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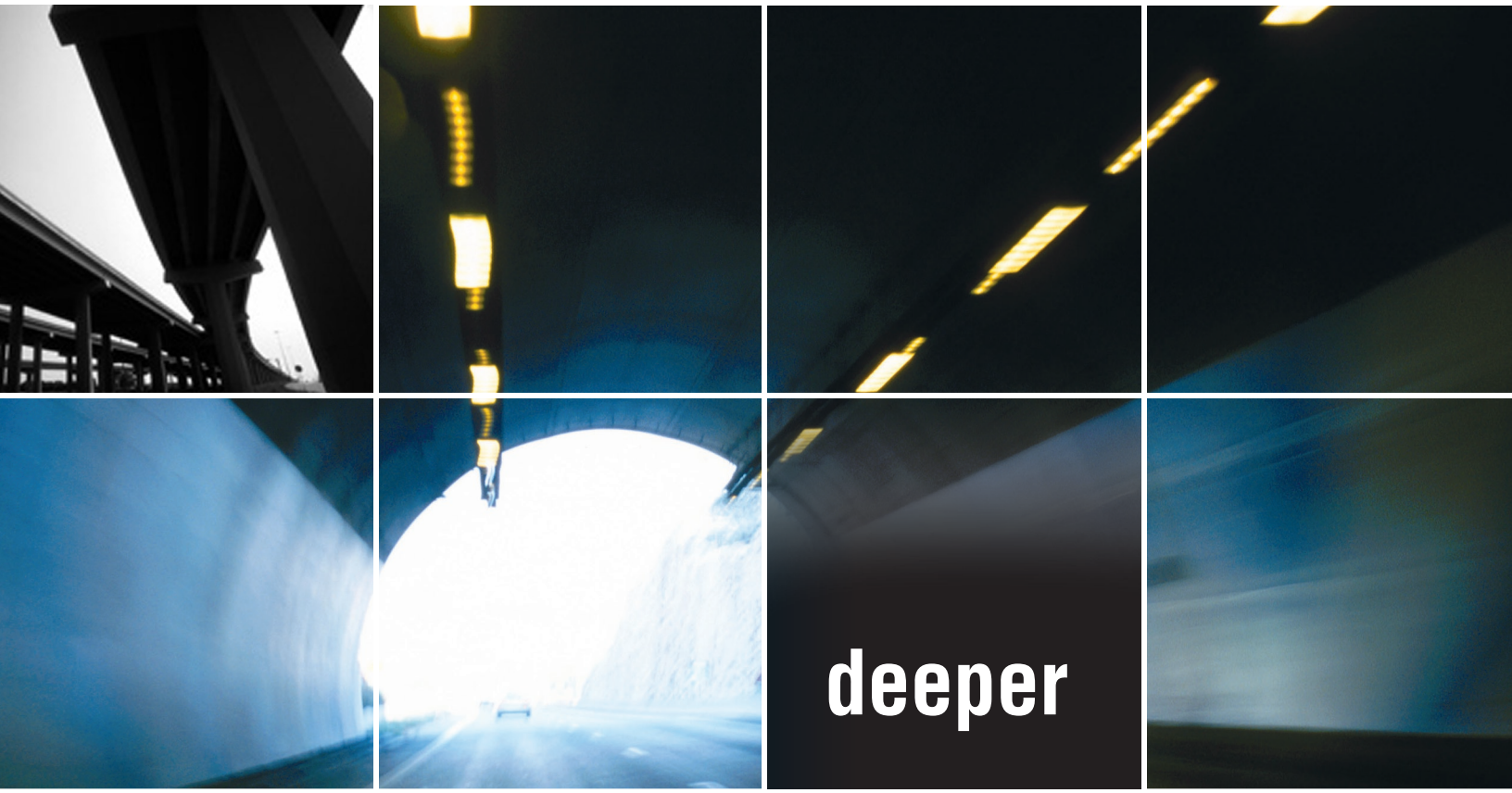
The automotive industry: On the road to on demand



