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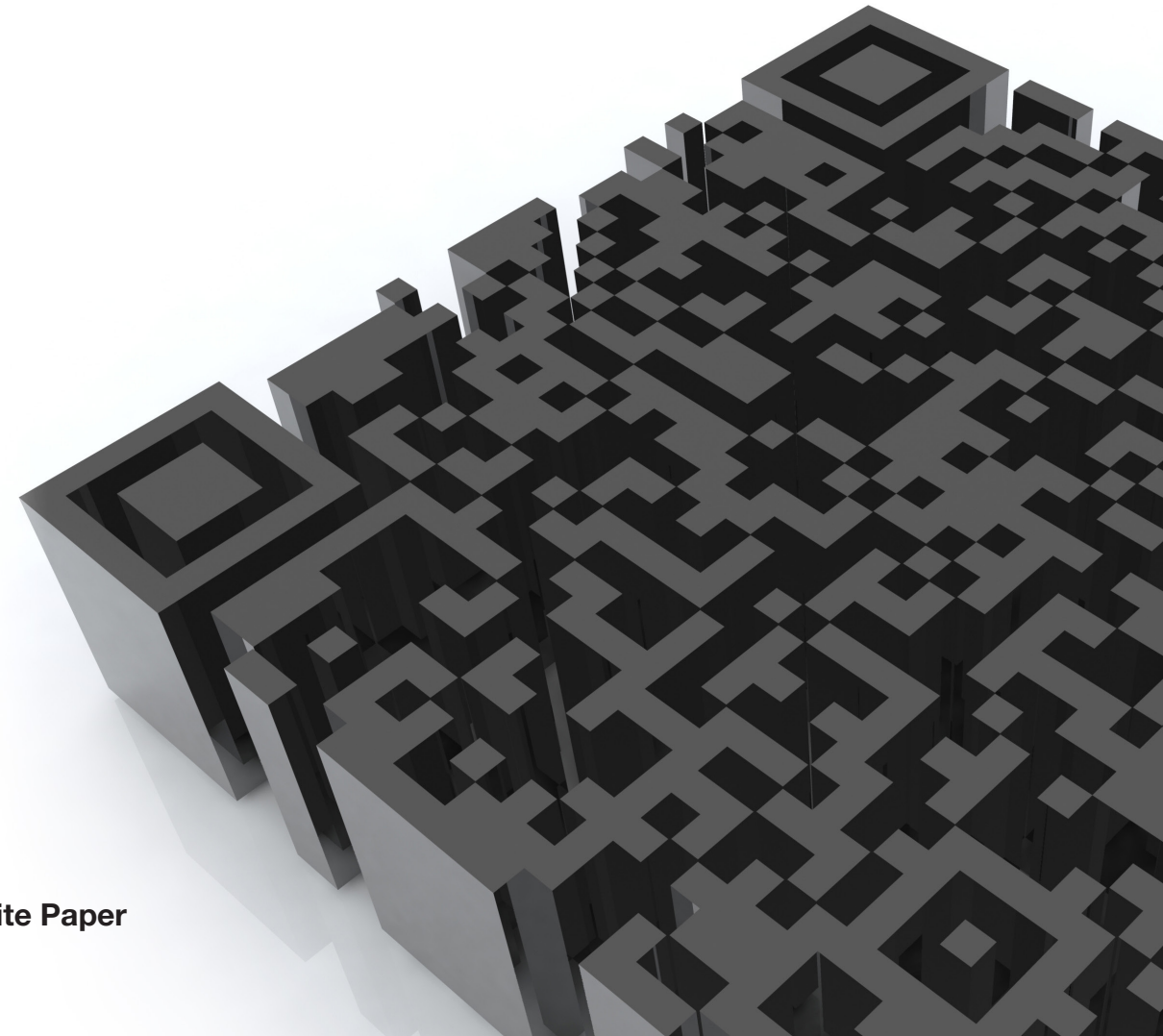
RAISING THE BAR

