The Global Automated Border Control Industry Report: Airport eGates & Kiosks

Market Analysis and Forecasts 2014 - 2018
Comprehensive Market Data - Critical Insight - Targeted Revenue Forecasts

February 2014
Acuity Market Intelligence
Report Overview

Scope: This report presents data driven insight into the worldwide opportunity for the development and deployment of airport Automated Border Control (ABC) eGates and kiosks.

Objective: To present global and regional market forecasts that provide the basis for short-term, mid-range, and long-term strategic planning for technology and solution development, market investment, and phased adoption of airport ABC eGates and kiosks.

Audience: Individuals responsible for strategic planning, business and market development, investments, and sales related to ABC initiatives including vendors, integrators, investors, consultants, solution providers, and public and private sector staff responsible for evaluating, developing, and implementing ABC programs.

Methodology: Data is drawn from significant market and technical developments, tests, pilots and deployments, public domain and private data sources, research and reports, surveys, and interviews with vendors, integrators, intermediaries, customers, privacy and civil liberties advocates, and other relevant technology and leading industry experts. Forecasts are derived from modeling market opportunities based on public domain and proprietary primary data and secondary data sources, and are flexibly structured to account for known and predictive factors. Primary data determines known model data. Models are then adjusted to reflect current deployments, anticipated projects, existing and planned infrastructure, and market drivers and disruptors. Conservative assumptions for predictive factors such as technology pricing and anticipated adoption rates are introduced to determine forecasts.

Key Conclusion: By 2018, the market for Airport ABC eGates and Kiosks will exceed $752 million US annually growing at a CAGR of 19.5% between 2014 and 2018. Revenue growth will be on track to reach a sustainable level of $1 billion US annually by 2020. Europe will dominate the global market in terms of both units sold and revenue through the forecast period reaching nearly 50% annual market share by 2018.

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About Acuity Market Intelligence

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Market Development Expertise
Acuity Market Intelligence provides biometrics and eID data driven market analysis grounded in a thorough understanding of technology concepts and processes. As the electronic identity revolution unfolds, Acuity will continue to help vendors, integrators, investors, policy makers, and commercial executives clarify the context and quantify the data that is required to understand this rapidly evolving eID marketplace.

Acuity’s expertise is applied in 5 key areas:
• **Market Analysis** – Identification and evaluation of key technological developments, market trends, industry players, and deployment effectiveness.
• **Opportunity Analysis** – Vertical market segmentation and identification, prioritization, and sizing of the most lucrative opportunities for a given product, service, or solution.
• **Solutions Analysis** – Requirements and functional specifications
• **Due Diligence** – Evaluation of market players to ensure:
  o Opportunities have been adequately and accurately assessed.
  o Financial, operational, and strategic plans are in place to create sustainable market viability.
  o Product and service quality can be demonstrated.
• **Strategic Planning** – Creation of highly leveragable plans to develop, evaluate, and deploy emerging technology-based solutions with the objective of achieving the highest level of customer satisfaction and sustained market dominance.

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• **Executive Briefings/Strategy Sessions** – Interactive sessions provide targeted insight to Executives.
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• **Reports** – Periodic and one-off targeted analyses focused on a range of topics including: technology evolution, application development, vertical market adoption, opportunity, and competitive analyses.
• **Research** – Standard and custom research projects designed to address specific knowledge gaps.
• **Consulting** – Custom projects designed to support specific Client objectives.

Please contact Acuity Market Intelligence for additional information on services, availability, and fees.

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Preface

February 2014

In the 2010 *Global ePassport and eVisa Industry Report*, Acuity asserted that as ePassports became mainstream and achieved significant market penetration, Automated Border Control (ABC) eGates would proliferate. The report forecast “widespread and accelerated adoption of Automated Border Control in the 2014 to 2020 timeframe”. It therefore, seems fitting that as 2014 begins, Acuity introduces the latest of its global industry reports *The Global Automated Border Control Industry Report: Airport eGates and Kiosks*.

