

Ford SYNC and Microsoft Windows Embedded Automotive Make Digital Lifestyle a Reality on the Road

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ABSTRACT

With Ford SYNC, Microsoft Corporation and Ford Motor Company have democratized in-vehicle infotainment systems - delighting consumers and bringing a new kind of agility to the automobile industry.

Built on Microsoft Auto (now Windows Embedded Automotive), Ford SYNC is a factory-installed, voice-controlled communications and entertainment system that allows drivers to converge their digital lifestyle with their life on the road. Windows Embedded Automotive is an industry leading technology platform that provides integrated infotainment features and a rich user interface. Car manufacturers and suppliers worldwide can use this software to create differentiated, infotainment in-vehicle systems that are immediately attractive to consumers.

This white paper will examine:

- Past approaches to in-car infotainment system development;
- The evolution of the Windows Embedded Automotive platform as Microsoft addressed market readiness and other business/technical issues through collaboration with the automotive industry;
- How Ford and Microsoft had a common vision, validated it with research, and worked in partnership to bring the vision to market, giving consumers the ability to combine their digital lifestyle with their life on the road;
- How the auto manufacturer democratized in-car systems by delivering it first on the most affordable car in Ford's line-up, the Focus sedan and coupe, to the increasing surprise and delight of its customers;
- The collaborative marketing campaign that leveraged Ford and Microsoft brand name recognition around the globe;

- Positive business results generated by Ford SYNC, including broad consumer satisfaction with the technology; and,
- The future of Ford SYNC and Windows Embedded Automotive technology.

INTRODUCTION

From the home, to the workplace, to everyday communication and entertainment, digital technology is pervasive in today's consumer lifestyle. For the most part, the automobile has failed to keep pace with this digital technology revolution, due largely to systemic industry issues, such as a multi-year research and development cycle and a 3rd party partnership model that has traditionally kept auto manufacturers distanced from faster-paced, technology component suppliers.

Ford and Microsoft took a different approach to vehicle infotainment systems. Both companies were early to recognize the trend of digital convergence in the automobile, and shared a vision for an affordable, product that would reach beyond the niche markets of luxury auto buyers and after-market enthusiasts.

The result of this close collaboration is the Ford SYNC product (*See Figure 1*), which is the best-selling vehicle infotainment system to date. SYNC has redefined Ford's image, thrilled customers, and even revolutionized the car itself.

For Microsoft, SYNC was an opportunity for the software maker to further evolve its platform, in partnership with one of the leading companies of the auto industry. What's more,

the lessons learned during the co-development and marketing of SYNC are benefitting auto manufacturers worldwide.



Figure 1. SYNC-equipped Ford Focus

Overview of Vehicle Infotainment System Development

Microsoft had a vision to extend the power and convenience of software to consumers on the road. The company collaborated with auto manufacturers over several years, allowing it to shape the technical backbone of vehicle infotainment systems-and what would become one of the most innovative of these systems to date-Ford SYNC.

Microsoft's automotive efforts began in 1996 with core technology based on Windows CE. The company chose this purpose-built operating system (OS) because it was designed for mission-critical embedded devices that had a minimal footprint. The OS has been used by industries that require reliable performance, such as healthcare and industrial automation, making it particularly suitable for demanding automotive applications.

By the late 1990s, the general view was that in-car systems would appeal only to luxury car buyers or after-market enthusiasts. Early attempts to meet the needs of this market lacked mass appeal due to high cost and a niche audience; however, they represented important milestones in Microsoft's development of an in-vehicle infotainment solution.

A New Approach Takes Shape

Throughout the late 1990s and early 2000s, Microsoft teamed with auto manufacturers, including BMW, Citroen, Toyota, Volvo, and Fiat, to enhance and further develop its automotive operating system and infotainment systems.

By 2002, it was clear that automobile drivers were going to want their personal devices integrated into vehicles. The standard for Bluetooth-an open wireless technology for exchanging data over short distances-was approved, enabling drivers to connect their mobile handsets with vehicles. In addition, the first portable media players were appearing on retail shelves, marking the emergence of the digital music revolution.¹

The central problem for the automotive industry was that consumer electronics were evolving at a rapid pace, while automotive design cycles were still geared to multi-year planning and development cycles. In partnership with manufacturers, Microsoft developed an updatable device-gateway, which would effectively separate the fast changing pace of consumer device innovation from the relatively slow cycle of vehicle delivery.

The first major proof point of Microsoft's vision came about as a result of its partnership with Fiat Group Automobiles. Fiat wanted a way to integrate mobile devices with cars to meet the needs of the growing smartphone market in Europe and shared Microsoft's concept of creating a device-gateway with a rich user interface - soon to be known as Blue&Me. Microsoft contributed the critical software platform enabling Fiat to introduce the Blue&Me in-vehicle infotainment system to market just 24 months after it was conceived in 2004.

