies president and chief executive officer, commended the association for its 10 years as the leading driver of open standards in the industry.

"Bally has been a proud member of the GSA since its inception," he said, "and we look forward to continue working with this venerable organization and their membership to keep open standards at the forefront of our industry."

Acres noted that the opportunity to gamble has expanded so much more rapidly than the pent-up demand to gamble has.

"If we don't create new exciting experiences for players, we're going to come up short," he said. "And we're already seeing revenues diminish in Atlantic City and some California casinos, not by a lot but by a little. And that's our cue to go look at those offerings, and think about how to make it more fun."

### NETWORKED FUTURE

GSA's standards pave the way for server-based or

networked gaming floors, said Tom Peck, senior vice president and chief information officer, MGM MIRAGE.

"Server-based gaming will not be successful without these standards. Imagine a multi-vendor environment of thousands of slot machines where the different brands were unable to be managed through a single solution. Standards are the underlying enabler of server-based gaming."

To be truly successful, server-based gaming must go beyond just downloadable games and the ability to remotely configure things such as payouts and denoms, Peck said. "The true success will be in the seamless flow of content, the ability to personalize the experience, an expansion of bonusing and the ability to integrate with other back-of-house solutions. MGM MIRAGE is currently doing field trials of the server-based technology at its TI resort in Las Vegas, but testing is limited to basic downloadable and configuration functions. In addition, the company and IGT recently announced that MGM MIRAGE's CityCenter project will include a server-based casino floor.

"We're working with the manufacturers through GSA to ensure this technology continues to evolve," Peck said. "However, in addition to the technology evolving and maturing, the business models also need to mature and evolve."

"The G2S, or Game-to-System, protocol is extremely important in that it not only will allow for communication between games and systems, regardless of manufacturer, it will also improve the overall technology by allowing for things like encryption and TCP/IP-based [or computer based] Web services," Peck said. "GDS links peripherals to slots via the USB standard interface. GDS will move us closer to truly plug-and-play peripherals such as ticket printers, bill validators and touch screens. Finally, S2S offers probably the most potential in that it will connect various casino systems to other systems ... moving us closer toward the migration of slots from standalone devices to fully networked "customer portals" with linkages to hotel and restaurant systems."

### BREAKING DOWN BARRIERS

The association created a forum for manufacturers and operators that the industry hadn't had before, said former GSA Chairman Gregg Solomon, now chief executive officer of Detroit entertainment LLC, which operates MotorCity Casino.

"Each of us within our companies lives a fairly insulated life. You go to work every day; you talk to the same people. You're not encouraged to talk to your competitor. It was very hard to get access to the guys who were doing what you did at other companies," Solomon said. "And now all of the sudden, GSA provides this totally legitimate arena where you could sit and talk, and in some cases, we were able to form strategic rela-

*Continued on Page 18*

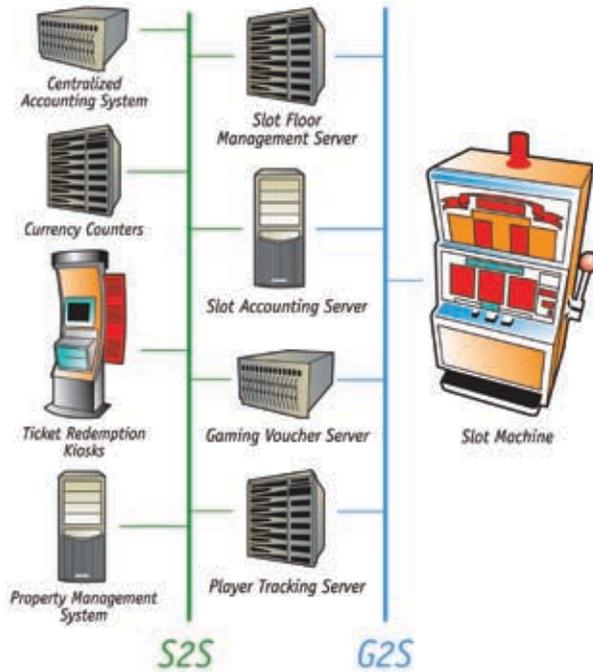
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The Konami logo is a red horizontal bar with a white border, containing the word "KONAMI" in white, uppercase, sans-serif font. The bar is positioned in the center of the lower half of the page, which has a light gray background with a pattern of white circles of varying sizes.

**KONAMI**

# How GSA protocol



## ABOUT S2S

### WHAT IS S2S?

System-to-System, or S2S, is a standardized communication protocol that enables casino operators to link their various casino management systems together, and to easily connect them to hospitality and POS systems as well.

