Dr. Winter spoke about imperatives during his lecture. In regards to Systems Engineering, the three major priorities, called drivers, mentioned were energy, urbanization, and transportation. The needs for energy are that its design processes are fast, reliable, and reusable, along with security, climate safety, and cost in mind. Urbanization is important so that product functionality improves, especially in third-world countries. Transportation helps usage of large amounts of data along with making physical systems more effective at making actionable decisions.

Over the years, the Urban Population Growth has steadily grown and expected to keep rising in the near future. The eastern side of the planet represents the biggest population of people, but they also lack urbanization. China, India, Latin America, Africa, and the rest of Asia are less than 20% urbanized. Despite how much technology is advancing, the third-world countries are slow to keep up and are in need of urbanization to improve quality of life with improved productivity.

Societal demand is the goal to meet what the expectations of the customers. For a company, System Engineers have to find the most effective method to meet these demands. An example involves air shipment of perishable goods and delivering them in the desired condition. Winters mentioned that the CO2OLTEC refrigeration uses natural refrigerant carbon dioxide that keeps the bananas at a constant temperature of 63⁰F that ensures that they stay fresh as they ripen.

Product families refer to different variation of the same product intended for different needs. Especially for the case of airplanes, which are expensive and in good condition for decades, it is more economical to modify existing products than to create from scratch. In the product family of the 787 airplanes, the only difference that sets them apart is the capacity for passengers and the amount of distance they travel.

The Systems Engineering process is complexed as it looks at the System of Systems to meet the product needs. A complicated system such as an airplane requires many subsystems to perform their own tasks. An example presented from Dr. Winter's lecture was the gas turbine that requires a significantly amount of parts and a huge group of labor to create and optimize.