This voice-activated system featured Bluetooth wireless technology for mobile phones and USB connectivity for digital music players and other devices. It could read FAT file systems on MP3 players, allowing for voice commands. There were multiple Blue&Me product iterations for navigation, fleet, and other applications, and, by January 2010, more than 1 million Fiat vehicles equipped with Blue&Me had been sold.

Market Research Weighs In

In 2006, Microsoft engaged FITCH to research automotive customer needs. One key finding of the research indicated that consumers ranked safety, music, and navigation as more important than other factors, (see [Figure 2](#)).

Microsoft also discovered that for many consumers the importance of GPS navigation was falling, while the significance attached to connectivity with mobile phones and digital music players was rising. This made sense because mobile phones had more daily relevance in most people's lives than did the navigation features in a car. The phone was a more personalized device because it helped people keep in touch with work, family, and friends.

The research also revealed that drivers wanted access to the information on the mobile devices they carried daily (e.g.,

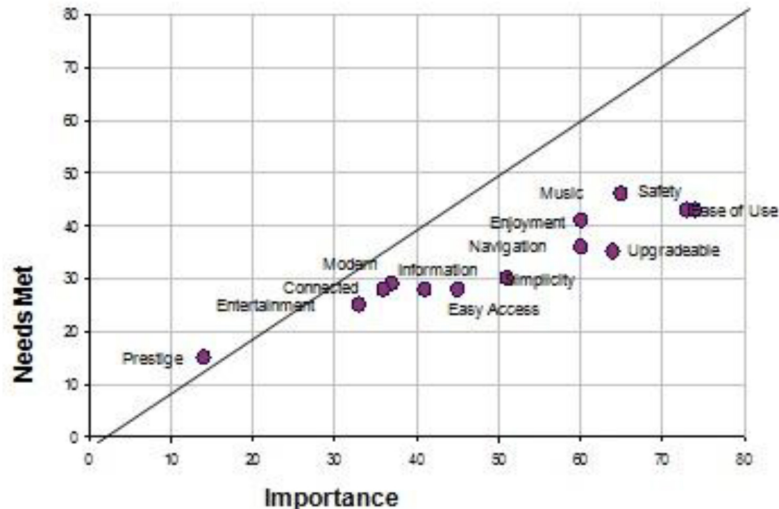


Figure 2. excerpt front FITCH 2006 Observational Research, Customer Segmentation, Analysis

songs on an MP3 player, phone numbers on a mobile phone) when they got inside their vehicles. Equally as important, people wanted to use these devices with convenient voice-control operation.

Ford's Vision and Collaboration with Microsoft Drives Development of SYNC

While Microsoft was evolving the technology, executives at the Ford Motor Company were also building on their vision - to reach broad numbers of drivers by developing an affordable infotainment system with widespread market appeal.

Ford was pursuing dual development tracks when it started discussions on in-car infotainment systems with Microsoft in early 2006. One engineering group at Ford had a mandate to integrate simple audio input jacks for MP3 players in to a car; another team was tasked with developing a Bluetooth interface for hands-free telephone operation.

The companies had a long history of working closely together at the enterprise IT level. Occasionally, IT meetings turned into discussions about how to grow and extend the Microsoft relationship at Ford. Microsoft also had representatives on Ford's Digital Lifestyle Council, which provided a forum for an extended interchange of marketing and engineering data and insights.

Out of this relationship and the discussions it fostered, important new concepts emerged at Ford:

Delivering value directly to consumers through software: Until then, software had been predefined by Tier One OEMs such as Delphi and Motorola, as opposed to Ford having a

direct and collaborative relationship with technology providers (e.g., Microsoft).

Using software as an independent platform to build an infotainment system: Having a core software platform would give an auto manufacturer like Ford more flexibility and extensibility to innovate, speed up the product refresh cycle, and evolve SYNC at a faster cadence than is normal in the auto industry, matching the consumer electronics industry.

Accessing mobile phones, music players, and other devices: Infotainment systems had to be technology-agnostic to work with whatever handset or media player the driver brought into the vehicle.

Democratizing in-vehicle infotainment technology through software: Affordability and accessibility would be critical to the infotainment product's success. Ford planned to introduce SYNC across multiple product lines, in both economy and luxury vehicles.

Promoting hands-free use of cell phones and media devices: Ford focused on voice recognition as a key technology for helping drivers keep their hands on the wheel and eyes on the road.

Recognizing Microsoft as an automotive software supplier: The auto industry had built-in skepticism about the ability of software vendors to satisfy the special requirements traditionally met by Tier One OEMs. These include auto-grade quality and parts scheduling, plus the need to run reliably for decades or hundreds of thousands of miles.

Microsoft's years of experience in the vehicle infotainment industry, coupled with the proven success of Fiat Blue&Me