### WHAT TECHNOLOGIES DOES S2S USE?

S2S is based on commonly available computer technologies – TCP/IP, XML, SOAP and Ethernet. The use of these technologies enable gaming operators and system providers to use off-the-shelf network equipment and software tools, rather than building custom interfaces to connect systems.

### HOW WAS IT DEVELOPED?

S2S wasn't developed by a single company. It was the result of years of collaborative work between worldwide gaming manufacturers, suppliers, operators and regulators. They are all members of the Gaming Standards Association (GSA), the international gaming trade association that facilitates the development of open standards in the industry.

## ABOUT GDS

### WHAT IS GDS?

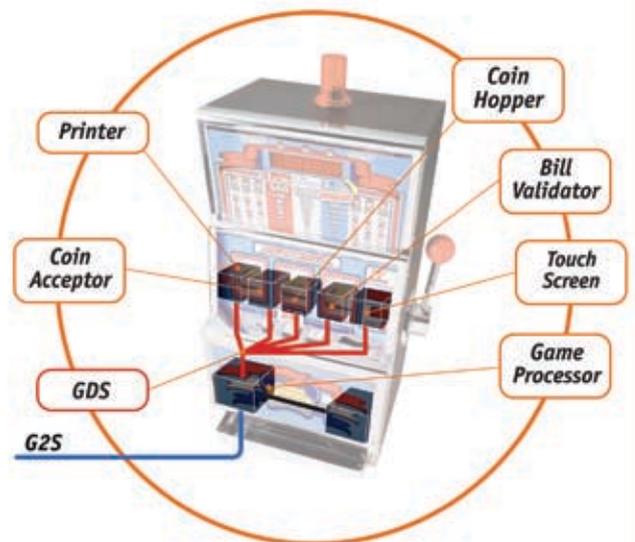
Gaming Device Standard, or GDS, is a standardized communication protocol that links peripheral devices to a slot machine. Devices such as bill validators, card readers and ticket printers use GDS to connect and communicate to the gaming machine.

### WHAT TECHNOLOGIES DOES GDS USE?

GDS leverages the well-known, existing interface standard, Universal Serial Bus (USB) as the foundation for GDS specifications.

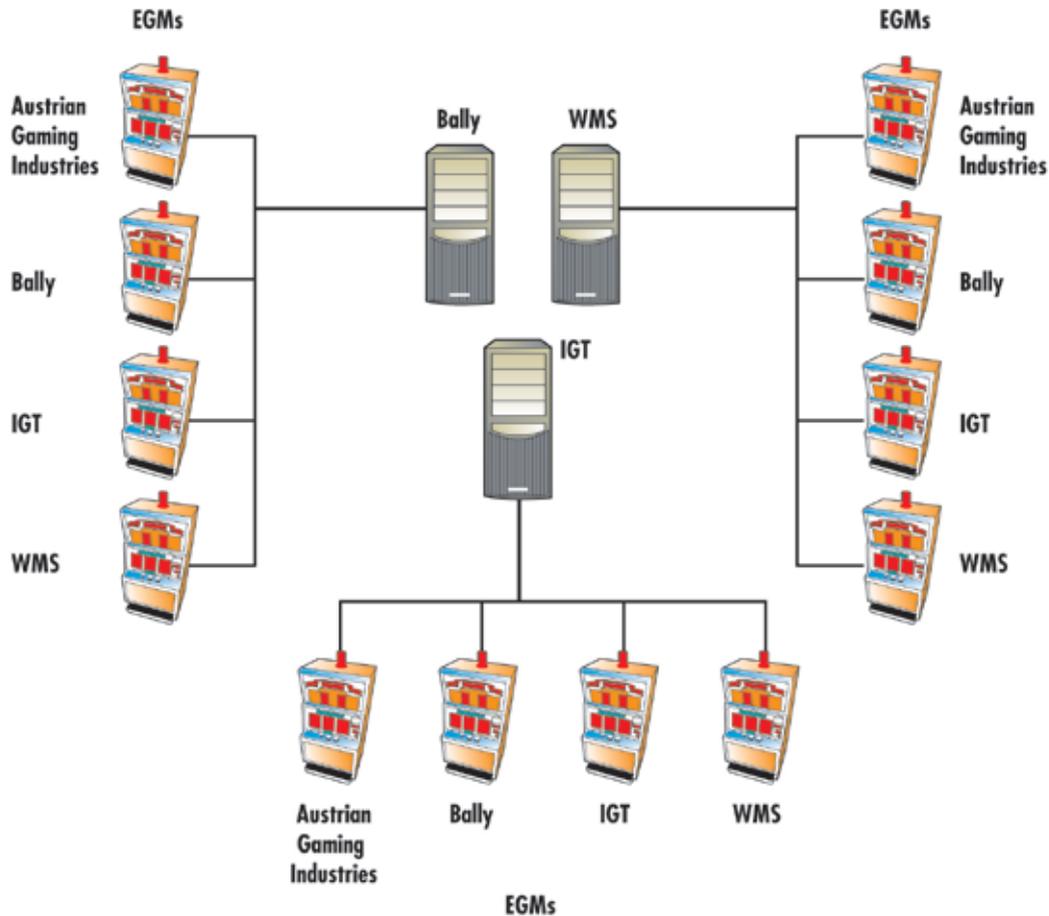
### HOW WAS IT DEVELOPED?

