

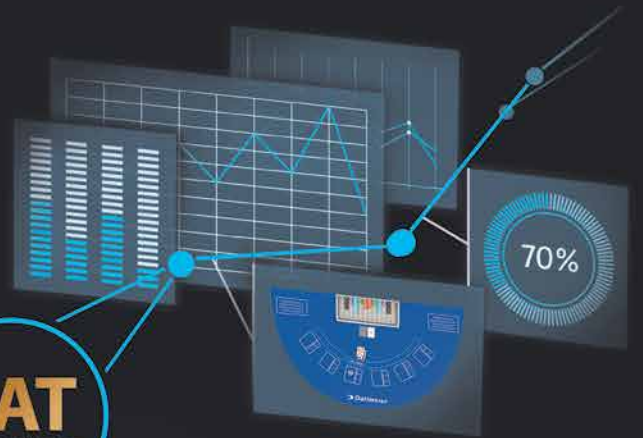
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# 跨越鴻溝

論系統互聯對娛樂場投資回報率的正面影響

# BRIDGING THE GAP

How interconnected systems increase casino ROI

# 跨越鴻溝

## 論系統互聯對娛樂場投資回報率的正面影響

Dallmeier的Konrad Hechtbauer就在本文解釋到底娛樂場如何可以通過運用智慧及融入人工智能的影像科技，從虛擬推向數碼。

# BRIDGING THE GAP

## How interconnected systems increase casino ROI

Dallmeier's Konrad Hechtbauer explains how casinos can use smart, AI-infused video-based technologies to take the next step forward in moving from analogue to digital processes.

By 文 **Konrad Hechtbauer**



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Konrad Hechtbauer是Dallmeier International Ltd.的董事總經理，並且在Dallmeier HQ中負責項目及應用部門(Project & Application Development)。他是Dallmeier成為博彩業界其中一個IP攝影鏡頭、錄影及軟件解決方案主要製造商的重要推手之一。







### “A SINGLE PANE OF GLASS” – ANALYTICS, DATA, INTERFACES AND VIDEO

An essential aspect of every efficient casino operation is the integration, presentation and processing of many different data sources and interfaces – from surveillance management to auditing to marketing data and many more.

Casinos can maximize efficiency for a multitude of workflows, creating more and more building blocks for what one may call a “casino operating system.”

Advanced video management systems (VMS) such as Dallmeier’s HEMISPHERE SeMSy provide surveillance managers with vast control options down to quickly creating a “digital evidence file” of any event, including corresponding video, notes, reports and further information, which can easily be included in respective processes.

Advanced, unified reporting capabilities make the creation of reports a breeze, such as those for casino regulation authorities. Extracting all sorts of data and correlating it with third-party applications gives marketing managers tremendous insight in increasing

profitability. Furthermore, they get a much better view on the effectiveness of their marketing spend.

All functions and data within such a “casino operating system” approach are fully integrated into the video and data management world, thus saving time and cost through fewer workstations and considerably less complex work processes, making findings from previously unused data sources usable and helping achieve synergies across different functional areas.

### CRUCIAL FOR MODERN CASINOS: INTEGRATION OF TABLE GAME MANAGEMENT

A great example for the “analogue to digital” transition is the area of table games. By their nature, live games are particularly difficult to capture in the digital world due to the complexity of the actions and processes. However, this is exactly what casino operators need in order to create real-time data for their business intelligence tools and to make their operations more efficient.

**自動化及資訊化賭枱管理，對於減低風險而言十分重要，並且能作為賭場的業務情報的基礎。**

**Automated and informed table management is an essential component for risk mitigation as well as the basis for informed business intelligence in the casino.**

### 「一鏡之隔」—分析、數據、介面及影像

整合、匯報及處理多數數據源頭及介面—從監控管理、精算、市場推廣數據等—是每個有效率的娛樂場業務的重要一環。

娛樂場可以在多個工作流程上把效率推至最大，以建構所謂的「娛樂場管理系統」。

包括Dallmeier的HEMIPSHERE SeMSy在內的高級影像管理系統，可以為監控部門負責人帶來多種控制上的選項，並能迅速地就任何事件產生一個數碼證據檔案，當中可以包括錄影、筆記、報告以及更多資料，而且可以把檔案用於相關的程序當中。