An IBM Institute for Business Value executive brief

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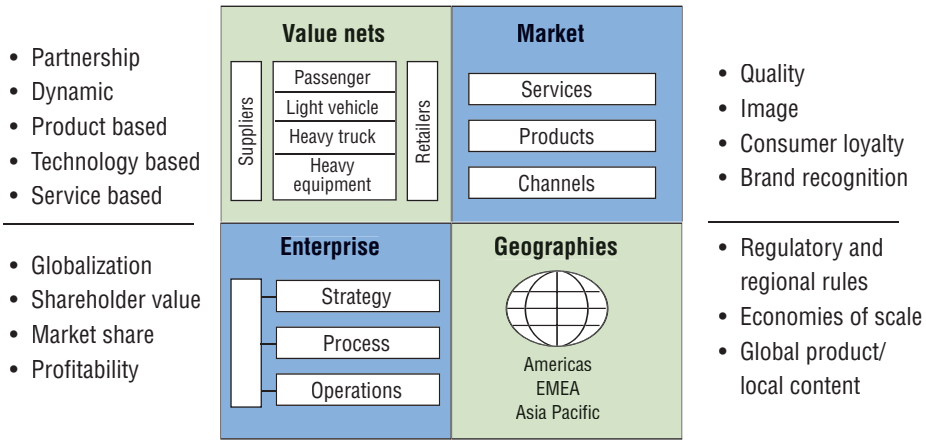
Automotive at a crossroads

In order to adapt to constant economic, cultural and technology changes, the automotive industry has reinvented itself time and again over the last century. Today, automotive is truly global, with design and manufacturing occurring on virtually every continent in the world. However, increasing globalization has brought the industry to a major crossroads in its evolution.

Automotive is comprised of large segments, including passenger and light vehicles, heavy truck and heavy equipment manufacturers, suppliers and service providers. Motor vehicle output alone represents almost four percent of the U.S. GDP[1]. The passenger and light vehicle segment is a complex ecosystem made up of Value Nets, Markets, Enterprises and Geographies, each with their own objectives and characteristics.

Figure 1.



Source: IBM Business Consulting Services analysis, 2003.

In the past, automotive companies have utilized mergers, alliances and consolidations to expand and compete in an increasingly global and challenging marketplace. In fact, the top nine global OEM's currently control more than 80 percent of global light vehicle sales.[2] At first, results seemed to indicate that these acquisitions and

consolidations were making companies bigger, better and more competitive. However, these changes have not altered the fundamental obstacles automobile manufacturers face today. Indeed, every segment of the industry is rife with challenges and risks, including:

- *Time-to-market* – A new vehicle can average 32 months[3]
- *Forecasting* – Currently, manufacturers look backward to what was sold from inventory to determine production levels, rather than aggregating data to forecast what customers actually want
- *Production overcapacity* – Currently estimated at more than 20 million excess units.[4] This represents approximately 95 plants worldwide.[5]
- *Inventory management* – Locate to order processes are becoming increasingly necessary to drive down costs and increase sales
- *Quality* – Warranty costs average more than US$700 per vehicle in the U.S. alone.[6]
- *Profitability* – Technical complexity and innovation are increasing the cost of development, yet dramatic cost reductions in bringing new products to market are imperative to remain competitive
- *Government regulations* – TREAD, Block Exemption, CAFÉ standards, safety requirements, Asia Free Trade Agreement (AFTA) and vehicle end of life management are increasing the cost and complexity of doing business.

Automotive companies have worked hard to address these and other challenges, but competition remains as difficult as ever. Continued acquisitions and mergers are not a guarantee of increased revenue, decreased cost or greater market share. After the merger frenzy of the last several years, brand expansion has peaked, and global auto manufacturers are looking to expand their equity stake in their core brands. Automotive companies must take a different approach to accomplish their goals and improve shareholder value. In order to overcome these challenges, the automotive industry needs:

- Greater *focus* on consistent core processes and competencies and differentiating tasks and assets with the use of tightly integrated strategic partners to manage non-core business components
- Increased *responsiveness* to intuitively sense and respond to changes in the market environment, as well as the needs of customers and all participants in the value net

- *Variable* business processes and cost structures that scale across value networks in order to reduce risk and operate at higher levels of productivity, cost control, capital efficiency and financial predictability
- Improved *resilience* to address unpredictable internal and external pressures – be they technological, economic, political or social.