Five tips to finding the Mobile Barcode SDK that's right for You



Manatee Works **White Paper**

INTRODUCTION

Barcodes have become commonplace in our everyday life. They have moved from the grocery aisle and shipping label onto everything from tattoos and print ads, to television and instructional materials. This is due greatly to the rapid rise of mobile devices, starting with handheld scanners, portable computers, and now smartphones. No longer is the barcode used just for the supply chain; with their smartphones in hand, consumers now interact with barcodes on a daily basis as well. Barcodes enable a host of marketing, promotional, tracking, shopping, and workflow management applications. They deliver on the promise of extending the reach of brands, creating more efficient work environments, growing sales and revenue, and much more. Today, organizations of all shapes and sizes incorporate barcode technologies into their systems for business to business (B2B) and business to consumer (B2C) applications alike.

With the explosion of mobile application development has come the explosion of the software tools for mobile apps. Barcode scanning solutions, also called barcode decoders, are many. Choosing the best barcode scanning software development kit (SDK) can be a daunting task for application development teams. In this white paper, we offer five simple tips to help guide you through the SDK discovery process, enabling you to make a more informed decision for your business.

1. KNOW YOUR NEEDS

Do you have a solid grasp of "the ask"?

Often, when an application developer is tasked with building a new application, the requestor does not provide much direction beyond, "include barcode scanning capabilities." Before starting the search for a barcode decoding SDK, do your homework. Discuss with your internal stakeholders exactly what it is they're looking for. A few questions to consider asking:

- **What are you hoping to achieve by including barcode capabilities within the application?**

  This may seem like an obvious question, but it's not; barcodes can offer a number of advantages to an application like ease of data collection, improved accuracy, data security, and faster input. Knowing which of these benefits is most important to your stakeholders is crucial to picking the right barcode and software. For example, if your application requires highly reliable and secure barcodes, you should consider using a 2 dimensional (2D) barcode like PDF417 or Data Matrix.

- **Who is the target audience for the application?**

  Is your application for consumer use, enterprise, or a controlled user base? Consumers demand intuitive, easy to use solutions, while enterprises place high value on stable, secure, and well supported applications. When evaluating barcode SDKs, be sure to consider these factors as not all SDKs are tuned or priced to meet every scenario.

- **What will be the User Experience (UX)?**

  It is important to know the expected user interface and experience when evaluating barcode solutions. Some SDKs offer a "high-level" interface for capturing and displaying the barcode image, but these can be inflexible and you may not be able to create the user interface you desire. Consider scan orientation too; do you need to scan with the device in portrait or landscape mode? Or Both?

- **What will be the physical environment for scanning?**

  Just as important as knowing the expected UX is understanding the conditions under which barcodes will be scanned with your application. Consider the lighting conditions (do you need an SDK that supports barcode illumination?), distance the user will be from the codes (do you need an SDK that supports flexible zooming?), the number of barcodes present in the fields of view (do you need an SDK that can detect multiple barcodes in a single image?), scanning angle (do you need a solution that supports a barcode aimer for difficult to reach objects?), and so forth.

- **What symbology or symbologies make the most sense for your initiative?**

  If your application needs to scan a predefined barcode or set of barcode symbologies, then this decision is already made for you. However, if you've been tasked with developing an entire barcode ecosystem, including selecting the type of barcode to use, a number of factors should be considered. This is a very broad topic; there are many different types of barcodes each with strengths and weaknesses requiring careful consideration. Some of the variables that influence this decision include the type of data to be encoded (numeric, alphanumeric, binary, etc.), the amount of data, the print area available for the barcode, the likelihood that the barcode can be damaged, and so on.

2. CUSTOMIZATION

Is the SDK easy to integrate into your existing app and does it allow you to tailor the look and feel according to your brand's needs?

Perhaps most fundamental in choosing a barcode SDK that's right for you is its flexibility – both in the technical integration process and as part of the business's branding objectives.

