

# *NICODIMUS, a forensic device to support Avocate and Judger public function and office*

*geNeral purpose recording devICe to embed fOrensic accepted DIgital certificates to the internet distributed art, comMUnication and politics multimedia productS*

Gerakis George, Deacon

TEI of Crete TEI  
-Department of Business Administration  
Iraklion, Crete, Greece  
[gerakisqr@gmail.com](mailto:gerakisqr@gmail.com)

Razis Dimitrios

Sofia University “St. Kliment Ohridski”  
Faculty of Mathematics and Informatics  
Sofia, Bulgaria  
[dr@razis.org](mailto:dr@razis.org)

Zisopoulos Athanasios

Sofia University  
Faculty Mathematics and Informatics  
Sofia, Bulgaria  
[Zisopoulos.Athanasios.Dim@gmail.com](mailto:Zisopoulos.Athanasios.Dim@gmail.com)

**Abstract**— The device records like any other device video, audio and other real world events to be sold by the creator. Inside the device a number of the main recording event monitoring devices and sensors it is installed like: microphone, GPS receiver, weather station, sensors, back camera, device serial number, fingerprint capturing, heart rate monitor and thousands more. All these data are embedded into a media-file. From this file we distribute the useful video, audio, image part to the internet and we keep the auxiliary file containing the forensic data. When falsification occurs the Court reverse the procedure and reveals the truth. There are two device benefits: First the recording occurred in the past (offline files) only falsification reveal is possible but with during online streaming transmission (online mode) we can instantly verify a genuine recorded event. Second most of the original auxiliary event data do not longer exist after the recording moment and cannot be falsified either alone or in correlation with other original data. Indicative applications are Forensics Auditing, Copyright Clearance, Personal secure recorder, Military SIGINT and Defense systems.

**Keywords**—Forensics auditing, internet crime, audio visual industry, sensors, multimedia, security.

## I. INTRODUCTION

### A. Naming Convention

The name of the professional device derived from the acronym of the originated patent application filed already as:

- Ge
- Neral purpose recording dev
- ICe to embed f
- Orensic accepted
- DIgital certificates to the internet distributed art, com
- MUnication and politics multimedia product
- S

Osios Nicodimus is a saint of the East Orthodox Ecclesia, we honor its memory at 14<sup>th</sup> of July. In his famous work “Spiritual Exercise” [33] from the 1<sup>st</sup> January 1800 printed in Venetia. The exercise number sixteen give us profession selection guidelines. The selected lemma denotes:

“Do not select a profession that you intentionally violate the God commandments like: music player, sport games player, theater player and Advocate”. (fig 1)

As scientists we do not pay attention to actors and football players but we do care for advocates. Advocates do play an important role in current business life and they are necessary for our democratic constitutional operation. Unfortunately, a lot of times advocates forced to say lies in order to accomplish his task. For them we invented a device that facilitates its work, as a technology step to his salvation according to Osious Nicodimus.

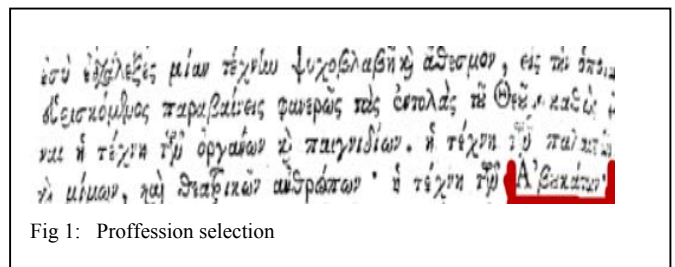


Fig 1: Profession selection

### B. Technical field

The Nicodimus device technical field areas are:

- Computer Video, audio and sensors technology.
- Journalism devices [1, 2] and Forensic auditing support [3, 4, 5].

Once upon a time evidence falsification was a very difficult and expensive task. Current technology provides real word monitoring with digital capturing devices like: [6, 7, 8, 9]

Audio, video, still photographs, infrared filming and filing, pollution sensor data, GPS data and hundred other digital data.

Unfortunately, this real world secure capturing is not applicable anymore. Modern computer software permits all kind of original data alterations. As a result, they do not represent the truth specially in front of the law.

The main idea of the invention is to combine irrevocably all type of real world capturing data in a single file. The device

Therefore, we introduce the “inner personal space” [37] approach. According to this definition there is another human right above the usual non-recording human life rights. According to that we have the right to record the human inner space from my skin and inside.