This report is the first in a series intended to provide both broad coverage of developing ABC solutions as well as targeted analysis of specific segments of this emerging marketplace. This includes a range of fully automated, semi-automated, and manual border control technology and processes from ABC eGates and kiosks to visa application and visa waiver biometric data collection to supporting IT systems such global PNR record management and passport and visa information databases. *The Global Automated Border Control Industry Report: Airport eGates and Kiosks* is therefore intentionally limited in scope as a means to provide a deep dive into one facet of this market and does not in any way attempt to marginalize or ignore other important aspects of the larger ABC marketplace. Future reports in this series will address other market sectors based on Acuity’s single most important criteria for report publication; *market demand*.

While the market for ABC eGates and kiosks represents a critical component of overall border automation arena, the overall number of units deployed is not overwhelming. Acuity projects the Total Addressable Market (TAM) for all ABC eGates and kiosks -- airport, land border and seaports -- to be approximately 72,000 units worldwide. Of these, only 8,759 are the ABC eGates that replace border control agents at passport control desks, the most emblematic of all ABC solutions. There are far great numbers of the new and emerging ABC eGate and kiosk solution types. These Automated Passport Control or APC Kiosks, fully Automated Immigration
Check-in or AIC Kiosks, and Automated Immigration Boarding or AIB eGates are defined within the report. Each of these offer semi or fully automated processes designed to both expand ABC passenger targets and provided additional immigration automation capabilities.

In spite of the relatively limited market size -- tens of thousands of units as opposed to hundreds of thousands or millions of units -- the market for ABC eGates and Kiosks represents a far broader opportunity than simply the deployment of these 72,000 units. ABC eGates and kiosks represent the roll-out of customer facing “touch points” to what promises to be a far more complex and highly interoperable 21st century border management IT infrastructure designed to both facilitate global travel and provide enhanced sovereign security capabilities. And, over time these IT systems will be incorporated into an even more comprehensive network that integrates both passenger and immigration processing; a network that will fundamentally reshape the global travel experience.

The report, therefore, provides a targeted window into the future of global travel by focusing on airports which are the defining ABC eGate and kiosk market opportunity and represent more than 85% of the market over the forecast period. For in much the same way that ePassports provided the enabling platform for the initial development of ABC eGates over the past five years, so too will ABC eGates and kiosks pave the way as the enabling platform for fully integrated border control, immigration, and passenger processing over the next five.

Cheers,

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Introduction

The Global Automated Border Control Report: Airport eGates and Kiosks is a data driven analysis of the current state and future of the market. The report relies extensively on primary sourced data -- which for the purposes of this report is defined as quantitative data obtained from sources directly tabulating or producing this data -- and on secondary data obtained from trusted sources. The report leverages model-derived forecasts to present a comprehensive view of the market. Data acquired, modeled, and forecast includes existing and planned eGate and kiosk deployments, international passenger traffic for air, land and sea borders, contract costs, anticipated technology price performance drops, and conservative projections of adoption rates based on economic and regional factors.

Definitions

The analysis includes only automated systems related to airport border control. Kiosks and eGates used for security facilitation such as flight check-in or for automated boarding pass reading at security checkpoints or at airport departure gates are not included. For the purposes of this analysis, the following definitions apply:

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<th>SOLUTION TYPES</th>
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<td>ABC eGates</td>
<td>Automated Border Control Gates including Kiosks delivered as part of the configuration deployed at ARRIVALS or DEPARTURE that replace passport/border control agents seated at desks.</td>
</tr>
<tr>
<td>ABC KIOSKS</td>
<td>Automated Border Control Kiosks at ARRIVALS (or for DEPARTURE pre-clearance) like those deployed in United States and Canadian airports for Global Entry and NEXUS programs. ABC KIOSKS provide essentially the same function as an ABC eGate but without an integrated physical barrier.</td>
</tr>
<tr>
<td>APC KIOSKS</td>
<td>Automated Passport Control Kiosks like those currently deployed at United States and Canadian Airports that expedite ARRIVALS. APC Kiosks capture information prior to arrival at a border control agent’s desk significantly reducing processing time. Most APC Kiosks currently capture only a photo, though they are biometric capable. Some biometric APC Kiosks have been deployed to expedite foreign national arrivals from visa waiver nations.</td>
</tr>
<tr>
<td>AIC KIOSKS</td>
<td>Automated Immigration Control Kiosks for DEPARTURE. There are currently no AIC KIOSKS deployed. These would be part of an integrated immigration processing program used to collect biometrics at check-in, bag drop, or security designed to integrate with DEPARTURE ABC eGates and AIB eGates.</td>
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Methodology

A combination of primary sourced data and model based projected data was used to develop the forecasts and analysis included in this report. Primary data acquired directly through government agencies and well-credentialed non-governmental agencies was presumed valid. Data acquired through sources with less qualified credentials or with strong motivation for particular outcomes was validated through additional sources and/or model based alternatives.

