



# KSI BLOCKCHAIN FOR EO DATA INTEGRITY

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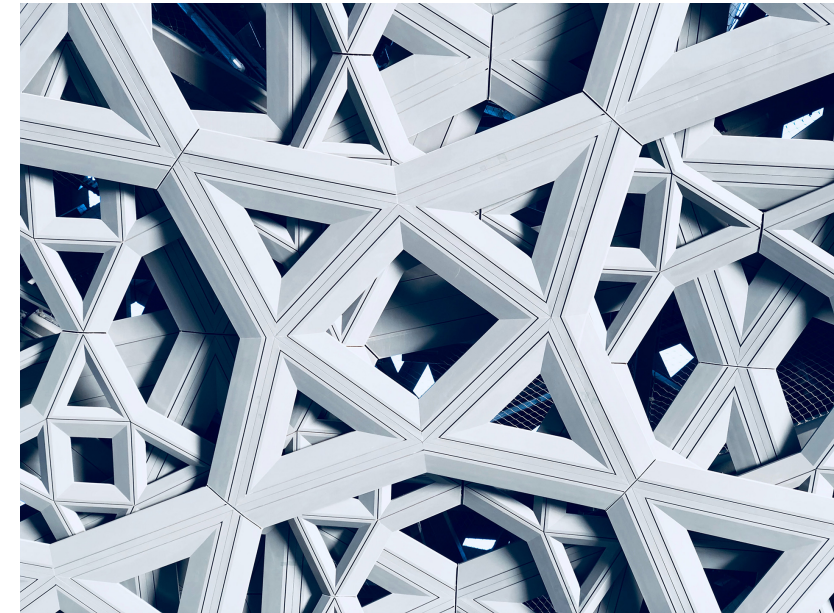
# ABOUT ME

/ PRODUCT OWNER of  
KSI Blockchain at Guardtime

/ 18 YEARS in the industry

/ 2010 - 2015 in the space sector

/ SINCE 2015 BLOCKCHAIN,  
crypto and information security



# 1/ INTRODUCTION

# WHY INTEGRITY?

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## / THE CIA TRIAD:

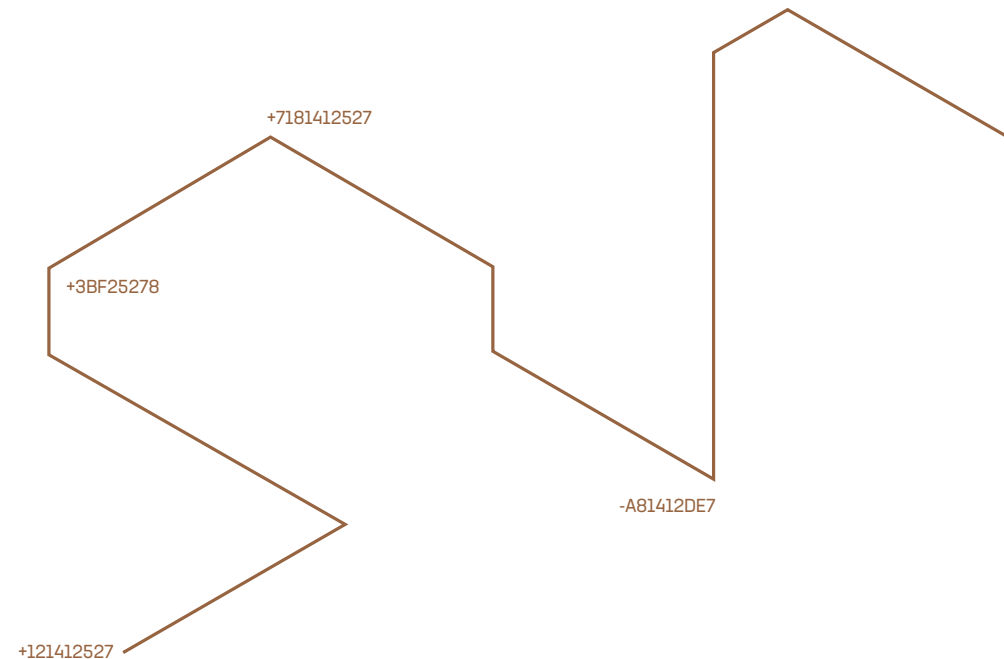
- + confidentiality;
- + integrity;
- + availability

