



BLUE SKY BIRDS COME TO THE WORLD

Bura Sabiha Kelek, (Lecturer)

Istanbul Commerce University

Abstract:

The New Supply System comes to all fields for logistics. Drone is an unmanned vehicle for loading and unloading packages. Perhaps we can imagine it as a "blue sky bird". This new trend has three important impacts that are determined by technological capabilities, regularity pressure, and public acceptance so that it will be dealt within current powers and circumstances. This kind of vehicles are used in different capacities, such as multicopter, drone or robot. Logistics' issues are interested in short-term delivery systems for customer satisfaction but all developments go through GPS so it is based on 21st century technological developments, which have been tested on a short-term basis and will be expected to be of use in 2 years. The purpose of this research is to give lead to researchers information about risk and the advantages of using the technology in this manner. Some advantages and disadvantages, schedules' problems in the system will be identified.

Keywords:

Logistics; Distribution; Drone; Predator; Transportation

1. Introduction:

They are our co-workers we haven't known until a year before. Drones as you know are literally named as Unmanned Aerial Vehicles which are produced by foreign companies, also need systematic and technological investments however they are not being used in logistics sector nowadays on the other hand their usage is shown as matter of time. They are logistic's robots in our near future so that many important experimentations are being carried through by major companies abroad.

Drones are just vehicles which have a capacity for burden. For the first time, the purpose of their production is based on the defense industry yet planning so many conferences is to show their new meaning to transportation and logisticians who are in emergency consignment. These birds who are the smallest unmanned airplanes just started to test drive. Of course, they are still in secret. Nowadays, lead companies of logistics significantly attempt to use them for being in one step ahead. They could be fiery eyes in the transportation.

These transport officials of package are not designed just as drone furthermore they are named for family tree of the helicopter. According to us, they are stated like that to change the future of logistics. Who knows if you can find the package that is ordered a day before on your balcony thanks to these little transporters.

This new era allows for new opportunities. Welcome to new drones, which are new logisticians. Congratulations to our man brand new machines to all logistics' sector.

2. The Aim of the Paper

We will sentence the UAVs' historical settlement for the entire world. In fact, they have already been considered for a long time by amateur, yet all techniques for them are ready to go along in all fields. Especially, indicated technics are familiar with us and our world so that no one is oblivious or disinterested in the internet and its source coming out. Important topics are indicated at the following sentences; for example reliability, security and infrastructure. All these requirements are explained shortly and introduced so many types of UAVs. Balancing the time and loading – unloading capacity are in connection with upgrading the cities' regularity. Blue sky predators deal with current circumstances today there is plenty of discussion about civil aviation producers for UAVs. Pilotless aerial devices will fill in our sky. In reality, all kind of sectors are willing to have their new hopes but logistic industry put itself forward for it. The importance of the delivery will be correlated with quickness of these sky predators.

Also, urgent deliveries are specified as priority usage for the human being. We are not talking about just drones, multicopters, quadcopters or planes etc. We will be willing to explain the necessity of usage for our technic world. A new era will cover you as soon as possible.

3. Historical Perspective

Due to the fact that it is necessary to defend our precious lands from enemies, we have faced enemy planes similar to drones since the beginning of time. The basic role is stated in army aviation because UAVs have enormous potential for the battle field so that it is the usage of air power in apparent ways.

UAVs receive a signal from a sensory array which are settled in ground control system and a basic datalink. The Navigation System is one of the major subsystems for a UAV. It provides the rest of subsystems with the position, velocity and attitude information they require in order to control the aircraft, manage the mission of inform the pilot (Parra, 2005).

The UAV is also equipped with first person view (FPV) systems for easier and more accurate control by a remote user (Spyridon G. Kontogiannis, 2013). Between 1960s and 1980s, piloted vehicles had a visible popularity but then some problematic term came to recognize in this path so late of 1980s unmanned air vehicle would be discovered even so in the 1990s piloted vehicles were chosen to keep the balance for the new invention such that they had to get an acronym form thence all got the same name as UAV.

Up to now, funding for the development of UAVs has principally been put up by the military and this is expected to remain so for the foreseeable future. Even though UAVs have been around for nearly 50 years, their military value and complementarity in relation to other weapon systems has not been generally acknowledged and accepted by the military hierarchy and the political establishment until fairly recently (Blyenburgh, 1999).

3.1 Tactical Role

Aviation sector focused on observation and reconnaissance mission in interwar years so these were photo and visual reconnaissance, contact mission and adjustment of artillery fire. UAVs liked better than balloons because commander wanted the men in them to be their eyes in the sky. Observation planes assured more flexibility than balloons because of their greater range.