Data and Data Acquisition

Primary data used to complete the analysis and develop forecasts for this report includes:

- Existing and planned ABC eGate and kiosk deployments,
- ABC eGate and kiosk published contracts and pricing,
- Annual airport international passenger traffic figures,
- Annual international tourist arrivals and departures,
- Existing and projected airport Infrastructure including check-in counters and kiosks, and departure gates, and
- Projected growth in international passenger volumes.

*Only Airports currently serving at least 500,000 international passengers annually were included in the report.*

Primary data was obtained directly from government agencies such as ministries of interior, homeland security, border control, and immigration as well as public and private airport...
authorities. Additional data was sourced from non-governmental agencies tasked with providing domestic and global insight into and statistics on global travel, tourism, economic development, and government expenditures. Source materials include online data and databases, published statistics, policy papers, budgets, program analyses, public statements, press releases, and direct consultation.

Finally, data was obtained through publicly available information from, statements by, and direct consultation with civil servants, consultants, vendors, integrators, analysts, and other third parties directly involved or with direct knowledge of specific relevant programs and deployments.

Model Development
Models were developed to project adoption and revenue based on known deployments and contract data. These projections are adjusted to account for regional indicators and variations such as political and social stability, levels of development, financial performance and stability, as well as other country or region specific indicators or influencers. Models are also adjusted to account for existing market conditions, current deployments, anticipated projects, and existing and planned infrastructure. Conservative assumptions for predictive factors such as technology pricing and anticipated adoption rates are introduced to determine forecasts.

Market Analysis
Analysis is drawn from significant market and technical developments, tests, pilots and deployments, public domain and private data sources, research and reports, surveys, and interviews with vendors, integrators, intermediaries, customers, privacy and civil liberties advocates, and other relevant technology and leading industry experts. Critical data and key implications drawn from the primary data and forecasts are filtered through this knowledge base.
Forecasts
Adoption and revenue forecasts are presented globally by region and by type of eGate and kiosk, and regionally by type of eGate and kiosk. The forecasts have been developed through a rigorous process relying on the best available and/or projected data. As with all market forecasts, the most significant indicator is the scale of the projections not the precise numbers. Furthermore, where assumptions were required to calculate forecasts, the underlying principal was to rely on conservative rather than aggressive estimates. In this way, the report offers a conservative market forecast baseline indicating the scale of opportunity expected over the next five years.

Adoption estimates are relative to the Total Addressable Markets (TAM) for each ABC eGate and kiosks solution. For the purposes of this analysis, a per passenger normalized value was determined based on existing ABC solution deployments, awarded contracts, regional service norms, and deployment levels of similar self service solutions. TAM values are than projected based on current and anticipated international passenger traffic volumes at the airports included in the analysis.

Because of the complex nature of the ABC eGate and kiosks market and the associated complexity involved in modeling data and forecasting revenues, it is critical that the methodology, assumptions, and model notes in the Appendix be reviewed to gain relevant insight form the data. Additional information is provided throughout the report in specific sections to reinforce the underlying assumptions where deemed necessary.
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1. Executive Summary

The Airport ABC eGate and Kiosk market is on the verge of transformation. This nascent marketplace based on a series of independent and largely disconnected efforts to address border management on a facility-by-facility basis has begun to coalesce into a more coordinated environment where standards, shared expertise, and best practices will drive collaborative development of integrated border management solutions. The rapid growth of this marketplace will continue to be both cause and effect of this transformation.