Automotive: New path, new players

As automobile companies implement different business models to remain relevant and viable in an environment of constant change, two distinct roles are emerging– the Vehicle Brand Owner (VBO) and the Vehicle Integrator (VI). The VBOs focus around core competencies in customer experience and product innovation. They have a comprehensive understanding of customer wants and needs – at times even creating the market by leveraging multiple channels to "touch" the customer. VIs focus on vehicle order and delivery and value net collaboration. They concentrate on production and assembly and distribution processes. VIs also have the ability to interchange suppliers and partners in their value net. Both VBOs and VIs optimize the value net by forming relationships with key partners and suppliers and exiting and/or divesting nonstrategic (or non-core) facets of the business in order to lower costs and increase competitiveness. For example, some auto manufacturers have spun off their components businesses, while others have outsourced their assembly operations – retaining the design and engineering functions as their core competencies. These actions move companies along the road to an on demand operating model by helping the automotive enterprise to become more flexible and respond rapidly to customer demands, market opportunities and external threats.

Automotive manufacturers have typically kept all aspects of automotive design and production in house. But over the last 10 years, manufacturers have begun to outsource more of the design and build functions to suppliers and partners, while retaining manufacturing and assembly control. With the intense pressure to reduce costs and cycle times, organizations have begun to view *outsourcing* as a major lever in shifting fixed costs to variable costs within the enterprise. An examination of their core competencies has led many manufacturers to outsource increasingly larger components of the vehicle, including the manufacture and assembly of major components. Tasks that include everything from design and engineering to component assembly are outsourced, with many transferred to low-cost labor pools overseas. This allows expenses to rise and fall with revenues, making profit targets more manageable and predictable for the automotive manufacturer.

Recruiting strategic partners to optimize the value net is another action companies are utilizing to improve their position. Strategic partners and suppliers are critical to the new value net – without these players, automotive manufacturers cannot be successful. Once companies have defined their core competencies, and which tasks and activities they are going to outsource, they can identify the strategic partners and suppliers to best help them round out their ecosystem.

As early adopters begin to take these key actions, industry differentiators emerge. Customer experience, product innovation and cycle time, vehicle ordering/speed of delivery, and value net collaboration and coordination are differentiators that drive fundamental imperatives and, in turn, create new roles and players in the automotive ecosystem.

Figure 2. Fundamental imperatives.

Industry identifiers	Fundamental imperatives	Industry players
Customer experience	• Intensify brand recognition and loyalty • Focus on establishing a lifetime bond with the customer • Improve service focus quality (aftermarket)	• Vehicle brand owners • Service providers • Retailers • Others
Product innovation and cycle time	• Reduce the time to market for new products • Explore new partnerships to advance innovation • Refocus electronics/software focus in product development and product lifecycle maintenance • Sustain high product quality	• Product innovators • Technology specialists • Systems integrators • Others
Vehicle order and delivery	• Implement flexible manufacturing operations globally • Implement transparent global order processes • Reshift point of product customization closer to end customer • Reduce operations costs from factory to customer delivery	• Vehicle assembly specialists • Manufacturing specialists • Channel specialists • Others
Value net collaboration	• Explore value nets around innovative technologies • Improve performance by sharing real-time information throughout the value net • Utilize global labor markets where appropriate	• Relationship specialists • Joint venture specialists • Technology integrators • Others

Source: IBM Business Consulting Services analysis, 2003.

These imperatives will help auto companies compete in the new auto ecosystem. For example, the entire industry is striving for significant improvement in product innovation and cycle time. The ability to introduce new products more quickly than the competition provides several benefits, including reduced development costs. A new platform program can cost approximately US$1 million per day.[7] If a program could be brought to market in 24 months instead of 32, manufacturers could realize

a savings of US$240 million per program. In addition to saving money by bringing the product to market more quickly, first mover advantage provides a larger market share, and more profits. This translates to a 13 percent higher market share and five percent higher profit, on average.[8]

New direction, new destination

New imperatives are driving specialization, changing the automotive blueprint from the traditional siloed view to a dynamic, networked ecosystem. In the new ecosystem, virtual value nets will lead to new partnerships which will be formed quickly in response to market needs. Competencies and players in other industries will become integrated as parts of the automotive ecosystem, and local and regional ecosystems will begin to transform into a single global system. In this environment, information can flow in realtime throughout the value net.

