CORE BUSINESS

• **Safety Improvement**: Active safety, Intelligent Transportation Systems, Next Gen Restraints and Structure, Biomechanics, and improved safety methods.

• **Emotive and Environmentally Responsible Vehicles**: Vehicles that create more of an emotional bond with the driver (see UX section). This also includes improved fuel efficiency and other environmental attributes.

• **Advanced Materials and Manufacturing**: Vehicle light-weighting and efficient designs to reduce cost, reduction in investment or time, product technology, disruptive material and manufacturing innovations, development of analytical and computational tools, reduction on prototype cost and timing.

• **User Experiences (UX)**: Changing focus from individual components and disciplines to a focus on the user and how he/she interacts with Ford’s products as a unified experience. Develop simple, thoughtful, enjoyable and compelling experiences that customers appreciate, make their lives better and create an emotional attachment to Ford and Lincoln vehicles.

EMERGING OPPORTUNITIES

• **Consumer Experience and User Experiences (UX)** (also in Core Business): Market research on consumer preferences, trends in health and wellness and technical research that supports the delivery of a fully connected and engaging consumer experience, at retail and beyond, via an innovative, convenient, and trusted digital/human/physical platform. This includes research on improved the physical and mental well-being, and satisfaction of the driver and passengers during the in-vehicle experience.

• **Data Infrastructure and Analytics Enterprise** (also in Core Business): “Big Data,” mathematical modeling and operations research techniques that improve business processes in the areas of supply chain, logistics, order fulfillment, product portfolio planning, option content bundling, and electronic markets among others. Risk analytics, market and consumer analytics, advanced operational analytics (AV and Sustainability), smart mobility analytics, descriptive analytics, data operations and enterprise analytics, data supply chain and analytics infrastructure.

• **Electrification**: The electrification of vehicle propulsion systems will constitute a growing segment of the market including hybrids, plug-in hybrids, full battery electric and fuel cell vehicles. Improvements in vehicle architecture redesign and improvements in the efficiency of electric drivetrains including fuel cells, batteries, motors, controls, etc. are desired.

• **Connectivity and Cybersecurity**: Vehicle connectivity that is scalable, flexible, secure and enduring including vehicle-vehicle, people-vehicle, vehicle to infrastructure and vehicle-network communications and mobile network infrastructure. This includes data security, cloud-based solutions, and the Internet of Things (IoT).

• **Mobility Research**: Developing advancements and new business models - mobility-as-a-service in ride sharing, ride hailing, e-hailing services, bike-sharing programs, and car-sharing solutions. New vehicle concepts and technologies in multimodal trip integration, flexible ownership and overall research in project that improve the overall user experience.

• **Autonomous Vehicle Technology**: Ford Motor Company recently announced our intent to have a high-volume, fully autonomous SAE Level 4-capable vehicle in commercial operation in 2021 in a ride-hailing or ride-sharing service. This vehicle will be specifically designed for commercial mobility services without a steering wheel or gas and brake pedals. We also expect to have autonomous vehicles for personal use available to the public by 2025. The main future thrust of safety technology will be toward zero accidents/zero fatalities utilizing “active safety,” to avoid accidents altogether, utilizing sensors, software and communications, vehicle connectivity and situational awareness to advise and assist the driver. Research focuses on vehicle technology development and design, both interior and exterior.
FOUNDATIONAL RESEARCH

- **Thought Policy Research:** Research on policy and thought leadership (relative to global, outcome-based regulation and policy in CO2/energy, cleaner air, water and land as well as autonomy and safety) and market research on innovation acceleration that focuses on the overall consumer, user and client experience.

- **Innovation Acceleration:** Research on innovation methods and strategy and emerging opportunities into new sources of growth. Innovations will be focused on the overall consumer experience including experiences as a customer, user and client.

- **Software, Controls, Electrical Architecture:** This includes research in controls, software, electronics, sensors and actuators, electrical architecture, machine learning and Artificial Intelligence (AI) methods, energy storage and distribution, augmented/virtual reality, Human Machine Interface (HMI)/User Interface (UI) design.