For example, a throat microphone, also laryngophone, is a type of contact microphone that absorbs vibrations directly from the wearer's throat by way of single or dual sensors worn against the neck. The sensors, called transducers, can pick up speech even in extremely noisy or windy environments such as on a motorcycle, or in a nightclub. NICODEMUS device very legally could record our own voice along with the actual useful

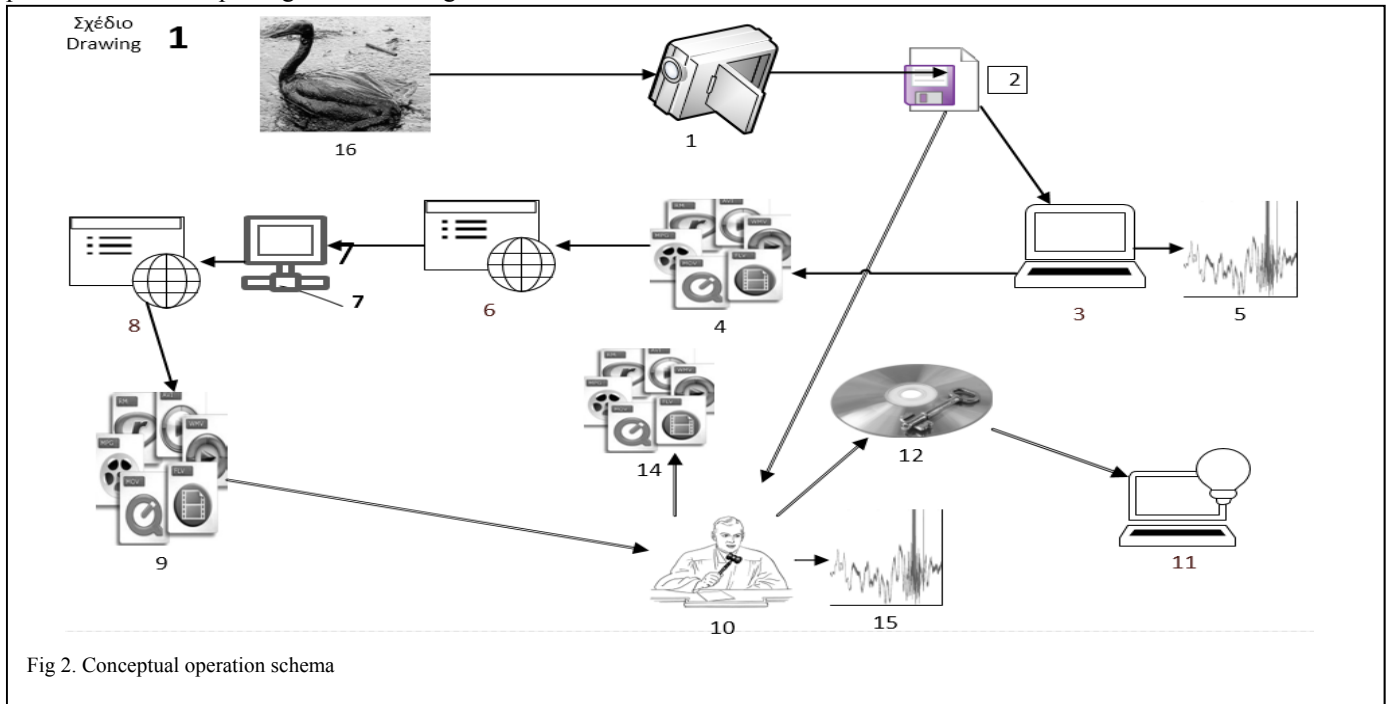


Fig 2. Conceptual operation schema

generally has:

- An enclosure housing all parts with several I/O connections.
- A basic recording module to capture real world like microphone, still camera, video camera, etc. [10, 11, 12, 13]
- An auxiliary recording module with hundreds of sensors to accompany basic recording module. [14, 15, 16]
- An algorithm that amalgamate all data to produce a single file. [17, 18, 19, 20]

### C. Internal Personal Space

Personal data rights are protected constitutional in our times. This is generally right but there are some cases where overprotection leads to the other side of no protection for the innocently accused. For example, a very easily “photoshoped” picture of a Church Father (one the writers is a Deacon of the East Orthodox Church) or a University professor could humiliate a lifetime apostleship for the good and society progression.

commercial data like video and still images.

## II. DEVICE DESCRIPTION AND FUNCTIONING

### A. Drawings and parts

To describe the invention, we attach 2 drawings.

Drawing number 1, describes the conceptual operation schema and field application of the invention:

- The real life event to be recording (16). Here the famous fake image of a bird.
- The General purpose recording device (drawing number 1) [21,22] that produces
- An all-inclusive integrated file (2) containing the
- The Judger (10) receives the file (9) and uses an official two key software (12) and/or manufacturer site (11) to regenerate
- The original recorded video (14) and auxiliary data (15).