1.1 Countervailing Forces Shape Market

The Airport ABC eGate and Kiosk market is being advanced by two sets of critical forces that drive program development. The unifying global market dynamics and trends that reflect technological capabilities, the competitive environment, and broad-based consensus in how advancements in 21st century airport operations will evolve, and the unique regional and local priorities and policies that define specific programs and shape the progress of airport ABC eGate and kiosk development.

Unlike related markets, such as ePassports that have developed in response to mandatory global requirements, airport ABC eGate and kiosk programs are internally driven; influenced, but not bound by, international initiatives and standards. Each program reflects the unique needs, operational requirements, logistical considerations, and immigration imperatives of both the airport and the nation where they are deployed. Even in cases where outside governmental or non-governmental organizations provide funding for projects and offer guidance for program development, sovereign priorities and policies ultimately define the outcome.

The tension between these two sets of forces will play a vital role over the next five years as a critical market transition plays out. During it’s brief history, the Airport ABC eGate and Kiosk market has been defined by a series of distinct projects that address border management on an airport-by-airport basis. Recently, there have been several more coordinated projects, Germany for instance, where a single contract for eGates across all major airports is now in force. The
3. Global Airport ABC eGates and Kiosks Market Forecasts

Global Revenues for Airport ABC eGates and kiosks are projected to reach more than $752 million annually by 2018 on track to reach $1 billion annually by 2020. This represents a Compound Annual Growth Rate (CAGR) of 19.5% over the forecast period. Total revenue growing at a CAGR of 27% over this four year period.

![Global Airport ABC eGates & Kiosks Annual Revenue Graph]

In 2013, there are a total of 1,932 ABC eGates and kiosks installed worldwide. By 2018 this number grows more than 9 times reaching 18,180 units worldwide. During this period, the number of annual units installed grows 450% from  units per year in 2014 to over  units per year in 2018. The overall installed base
ABC Kiosks continue limited market distribution in North America and the Middle East and generate average annual revenues in the $3 million range.

<table>
<thead>
<tr>
<th>AIRPORT eGATE &amp; KIOSK</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>ABC KIOSKS</td>
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<tr>
<td>APC KIOSKS</td>
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<td>AIC KIOSKS</td>
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<tr>
<td>AIB eGates</td>
<td></td>
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<tr>
<td>TOTAL</td>
<td>$309,036,937</td>
<td>$288,753,563</td>
<td>$364,318,362</td>
<td>$516,195,749</td>
<td>$752,811,588</td>
</tr>
</tbody>
</table>

Figure 3-5: Global Airport ABC eGates and Kiosks Revenue by Solution Type Table

Overall revenues decrease in 2015 as the global market reacts to a decrease in pent-up demand for ABC eGates. The market 3 as APC Kiosk revenues 5 million and AIB eGates begin to play a significant role reaching nearly 6 million in revenue. This growth continues, especially in 2018, when revenues increase roughly 7 over the previous year.

Figure 3-6: Global Airport ABC eGates and Kiosks Revenue by Solution Type
Europe maintains its dominant market share position throughout the forecast period, while significant growth in North America cuts into Asia's unit market share.
11.2 Caribbean ABC eGates and Kiosks by Solution Type

The Caribbean is projected to reach just [redacted] million in annual revenues with [redacted] units of all types deployed by the end of 2018. This represents a [redacted] TAM penetration by 2018. The Caribbean, therefore, has significant growth potential beyond the forecast period which could represent as much as [redacted] million in additional revenues to reach full market penetration.

11.2.1 Caribbean ABC eGates and Kiosks Revenue by Solution Type

Revenues by Solution Type are distributed very unevenly over the forecast period. ABC eGates revenues range from a high of [redacted] in 2014 to a low of [redacted] in 2017. APC Kiosks represent a [redacted] of revenues in 2014, grow to [redacted] in 2015, then [redacted] for 2016 and 2017, and end up [redacted] annual revenues in 2018. AIB eGate revenues increase the most dramatically of all solution types peaking in 2017 at more than [redacted] million annually and representing the vast majority of total revenues over the forecast period.

![Caribbean Airport ABC eGates & Kiosks Annual Revenue by Type](image)
Final Thoughts

Over the next five years, as the Airport ABC eGate and Kiosk market begins its transformation from emerging to established opportunity, a degree of uncertainty is inevitable. However, from across the range of high interest constituencies, competing priorities will confront global drivers and local demands creating a dynamic and useful period of market experimentation and shakeout. This process will refine the vision for airport facilitation and the associated integration of IAIP and passenger processing, and produce clarifying best practices that will accelerate and ease further market development.