NATO Operation Allied Force in Yugoslavia has demonstrated that a new age in reconnaissance is in fact dawning. For the first time in warfare, commanders at all levels have had nearly continuous, real-time visibility of at least portions of the battlefield through the optical and video sensors carried on U.S. Predator and Hunter UAVs (M. Nutwell, 2000).

Picture 1.



Significant efforts invested in unmanned air vehicle (UAV) technology led to a wide variety of new applications such as aerophotography and surveillance. Parallel advances in avionics and electronics applied to modern UAV technology combined with rapid developments in video and photographic equipment resulted in significant weight reduction, enhanced efficiency, and quality improvements (Spyridon G. Kontogiannis, 2013).

3.2 Technical Classification

They were developed for military and special operations but also used for growing number of civil aviation so UAVs are specifically designed for logistics and cargo operations and they are recognized how to use for human expectations furthermore all technical developments are used to cover their needs.

UAVs must receive greater priority in Service budgets. Investments in UAV programs are still modest compared with investments in manned aircraft. To some degree this reflects a continuing cultural bias toward manned platforms in the Services (M. Nutwell, 2000).

4. Changes and Challenges

In spite of UAVs' usage purpose in early times, their drifts' route distinctly took some important shape for commercial areas. Especially new innovation system was subsidiary to them upgrading steps. They are considered finding so many ways which are efficient, dependable, fast in logistics' industries.

They can be used to succeed and survive in logistics' sector. Meanwhile they have been growing and using for the sector, all perturbation would come to mind for the future of logistics. It is hard to get them and start to use them in a balance to keep for the human expectations.

Several challenges must be overcome if unmanned vehicles are to realize their promise in the S&R mission

- Vulnerability to air defenses must be reduced through signature reduction and provision of some self-protection capability against battlefield threats.
- All weather capability, including ability to fly in icing conditions, must be provided.
- Agreements, procedures, and capabilities for operating UAVs routinely in controlled airspace must be developed.
- Assured global, wide-band data links that are accessible to multiple echelons of command.
- Reliability must be improved, not only to reduce attrition rates and life cycle costs but also to facilitate flight in controlled airspace and over populated areas. Key factors in reliability include: redundant critical components; secure, reliable communication links; and enhanced ability for autonomous operations and recovery in the event of the loss of communications (M. Nutwell, 2000).

2.1 Routing

Path planning plays an important role in enhancing the ability of autonomous flight of unmanned aerial vehicle (UAV). By finding a global optimal route offline, the traditional two-dimensional (2D) path planning is popular in static or known environment. But the actual flight environment of UAV is usually dynamic and unknown, where a feasible path should be planned online by dealing with various dynamic situations (Peng Yao, 2015).

Logistic system that is associated with UAVs has got significant opportunities so ongoing projects are tried to coordinate in between basic location spots. Otherwise, traveling problems will be occurred in any time without calculating and testing the covered lands. In last few years they are being tested for the kind of problems we greet.

2.2 Scheduling

The unique capability has been provided by this semi self-governing aircrafts so these flying robots are more capable and less expensive thus commercial sector are aware of the smart predators such that seeking to collocate miles and algorithms on that vehicles can be operated by an operator so coordinating loading and unloading services gain to an important role.

On the other hand, flexibility in use, especially in a city environment, demands a short takeoff runways. Therefore, the takeoff distance was set to a maximum of 60 m. An electric power plant for the propeller was selected since it offers low operating costs, simplicity in installation, use, and because it is eco-friendly (Spyridon G. Kontogiannis, 2013). But the other important point that is about the capacity problem occurs on meantime. Because they have got a limited capacity to carry. All them depends on wing lift efficient role, surface and planform geometry.

So, the electronic and video equipment that the aircraft should typically carry does not exceed a total weight of 3 kg (Spyridon G. Kontogiannis, 2013).

5. Understanding UAVs

Of course, we can face some effective rules to use and put them in an order because regulations are changable situation from country to country on that matter some criticizing moves are settled slowly because solid arguments say that delivering packages to people will irritate other airspace users because airspace crowded in many regions will require maximum control capability on the other hand UAVs are not using just airways but also they are capable of using the land areas because they can stop whatever the controller wants. Not only just a menace for the air also for the land and pedestrians. Besides safety regulations can become to sight in a weakness 'coz of setting up cameras for controlling and seeing where they are going to and how they are finding their way. Nobody can give any guarantee to have more safety. So NASA works to design drone air-traffic control system which is called 'Unmanned Aerial System Traffic Management'.