先進及統一的報告方式，可以讓製作例如提交給娛樂場監管當局的報告的過程變得十分簡單。如果可以萃取所有數據，並且通過第三方程式找出關連的話，就可以讓市場推廣的負責人在如何增長利潤上得到前所未有的洞見。另外，他們亦更能夠掌握市場推廣支出的效果。

這種娛樂場管理系統方式所包含的功能及數據都能夠完全融入影像及數據管理世界當中，因此可以通過減少工作台及工作程序來節省時間及成本，令到從前那些無用的數據來源變得有用，以及幫助不同的功能範疇相互協同。

### 統一賭枱遊戲管理是現代娛樂場的要務

從虛擬到數碼這個轉變的一大例子，就是賭枱遊戲範疇。由於其本身的特性，直播遊戲特別難通過數碼方式去記錄，這是由

於其動作及過程的複雜程度。可是，這亦正正是娛樂場營運商所需，從而為他們的商業情報工具製造實時數據，同時讓他們的營運變得更有效率。

「賭枱遊戲自動化」技術包含無線射頻辨識、影像或人工智能辨識(例如針對籌碼的面積)等科技，可以讓賭枱遊戲管理數碼化出現大躍進。現時已經出現的解決方案已經可套用在百家樂和廿一點等的遊戲。這些技術的主要功能是追蹤及管理賭枱遊戲實時玩家排位、自動賭枱安全保障和實時賭枱器具庫存資訊。

### 博彩遊戲追蹤的重要性

自動化及資訊化賭枱管理，對於減低風險而言十分重要，並且能作為賭場的業務情報的基礎。若果賭枱自動系統都建基於影像技術及人工智能上的話，一個虛擬賭枱 遊戲監場及監控操作員將能全天候工作，以及能對每張賭枱都保持警覺，協助人類員工。

系統可以不斷地監察及分析遊戲和賭枱表現，提供下注位置及頻率的數據，同時進行詐騙機率測試。此外，這類系統可以幫助準確地探測及分析所有賭枱管理有關的關鍵績效指標，例如遊戲的節奏，以及包括博彩區域資料或入座使用率在內的利潤管理等等。如此就可以大幅地減低風險、增加每張賭枱的利潤，以及從一個業務分析的全新角度去看待賭枱管理。



### 實時玩家排位可以讓會員計劃變得更精準

玩家排位為娛樂場市場推廣、挽留顧客及業務規劃等都非常重要。當今的娛樂場玩家排位系統通常都缺乏準確度，而常客會員計劃也經常被濫用，令到業界付出大量成本卻又無法取得收入。通過賭枱遊戲自動系統，娛樂場可以精確地對玩家進行排名，並且防止類似的濫用及損失的出現。

這些都可以實時提供分析資料，包括注碼價值、派彩及籌碼兌換數字，以及監察收取籌碼的情況。這樣的數據可以讓娛樂場營運商清晰的了解玩家的行為及活動，幫助他們決定玩家的價值和增強會員計劃的準確度。

### 在賭枱得到充分保障下「向錢看」

通過不同手法及方式進行的欺詐及偷竊在賭場內時有發生，這些行為為賭場帶來的損失異常巨大。從前那依賴荷官作為「前線守衛」的解決方法都非常脆弱，而且通常要過24小時或更長時間後才會帶來關於贏輸的資料。賭枱遊戲自動系統可以讓娛樂場營運商立即追蹤金錢流向，以防止大額詐騙或盜竊的出現。

### 到賭枱器具全檢查

監察賭枱表演及器材庫存為娛樂場而言十分重要，因為可

“Table gaming automation” technologies combining technologies such as RFID, video images or AI-based recognition (such as of chip values) promise a quantum leap in the digitization of table gaming management; solutions are currently available for games like baccarat and blackjack. The primary functions of these technologies are overall tracking and management of table games, real-time player rating, automated table protection and a real-time view on the table inventory.

### WHY TRACKING GAMES IS IMPORTANT

Automated and informed table management is an essential component for risk mitigation as well as the basis for informed business intelligence in the casino. With table gaming automation systems based on video technology and AI, a “virtual” table game supervisor and surveillance operator is permanently available and alert at every table to assist human staff.