Drawing number 2 describes manufacturing details for actual recording device inside and outside with elements:

- A basic video recording module (20)
- The auxiliary recording evidence module with unlimited devices and thousands of sensors like:
- Event data monitoring with a microphone (23), GPS data (24) weather station data (25), other sensor data NH4 sensor [23 ,24] is shown here (26), etc.
- Device operator identification like back camera (27), device serial number (28), finger capturing (29) and heart rate monitor [25, 26] for identity reveal (30).
- A tiny computer (21) running the custom Algorithm (22) to produce the final useful and forensic valuable file (2).

- The Judger (10) receives the original all-inclusive integrated file or stream (2) and process the file either through the manufacturer database (11) or with an official two key software (12).

### B. Operation initial step

The General purpose recording device enclosed in a multi-device container (1). All interoperated sub-devices work very simply. The General Purpose Recording Device operation in a typical situation configuration to capture a bird video for the broadcasting news in a polluted oil area follows:

- The main video camera (20) captures the incident in High Definition video.
- All other event data monitoring sub-devices already recorded secondary data through a microphone (23), GPS data recorder (24) [27, 28], weather station data (25) [29, 30], other sensor data like the NH4 pollution measurement sensor (26), etc...
- All device operator depend data like back camera (27), device serial number (28), finger capturing (29) and heart rate monitor for identity reveal (30).

All the above data are send to the tiny computer (21) running the custom Algorithm (22) to produce the final useful and forensic valuable file (2).

### C. Forensic incident

The General purpose recording device (1) operational use follows a straight forward simple consecutive steps:

- The device main video camera (20) captures the incident (16) in High Definition video and produces the all-inclusive integrated file or stream (2).
- The filming operator or a simple user computer reads the file (2) and produces two type of files:
- The target video file to be used furtherly (4)
- An auxiliary file containing the forensic data. (5).

The target video file (4) is the only commercial distributed piece of work. It travels around with stops at:

- The officially internet page (6) where the genuine video is presented, then it goes around the globe through Internet (7) and finally it arrives to a page (8) with the fake instance (9) of the video (6).
- There a dispute occurs and the case is transfer to the Judger (10) along with the fake video file (9).

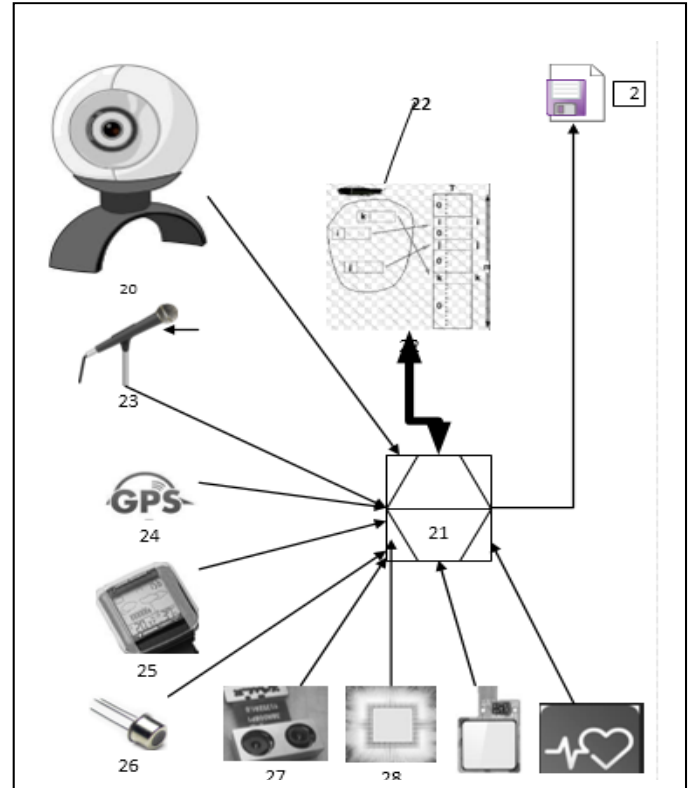


Fig. 3. Manufacturing details for actual recording device

The Judger produces two files:

- The forensics version of the original recorded video (14).
- and auxiliary forensic approved data (15) to support the case.
- There are two options for the Judger:
- Files (9) and (14) are different and the case is send to court.
- Files (9) and (14) are identical. At this case further clarification is necessary and therefor the Judger studies the auxiliary forensic approved data (15) to decide.

### D. Device network support

A significant device useful secret is that some data from the devices does not longer exist after the recording moment and therefore cannot be falsified either alone or in correlation with other original data (reverse engineering).