GDS wasn't developed by a single company. It was the result of years of collaborative work between worldwide gaming manufacturers, suppliers, operators and regulators. They are all members of the Gaming Standards Association (GSA), the international gaming trade association that facilitates the development of open standards in the industry.



# standards work

## GSA's G2S Protocol in Action (as demonstrated at G2E 2007)

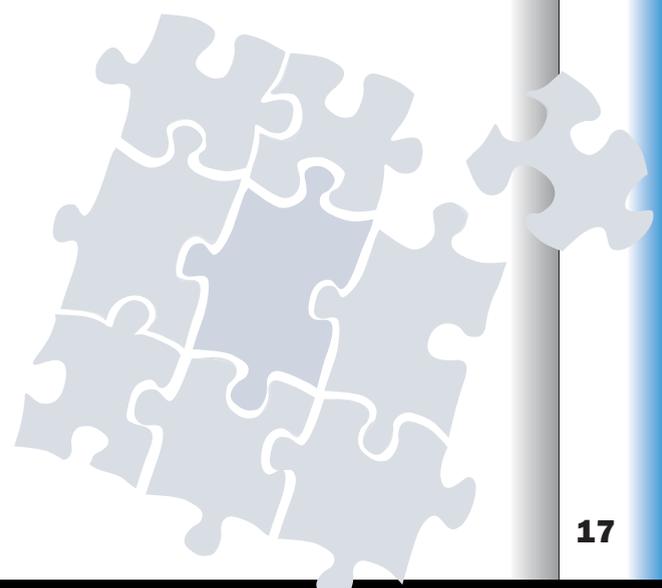


### WHAT IT DOES

This diagram illustrates the primary benefit of open standards interoperability. Displayed are three independent host configuration systems, each connected to different EGMs. The diagram shows that, using open communication standards, a single manufacturer's host system can reconfigure EGMs from multiple manufacturers.

### HOW IT WORKS

In idle mode, the host systems are running a script that effects changes of theme, payable and denomination on the EGM. In manual mode, on-demand changes may be made to a specific EGM. The software that is being swapped in and out resides on the EGM. There is no software being downloaded in this diagram. This configuration change ability represents a powerful first step toward full EGM configuration and software download and shows interoperability between one host system and multiple EGM manufacturers.



Continued from Page 14

tionships with people you actually competed against in a very nice, nonconfrontational way.

"A lot of barriers get broken down when you just sit around and talk to each other," Solomon said.

GSA hosted an operators meeting, which put slot executives in a room and had them rank slot-related issues from 1 to 10 in importance.

The results, he said, were astonishing to manufacturers. "They had thought things like multiple monitors and higher resolution displays would be at the top of the list."

Instead, more mundane but nonetheless important issues were on operators' minds, Solomon said. Things like "I have to cut a different hole every time I put another machine on top of that drop cabinet – Why can't you guys get together and agree that the hole will be somewhere around this area?"

And operators also gained new understanding and appreciation for what manufacturers have to go through, Solomon said.

GSA standards also proved their mettle in the Class II world, Solomon said.

Current GSA Chairman Lyle Bell, senior vice president of information technology for the Seminole Tribe, was able to leverage GSA's S2S protocol on its Seminole Hard Rock hotel-casino and other properties.

"Lyle seized the moment and used S2S to get all of his Class II devices to work together to form the very first property-wide player tracking system in Class II gaming," Solomon said. "And it was all through S2S that that was accomplished. Now, I don't think anybody thinks anything of the fact that you have a property-wide player tracking system in a Native American casino, but when Lyle did it, nobody had it."