The system continuously monitors and analyzes games and table performance, provides data on bet position and bet frequency and performs fraud

以從此得知何時需要填充籌碼，這是可以通過於每次下注後包括追蹤籌碼價值及賭枱 差額來進行。到了今時今日，這涉及到大量的人力，而且亦非常不透明。

賭枱遊戲自動系統通過檢測工具以確保準確度得以提升，以及令很多手動工作自動化，如此就可以大量減省勞動成本及大幅提升準確度。

### 實時降低風險及優化收入

與此前需要人手干預及進行偵測的系統不同，結合影像技術及基於人工智能的數據分析可以對一系列活動進行自動監測。從竊取籌碼到荷官出錯，還有過時下注以及干預已買定的賭枱等。一般而言，賭枱安全保障可通過對現時以影像為主的監察系統發送更多實時資料來達成，這樣該系統就可以自動地下令執行動作及在偵測到可疑的數據樣式後提醒其他系統或人員。

### 智慧市場推廣措施對挽留客人的幫助

最終而言，通過以影像為基礎的賭枱自動系統，娛樂場營運商可以發掘那些從前未能使用的大量數據。娛樂場現在可以知道到底應該在一天的甚麼時間推出甚麼遊戲以及如何，基於他們的訪客和玩家的行為和表現來改善他們的會員計劃

除了博彩以外，其他諸如酒店、餐飲、零售等的相連部門亦

probability tests. Furthermore, such systems facilitate the precise detection and analysis of all the relevant KPIs for table management such as game pace information, yield management with gaming floor table data or occupancy/utilization ratio to name just a few. The result is highly-improved risk mitigation, increased profitability on each table and an entirely new scope of table management from a business analytics point of view.

### REAL-TIME PLAYER RATING MAKES LOYALTY PROGRAMS ACCURATE

Player rating is essential for casino marketing initiatives, customer retention and business planning. Today’s casino player rating systems often lack accuracy and the “frequent player” loyalty plans get abused, costing the industry huge amounts in lost revenue. With table gaming automation systems, casinos can rate players accurately and prevent such costly abuses and losses.

Such modules offer in-depth analysis in real-time based on stack value, pay-outs and buy-ins as well as monitoring of chip collection. This data allows the



casino operators to attain a thorough understanding of the players' behavior and activities, helping to determine the value of the players and increasing the accuracy of loyalty programs.

### “FOLLOW THE MONEY” WITH EFFECTIVE TABLE PROTECTION

Fraud and theft are also well documented in casinos via advantage play schemes, edge play, false shuffles, ratings and card cut scams. The resulting losses for casinos are astronomically high. Former solutions that rely on dealers as the “first line of defense” are vulnerable and often provide no win/loss information for up to 24 hours or longer. Table gaming automation systems give casino operators the ability to “follow the money” instantly and therefore prevent costly fraud and theft.

### “CHECKS AND BALANCES” FOR THE TABLE INVENTORY

It is important for casinos that they monitor the performance and inventory of their tables so they know, for example, when to order a credit or chip fill.

This is achieved, among other things, by tracking the float's value and balance of a table after every hand or coup. Today, this involves many manual tasks and provides a low level of transparency.

Table gaming automation systems use the float as a “checks and balances” tool to ensure better accuracy and automate numerous manual tasks. The result is high savings in labor costs and significantly higher accuracy.

### MITIGATE RISK AND OPTIMIZE REVENUE STREAMS IN REAL TIME

As opposed to previous systems that required manual intervention and detection, the combination of video technology with AI-based data analytics enables the automated discovery of a wide range of activities – from theft of chips to dealer errors, late bets and tampering with closed table floats. Overall, table protection is increased by adding real-time live data to the existing video-based monitoring. This way the system can automatically trigger actions and alert systems or personnel in the event of suspicious data patterns.



## CUSTOMER RETENTION BENEFITS FROM SMART MARKETING MEASURES

Eventually, with video-based table gaming automation systems, casino operators can gain access to a previously hidden treasure trove of data.

Casinos now know what games to offer at each time of the day or how to improve their loyalty programs based on the behavior and preferences of their visitors and players.

Way beyond gaming, adjacent departments such as hotel, food or retail can also hugely benefit from this data by massively improving their operational efficiency. Combining the various aspects – protection, automation, business intelligence – reduces labor costs and human fallibility and increases gaming floor transparency.