All these are applicable for historically already recorded data. When the recording occurred in the past only

falsification reveal is possible but with during online streaming transmission we can instantly verify a genuine recorded event. Most the electric and mechanic parts are commercially available from the industry today. For this reason, it is avoided a detailed material and part description.

### III. 3 LEGAL CLAIMED AXIOMS

Claim 1: General purpose recording device enclosed in a multisystem container (1) to generate digital secure real world forensic evidences that are characterized by a central computer (21) accepting media input from the recording modules (20 - 30) producing an all-inclusive integrated file (2), that it could be used as forensics evidence (14,15) when internet or other falsification eventually occurs.

Claim 2: The Central computer (21), according to the main claim 1, is characterized by a custom Algorithm (22) that reads all recorded file input from the recording modules (20-30) and it produces an all-inclusive integrated file (2).

Claim 3: The all-inclusive integrated file (2) according to the above claims 1 and 2, are characterized by its one way inside machine assembly. It contains intermixed all various data recordings and it cannot be assembled later both as a result of the its strong custom Algorithm (22) and the unique in time and space collected auxiliary data.

Claim 4: The recording modules (20,23, 24, 29,30) according to the main claim 1, are characterized by its capability to convert analog multimedia data into a computer recognized file belonging in two types, primary and auxiliary.

Claim 5: The primary recording modules, according to the above claim 4, are characterized by its use to write the basic multimedia data and they are devices like microphone, still camera, video camera, speedometer and hundreds of similar commercials of the self's devices.

Claim 6: The auxiliary primary recording modules according to the above claim 4, are characterized by its only use to feed the custom Algorithm (22) with unlimited file data to insert into the all-inclusive integrated file (2). Such systems indicatively are: microphone (23), GPS data (24), weather station data (25), other sensor data (26), back camera (27), device serial number (28), finger capturing (29) and heart rate monitor for identity reveal (30) and thousands more.

Claim 7: The all-inclusive integrated file (2), according to claims 1,2 and 3, is characterized by its dual nature in relation with the physical data layout. It is either a normal computer disk file or a network data stream as an equivalence to the disk. [31, 32, 34].

### IV. BUSINESS APPLICATIONS

A successfully engineered device could revolutionize all current technology in all major professional and consumer devices. Everybody wants to operate in a bullet proof digital environment. Well, almost everybody due to the nature of human being and the daemonic influence. Application vary in a wide range of profitable areas:

- Forensics Auditing.

- Copyright Clearance.
- Personal secure recorder.
- Military SIGINT .
- Defense Communications.

#### A. Forensics Auditing.

NICODEMUS device is ideal for all auditing applications from product and process audit up to compliance and internal control. [38] The main task here is to find and evaluate genuine and useful evidences.

#### B. Copyright Clearance.

Intellectual property copyright clearance procedure is very difficult in our times, primarily due to Internet chaos. In internet early times there was a demand to identify or even give a domain name according to geography coordinates. For example a server located on this desk we do not used [www.teicrete.gr](http://www.teicrete.gr) but a more mathematical unique approach :

$$35.316165^{\circ}25.103287^{\circ}$$

A more radical perception is to use spatial temporal incorporated standard feature into any Nicodimus device[ 39 ]. According to this the center of the gravity of a specific Nicodimus recorder is unique in space and time. This is not a innovative idea any 3D object has its distinctive spatial temporal data. To define the copyrights of this speech we isolate from the recorder the following data:

TABLE I. UNIQUE NUMBER COPYRIGHTS CALCULATION

description	Numeric data
Machine unique identity code	9001101111
Geographic Latitude fo Heraklion, TEI, ontop of this presentation desk.	35.316165
Longitude	25.103287
START time stamep of this speech Thursday, September 22, 2016, 10:00 (UNIX Timestamp: seconds since Jan 1 1970)	1474552800
Copyright Start Unique number produced by hashing the above.	<b>545,316,149,323.21</b>

#### C. Personal secure recorder.

Our originated team described the personal recorder a few years ago[35]. It was a general design approach. Nicodimus device is the perfect machine to protect human life from personal data violation.

#### D. Military SIGINT and other Defence Systems

Signal Intelligence meets an unprecedented opportunity to expand its horizons with unlimited signals in the battle field. Existing systems are not capable to process this type and volume of data. The main benefit here is the COTS feature. COTS stands for Commercial of the Selves. According to this definition to assembly a military product we only use existing parts reducing the cost of the final military product.

Of course there is a “minor” detail. All data come across friendly devices exactly where we primarily demand enemy data. Even so a sniper [ 36 ] receives hundreds weather data and calculates the bullet track.

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