GSA accomplished an awful lot, Solomon said, but he said he can't help being somewhat disappointed that things haven't progressed even fast-

## A GSA booth at Global Gaming Expo



**A lot of barriers get broken down when you just sit around and talk to each other.**

**— Gregg Solomon,  
former GSA chairman**

er. "BOB," he said, "was a done deal three years ago," when GSA and IGT then decided to combine GSA's BOB and IGT's SuperSAS into the G2S protocol.

"We will see semi-proprietary infrastructure," he said. "What I won't have next year is the ability to take IGT system bonusing and Konami security and Bally's accounting and put it on a system." **GSA**

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**M**GM MIRAGE CIO Tom Peck sees a casino floor future in which new technology will eventually turn every gaming machine into a guest portal, with branded slots that not only allow slot play but also e-commerce, personalized dynamic marketing and the ability for casinos to up-sell and cross-sell other resort amenities.

But a move to this tall order into the world of networked gaming wouldn't be possible without the protocols established by the Gaming Standards Association, Peck said.

And it won't happen overnight, he said.

MGM MIRAGE has been trialing server-based gaming for a couple of years now, and the association is growing interested.

Two current field trials for server-based gaming at TI and Bellagio are not GSA compliant but soon will be upgraded to include GSA standards.

Grand Detroit, as an example, opened fully server-based ready, all wired and ready to go, pending successful field trials and functionality."

Most recently, CityCenter, which is jointly owned by MGM MIRAGE and Dubai World, and International Game Technology have signed a memorandum of understanding about installing a server-based network and related IGT server-based and gaming management system products at the development's resort casino slated for a late 2009 opening.



**The resort-casino at MGM MIRAGE's \$8 billion CityCenter project in Las Vegas will be the site of the first floor-wide implementation of IGT's server-based casino technology, based on GSA standards. The project, shown in this rendering, is slated to open in late 2009.**

## Standards in Action

*Gaming operators share how they are reaping the benefits of GSA standards*

"Going forward, any new investments in slot or slot floor technologies all require an unwavering compliance with these GSA standards," Peck said.

"Our approach is to wire all of our casino floors ready for server-based, so we've got the bandwidth to the slot banks so that, in the future, we can do anything we want," Peck said. "The connectivity's already there and ready; we just have to turn the thing on and throttle it on or off. And we want to use our existing properties to try and pilot, if you will, whether it's server based or protocols or whatever. So MGM

### GSA's March Toward Gaming Industry Standard Protocols

**Oct. 30, 1996** Acres Gaming Founder John Acres plants seed for gaming standards, first at the World Gaming Congress & Expo and later drawing manufacturers to a meeting to address technical communication problems.



**May 12, 1998** Eight gaming manufacturers form GAMMA, the Gaming Manufacturers Association. Original members are Acres Gaming, Aristocrat Technologies, Bally Gaming & Systems, Progressive Gaming (formerly Mikohn Gaming), Sega Gaming, Sigma Game, Silicon Gaming and WMS.



**March 31, 1999** GAMMA adopts industry's first standard protocol, GAMPro-A V1.00. The A-link slot machine protocol was designed to offer casino operators an unparalleled level of player tracking, accounting and bonusing functionality.

**April 16, 1999** Circus Circus Enterprises (later Mandalay Resort Group) becomes the first casino operator allowed to join the association when Gregg Solomon, then-senior vice president of operations, becomes a platinum member. International Game Technology also joins as a platinum member but later exits the organization because of a disagreement over the association's patent policy.

**March 20, 2000** GAMMA allows representatives from two casino companies to serve for the first time on the Board of Directors. They are Gregg Solomon, then-senior vice president of operations, Mandalay Resort Group, and Bruce Rowe, then-vice president of slots and R&D for Harrah's Entertainment.



IGT's Service Window and a server-based casino floor network will provide the basis for the first floor-wide installation of a system of this kind. Its Service Window will be accessible to players via slot machines and eventually table games to link them to their players' club accounts and to various services, a news release said.

"What we're doing now is we're trying to drive via the GSA all the manufacturers to comply" with the specifications set up for the server-based operation with CityCenter, Peck said. "If you want to do business at CityCenter, if you want your games on our floor, you need to comply."

How far will it come? Will it be nothing more than download and configuration, plus some very basic ability to do things like bonusing and content servicing?" Peck said.

"It really boils down to three things. It's connectivity in the line. It's the specifications to be things like GSA compliant, and then the third thing is we want a transparent seamless interaction with our players regardless of vendor and technology," Peck said.

