



# **The use of satellites in the border security**

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# Overview

- \* **Introduction**
- \* **What is the land border?**
- \* **Why border security must be ensured?**
- \* **The Efficiency of Satellites in Border Security**
- \* **SWOT Analysis of the System Created to Ensure the Security of a designated Area**
- \* **Conclusion**

# Introduction

- \* **Speaker's Biography**
  - **Department of Electronic Engineering of Turkish Air Force Academy in 2007**
  - **2010 - Became a F-16 pilot**
  - **2014 - Master degree study on “Image Fusion” from Turkish Aeronautics and Space Technologies Institute**
  - **Recently - Attending in Turkish Air War College(TAWC) as a staff officer candidate**

# What is the land border?



- Borders make the designated country easy to protect itself, and also make a significant contribution to people live there safely. (Gümüŝçü, 2010)
- Security factors are also referred to the security of the borders.

# Why border security must be ensured?

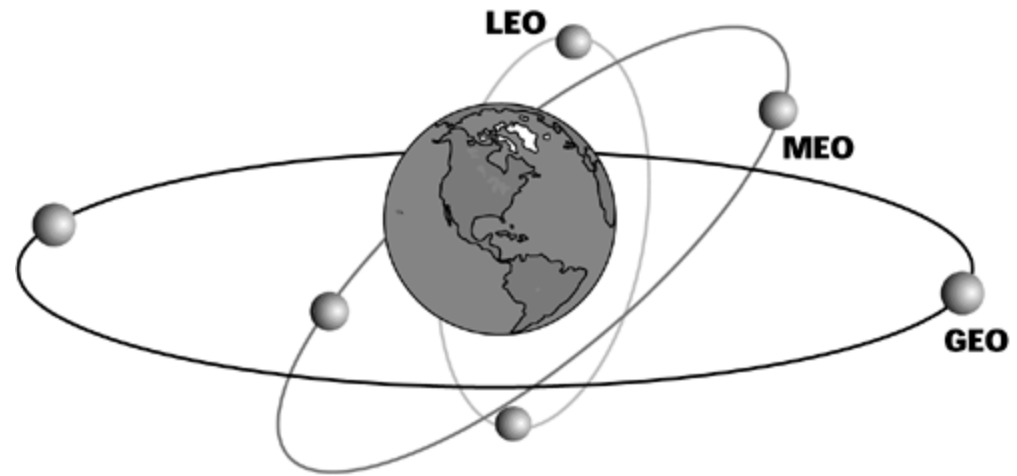
- Land borders, can divide the lands of the country to ensure the controllability.
- Borders are like the walls and doors of a house, they provide not only the effectiveness of controllability but also easiness of legal trade. (Marenin, 2010)
- Due to the similar reason of ethnic differences, difficult geographical conditions, economic difficulties and the human factor land border control is never fully done. (Barth, 1969)

# Why border security must be ensured?

- “How can we provide effective border security”
- Software programming capability, the ability to produce own sensors and the satellite technology after that, they eager to put the UAV project into practice to surveillance and recognize of a land area.
- To get the ability to obtain instant aerial images from satellites to be able to lower the cost of unexpected ISR workout.

# The Efficiency of Satellites in Border Security

- \* Examine the constraints about earth satellite orbits and the difficulties that likely to be encountered.



# The Efficiency of Satellites in Border Security

- \* **Five different Lagrange points.**
- \* **LEO satellites are scientific satellites and the ones used for getting regional weather forecast information. (Riebeek, 2009)**
- \* **MEO is suitable for observing the areas far from the equator.**
- \* **Satellite systems are used as supplementation for proposed border security system.**



# **SWOT Analysis of the System should Created to Ensure the Security of a designated Area**

## **\* Strengths**

- Real time view of greatly huge land**
- Redundancy capability**
- Peacetime High ISR ability performance**
- Ideal system**
- Mimimized human workload**

# **SWOT Analysis of the System should Created to Ensure the Security of a designated Area**

## **\* Weakness**

- Form of several satellite group(not only a single satellite)**
- Sensor and orbit measure combination problem**
- Long intervals can be process if system break down**
- Cost of the system to be built will not be suitable for a country.**
- IMINT satellites are short-lived.**
- Negative effects of adverse weather.**

