Drones, or UAV's, are a type of Unmanned Aerial Vehicle, which is just a technical term for an aircraft without a pilot. The type of drone that most people are familiar with is a quad copter. But what most people don't realize is that there are many types of drones that can range from a small RC helicopter to an 8-rotor rescue drone.

UAV's has been used in military applications spanning decades. From scoping out battlefields to carrying out dangerous attacks, this technology has provided maximum results by minimizing human risk. But recently with the rise of consumer model drones, people and businesses are beginning to realize the practical applications for drones in our daily lives.

Imagine a person that wants to inspect a power line. He could climb up the telephone pole and do it himself at the risk of falling down or being electrocuted. Or they could fly a drone up there to do it for them, eliminating those occupational hazards.

Drones can be retrofitted with a multitude of different technologies like cameras, robotic arms, and winches to do more specific jobs or tasks. Drones can also help with search and rescue missions. Drone America has built a drone that can fly over 30 minutes with a 5-pound payload and has the ability to land and take off in water. So if someone is in need of assistance after an accident, they can fly out some emergency supplies. Companies like Amazon have even proposed delivering goods with drones. Other uses include using drones to track wildfires, because they can get a bird's eye view in seconds, minimizing the need for costly helicopter recon missions.

All these applications are great, but there are some issues. If companies want to fly their drones, they have to get special permission from the Federal Aviation Administration, or FAA. However, this can take a very long time, and there's no guarantee that they'll be able to fly their drone. Even if the FAA does approve a flight, there are a lot more regulations that need to be followed.

Fly below 400 feet and remain clear of surrounding obstacles. Keep the aircraft within visual line of sight at all times. Remain well clear of and do not interfere with manned aircraft operations. Do not fly within five miles of an airport, unless you can contact the control tower beforehand. Do to not fly near people or stadiums. Do not fly aircrafts that weigh more than 55 pounds.

Another issue is air traffic management. Let's say the FAA gives all the companies permission to use their drones. There is currently no system that will organize all of these flights to ensure that drones are not crashing into each other, that they are not running into bad weather, and that they're following all the rules. But there's good news.
NASA wants to help integrate drones into the national airspace. They're using all of their prior research on air traffic management for manned aircraft to build a similar system for drones. They're partnering with 12 other organizations, including NAASIC from UNR to get the job done.

This system's called UTM, which stands for UAV Traffic Management. NASA is building a UTM server, and each of the 12 partners are building a client-site for that system. The client will be able to submit flight plans to the UTM server. The server will either grant or deny permission to fly, depending on whether or not the flight plan is in compliance with FAA regulations and/or it doesn't conflict with other flight plans in the system.

If the flight plan is accepted, the client can begin its flight by sending "All-Clear" message to the UTM server. While in flight, the client will update the server with flight position updates. When the flight is finished, the client can close out the flight plan. The UTM server will enable drones to fly safely and efficiently. Pretty soon, you'll be able to order a pizza and have a drone deliver it to your house.

[MUSIC PLAYING]