G2S is crucial, he said. "That's what's going to enable us to plug in this transparent seamless interface back into our existing systems. Without that, the whole concept of server-based

and standards really doesn't matter if you can't interface all games with your systems because the reality of it is we're not going to upgrade and replace all of our systems at once. And we're not going to upgrade all of our slot machines at once," he said. "There needs to be a bridge, if you will. And the way you get that bridge is through plug and play. We can't imagine having a casino floor with the complexity of the slot machines in the future without having the standard. It would just be unmanageable."

### A CLASS II CONUNDRUM

After one look at the situation Lyle Bell, senior vice president of IT for the Seminole Tribe of Florida, was in, the value proposition of gaming standards crystallizes quickly.

Bell, who also now serves as GSA chairman, was faced with the daunting challenge of how to get multiple gaming systems on the Class II

"The reality of it is we will open CityCenter with server-based technologies. The problem is, what does that mean? How do you define server based? Today it's really nothing more than downloading configurations. It's very, very basic. A year and a half from now, when we open up CityCenter, how much will that product mature?"



## GSA's March Toward Gaming Industry Standard Protocols

**April 5, 2001** Gaming Manufacturers Association (GAMMA) announces name change to Gaming Standards Association (GSA) to more accurately represent the organization's makeup of manufacturers, operators and suppliers committed to developing standard interface protocols for the gaming industry.



**Oct. 11, 2001** IGT announces it will provide SAS protocol as a gaming protocol standard. The move allows GSA to have input into the evolution of the SAS protocol. GSA says it will work with IGT to enhance the SAS protocol by incorporating functionality found in other protocols.



**July 31, 2002** GSA votes to adopt the IGT SAS 6.00 as an official specification. The vote clears the way for manufacturers of gaming equipment to begin implementation of the SAS 6.00 protocol in their products.

**June 8, 2004** GSA releases two new groundbreaking protocol standards - Best-of-Breed, or BOB, and System-to-System, or S2S. The two standards promise to enable machines and systems of different manufacturers to communicate correctly with each other.

**Oct. 4, 2004** GSA releases Best of Breed, or BOB, development suite. In a separate move, the Seminole Tribe of Florida adopts BOB and S2S standards for its Seminole Hard Rock Hotel & Casino and Seminole Casino properties in Florida.





**The Seminole Indian Tribe of Florida was the first to implement GSA's System-to-System, or S2S, protocol across its Hard Rock hotel-casino and other properties, in order to offer its guests a more seamless experience.**

gaming floor of the Seminoles' new Hard Rock hotel-casino, and other gaming properties, to seamlessly accept vouchers from each others' systems — something that had never been done before on a Class II floor.

In most Class II gaming properties, players who cash a ticket from an electronic bingo machine running on one vendor's system cannot reinsert it for play on another vendor's system. Instead, they must spend time waiting in lines to cash out their tickets in order to do that, Bell said.

Through GSA's System-to-System protocol, the Seminoles were able to offer many of the same game themes as in Class III gaming, while still following Class II machine requirements. "It was S2S that enabled me to implement the IGT and Rocket games to work on a [Bally] central system, that handled the ticket-in, ticket-out and the player tracking and accounting for all three Class III vendors."

Bell said he and others had no illusions about what a challenge it would be. "We did not accept anything less than making it happen," Bell said.

It gave the Seminole tribe the ability to operate a casino with Class II games, in the same manner that a Class III casino had operated. "And that was not possible before we did this," Bell said. "We did our utmost to make the experience as close as we could to playing Class III games."

And it marked a major turning point for GSA.

"We really changed the face of the class II market, and thanks to the S2S experience, we were able to get the industry's attention on the S2S success story and open people's minds to open standards," Bell said. "I think it caught everybody's attention, and it truly paved the way for the industry as a whole to recognize the importance and the value of open protocol."

Bell credited Seminole CEO Jim Allen and then-Seminole Senior Vice President of Gaming Operations Charlie Lombardo as instrumental in backing the concept to use the S2S protocol.

The tribe, which now operates some 9,000 machines at six properties, has experienced highly successful results, Bell said. "It was good enough that we were able to buy Hard Rock International, we'll leave it at that," Bell said, adding that the tribe also now has a contract with the state that allows Class III games as well as Class II. **GSA**

## GSA's March Toward Gaming Industry Standard Protocols

**Aug. 18, 2005** GSA simplifies its patent, or intellectual property, policy in an effort to bring it in line with other global standard-setting bodies. A month later, IGT, which had opposed the previous policy, rejoins as platinum member. IGT and GSA agree to combine efforts and consolidate IGT's SuperSAS and GSA's BOB, or Best-of-Breed protocols to lead to an open, global industry standard.

