**Compliance Against All Risks: A Technical Perspective**
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For over a decade in the interactive gaming sector, and several more in the traditional land-based gaming sector, we've seen countless examples of what can go wrong if we don't have an opportunity to do what we do best – our testing! Whether it's an inane mistake in the software, a critical weakness that gets exploited, or just a cautious regulator shutting down someone's operations before things get worse, it's clear that testing should never be skipped over. Failure to keep up with compliance can mean a failure to make money!

Although compliance testing touches on many areas of your business as a whole, such as legal and accounting, today we're going to focus on compliance purely from a technical perspective.

If you don't think that technical compliance applies to your business, just look at a few of these examples.

We've seen untested Random Number Generators (RNG's) compromised by external attackers who found a pattern or bias in the game outcomes. Worse yet, we've seen internal attackers find ways of exploiting untested RNGs because they had prior access to the source code for the RNG, and a hankering for burning their former employer.

We've seen operators running untested games in the live environment for months, unaware that the games were incorrectly designed to pay out at well over 100% Return to Player (RTP), resulting in a consistent profit for the players! Conversely, we've also received scathing complaint emails from punters who are convinced the games they are playing are purposely rigged to pay out significantly less than the advertised RTP.

We've seen untested control environments allow the success of Denial of Service (DoS) attacks, hackers to break into high-security computer networks, and super-user accounts to be compromised and used for fraudulent purposes.

We have seen these events repeated over and over, time and time again. Many of which have transpired under the spotlight of the public eye. If you're okay with exposures like these and negative publicity for your business, then maybe you don't need compliance testing after all. But if you'd rather avoid these costly and embarrassing disasters, then by all means keep reading.

Over the years, compliance testing has evolved in an effort to protect those willing to participate from these horror stories. To understand where we stand today with this evolution, we'll have to first take a step back to yester-'year'.

You've surely heard that necessity is the mother of invention, and the same applies to compliance testing. We all know that in some parts of the world gaming had unlawful roots. However, to better understand the roots of compliance testing, we need to fast forward to the end of that era. We're talking about when the gaming industry began to increasingly need a way to ensure the safety and security of its operations to guarantee business continuity and a steady flow of revenue. This was made even more critical by the high-profile nature of the business, where any bad press meant significantly reduced profits. So compliance testing was born to answer these demands, and give the industry and the players the safety and security it needed.

This compliance testing made gaming systems comply with prescribed minimum technical standards, thereby protecting them from potential exposures.

As Government bodies became increasingly involved with the process, official regulatory technical requirements were increasingly put in place, thereby enforcing what was previously voluntary. In effect, it became illegal to operate without complying with the requirements.

That worked fine for the time being, but as we all know, things change. Long periods of uneventful operations or economic downturns called for technical requirements to be loosened. On the flip-side, public scandals and costly exposures called for technical requirements to be tightened. This tug-of-war continues today as well, and as new technologies are introduced, new exposures are created. With each new form or complexity of gaming came new ways to cheat the system, and new ways for things to go wrong.

The technical requirements had to be updated to reflect the changing landscape, and experts were soon in demand to help Government bodies keep up.

Again, necessity had given birth to a new invention: the Accredited Testing Facility (ATF). There are now numerous ATF's operating around the world, experts specializing in technical compliance testing for the gaming industry. These ATFs help Government bodies to keep their technical requirements up-to-date, and to provide operators and suppliers with compliance testing and support.

The result was that compliance testing was being performed by experienced and specialized agencies, and in many cases the technical requirements were being refined by those responsible for the actual testing effort.

The interactive sector of the gaming industry has followed an almost identical course, albeit highly accelerated.

Like any other industry today, the Internet is the fastest growing playground for business, calling for all those involved in e-commerce to adapt at an unprecedented rate or risk missing the boat. Since the history of the interactive gaming industry is much more condensed than its traditional land-based counterpart, it is much easier to track its history.

Since interactive gaming is relatively new, and tends to change so quickly, Government regulators often look to one another to set precedence for technical requirements. Why re-invent the wheel, when your neighbour already has a great design to lend you? That's why jurisdictions half-way around the world will sometimes have nearly identical technical requirements. In many cases, the requirements will match word-for-word. In other cases, each jurisdiction will tailor their requirements to meet their specific and unique needs; however, the underlying themes usually remain the same.

So who raised the bar and set the highest precedence for technical requirements? In the world of interactive gaming, that would be Australia.