NASA said on its website: "A UAS traffic management (UTM) system for low-altitude airspace is needed, much like today's surface vehicles that operate within a system consisting of roads, lanes, stop signs, rules, and lights, regardless of whether the vehicle is automated or driven by a human. www.rt.com/usa/310705-drone-air-traffic-control

Having summarised current NATO efforts and challenges in the field of UAVs, and before elaborating on future UAV requirements, let me now briefly comment on why UAVs are getting higher priority in procurement planning and acquisition. The short answer is reduced costs and less personnel combined with higher efficiency for specific missions. For existing weapon systems, operating and logistic costs are the bulk of total life cycle cost, and the single largest portion of these costs is for personnel (BLYENBURGH, 1999).

In some concepts, "wartime UAVs" could be operated primarily by reserv personnel who would only be called to active duty as and when required.

The other reason UAVs are becoming more attractive is the advantages provided by not having an onboard crew. By reducing the risk of loss or capture of personnel, the UAV provides a more politically acceptable military system for certain missions. (Blyenburgh, 1999).

From a technological perspective, social, business and political changes are not more wider than technology ones. In this case, they are expanded in types builded which are fixed-wing, tilt-wing, unmanned helicopter and multicopter as known as drones. They have different specifications not only leading the range but also taking off capacity.

Table.1

	Advantages	Disadvantages
Fixed wing	Long rance-endurance	Vertical take off - landing
Tilt wing	Fixed wing combination	Expensive
Unmanned Helicopter	Maneuverability	High requirements
Multicopter	Inexpensive, Low weight	Limited payloads

Combination Of Uavs can be identified them into different categories such that long - short range ,inexpensive - expensive , low-high payloads , uncomplexed - complexed models.Multicopter,octocopter, etc.

6. Logistics' Impacts

As we mentioned before these new birds on air help to transport from one place to another.This improved air vehicles as known UAVs allow all logistics and supply chain managements advanced scopes as cheaper and smarter transporter . Digital technology in this case are growing much faster without any doubt.Meanwhile,all kind aircraft have the capability of autonomous flight ,it means that there is a mission from point to another one.

GPS has accommodate with sensor,batteries or other signal which comes from on ground to remote UAVs .Air freight delivery system can be easily adopted to use particular package transportation. Recognizing package space delivery needs short line will help all logistic systems to understand how to use them in efficient way.

Picture 2



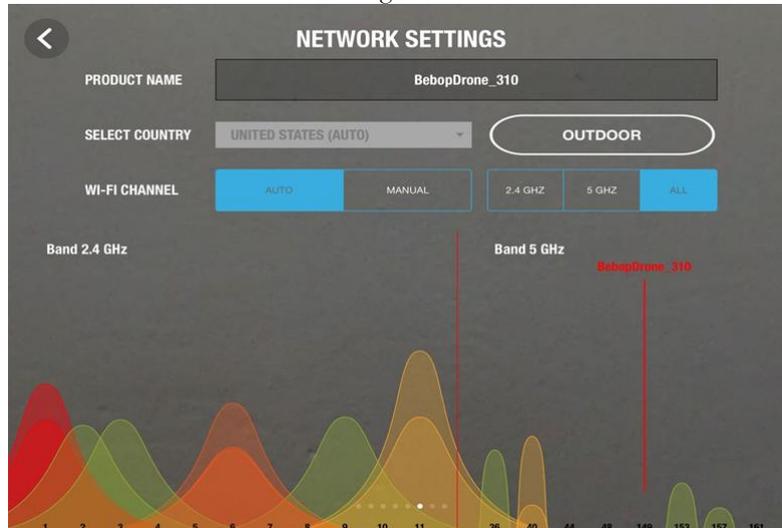
We must also consider the future role of UAVs and other aircraft with respect to spaceborne reconnaissance platforms.Spacecraft provide wide geographical coverage and Access to regions denied to aircraft,can respond rapidly to missions in different regions,and are invulnerable to conventional countermeasures.Airborne S&R platforms provide under-the-weather coverage , video, dwell for imagery and video , operational flexibility,and the ability to address some regions not covered by overhead assets.In short,airborne and spaceborne reconnaissance platforms complement each other. (M.Nutwell, 2000)

This new transportation mode is emanated but developing and maturing will be happened sooner than we think.Human beings must be aware of facing with road-drones (driverless truck) for the road transport.Stay tune.

The Approach To The Newest Anthology Of Technic For The Logistics

Before 5 years ,there weren't this kind of camera system which are smaller and sharper also fast microchips on the other hand batteries weren't so light and long durability.This new transporter is a virtual availability of the real man but usage of them for logistics are stil in early stages.But book rental services are ready to use them because aim is to reduce to wait the delivery from two to three days , to as little as two to three minutes.The most important thing is existing facilities like hubs,warehouses,crossdocking sites.In addition to weight,size and critical time and also there are some criteria could include road,air conditions and network load.