- **Full control over the user interface**

  Be sure the SDK you select allows you to meet your enterprises' standards for colors, logos, and look and feel as well as copyright and trademark acknowledgment. Some software products require you to include their copyright and trademark notices within your application or even force you to display an extraneous logo. These types of solutions may be in conflict with your organization's branding policies and goals. Look for an SDK that gives you complete control over the user interface for barcode scanning.

- **Support for both landscape and portrait scanning**

  Not all barcode decoders provide scanning in both orientations—this could limit your user interface and subsequently the usefulness of your application.

- **Flexible analytics**

  Many mature barcode SDK products offer rich usage tracking and data analytics for your barcode scanning applications—but be wary of these services: be sure they are optional and their operation doesn't interfere with your application's performance or violate your organization's privacy policies. Some barcode SDK offerings claim ownership of collected data or charge a premium to disable the analytics portion of their product.

- **Ownership of derivative works**

  A careful review of an SDK's license agreement may reveal some unanticipated surprises, like who has rights to any

derivative works you create. Some open source licenses prohibit commercial application development or require any derivative works to also be made available freely under the same open source license.

3. PLATFORM DIVERSITY

Is the SDK available for all major mobile platforms?

The mobile operating system or systems you plan to deploy your application on play an important role in SDK selection. While iOS and Android may be a given, what about Tier 2 platforms like Windows Phone or Blackberry – will your target audience use these platform? Even if your initial deployment is only one or two popular mobile platforms, you may want to choose an SDK that has broad operating system support to meet future needs. There are several SDK options available for both Android and iOS but only a few support a broad spectrum of mobile (and desktop) operating systems.

If you will be using an application framework like PhoneGap, iFormBuilder, or Xaramin, consider a barcode SDK that is explicitly supported by the framework. Having an SDK that has already been tested and integrated with your framework of choice can save countless hours of learning, frustration, and avoid compatibility issues.

Just as important is the application programming language you will use. While some mobile platforms are virtually homogenous in this regard (e.g., Java on Android devices), other platforms have multiple options (Objective C or Swift on iOS). Be sure the SDK you select is fully compatible and supported in the programing language of your choice as well.

4. DECODING CAPABILITIES

Does the SDK provide a rich set of features and options for barcode scanning?

A good barcode SDK will do far more than just decode a barcode from a captured image. It should offer a broad set of advanced features for controlling the mobile camera and tuning the scanning experience. Here are just a few of the features you should look for:

- **Broad barcode symbology support**

  There are dozens of barcode types commonly used worldwide today – everything from QR Codes used in sales and marketing, PDF417 used in government IDs, to the commonplace UPC/EAN barcodes found on consumer product packaging. A robust SDK can decode all major barcode symbologies. Look for an SDK that includes all or most of these symbologies as part of its standard offering:

  Aztec Code
  Codabar
  Code 11

Code 25
Code 39
Code 93
Code 128
Data Matrix
EAN
GS1 Databar
MSI Plessey
PDF417
QR Code
UPC

Avoid SDKs that only support a small subset of these barcode types. If you're developing and application for scanning consumer products, be sure your decoder supports add-on or supplemental codes (EAN 2, EAN 5).

- **Omni-directional scanning support**

  Just because your user holds their smartphone in a landscape orientation shouldn't mean that the barcode itself must be in a landscape orientation as well, or that the barcode cannot be upside-down or at an angle to the camera frame. A good decoder will handle barcodes in just about any orientation, irrespective of the angle to the camera. This is a feature known as omni-directional scanning.

- **Support for advanced camera features**

  Robust barcode decoding solutions provide support for leveraging advanced features of the mobile device camera. These include use of the LED flash as a light source (for low light situations) or aiming pattern, enabling (and even disabling) the autofocus, and use of any zoom feature. Be sure to look for these features in the SDK solution you choose.

- **Support for industry standard messaging**

  If your application needs to read industry standard barcodes of some type (e.g. GS1 GTIN, Department of Defense IUID, driver's license AAMVA, etc.), then look for a barcode SDK that includes support in the form of parsing and validation for the standard you need. These powerful add-ons to a barcode SDK can translate to tremendous development savings in time, effort and accuracy.

