



An overview of FTS products & services

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1.0 Company overview

Forensic Telecommunications Services Ltd. (FTS) is a world leader in the advanced extraction, analysis and presentation of data from mobile telephones, mobile networks and all forms of computing and mobile communications technology.

FTS delivers specialist technical services and unique data extraction tools to a wide range of security services, police forces, legal services and corporate clients. Through the provision of highly specialised Software, hardware and training solutions the company also supports the activities of law enforcement and internal security agencies all over the world.

Based in the UK with offices in Europe and the USA, FTS has provided advanced technical services since 2000, developing the experience and technical expertise to enable the delivery of Best Evidence as a standard. Building on this solid foundation, the business is managed and staffed by qualified individuals from the telecommunications industry and by experienced former police investigators.

An accredited ISO 9001:2008 company, FTS is committed to achieving the internationally recognised ISO standards relevant to the delivery of forensic services and software products, including ISO 17025:2005 and ISO 27001:2005. A strong emphasis is placed on best practice and audited forensic processes to ensure the constant fidelity, integrity and credibility of all FTS's data output and products.

Fundamental to FTS's ongoing success is a significant and continuing dedication to independent research and development, specifically the advancement of E-forensic extraction techniques, specialist telecoms products and the validation of digital forensic processes. It is through this continued commitment to quality, improvement and stability that FTS is assuring its long-term ability to deliver Best Evidence through Best Practice, thereby guaranteeing Best Value.

Work in partnership with law enforcement agencies on MAJOR cases

- International terrorism
- International drug trafficking
- Money laundering
- Organized crime
- Rape and child abuse

USA, UK, Canada, Spain, Germany, Lebanon, Saudi Arabia, Pakistan, Malaysia, Bali, etc.



2.0 SIM card forensics - SIMiFOR®

2.1 SIM reading and copying hardware overview

- a. Support multiple SIM card formats i.e. GSM, iDEN, UMTS and CDMA etc.
- b. Copy all accessible data leaving the original SIM card unchanged
- c. Copy from an original SIM or custom copy SIM details from a library resource
- d. Provide reusable SIM copy cards for creating custom SIMs
- e. Support full Unicode and extended character sets
- f. Obtain handset IMEI data, location information, voicemail data and other information where possible

2.2 SIM reading and copying software overview

The SIM reading software will, where possible, be able to retrieve;

- a. Phone book names and numbers
- b. USIM phonebook data including email addresses, category and number types and any additional names and numbers
- c. Numbers, time and date of calls received, made and missed
- d. Text messages sent, received and deleted that are stored on a SIM card
- e. Produce customisable reports which can be outputted to XML
- f. MD5# & SHA1# of the full read file proving forensic integrity
- g. Leave no trace on the original SIM card of investigation





3.0 Mobile phone forensics – HEX Raptor®

3.1 Mobile data extraction hardware overview

The mobile handset raw and deleted data extraction hardware supports a wide range of commonly available mobile phones such as Nokia, Sony Ericsson, Samsung, Motorola, LG and others.

It includes the necessary hardware for connecting to such mobile phones and extracting as much data as is possible including but not limited to;

- a. Phonebook and call registers
- b. SMS text messages
- c. Pictures, sounds and video
- d. The SIM card serial number and IMSI of the SIM card's inserted into the phone
- e. Other data like calendar entries, to-do lists, speed dials etc.
- f. Security or handset lock code
- g. Deleted data from all of the above where possible
- h. Large number of models covered circa 360+
- i. Specifically large number of Nokia models covered circa 100+

3.2 Mobile data interpretation software overview

- a. The mobile product includes decoding software for interpretation of the HEX data retrieved from the handset.
- b. The data retrieved is presented in a reporting format suitable for evidential use.
- c. Multilingual decoding of text messages
- d. Decoding of images, video and audio
- e. Physical memory extraction
- f. Extraction with no SIM present
- g. Information on last SIM used in the phone when SIM is not present
- h. MD5# of binary files to ensure forensic integrity
- i. Leaves no trace in phone of investigation





4.0 Advanced mobile phone forensics – Chip-off

When a mobile phone is purchased it usually comes in a shiny box complete with user manuals, PC-sync software and peripherals such as headphones, screen cleaning cloth and perhaps a case.

A mobile phone that has been part of a terrorist incident, or simply damaged by a criminal in an attempt to destroy potential evidence detrimental to their freedom may arrive at a laboratory in a very different condition!

Damage by fire, impact, water or even DNA analysis has, in the past, often meant the end of any useful digital evidence being made available from the device.

There is however, a technique commonly referred to as 'CHIP-OFF' which means that such damaged devices can still provide vital intelligence and evidence.