A roadmap to on demand

Automotive companies moving toward on demand share common attributes: increased focus, responsiveness, variability and resilience.

A *focused* automotive company:

- Concentrates investment in areas that differentiate it from competitors
- Establishes a clear market profile and customer value proposition
- Collaborates throughout the value net to develop an all-encompassing customer profile
- Drives incremental revenue from in-sourcing strong components.

Example: An automotive manufacturer determines that the majority of revenues and profits come from the luxury class segment of their customers. The vehicles in this segment contain many advanced technology and engineering features. The manufacturer decides to concentrate capital expenditures on leading-edge design and engineering features, emphasizing skill and expertise in this area to the customer base. To support this focus, the manufacturer sells off a small division that provided smaller, mid-priced vehicles to another company which specializes in that market segment. The manufacturer emphasizes its focus on luxurious, technically sophisticated vehicles through marketing and advertising campaigns.

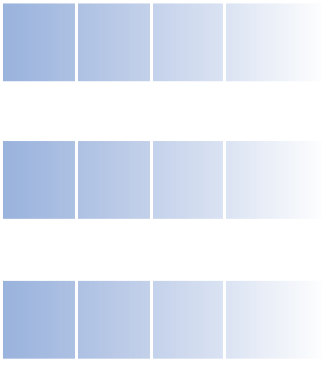
A *responsive* automotive company:

- Quickly identifies and captures new opportunities
- Reduces development cycle time, introducing new products and services to market faster and with greater success than its competitors
- Builds vehicles customers are passionate about by accurately understanding customer wants and needs, allowing their vehicles to sell with a value premium and virtually eliminating the need to sell the products at a discount
- Aggregates and shares data throughout the value net – freely sharing information among suppliers and dealers to take advantage of opportunities and address issues quickly and efficiently
- Empowers employees and customer facing agents to make fast, well-informed, customer-focused decisions.

Example: An automotive manufacturer identifies that recent sales volume for a high-end model is down dramatically. Through interaction with the dealer community, the manufacturer learns that many buyers are going to a competitor that has released a new version of a similar vehicle. Customers are paying a premium for this vehicle, which has additional high-end options. The manufacturer recognizes that changes must be made immediately. By integrating new features and options into their vehicle to compete with its competitor within the current model year, the manufacturer recaptures lost sales and revenue for both itself and the dealer community.

A *variable* automotive company:

- Builds capacity to handle an average load
- Supplements internal capabilities with out-tasking to support peak capacity
- Has the ability to produce virtually any vehicle in any plant anywhere, at any time
- Completely outsources non-core components
- Shifts cost structure from predominantly fixed to predominantly variable
- Scales capacity/inventory smoothly in line with actual demand.



Example: An automotive manufacturer identifies a significant increase in demand for a particular model in an emerging market. Since the manufacturer has standardized on a few main body styles, using flexible planning and manufacturing processes, the manufacturer is able to rapidly shift production for the popular vehicle to the country where it is most in demand. With minimal effort, the manufacturer adjusts the assembly line and produces the product in the local market, reducing costs and increasing revenue and profit.

A *resilient* automotive company:

- Possesses realtime knowledge of exposure to operational, market and governmental risks
- Maintains service levels and operational continuity even in times of turmoil
- Decreases number of points of vulnerability or potential failure
- Effectively distributes risk with strategic partners
- Builds robust, "self-healing" organizational capabilities (process and technology).

Example: An auto supplier monitors warranty and failure analysis data using electronic chips installed in its wiper motors and finds that a new model's motor is prone to failure under heavy downpour conditions. The supplier alerts the manufacturer, and together they identify and implement a solution before the condition can become widespread. The manufacturer is able to pinpoint the specific vehicles produced with the faulty motor, and contacts those owners directly so they can replace the motor. Their quick action avoids a recall and significant warranty costs.