**Dec. 21, 2005** GSA reveals name for combined Best-of-Breed and SuperSAS protocol. It is now known as Game-to-System, or G2S. The name was selected to give an accurate description of the protocol, and bring clarity to what the protocol encompasses.



**Jan. 2, 2007** GSA's members approve Game-to-System, or G2S, protocol and make it immediately available for free download from GSA's Web site, [www.gamingstandards.com](http://www.gamingstandards.com). The move finalizes 14 months of work by GSA's membership.

**Oct. 8, 2007** Macao Polytechnic Institute and GSA create partnership for GSA standards/knowledge exchange in China. Under an agreement, Macao Polytechnic Institute will act as GSA's office in Asia, and GSA will support the institute in an effort to spread the technical knowledge of GSA's gaming protocol standards.



**May 12, 2008** GSA celebrates 10th anniversary of its founding and the strides made since then to establish common protocol standards. The organization's worldwide membership has grown from an initial eight members to more than 70 worldwide.



The Gaming Standards Association is making a concerted effort to widen its base internationally.

GSA President Peter DeRaedt noted that GSA is an international organization and is focused on ensuring global representation.

"Our partners are global. Our business is global. We want to try to reach out and make those various jurisdictions, companies and new students aware of the technology that's going to drive the next generation of gaming platforms," he said.

Membership internationally also is growing, DeRaedt said. "It's picking up. The international market is definitely aware of GSA," he said.

The association kicked off its yearlong 10th anniversary celebration in January by exhibiting at the International Casino Exhibition in London.

The organization also held its Technical Committee meeting in Europe, the first time that the meeting had taken place on the continent.

At ICE, GSA discussed gaming protocol standards, and the Technical Committee meeting was hosted by Atronic International and took place in Graz, Austria, a week later.

DeRaedt noted that the committee meeting was so successful that GSA already has scheduled another such event next February, this time

in Amsterdam, the Netherlands.

"We are being very well-received in Europe," he said. "We will be in Europe every year to bring them up to speed on what's happening."

In addition, the association is also focused on other markets, including Asia.

# Expanding Influence

*GSA extending its international reach*

DeRaedt and other GSA representatives speak at numerous trade and other events — in North America and abroad — each year to get the word out about the importance of standards.

"The main focus for me is to make sure we get more global recognition," he said. **GSA**



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**P**eter DeRaedt became the president of the Gaming Standards Association in October 2002, but has been intimately involved with the organization since its inception and previously served as chairman from 1998 until 2001. DeRaedt's previous gaming experience includes executive positions with MIS Group of Monaco, Aristocrat Technologies and TCS. In this Q&A interview, DeRaedt talked about GSA's achievements, challenges and future direction.

#### How did you get involved in GSA?

I was asked to participate with a group of engineers who were meeting informally in Las Vegas to discuss a common communication protocol.

#### At the time, were you confident that this was something that made sense and was good for the industry?

Oh, absolutely 100 percent. I had just arrived from Australia where I was in charge of a group of engineers who had to implement and maintain the various communication protocols to support the global sales team. Since this was my first exposure to slot machines, I was puzzled as to why the industry did not settle on a global standard. In those days, the number of messages were simple and limited.

## Staying Power

*A conversation with  
GSA President Peter DeRaedt*

#### After that initial meeting, what struck you or what was your initial reaction?

I want to do this, I want to drive this and make this a reality. The initial meeting and all the subsequent meetings were very tense. Engineers were listening, but not very communicative. There was a great deal of competitive atmosphere in the air. For all of us, meeting with your competitor, especially at an engineering level, was pushing the boundaries. They were not quite sure how to behave or interact.

#### How long did it take for them to become more comfortable?

I'd say it took many years to really get comfortable discussing common industry solutions. I believe the catalyst was that we, as an organization, continued to put structure in place. We defined a series of policies that defined how the committees and the association should be managed; we became more knowledgeable about intellectual property and

established a policy after consultation with the industry. We were always fair and behaved in an impartial way toward all our members. They respected that, and as the membership grew, the members started to participate more and more.

#### It's been 10 years, and things are happening now. Has the industry been patient with GSA's progress?

Up until now, our industry did not move as fast as other technology industries. For some time, there were quite a few who thought that what we were trying to achieve was simply not possible. As you know, it is very hard changing an industry as incestuous as ours. Then there were those, whose numbers increased rapidly, who fully supported the notion of common standards. Although we all wanted a single solution, our members understood and agreed that we would all be better off having most of the industry behind the concept than not at all. That is when the BOB phase was born, developed and released as the first new game-to-system communication standard.