Specialist equipment can be used to remove the handset's memory chip which may then require resoldering before a memory image can be taken. This read can then be run through advanced software tools to decode the hexadecimal data and produce an evidential report.

Though easy to describe, this process can be time consuming and highly specialised requiring skilled engineers to perform the task.



Useless for evidence?



Chip-off techniques mean 'not necessarily!'



5.0 Forensic Acquisition for Apple iPhone™ and iPod Touch™ - iXAM™ & iXAMiner

The Apple iPhone™ offers an advanced multimedia experience that integrates cutting edge phone, web and media functions in one device. Forensically secure data recovery from such complex equipment requires a specialist solution.

iXAM™ is able to provide comprehensive, non-invasive data recovery from both the original and new 3G Apple iPhone™ as well as iPod Touch™. iXAM™ is proven to deliver a range of information potentially vital to law enforcement investigation, providing anything from a stored contact or text message to an email, photograph or specific map location.

Our secure extraction technique creates a full forensic image of the device via USB download, which can be retained for additional investigations in the future. A full evidential report is easily produced along with an XML audit trail covering the data extraction process.

iXAM™

- Address book (including multiple entry types i.e. home, mobile, work, webpage, assigned ringtone etc.)
- Call register
- Incoming and outgoing call durations
- SMS messages
- E-mails (plain text) and E-mail accounts used
- Extract and reproduce e-mail attachments
- Calendar entries
- Map locations (latitude, longitude and search terms)
- ICCID/IMSI of last SIM card
- Speed dials, Tasks and Notes
- User specified dictionary words
- Live and deleted images (our image extraction will retrieve the time and date that a picture was taken and, if available, the location it was taken at i.e. latitude and longitude of the image)
- Video footage and Audio clips
- Content downloads
- Deleted and historic Call Register entries





iXAM™ users benefit from ongoing research and development as FTS continues to increase the range of live and deleted data recoverable from the Apple iPhone™ and iPod Touch™. Regular updates are included with each seat licence.

In most cases iXAM™ can recover the following information where available:

- Live and deleted voicemail (potentially everything received over the lifetime of the handset)
- Internet bookmarks (including last visited date)
- Internet history
- Internet cookies (including websites visited and creation/expiry timestamps)
- Active and historic viewed web pages
- Wireless Network details (including router IP/MAC/Subnet, domain name and last connection time)
- Bluetooth pairings (this includes device names, MAC addresses and PIN numbers for pairing. Also shows historic entries)
- Current time zone offset (not available on all firmware versions)
- IMEI/Firmware version (only possible in certain cases)
- Screen shots showing general use, function and data entry
- For 3G iPhone™, we can extract GPS location fixes. These include latitude, longitude, altitude time and date. These are confirmed fixes – they prove that the device was definitely in that location at that time.

iXAMiner™ provides automated decoding and reporting of data extracted by iXAM™



6.0 FTS Training services

Investigator training services:

Telecoms Investigators Course

An intensive 3 day course, presented by accredited police trainers and guest speakers, designed to give officers and analysts working within law enforcement an insight into forensic telecoms as an investigative tool.

Students will learn about key areas of telecoms investigation during a variety of presentations and exercises, culminating in an interactive scenario.

The interactive nature of the course will enable students to share their own expertise and experience with others and in combination with the course subject matter they will be equipped with the knowledge to fulfil both the administrative and investigative aspects of their role as telecoms investigators.



Crimes in Action Course

This 2 day course is a natural follow up to the Telecoms Investigators Course whereby staff can expand their knowledge into the area of "live" telecoms data analysis. The course is designed to give law enforcement officers an insight into the use of live telecoms data as a dynamic investigative tool. Students will learn about key areas regarding the use of live telecoms data during a variety of presentations and an interactive scenario.

The interactive nature of the course means that the students will utilise "live" telecoms data as part of a kidnap investigation. The students will be able to share their own expertise and experience with others. In combination with the course subject material, they will be equipped with the knowledge and skills to better plot and use live telecoms data when investigating crimes in action.

Due to the profile of FTS, we are able to ensure that all our students are given up to date instruction on the latest techniques and methods surrounding telecoms evidence being used in criminal investigations.

Internet data Course

A 1 day course facilitated by accredited Police trainers and guest speakers who are specialists within their fields. The course is designed to give officers working within Law Enforcement an insight to recognise the potential sources of communications data held by Internet Service Providers, which may progress an investigation. Students will learn about key areas regarding the use of internet data during a variety of presentations and an interactive scenario.

The interactive nature of the course means that the students will utilise internet/comms data as part of a missing person investigation. The students will be able to share their own expertise and experience with others. In combination with the course subject material, they will be equipped with the knowledge and skills to better use internet/comms data.

This course is a natural follow up to the three day Telecoms Investigators Course whereby staff can expand their knowledge into the area of internet/comms data.