The result is much more efficient marketing and player management and a massive contribution to a casino's business intelligence. This allows casino

management to make more informed decisions, quickly react to changes and events and tremendously increase the overall efficiency of their gaming table and other operations.

## VIDEO SURVEILLANCE “AT THE NEXT LEVEL”

Classical video surveillance still plays a major role in a casino's investment in video technology. Large areas need to be monitored to protect guests, players, staff and the casino's inventory. With sophisticated camera technologies, such as the patented multifocal sensor technology “Panomera,” casino surveillance operators can cover much larger areas with the same number of operators. In addition, the automatic transfer from camera to camera and the automatic selection of the camera with the best picture quality enable an unprecedented capture of even the largest spatial contexts.



可通過大幅改善他們的營運效率來從這些資料獲益良多。結合安全保障、自動化及商業情報等方面，可以減省勞動成本和減少人為錯誤，同時增加博彩區域的透明度。

這樣將能帶來更有效率的市場推廣和玩家管理，以及對於一間娛樂場的商業情報有非常之大的貢獻。這將容許娛樂場管理在得悉更多資料下進行決策，更快地對改變和活動作出回應，以及大幅提升賭枱及其他運作的效率。

### 把影像監測帶到新台階

傳統的影像監測依然在賭場對影像技術的投資中佔了很大的份額。為了保障客人、玩家、員工及娛樂場的庫存及設備，需要監控的面積非常廣泛。但如果有包括已獲專利的多焦點感應技術「Panomera」等攝錄科技的話，娛樂場監控將可以以同等數量的監控人員去監察更大的空間。另外，攝影機之間的傳送以及自動選取最佳影像質素的攝影機，將前所未有地捕捉大量的內容。

### 一支鏡頭，多組監控

一個完全覆蓋的視覺加上最高的解像度，實在是尤其讓人心動。這技術使那些在遠處的物件的解像度與近物無異。如果

有任何事件發生，鏡頭可以對所有位置進行無限變焦及得到極高的解像度。

這在複雜的娛樂場環境裏是一個尤其重要的功能，以確保可以成功收集證據。這在從前的PTZ及百萬像素攝影機(單感應器及多感應器)都無法做到。至於分析方面，這技術亦比同級系統更優秀，因為它可以让整個區域的監控影像都最少可以維持一個最低的影像質素，這在任何基於影片的分析中都經常被低估。

### 巧妙地結合科技將會是重點所在

在娛樂場營運方面，正經歷一些大變化。從那用於智慧分析影像的新人工智能技術，包括分析在一張廿一點或百家樂賭枱上的籌碼價值，到為優化賭枱收集的數據，到差不多與娛樂場管理系統運作一樣專為娛樂場而設的影像管理系統，再到新的攝影機技術。

總括而言，在娛樂場管理的多層面中，都有一系列選擇可以大幅提升效率。現在，決策者所面臨的挑戰是正確地結合這些科技，以避免單一組成部分出現瓶頸，從而以達至一加一大於二。iag

## A SINGLE CAMERA FOR MULTIPLE SURVEILLANCE OPERATORS

The combination of a complete overview and highest-detail resolution is particularly impressive: the technology can display distant objects with the same resolution as objects in the front image area. In the event of an incident, an unlimited number of zooms with extremely high resolution can be performed in all detail areas of the overall scene.

This is an especially important function in complex casino environments to ensure a successful forensic evaluation, which is not possible with PTZ and megapixel cameras (single sensor or multi sensor). When it comes to analytics, this technology is also superior to comparable systems as it enables a minimum image quality to be maintained across an entire area, an often-underestimated factor for any video-based analytics.

## SMART COMBINATION OF TECHNOLOGIES IS KEY

A lot is happening in the way casinos run their businesses, from new AI-based technologies for intelligently analyzing video images, such as chip values on a blackjack or baccarat table, to capturing data for table game optimization, to casino-specific video management systems that almost work like a "casino operating system", to new camera technology.

All in all, there is a wealth of options that promise huge efficiency gains in many areas of casino operations. The challenge for decision makers now lies in the right combination of these technologies to avoid bottlenecks in quality of individual components, so that the whole is more than the sum of its parts. iag



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