## / EO DATA IS A GOOD EXAMPLE

- + Availability - important
- + Confidentiality - most is not confidential, often even public
- + Integrity - very important

## / COMPROMISED DATA - BAD

## / NOT KNOWING THE DATA IS COMPROMISED - WORSE



# WHY EO DATA INTEGRITY MATTERS?

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## / THE NUMBER OF DOWNSTREAM APPS IS GROWING

- + The impact can be very wide
- + The impact can be cascading
- + The impact is difficult to assess

## / THE IMPORTANCE OF DECISIONS MADE BY APPS IS GROWING

- + Significant monetary losses
- + Impact on people's health

## / INTEGRITY AND TIME VERIFICATION can enable and support building certain applications

# THE INTEGRITY CHALLENGE

- + The EO data supply chain is complex
  - Mission planning, M&C, etc. systems
  - Data Processing Facilities
  - Archives and Dissemination Systems
- + It involves several organizations
- + Missions last for tens of years, data is used even longer
- + Archives are huge and growing
- + Situation in cyberspace is getting more challenging

# PREVENTION VS. VERIFICATION

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## / PREVENTION

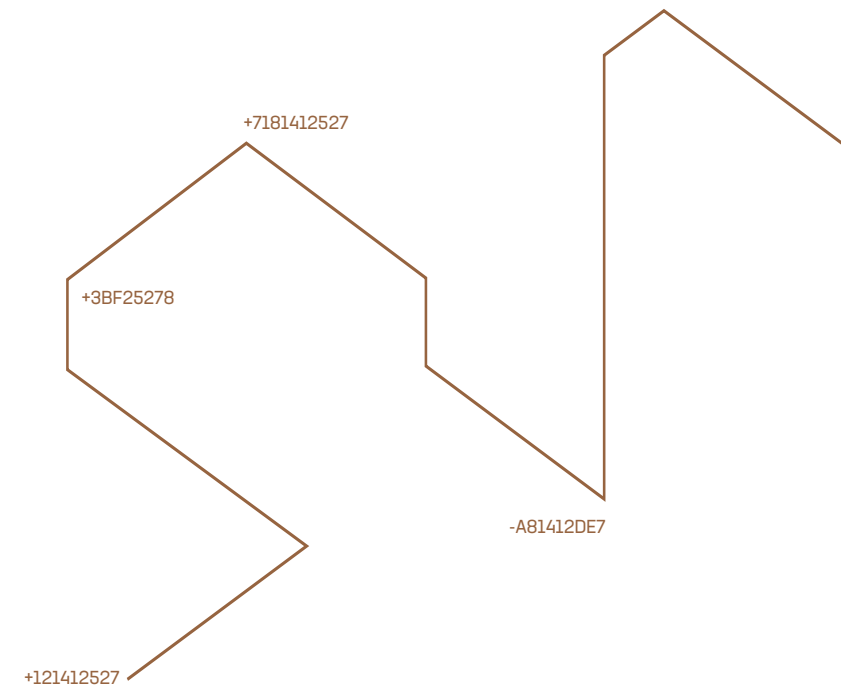
(software controls,  
operational procedures)

- + Necessary to avoid compromise
- + No means to check the actual integrity
- + No means to prove the integrity

## / VERIFICATION

with KSI blockchain

- + Easy to check the actual integrity
- + Easy to check the actual time
- + Does not prevent the compromise



# 2/ KSI BLOCKCHAIN



# KSI BLOCKCHAIN

- + Proves the integrity and time of any piece of data
- + 1-second time-resolution
- + 1-second response time
- + Any number of KSI signatures per second
- + Widely witnessed trust anchors in newspapers and electronic media
- + Independent offline verification (verification code open source)
- + Privacy - no need to expose data
- + No key management



# KSI FOR EO DATA INTEGRITY - FIRST STEPS

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guardtime

## APPLY TO THE COMPUTED EO PRODUCTS THAT ARE ARCHIVED / DISTRIBUTED

- + Long-term integrity verification for security reasons
- + Provides proof of time for applications that need it
- + Independent verification for the provider as well for all the end users

## APPLY TO DATA PROCESSING FACILITIES AND M&C SYSTEMS

- + Protect audit logs, TM/TC trace, configuration, etc.
- + Detect potential “ill-made” products
- + Detect malicious manipulations of the systems



# HOW TO GET STARTED?

KSI SDK-s in Java, C, .NET, Go, ...