Although they were first out of the gates, a legislative moratorium was quickly put in place to control the existence and expansion of interactive gaming in Australia. The technical requirements set forth at the onset have remained some of the strictest across the globe.

Australian Technical Standards Documents (TSD's) are often used as a basis for other jurisdictions seeking to put in place their own. ATF's are often called in to draft TSD's for new jurisdictions, thus making sure that the technical requirements match perfectly with what the jurisdiction wants and needs.

In fact, many Government regulators borrowing technical requirements from other jurisdictions may not even realize that those technical requirements might have originally emanated from Australia.

As technical requirements continue to evolve over time, we're seeing a convergence across different mediums of gaming. For example, downloadable Server-Based Gaming (SBG) in casino environments has elements of traditional land-based gaming combined with interactive gaming. The resulting merger requires new TSD's to be authored by Government regulators and ATF's to ensure that these new systems comply with appropriate standards and incorporate the necessary controls.

Similar convergence can be seen with many other new technologies across the board, such as mobile gaming (telephone and PDA) and wireless hand-held devices in casinos. Again, Government regulators and ATF's are challenged with responding with the associated technical requirements for compliance testing.

We're also seeing a number of betting and gaming organizations offering their services over multiple mediums, where the same player account can be accessed over the internet, by mobile telephone, and even in person at the casino.

These innovative models present new challenges from a compliance perspective, but not as much as you might think. Naturally, there are significant differences behind the scenes, as each new model requires an entirely new set of IT infrastructure to support it. But from the player's perspective the differences are few. If done right, the differences are virtually invisible and seamless.

In fact, it is quite deliberate that the player's gaming experience remains effectively unchanged regardless of whether accessing their account over the Internet or via mobile telephone or PDA. Sure, the screen may be smaller, and the buttons may look a little different, but the images and game functionality are basically the same. The intention is for the operator to more easily migrate player accounts across different mediums and for the player to be able to more easily adapt to the new interfaces. This will allow the player to quickly get into the swing of things, and start gambling with the new medium as soon as possible.

We can even see this happening between traditional land-based games and interactive games. International Game Technology (IGT), one of the world's largest suppliers of traditional land-based Electronic Gaming Machines (EGM's), recently purchased interactive supplier WagerWorks, and has expanded WagerWorks interactive offering by including games from IGT's library. We've seen the converse of this with Boss Media, who ported their interactive offering over to traditional land-based EGM's.

What does this mean for compliance testing? It means that many of the technical requirements specifically relating to game design can remain effectively unchanged. What was required for a game on the Internet is also required for a mobile device game, or a game operating on an EGM in a bricks and mortar casino.

**ATF Case Study: Technical Systems Testing (TST)**

Established in 1993, TST is an internationally-recognized ATF offering a full range of testing and consulting services to the traditional land-based and interactive gaming, wagering, lottery, e-commerce industries. Since its inception TST has worked closely with industry operators, suppliers, manufacturers and Government regulators. The mandate is to ensure that gaming systems comply with Government-prescribed technical requirements, manufacturer's technical specifications, and world-best-practice industry standards.

Fully independent, impartial and confidential assessments are performed by highly qualified and skilled teams of full-time probity checked in-house personnel through a global network of TST laboratories.

Who keeps ATF's in line you might ask? Well, beyond the Government regulators themselves, TST itself has been independently certified for compliance with International Standards Organisation (ISO) 9001 and ISO / IEC 17025 requirements. Government regulators are increasingly using such qualifications as minimum benchmarks to accredit ATF's.

Over the years, TST has performed compliance testing on a vast array of gaming systems for both traditional land-based and interactive applications. These have included Hardware, Software, Games, RNG's, Communications Protocols, Central Monitoring Systems , Jackpot Controllers, and Websites. TST also performs Information Systems Security (ISS) Audit, Field Data Analysis, Game Payout Calculation, and Expert Witness Testimony services.

Although TST's qualified and trained staff routinely performs all areas of compliance testing, TST's particular strengths are focused towards the high-risk areas of gaming. System elements such as RNG's and game mathematics are among the most complex, and can result in the most damage if a potential exposure is not identified and corrected at the outset. TST has routinely identified errors or omissions in RNG solutions.

These high-risk elements are also prevalent for both traditional land-based and interactive applications alike.