Standards, formal and informal, will emerge for technology implementation, operations, and process management, and human factors creating more universal and more easily integrated ABC experiences that easily translate across airports, borders, cultures, and languages. True global facilitation requires this level of universal experience. And, it provides a critical step towards achieving high levels of confidence in traveler assessments that helps drive unfettered cross-border access.

With this foundation established, the next vital step towards truly unfettered assess can begin in earnest; creating cross border interoperability among Airport ABC eGate and Kiosk programs. This is, of course, the ultimate goal but represents a far more complex challenge. This level of multi-lateral cooperation will require a delicate but critical balance between sovereign control of security, privacy, and data protection and the compelling motivation to expedite and enhance the international travel experience.
19. Appendix A: Forecast Methodology and Assumptions

Report content is based on a proprietary approach using customized forecast methods and tools applied to primary and projected data.

Methodology

A combination of primary sourced data and model based projected data was used to develop the forecasts and analysis included in this report. Primary data acquired directly through government agencies and well-credentialed non-governmental agencies was presumed valid. Data acquired through sources with less qualified credentials or with strong motivation for particular outcomes was validated through additional sources and/or model based alternatives.

Primary data used to complete the analysis and develop forecasts for this report includes:

- Existing and planned ABC eGate and Kiosk deployments,
- ABC eGate and Kiosk published contracts and pricing,
- Annual airport international passenger traffic figures,
- Annual international tourist arrivals and departures,
- Existing and projected airport Infrastructure including check-in counters and kiosks, and departure gates, and
- Projected growth in international passenger volumes.

*Only Airports currently exceeding 500,000 Annual Internal Passengers were included in the report.*

Primary data was obtained directly from government agencies such as ministries of interior, homeland security, border control, and immigration as well as public and private airport authorities. Additional data was sourced from non-governmental agencies tasked with providing domestic and global insight into and statistics on global travel, tourism, economic development, and government expenditures. Source materials include online data and databases, published statistics, policy papers, budgets, program analyses, public statements, press releases, and direct consultation.
Data was also obtained through publicly available information from, statements by, and direct consultation with civil servants, consultants, vendors, integrators, analysts, and other third parties directly involved or with direct knowledge of specific relevant programs and deployments.

Analysis is drawn from significant market and technical developments, tests, pilots and deployments, public domain and private data sources, research and reports, surveys, and interviews with vendors, integrators, intermediaries, customers, privacy and civil liberties advocates, and other relevant technology and leading industry experts. Critical data and key implications drawn from the primary data and forecasts are filtered through this knowledge base.

Models were developed to project adoption and revenue based on known deployments and contract data. These projections are adjusted to account for regional indicators and variations such as political and social stability, levels of development, financial performance and stability, as well as other country or region specific indicators or influencers. Models are also adjusted to account for existing market conditions, current deployments, anticipated projects, and existing and planned infrastructure. Conservative assumptions for predictive factors such as technology pricing and anticipated adoption rates are introduced to determine forecasts.

Adoption estimates are relative to the Total Addressable Markets (TAM) for each ABC eGate and Kiosks solution. For the purposes of this analysis, a per passenger normalized value was determined based on existing ABC Solution deployments, awarded contracts, regional service norms, and deployment levels of similar self service solutions. TAM values are then projected based on current and anticipated international passenger traffic volumes at the airports included in the analysis.

Adoption and revenue forecasts are presented globally by region and by type of eGate and kiosk, and regionally by type of eGate and kiosk. The forecasts have been developed through a rigorous process relying on the best available and/or projected data. As with all market
forecasts, the most significant indicator is the scale of the projections not the precise numbers. Furthermore, where assumptions were required to calculate forecasts, the underlying principal was to rely on conservative rather than aggressive estimates. In this way, the report offers a conservative market forecast baseline indicating the scale of opportunity expected over the next five years.