Catena Middleware with a REST API and additional features

Domain-level integrations, e.g. Rsyslog

Go to <https://guardtime.com/technology/blockchain-developers>

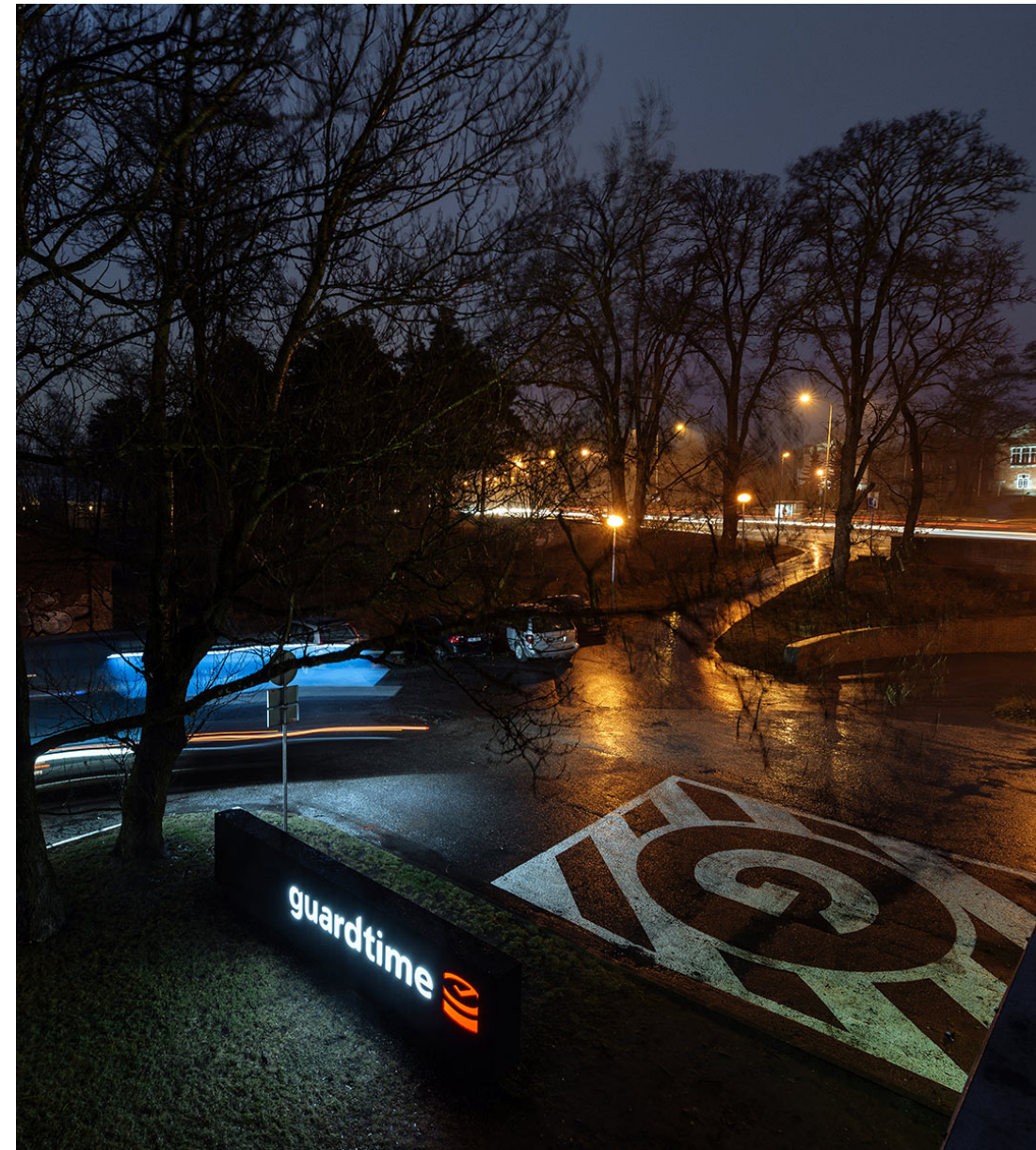
- + Guides to get started
- + Access to the service
- + SDKs and other tools

# 3/ ABOUT GUARDTIME



# GUARDTIME

/THE WORLD'S LARGEST BLOCKCHAIN  
COMPANY BY REVENUE, HEAD COUNT AND  
ACTUAL PRODUCTION DEPLOYMENTS.



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