#### It seems like the turning point was when operators came on board.

Yes, that was one of the most important milestones in our history. In my opinion, it is clear that operators are the enablers of open standards. Having them as part of the board and committees makes a huge difference. For a long time, the industry told their customers, "This is what we developed," and it was a take-it-or-leave-it scenario. Most of them were totally oblivious to the real needs of the operators. I believe that GSA created a forum that opened the eyes of both parties, and as a result, today you see a closer interaction between manufacturers and operators. They organize focus groups to better understand market requirements. Standards are eliminating the final roadblocks to unleash and drive true innovation for our industry.

#### GSA seemed to have a lot of operator buy-in and then an up-and-down period. Why was that?

I believe that the initial operators who participated in GSA were people who, in my opinion, had vision and a clear understanding of what GSA and standards could do for them. Most operators live in a comfort zone, and it wasn't until the industry injected or attracted talent from outside [that] you saw the participation increase. The guys from the outside simply could not imagine operating in a world without standards. It must have been quite a shock for them entering our industry.



**GSA President  
Peter DeRaedt**

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**Over the years, IGT was a member, then it wasn't a member, then it rejoined. What happened?**

The biggest challenge in any standards setting organization is the intellectual property policy and how to deal with it amongst competitors in a fair and equitable way. IGT essentially withdrew because of disagreement over our IP policy. It was very tough, but GSA handled it right, and the board stood up for what they felt at the time was right for the industry. We have had to deal with the business realities out there, and we have learned a lot since then. It has taken us a while, but we ended up building a policy that everyone bought into. Note that when IGT dropped out, we had a tremendous upswing in committee participation and especially the BOB standard (the predecessor to G2S). We focused very hard in getting BOB ready to the market. At the same time, we engaged contractors to start building us the BOB toolkit. It was a win-win; the toolkit made it easier for our members to embrace and implement BOB.

This was an important component. Not only did we have the document that explained how to implement the standard, we had the tools to support its implementation. It allowed companies to get the product to market quicker. The point was proven during the G2E tradeshow at the time when both BOB and SuperSAS were available: Manufacturers had adopted BOB over SuperSAS.

A major event took place in Macau where both

IGT and GSA addressed the industry about the upcoming technology in the gaming industry. At that time, I delivered a stronger message since BOB was supported by the whole industry instead of just one company. This event was the turning point in our relationship, and a few weeks after Macau, we met in Reno and decided to re-evaluate the IP policy. This was not a trivial exercise, but we brought in an IP expert, and over the course of the next couple of months, it resulted in a revised policy acceptable by all. Today, we are all working toward our common goal of open standards.

**How difficult was it to integrate the two protocols?**

There was give and take on both sides. We hired a great moderator, Russ Ristine, to manage the integration of BOB and SuperSAS. Although at times it became very stressful, the job was completed in 10 months after a series of marathon meetings. It resulted in the birth of G2S.

**In those early days, were there times you thought this is not going to get of the ground?**

Oh yeah, I had quite a few of those moments. It was hard, you fall and you have to pick yourself back up and push forward. I asked myself, "What I am doing?" But I am quite stubborn. If you believe in something, you have to go for it. I always told myself logic prevails. I gave it my best shot. And today I know for a fact that the industry five or 10 years from now will look totally different. ➤



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### Talk about a real-world success brought about by GSA standards.

The first one without a doubt is S2S, and the solution it brought to an industry segment that was in desperate need for a solution. Thanks to Lyle Bell, S2S was installed in the Seminole Hard Rock Casino in Florida and is now installed in many places. To the player, the S2S standard provides total transparency for a Class II floor. He takes his ticket from one gaming device and puts it into another gaming device and can continue playing, unlike before where the ticket would not be recognized. S2S allows him to use his player card on any gaming device. Before, player tracking in Class II was impossible.

### What is the next step for GSA?

Now that we have our standards well under control, the next major step is ensuring interoperability. We need to ensure that everyone interprets, and implements the message protocols in the same way so that when you purchase devices from various manufacturers they all work together. This is a critical phase. We have a program developed that defines the foundations on how to get certified and what to do in case we find errors or inconsistencies. The second step is to try to ensure backward compatibility between different protocol versions. We need to ensure a clear migration path as we keep growing protocol functionality. The next step is to correctly manage manufacturers' extensions.