On demand automotive enterprises will dramatically change the way the automotive industry acts. A focused auto company develops and sells products that its customer feels passionately about because they have concentrated on developing a deep understanding of that segment's needs. A responsive auto company continually looks to reduce the cycle time to bring a new product to market, and works closely with the retail community to identify new opportunities. The variable cost structure in an on demand company allows it to share its savings with customer through attractive leasing programs and competitively priced products. A resilient company continually monitors the quality and safety of their products and implements updates and fixes before they become problems.

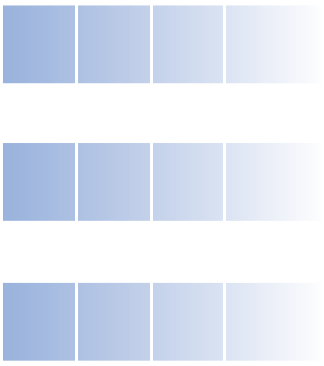
While technology has always been a key role in running automotive operating models, in an on demand environment, technology becomes the key catalyst in enabling collaboration, integration and personalization. Technology provides new ways of facilitating business integration and reconfigurations, as well as helps companies better adjust to the rising complexity of managing IT itself. An automotive company's technology infrastructure needs to be:

- *Integrated* – To facilitate realtime connectivity among various systems, data and processes within and across the value net, provide connection to partners, suppliers and customers, and enable active data mining and decision support
- *Based on open standards* – To facilitate enterprisewide collaboration, integration and communication, and adapt to technology changes rapidly
- *Virtualized* – To manage computing resources as a single entity, thereby increasing the utilization of legacy systems and existing assets and decreasing IT costs
- *Autonomic* – To use systems that can be managed remotely, have embedded privacy protection and security features and are capable of self diagnostics and repair.

Driving bottom line results

Financial returns from moving toward an on demand operation appear in numerous ways. Automotive companies should consider the economic impact that even incremental steps toward on demand can offer:

- In the current U.S. economic climate, vehicle incentives are the norm (and as much as 18 to 20 percent of the vehicle price)[9] – it is no surprise that they are taking a toll on the bottom line. However, in an on demand automotive company, marketing efforts are coordinated around a single integrated view of current region- specific inventory levels. What would the payback be for a company that offered rebates on only the slowest moving vehicles, thereby reducing the incentives paid out across the brand?
- The average development cycle for a new vehicle program can be approximately 32 months[10] with costs running from US$200,000 per day to US$1 million per day.[11] An on demand auto company would collaborate closely with its partners and suppliers to quickly and easily move through the design and build phases. How much additional market share and higher profits would an automotive company gain from first-to-market advantage?



Going the distance

Becoming an on demand automotive company should not be viewed as a leap to a final destination – but as a journey of systematic steps toward an on demand environment. A number of companies are currently reengineering their business processes and IT by locating operations offshore, streamlining distribution networks and outsourcing non-core activities, such as finance and human resources. However, until now, these approaches have been disjointed – driven primarily by cost reduction goals – and undertaken without a holistic view of how new initiatives will collectively impact the business.

The organization and culture of an on demand company will be, by necessity, very different. In the on demand culture, people and organizations are tightly networked, both formally and informally. To operate on demand, traditional barriers must give way to a new mindset. The importance of closely managing the cultural transition that on demand requires should not be underestimated.

Figure 3. On demand organizations exhibit a very different culture.