Assumptions and Notes

The following assumptions were used in the acquisition, filtering, integration, and calculation of data and the development of associated adoption, and revenue forecasts:

• All revenue forecasts are in United States millions of dollars. All currency conversions were based on current values from the XE Universal Currency Converter (www.xe.com).
• Only Airports with annual international passengers traffic exceeding 500,000 are included in the analysis.
• Annual international passenger traffic numbers for airports based on data from Airports Accounts International (ACI).
• A 5% increase in international passenger traffic was applied to all passenger traffic data.
• This model does not explicitly project for planned new airport terminals, gates, and check-in counters but relies on the 5% across the board passenger volume increase to account for new construction increases.
• A model based on annual international passenger traffic was used to project ABC eGate, ABC Kiosk, and APC Kiosk requirements Additional data on airport check-in counters, self service kiosks, and the number of boarding gates at airports was incorporate d to project AIC Kiosks and AIB eGates.
• Passengers per unit varies based on eGate or kiosk solution type as well as region based on proprietary modeling factors e.g. service levels, economic development, infrastructure investment, etc.
• Adoption rates vary based on eGate or kiosk solution type as well by region based on a number of proprietary modeling factors e.g. service levels, economic development, infrastructure investment, etc.
• The percentage of international passengers at a given airport was used to determine the percent of check-in counters, self-service kiosks, and the number of boarding gates to apply towards ABC eGate and Kiosk projections.

• Assume 1 kiosk per check-in counter plus additional number based on United States ratio of self service kiosks provided by ACI data which equals ~27% of total check in desks based on percent of international passengers.

• ABC eGate and Kiosk program costs vary depending on the existing infrastructure, volume, geographic region, and complexity of applications. Fully loaded costs averages were calculated based on available contract data for existing deployments.

• A 5% annual price per unit reduction was applied to all eGate and kiosks. Regional allowances were applied for price per unit adjustments.

• Average base price for ABC solution types are as follows and include HW, SW, Installation and 3 years maintenance:

| Fully loaded cost per eGate                  | $373,000         |
| Fully loaded cost per ABC KIOSK             | $122,167         |
| Fully loaded cost per APC KIOSK             | $87,087          |
| Fully loaded cost per AIC KIOSK             | $87,087          |
| Fully loaded cost per AIB eGate             | $186,500         |

• Normalized values for the number of passengers per eGate or Kiosk per airport were applied to project Total Addressable Market.

• Replacement units based on 5-year lifecycles were applied to all eGates and kiosks. This affects annual units installed but not total units deployed.

• Where conflicting primary or projected data were identified, conservative estimates were used.
20. Appendix B: Author Biography

C. Maxine Most
Principal, Acuity Market Intelligence

Acuity Founder and Principal, C. Maxine Most ("max"), has 25 years experience in international emerging technology market development. Throughout her career, Ms. Most has provided strategic expertise in emerging markets such as biometrics, electronic identity (eID), e-commerce, interactive services, and 2D and 3D visualization and image processing. She has worked with start-ups, established technology market leaders, Global 1000's and a range of organizations in between.

Ms. Most founded Acuity Market Intelligence in 2001 to bring strategic market development expertise to the then nascent biometrics market. Since that time, Acuity has earned a reputation for consistently providing original, provocative, accurate, and reliable thought leadership and industry analysis that Clients rely on to achieve business success.

Ms. Most authored Acuity’s The Future of Biometrics, The Global ePassport and eVisa Industry Report, and The Global National eID Industry Report. She regularly contributes to industry publications and presents at industry events on biometrics and eID trends, visions, and the data that support them.

Previously, she managed the Computer Aided Molecular Design market for Silicon Graphics Computer Systems, directed Pacific Rim operations for a hospitality-based interactive services company, and founded and operated a Silicon Valley-based retail company. She has also designed and delivered sales and technical training courses worldwide and began her career as a software engineer specializing in 3D graphics applications. Ms. Most is a graduate of the University of California, San Diego with a multi-disciplinary degree in Mathematics, Computer Science, Economics, and Visual Arts.
The Global Automated Border Control Industry Report: Airport eGates & Kiosks

Published February 2014

Market Analysis and Forecasts 2014 to 2018

Comprehensive Market Data. Critical Insight. Targeted Revenue Forecasts


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