Figure.2



A network of mobile sensors has demonstrated the ability to enhance sensing flexibility and achieve the mission objective in a shorter time period. Decentralization among the sensors further provides scalability, modularity, and redundancy to the network. This reduces the vulnerability to central server failure, which further enhances overall system robustness (Pablo Lanillos, 2014).

Emergency transport comes in this stage especially picking up time critical shipment as blood, medicine, serum. Of course there might be needed a notification for customer satisfaction or in case of returns and insufficiency customer location .

Picture. 3



Also ,UAVs have scanned the barcode on the package and controlled the route to determine the distance. After delivery , they return to rechargeable area on the ground or on a vehicle and they can do it wirelessly. UAVs look like

blue birds in ancient times, they transport light packages to the receiver. The most amazing trick is identifying the customer via QR code then they hand over it because getting approval helps to gain trustworthiness.

Locations are highly dissimilar all over the world such as UAVs could drop the package in a garden or a balcony, they must use the roof for large buildings. Perhaps this idiomatic problem can be solved making an alternative delivery area or point like a box which is upgraded station to handle shipments. Multi-sensor coordinated search problem considers a team of mobile sensing platforms capable of maneuvering freely and gathering information about the existence of targets within a defined workspace (Pablo Lanillos, 2014).

7. Emergency Response for the Logistics

Logistic companies pay attention for the process with occurred just in time so that emergency deliveries can be performed by the UAVs because they are easy to distribute and there is no requirement for well trained personnel. Express delivery system can be put in order to do operations such as spare, machine or precession parts. Intralogistics need to cover the private demand in case of emergency operations and providing the major advantages because of more flexibility and accessibility.

Picture. 4



The other aspect is that The Commercial use of UAVs could have a beneficial effect on the use of military UAVs, as economies of scale would then become possible. The commercial use of UAVs is not only being severely limited by air traffic management issues and high price of ownership and insurance (in relation to manned aircraft). The high cost of insurance severely limits the interest of leasing UAV systems for commercial (or military applications) and is generally attributed to the unproven reliability (safety) of UAVs; once UAV technology has proven itself a little more, and acceptable UAV system qualification norms exist, their cost should come down (Blyenburgh, 1999).

Picture. 5



8. Conclusion

This paper has introduced the features of the UAVs maybe it is likely to face some challenges , privacy concerns , perfection into existing networks. Logistic industry is ready to use them for urgent- express shipments ,potentially aims to upgrade the delivery speed which effects the its time and also , using global trade networks can provide rural deliveries inadequate areas. Technological developments and changes in a short period will require the some arrangements in applicable law of UAVs.This kind expectations will be fined over the next few years.

UAVs are currently at a major turning point in their history.After decades of limited success and some failed promises,the UaAV has become a real hope for the future (Kreienbaum, 2000). The age of unmanned air vehicles has arrived.The confluence of technology and tactical considerations,especially the thirst for " dominant battlespace awareness" and the desire to avoid aircrew losses,has resulted in increased reliance on unmanned vehicles for S&R and for other missions (M.Nutwell, 2000). UAVs' projects will be ameliorated in certain ways. Several works have been extended in many modalities.We need little more time to see them in the air and look forward to great opportunities.

References

- <http://logisticsviewpoints.com/2013/02/06/drones-the-birth-of-a-new-transportation-mode/>
[http://uofllogistics.org/seminar:drones in logistics](http://uofllogistics.org/seminar:drones%20in%20logistics)
<http://mashable.com/2015/08/02/faa-drone-close-calls>
<http://mashable.com/2015/08/02/license-plates-for-drones>
www.ibj.com/articles/53394-langham-will-drones-distrupt-logistics
http://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/DHL_TrendReport_UAV.pdf
www.rt.com/usa/310705drone-air-traffic-control
 Blyenburgh, P. v. (1999-vol 1). UAVs:an Overview . dossier , 5/6.
 Kreienbaum, B. (2000 Vol2). Unmanned Air Vehicles are Taking Off in NATO's Priorities . Air&Space Europe , s. 26-30.
 M.Nutwell, R. A. (2000 vol2). Unmanned Air Vehicles-Coming of Age at Last . Air & Space Europe , 23-25.
 Pablo Lanillos, S. K.-P. (2014-282). Multi-UAV target search using decentralized gradient-based negotiation with expected observation . Information Science , s. 92-110.

-
- Parra, S. d. (2005, 9). Low cost navigation system for UAV's . Science Direct , s. 504-516.
- Peng Yao, H. W. (2015-47). Real-time path planning of unmanned aerial vehicle for target tracking and obstacle avoidance in complex dynamic environment. Aerospace Science and Technology , s. 269-279.
- Spyridon G.Kontogiannis, J. A. (2013-29). Design,performance evaluation and optimization of a UAV . Aerospace Science and Technology , s. 339-350.