### Talk about things GSA standards are going to help come to fruition in the gaming industry.

System-supported or networked gaming is really all about the network. Five years from now, as I have said many times, we won't be talking about protocols. The word will become a distant term as applications take the front stage. Yet it is because of the underlying protocol standards we have developed today that we will enable the future of gaming tomorrow. I believe we're going to see an acceleration of development and adoption of our standards.

### Will GSA's role be as visible going forward?

It will probably become less visible over time in the sense that once the standards are developed, we will move toward continuously enhancing or growing them. It will be the new applications that will flourish and take center stage. However you will still be reminded of GSA through product certifications. Mind you, GSA, as an industry forum, can provide the industry with any standard it wishes. In addition, I see the Operators Advisory Committee as a vital and powerful link between operators and manufacturers. It is a golden opportunity for operators to further drive standards and get the functionalities they need to run their businesses, some of which are technically simple to achieve but provide a big impact. That group will bring their business requirements to GSA; we will prioritize them and address them in later releases. I hope we can grow this into an international forum. **GSA**

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*Congratulations GSA  
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Building Industry  
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One of GSA's cornerstones is education, and the standards association has made several recent strides to enhance and expand the understanding of its communications standards in the United States and abroad.

Most recently, the association hired a full-time educational director to establish a global education plan, said Peter DeRaedt, president of the Gaming Standards Association.

The new director Line Robichaud, formerly of GTECH/Spielo, will organize and direct educational sessions in Asia, Australia, Europe and the United States.

## Reaching Out

*GSA focuses on education as a cornerstone*

DeRaedt noted it is often difficult for gaming industry representatives to travel to the United States for training. "So rather than bringing the people to the mountain, we are bringing the mountain to the people," he said.

GSA also made a key stride on the educational front in October 2007 when it signed a memorandum of understanding with the Macao Polytechnic Institute. The MOU expresses GSA's and MPI's mutual commitment to provide education related to the latest gaming technology and open communication standards.

Under terms of the agreement, MPI will act as GSA's office in Asia, establishing a location for GSA on the continent. That office opens June 2, 2008.

Additionally, GSA will support MPI in an effort to spread the technical knowledge of GSA's gaming protocol standards to students in Macao and other parts of Asia through MPI.

"This is a major step forward for GSA," DeRaedt said in making the announcement. "The industry is keenly aware of the expansion of gaming in Macao and the future development that is to come to Asia. We are very pleased to be at the forefront of that growth, laying the groundwork for what will be an intense adoption and implementation of GSA standards."

MPI President Lei Heong Lok noted the partnership between MPI and GSA, which aims at fostering the adoption and implementation of open industrial standards in Macao, will create benefits for manufacturers, operators and other stakeholders in the gaming industry. "Fulfilling the promise of seamless communication and interoperability, robust and long-lasting open standards can be a solution for greater revenue and decreased costs," he said at the time of the announcement.

The new GSA educational director will work with the association to establish both short-term and long-term educational programs, DeRaedt said.

Earlier this year, GSA and the University of Nevada, Las Vegas' International Gaming Institute completed a series of four, easy-to-understand, nontechnical courses designed to quickly give attendees a better working knowledge of the industry's new protocol standards and their implications.

The "GSA Executive Awareness Program" series consisted of four one-day classes and focused on the needs of executives and managers working for game and systems equipment manufacturers, casino properties, regulators and independent test labs. Each class was presented in nontechnical, easily understood language.

The courses included an overall executive briefing on GSA protocols as well as sessions on individual protocols, G2S, S2S and the Transport and Security protocol that enables G2S and S2S to revolutionize casino operations.



澳門理工學院  
Instituto Politécnico de Macau  
Macao Polytechnic Institute

The institute also has worked with GSA on Certified GSA Engineer Programs to accelerate the successful implementation and adoption of GSA standards throughout the gaming industry. In-depth technical training in the structure, features and implementation of GSA protocols is tailored to the engineer and engineering manager working in development, quality assurance, compliance testing, and operations for game and systems equipment manufacturers, casino properties, regulators and independent test labs. More than 35 people, including representatives from Europe and Asia, have gone through the UNLV training. **GSA**



➤ **“In these last two or three years, things have really started to pop. I think there are the right people, impassioned people, driving it ... standards are coming out, and it’s now incumbent on guys like myself and Tom Peck and Marshall Andrew and others who have some purchasing power to say, ‘We’re not going to take it if it doesn’t do this stuff.’ That’s been very helpful.”**

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*Tim Stanley  
Chief Information Officer  
Senior VP, Innovation,  
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