TST's evaluation methodologies are not limited solely to established gaming mediums, thereby allowing testing staff to quickly adapt compliance testing to unique new systems. These are merely some of the reasons that many Government regulators choose to use TST for compliance testing of entirely innovative and hightly complex systems.

TST has observed that the on-going improvement of testing methodologies by ATF's has undoubtedly resulted in an overall increase in quality of gaming systems on the market today. But that doesn't mean that we're all in the free and clear.

Common problems tend to pop up throughout the course of compliance testing.

First of all, we see countless non-compliant RNG's still crossing our path. Whether software-based algorithms, or physical hardware-based devices, RNG's are extremely complex system components that should not be taken lightly. RNG's should always be subjected to adequate compliance testing to ensure fair distribution and non-predictability of the RNG outcomes. A misconception we often have to deal with is that RNG testing need be overly cumbersome and time consuming. On the contrary, the associated testing time and costs are actually quite low, and pale in comparison to what you risk losing if there is an exposure.

We also see systems being pushed through compliance testing before they're actually finished being developed – especially games.

Naturally, any ATF with adequate experience should be able to jump in and perform compliance testing at any stage of system development. This isn't necessarily a problem, as long as all concerned parties are aware of the pro's and con's associated with each approach:

| Getting Compliance Testing Done before Development is Finished | Waiting until Development is Finished before Getting Compliance Testing Done |
|---|---|
| Pros:<br>• Uncovers issues of non-compliance early on, so that fixes are quicker and easier for your development team to make, thus avoiding potential expensive retrofits. | Pros:<br>• Easier and cheaper for ATF to complete their testing, since system is fully functional and ready to go. Avoids the ATF having to evaluate an evolving / moving target. |
| Cons:<br>• Harder for ATF to complete their testing, since system is not fully functional.<br>• Potentially higher compliance testing costs, since issues of non-compliance will be identified together with development bugs and faults. | Cons:<br>• Any identified issues of non-compliance will be harder for your development team to correct, since elements of the system may need to be entirely re-engineered.<br>• Implementation of fixes could have farther reaching impact than initially anticipated, due to overlap with other systems in place. |

With either approach, one of the best ways to avoid the con's is to ensure that your development team has a copy of the relevant TSD in front of them while they work. They should be well-versed as to the regulatory requirements, so that they don't start down a development path doomed to fail with a non-compliant end result.

Also, ensure that your development team works closely with the ATF before and during the compliance testing process, so as to give them the technical support that ATF's require to get through the testing as quickly and cost-effectively as possible. It is critical to the process that the ATF and your development team are on the same wavelength as to the requirements and the objectives. The best evaluations are those where ATF's and their clients work together rather than oppose one another. At times the ATF can be perceived as an enemy rather than an ally in the process to achieve a fair and secure gaming system.

## ATF Expansion

Although each ATF has a country of origin, in the case of certain ATF's their operations have expanded to include a physical presence in additional geographic locations. This growth tends to follow the current or anticipated demand for compliance testing local to that jurisdiction, particularly for traditional land-based gaming systems.

This growth is beneficial for operators, suppliers and Government regulators, since there are more ATF offices available to perform their compliance testing in multiple time zones. It is also beneficial for the recipient country, since it strengthens the gaming integrity of the region while simultaneously bringing additional commercial attention and tax dollars to those areas.

It also inevitably culminates in the creation of new jobs, and attracts highly skilled and educated personnel to those areas.

Some Government regulators go as far as requiring that a local office be set up before an ATF can be accredited to perform testing for their jurisdiction.

TST has offices located in London (England), Vancouver (Canada), Sydney and Melbourne (Australia), and Macau (China). Steps are taken to ensure that local staff are trained with the company's standard ISO procedures and proprietary testing methodologies, resulting in a proper transfer of knowledge so that testing quality is never sacrificed.

Burgeoning regions in Europe, Asia and South America are increasingly demanding ATF attention as they intend to establish themselves along the same level as more mature jurisdictions. TST continues to pursue opportunities to open new offices worldwide, as local demands require.

ATF's like TST are here to help protect from costly mistakes, exposures and scandals. They have the same underlying goal as you: get you up in running with a high quality product and service, in the jurisdiction of your choosing, as quickly as possible, fair and secure.

No matter who does your compliance testing, or where you get it done, the fact remains the same: ATF's are your first line of defence against the hassles and disasters associated with not keeping up with compliance.

The nature of gaming compliance is changing, and everyone has to choose to either keep up, or fall behind a pay the price!

**Bio**


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