



# **Cassini Hackathon**

Project Report

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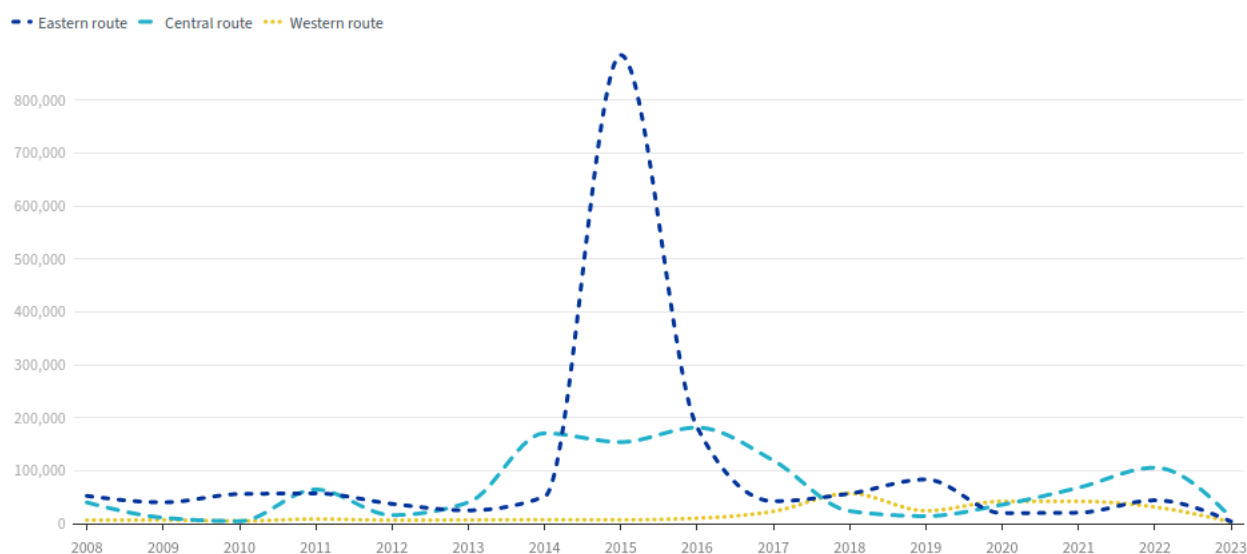
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## Summary

Sterna is a technology company that uses Copernicus, Galileo and EGNOS data to classify terrain availability and passability on land borders where immigrants can cross. The solution provides simple and easy-to-use software to border control agencies and other relevant organizations, allowing them to prevent illegal border crossings more effectively. The solution has significant potential in the European Union, where illegal immigration is a major challenge for many member states.

## Problem

Illegal immigration is a significant problem for many countries in the European Union. Illegal border crossings can be a threat to national security, public health, and public safety. Meanwhile, monitoring borders can be a challenging task, particularly when it comes to identifying critical points where illegal border crossings are most likely to occur. Today, many different technologies are used to monitor borders, such as video surveillance, motion detecting cameras, drones and helicopters. However, those are not always efficient enough, as illegal immigrants can often find ways to bypass these measures. Sterna's main goal is to improve and optimize usage of the aforementioned technologies.



Source: Frontex and Spanish Ministry of Interior



Figure 1: Irregular arrivals to the EU(2008 - 2023)

## Solution

Sterna will use data from Copernicus, Galileo and EGNOS, Earth observation programmes developed by the European Space Agency (ESA), to identify available terrain on borders where immigrants can cross. We will leverage the data to create a heatmap of the border area, identifying areas where illegal border crossings are likely to occur, based on terrain availability. This information will be used to inform border control agencies and other relevant organizations in the European Union, allowing them to allocate resources more effectively and prevent illegal border crossings. Software will also suggest alternative paths immigrants can take using the heatmap. Data, such as elevation, type of land and similar, will be used to classify terrain availability and consequently create heatmap which will correspond with terrain availability.