# **SWOT Analysis of the System should Created to Ensure the Security of a designated Area**

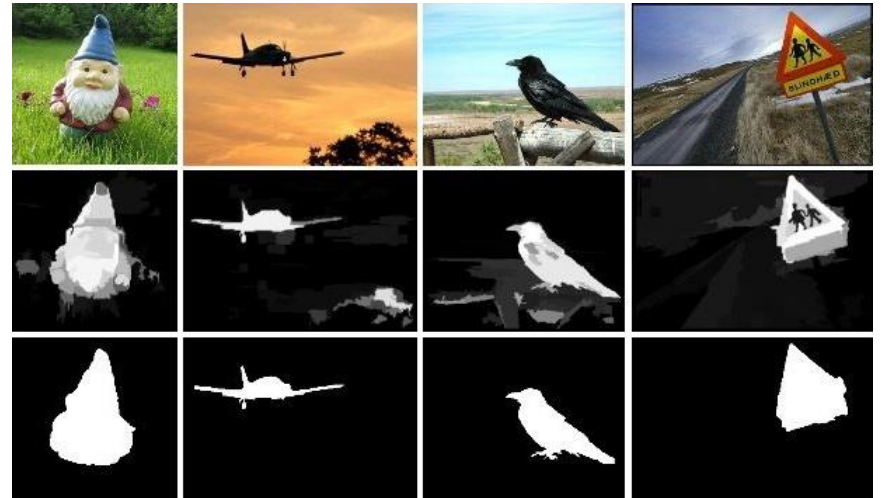
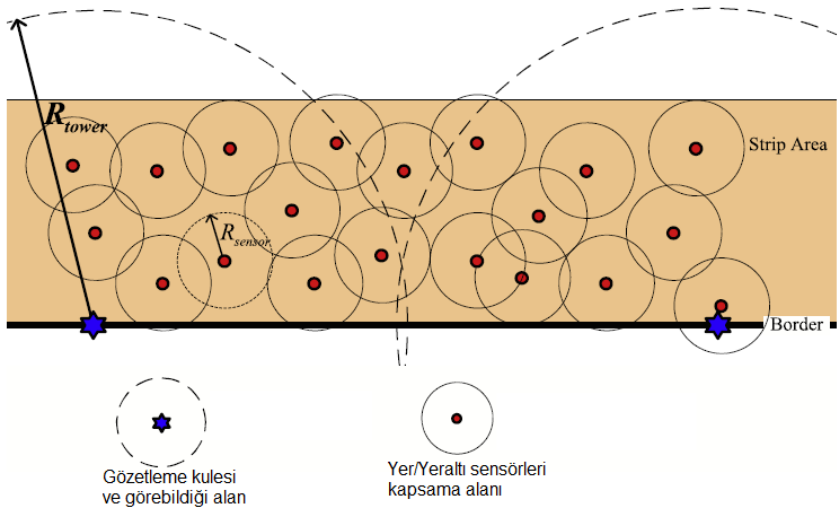
## **\* Opportunities**

- Image fusion algorithms can automatically realize the changes.**
- Can be used in many other ISR activities.**
- It can be easily to find the person who harbour an outlaw.**

## **\* Threats**

- Detailed calculations and advanced technology**

# Conclusion

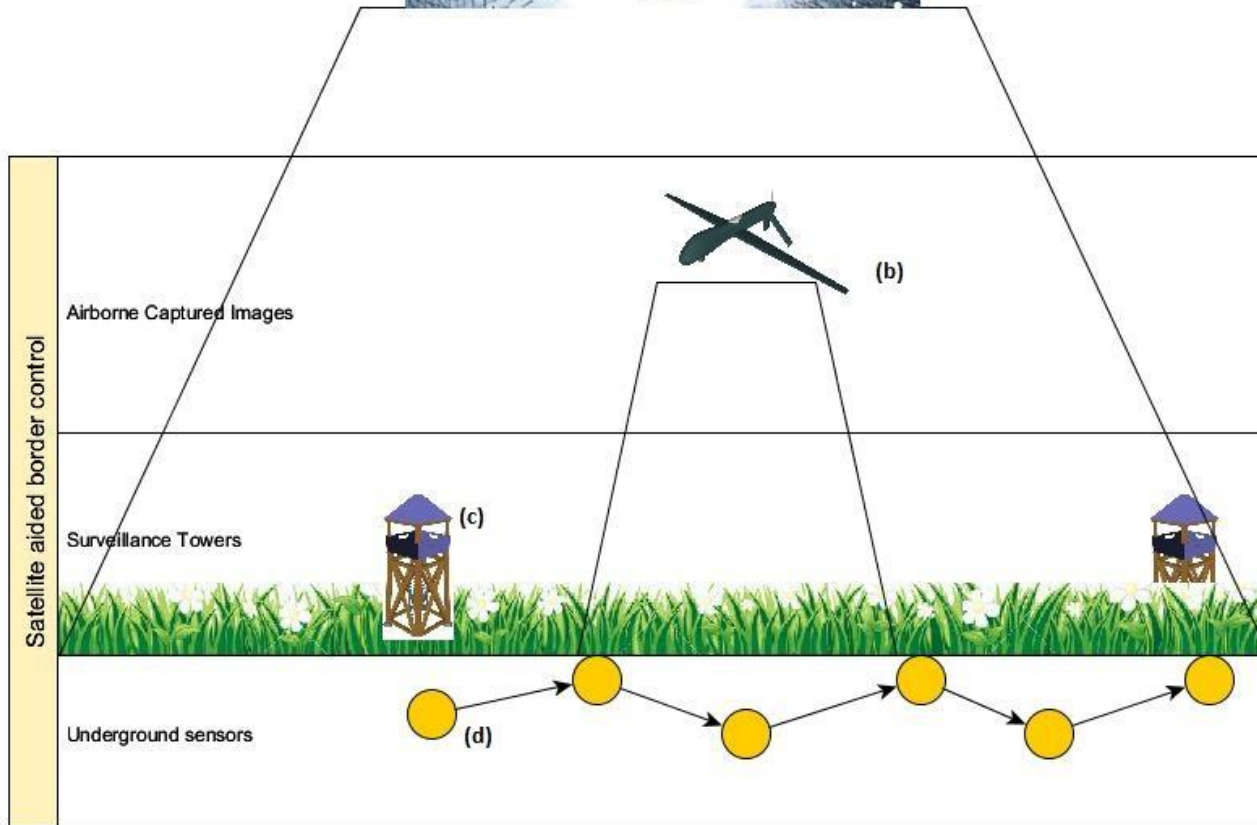


**The BorderSense System(Zhi SUN, 2010) and Image tracking in UAV's**

- a-One of the High defined satellites when crossing over the designated border area
- b-Tactical UAV
- c-Ground surveillance tower
- d-Seismic ground sensor



(a)



**THANKS**