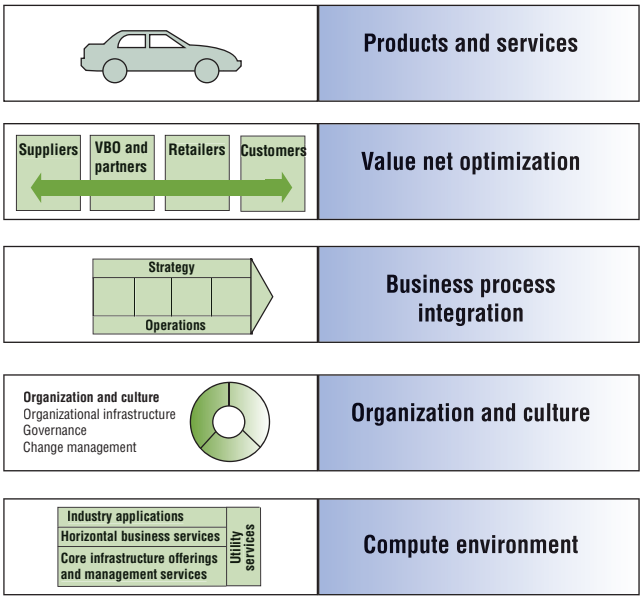
Traditional cultural barriers to change	Characteristics of an on demand organization
• Line of business silo mindset • Slow decision making processes and a lack of partnering capabilities • Inability to simultaneously nurture and control innovative ventures • Inflexible organizational structures and inflexible measures of success	✓ Networked, formally and informally, within and beyond organizational boundaries ✓ Ability to anticipate and respond rapidly to needs of customers and value network partners ✓ Individuality, diversity, creativity and change are embraced ✓ Self-organizing, re-shaping itself constantly as market demands dictate

Source: IBM Institute for Business Value analysis, 2003.

Without a unifying goal and strategic coordination, automotive companies are unlikely to become responsive, focused, variable or resilient. Thus, they are not on the road to on demand.

Utilizing the five business foundation elements provides the basis around which to start the on demand journey. (See Figure 4).

Figure 4. Business foundation elements for an automotive company.



Source: IBM Business Consulting Services analysis, 2003.

To move toward an on demand automotive environment, companies should begin with three basic steps:

1. Define where you are today. Review each of the business foundation elements and identify your progress toward each of them and how they link together within your organization.
2. Identify areas of greatest opportunity and success – determine where you can get started right away.
3. Make the journey self-funding. Use the savings and efficiencies from each project to fund the next.

Conclusion

A true on demand automotive company cannot be built overnight, but can develop as the industry and technology evolve. The transformation has already begun in several areas, and early adopters are already realizing the benefits. To discuss how our automotive consultants can help you plan and prepare for an on demand future, please contact us at *iibv@us.ibm.com* or visit our automotive Web site at **ibm.com**/services/automotive. To browse through other resources for business executives, we invite you to visit:

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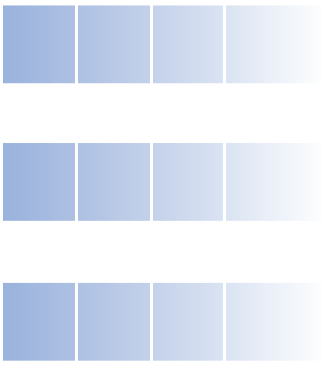

Linda Ban
Global Automotive
Industry Leader

About the author

Linda Ban leads the Global Automotive Industry team for the IBM Institute for Business Value (IBV) and is an Associate Partner within the Business Consulting Services Automotive Team. She can be reached at *lban@us.ibm.com*.

Contributor

Ben Stanley, Global Automotive on demand Program Manager, IBM Business Consulting Services

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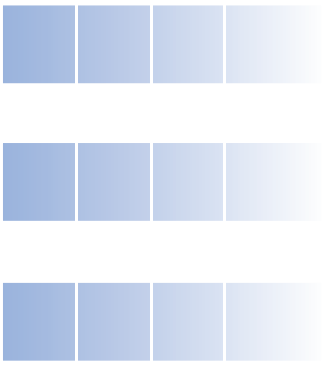

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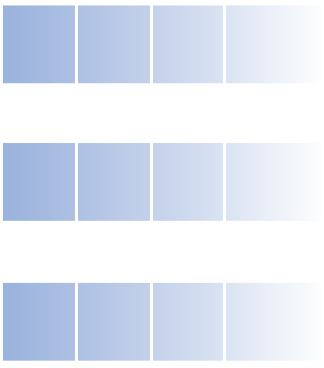

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