Digital Forensic Investigation Courses

Mobile Phone Forensics training

Level 1 – beginners

Level 2 – intermediate

Level 3 – advanced

- Training at our 'virtual digital laboratory' facility in the South of England is given on a 1:1 or 1:2 basis by Senior Forensic Technicians.
- Courses are bespoke created for the students and last from 1 week to 12 weeks.
- Training includes;
 - Understanding forensic analysis in relation to mobile phone equipment.
 - Understanding the digital forensics laboratory.
 - Understanding procedures, quality, handling techniques to be used.
 - Understand Casework/ Investigation Management.
 - Understanding imaging Processes
 - Examine a variety of devices and extract digital evidence.
 - Write witness statements
 - Setup a forensic workstation and install forensic software tools.
 - Understand the need for peer review and validation
- Visits from students from the UK or overseas can be fully provisioned (hotels, transport, weekend activities etc).



SIM card forensics training

- Course in advanced methods for data extraction from damaged SIM cards

Chip-off forensics training

- Course in advanced data extraction method for damaged mobile phone handsets as well as models unsupported by generic forensic tools.



Computer and Hi-Tec device forensics training

Three distinct areas covered at beginner / intermediate / advanced levels;

- Exhibit handling
- Core Computer forensic recovery skills
- Other disciplines & professional development (Internal & External training courses)

Course contents overview;

- Understand forensic analysis in relation to computer equipment.
- Understand the Forensic Telecoms laboratory.
- Understanding procedures, quality, handling techniques to be used.
- Understand Casework/ Investigation Management.
- Understanding imaging Processes
- Examine Computers/Hard Drives/data storage devices and extract digital evidence.
- Write witness statements
- Setup a forensic workstation and install forensic software tools.
- Understand the need for peer review and validation
- Visits from students from the UK or overseas can be fully provisioned (hotels, transport, weekend activities etc).



7.0 IMSI / IMEI Grabber & Locator – FTS Seeker

People involved in unlawful activities frequently use mobile phones. The identities of these phones are often unknown, for example a Pay As You Go phone purchased for cash. Not being able to readily identify users and the phone identity through normal methods poses significant problems for law enforcement agencies.

The FTS Seeker Handset Identifier/Locator provides an easily deployed, cost effective, system for establishing the identity of mobile phones in a specific area. The unit can recover both the handset identity (IMEI) and the SIM card identity (IMSI). These can subsequently be used to check Billing Records from the Network Operator, as well as being used for target location and to detect SIM card swapping.

Tools of this type are, of necessity, deployed in potentially hostile areas, very close to a target. Covert operation is therefore of vital importance both to avoid detection by targets and to protect the safety of the operator. This system has been specifically designed with these requirements in mind, so that it may be easily operated and carried in a variety of concealments, for example a shoulder bag or rucksack. It also uses a rugged form of construction to withstand the rough treatment that is inevitable during operations of this type. The device can be deployed both inside and outside of a vehicle.

Features:

- Ultra compact and easily portable system.
- Rugged construction in sealed casing.
- Backpack / Shoulder Bag or brief case deployment.
- Wireless user interface via PDA, Smart-Phone, Laptop or Netbook.
- Operationally simple to use by non technical personnel.
- Cost effective alternative to vehicle based systems.
- Dual base stations for high speed operation – scan two networks at once.
- Embedded receiver for fast network survey.
- Automatic scan of multiple Networks (two at a time).
- Powerful built in database with removable media store.
- Totally silent operation using all solid state electronics.
- Built in software for IMSI catching identifying which network or country IMSI is from.
- Built in software for IMEI identity of handset make and model.
- Self contained, operates from internal batteries.
- Simple download of results to a laptop for detailed analysis.
- GPS facility – coordinates stored of where unit is deployed.
- ‘White list’ function, to ignore ‘friendly’ IMSI/IMEI’s.

User benefits:

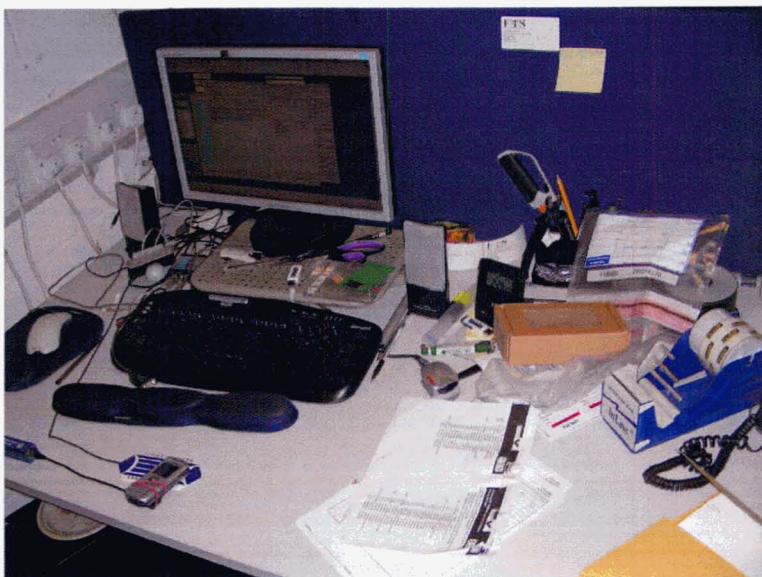
- Fast, efficient, cost effective IMSI grabbing.
- Directional antennas focus target area.
- User “Mark” facility for logging of visual information.
- Simple target identity analysis using database.
- Easily concealed for covert operation.
- Supports target location.
- Adjustable grabbing times.



8.0 Building a digital forensics laboratory

With digital forensics laboratories across the United Kingdom and overseas, FTS analyse many tens of thousands of devices each year. Drawing on years of experience in providing digital forensics services to law enforcement agencies globally puts FTS in the position to offer an advisory or physical service to any agency wishing to build a forensics laboratory.

- Advisory service
- Physical supply and install of equipment
- Laboratory management software systems
- Procedures and specialist training
- Ongoing support and training services





9.0 GPS device forensics – X-NAV

FTS X-NAV is able to extract and analyse raw data from both portable and fixed satellite navigation systems. This is achieved using FTS' dedicated extraction software which, in many cases can produce highly detailed results including raw co-ordinates accurate to within 15cm. The range of data recoverable varies between devices but can include journey logs, planned routes, vehicle speeds at given times, and bearings (direction of travel).



All this information can be plotted using FTS' custom mapping solution and forms part of a comprehensive post examination report produced to ISO9001:2000 quality standards.

TomTom®(all current models)

Recover home locations, favourites, recent destinations and stored routes, both live (accessible by manual examination) and historic (only accessible from memory analysis by X-NAV software).

Please note: These are not time and date stamped.

A manual examination will only retrieve a maximum of 24 recent destinations from the device. With X-NAV software the recovery of considerably more is possible. The highest number X-NAV has achieved is 1700 destinations. If the SatNav has been paired to a Bluetooth enabled mobile phone; even without the recovery of that mobile, FTS can identify the phone, extract its call registers (not including times and dates), phonebook, possibly text messages with times and dates. X-NAV can also recover live and historic data including phone name, model and Bluetooth address.

Garmin™/ NavMan

Similar to TomTom®. However, X-NAV can currently only extract 'live' and not deleted data. Linked mobile phone information including core data and call registers can also be confirmed.

Windows Mobile™ Devices and Pocket PC PDAs

Most devices store raw data from the satellites so it is possible to plot where the device was actually located.

Sometimes analysis identifies times and dates, enabling the recovery of overview maps and other historic data. One such examination undertaken by X-NAV recovered 600 maps.

Please note: Some Windows Mobile™/PDA devices use TomTom® navigation software. In these cases X-NAV is able to retrieve the same level of GPS data as under TomTom®.

Standard forensic analysis of the PDA device itself will also reveal all available telephony data (call registers, phonebook, speed dialling numbers, SMS and MMS messages), plus all PDA data (appointments, tasks, notes, e-mail messages, media files and documents).



10.0 Specialist equipment

FTS maintain a portfolio of specialist intelligence products and services including;

- **Interception range overview;**
 - Analogue telephone interception
 - Analogue interception with call routing
 - Switch/LI software dial-up receiving
 - Digital trunk interception
 - GSM interception
 - PBX monitoring
 - Call playback
 - Modem decoding (dial-up internet)
 - Broadband interception
 - Fax processing
 - Mapping
- **Satellite phone interception;**
 - Thuraya Tactical or Strategic monitoring systems
 - Iridium Monitoring & Decoding System IMDS – Tactical or Strategic systems
- **Ghost phones (Nokia and LG) & coded phones**
- **Jammers**
- **Directional microphone system**
 - Features an array of high quality miniature microphones and state of the art digital signal processing technology to produce the most sophisticated microphone of its type anywhere in the world
- **CDR collection and analysis system**
 - The system is designed to be part of a National/Regional Monitoring System that is fully capable of targeting Telecommunications Traffic and suspects in any particular region – or to look for their electronic association of suspects in ANY area across the nation and their supporters, funders or overseas associates.
- **GSM location and tracking system**
 - The LTS provides the ability to locate GSM mobile devices on request and the ability to perform tracking of these devices over a period of time. The LTS is located within the selected Host operator's network while the requests are managed and targets monitored via the LTS system located in a secure HQ location.