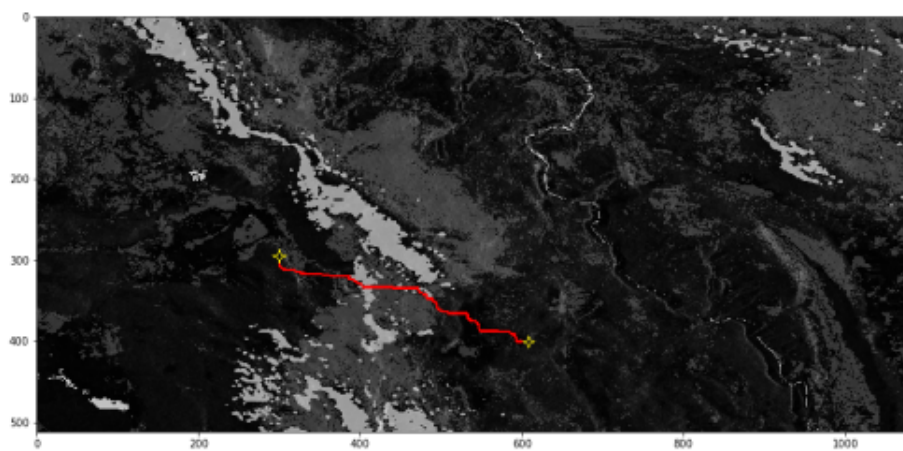


Figure 2: Heatmap

## Target Market

The primary target market for Sterna will be government agencies responsible for border control and immigration management in the European Union. These agencies may include:

- Frontex, the European Border and Coast Guard Agency
- Member state border control agencies
- European Union agencies responsible for migration and asylum, such as the European Asylum Support Office (EASO) or the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (FRONTEX)
- Sterna may also target private security firms and other organizations that work in the border control and immigration management industries in the European Union..

## Marketing Strategy

Sterna will use a targeted marketing strategy, focusing on government agencies responsible for border control and immigration management in the European Union. The company will attend industry conferences, participate in trade shows, and engage in targeted digital marketing campaigns to reach potential customers.

## Revenue Streams

Sterna will generate revenue by charging customers for access to the software. Revenue will be generated with one-time payments for the software and yearly payments for maintenance. Additional revenue streams may include consulting services, and training programs.

## Financial Projections

The financial projections for Sterna are indicated in Figure 2.

| Year | Revenue from Software Sales | Revenue from Maintenance | Total Revenue | Salaries and Wages | Other Expenses  | Net Profit | Cumulative Net Profit |
|------|-----------------------------|--------------------------|---------------|--------------------|---|------------|-----------------------|
| 1    | €1,800,000                  | €300,000                 | €2,100,000    | €800,000           | €2,100,000<br>(including<br>€2,000,000<br>investment) | €100,000   | €100,000              |
| 2    | €3,600,000                  | €600,000                 | €4,200,000    | €1,200,000         | €1,750,000  | €1,250,000 | €1,350,000            |
| 3    | €5,400,000                  | €900,000                 | €6,300,000    | €1,800,000         | €2,600,000  | €2,000,000 | €3,350,000            |
| 4    | €7,200,000                  | €1,200,000               | €8,400,000    | €2,400,000         | €3,250,000  | €2,750,000 | €6,100,000            |
| 5    | €9,000,000                  | €1,500,000               | €10,500,000   | €3,000,000         | €4,150,000  | €3,350,000 | €9,450,000            |

Figure 3: Financial Projections

Costs associated with running the company will include satellite data acquisition, storage, and analysis, as well as employee salaries and benefits, office space, and marketing expenses. The initial investment required to start the company will be €5 million, which will be used to purchase equipment and hire staff.

## Conclusion

Sterna has significant potential in the border control and immigration management industries in the European Union. By using Copernicus, Galileo and EGNOS data to identify available terrain on borders where immigrants can cross, Sterna will provide valuable intelligence to government agencies and other relevant organizations, allowing them to improve prevention of illegal border crossings. With a targeted marketing strategy and solid financial projections, Sterna is well-positioned to succeed in the European market.