5. SERVICE AND SUPPORT

What are the terms of service offered by the SDK provider?

Finding the right SDK goes beyond finding a quality product – it also means finding a quality partner. Look for a provider that will provide an acceptable degree of support through the lifecycle of your app. Ask to see their terms of service and what they will charge to support and provide software updates for the SDK once you've made an initial purchase. You will want to ensure the provider is equipped and prepared to offer a level of service commiserate with your business needs. In this case, the old adage is true: do business with people you trust. While open source solutions may look attractive in terms of initial investment, those saving can evaporate quickly if you find yourself without integration support, or worse, facing defective or inadequate software with no vendor to correct it.

VALUE

Simply put, what are you getting for your money?

This may seem intuitive, but when corporate budgets are on the line, it can be tempting to source the least expensive option available. However, the best solutions go beyond price. Consider the tips below when making your decision.

1. Know the total cost of ownership (TCO) of the SDK. Many commercial products offer perpetual support and upgrades: but for an annual or monthly fee. Still other products **require** an annual or monthly license fee even to continue to use their SDK. Be sure when you compute TCO you include these costs for the entire life of your application, not just the initial investment in software and development.

2. Be sure the SDK is well supported. This goes beyond just a support contract offered by the vendor. Look for the added resources of a network of developers using the product, copious sample code, knowledge bases, and case studies; these are invaluable to developers and stakeholders alike.

3. Choose an SDK that saves your developers time, but not by sacrificing features and function. The best barcode SDKs provide a consistent application programming interface (API) across platforms; they support a wide variety of programming languages; they have already been integrated and tested with popular application development frameworks; and, they don't restrict or limit how your application performs or looks.

4. Does the SDK vendor have a product roadmap you can benefit from? Even if this is your first barcode scanning application, you've likely already discovered not only the rich benefits that can be realized with barcodes, but also the diverse solutions sets available to leverage this technology. Don't look for just an SDK vendor; look for an experienced and forward-thinking partner that has an advancing barcode product line that you can use as your needs grow.

Bear in mind the anticipated overall value that an SDK offers as you make a decision.

CONCLUSION

A barcode SDK can enable a world of possibilities – bridging the physical-digital divide and allowing for a host of practical implementations. Finding the barcode SDK that fits into your overall objectives will allow your organization to maximize ROI, creating meaningful user interactions that helps extend brand awareness, turns fans into advocates, and enables a host of innovative enterprise applications that can drive efficiency and revenue. Armed with the tips above, your organization can find a solution that makes sense.

ABOUT

Manatee Works offers simple, affordable, accurate, and fast barcode decoding solutions for smartphones, tablets and wearables. Our barcode scanning software is robust enough for the most demanding, enterprise-grade applications. Our toolset and complementary products make those applications a snap to develop. Supporting the widest range of symbologies, platforms, and development frameworks in our competitive landscape, we deliver mobile barcode scanning solutions to a variety of distinguished, world-recognizable customers throughout various industries.

Manatee Works' technology was acquired by **Cognex Corporation** in 2015. The Manatee Works team remains committed to pioneering innovative mobile solutions, while ensuring our commitment to customers by exceeding their expectations.

Cognex Corporation designs, develops, manufactures, and markets a range of products that incorporate sophisticated machine vision technology that gives them the ability to "see". Cognex products include barcode readers, machine vision sensors, and machine vision systems that are used in factories, warehouses, and distribution centers around the world to guide, gauge, inspect, identify, and assure the quality of items during the manufacturing and distribution process. Cognex is the world's leader in the machine vision industry, having shipped more than 1 million vision-based products, representing over $4 billion in cumulative revenue, since the company's founding in 1981. Headquartered in Natick, Massachusetts, USA, Cognex has regional offices and distributors located throughout the Americas, Europe, and Asia. For details visit Cognex online at **http://www.cognex.com**.