

Overcoming Common Challenges in Digital Forensics Investigations

Digital forensic investigation refers to the collection, analysis and preservation of digital evidence that can be utilised when investigating cybercrime or other digital incidents. Digital forensics exists to identify perpetrators, enable electronic data to be collected ethically with strong legal grounding and provides insight into the extent of a digital, forensic crime. It is used when investigating intellectual property as well as fraud prevention and protection.

As a multitude of factors challenge the way in which stakeholders conduct digital forensic investigations, the need for robust solutions has become more prevalent. It's important to know the factors which influence digital forensic investigations in order to identify the potential challenges associated with each factor. *Mordor Intelligence* reported that the Digital Forensics Market is expected to reach USD 5,890.88 million in 2023 and grow at a CAGR of 12.92% to reach USD 10,815.2 million by 2028. As the market flourishes, so too will forensic investigation. This means that each digital forensic investigator will need to be aware of the current trends and challenges within the niche.

The Factors That Influence Digital Forensic Investigations

The factors that deeply influence digital forensic investigations include the introduction of technological advancements, an increase in the sophistication of encryption and data protection, and the influence of the legal and regulatory landscape. Additionally, resource constraints, data volume, and variety, and the availability of digital forensic experts also play an important role in digital forensic investigations. Other factors also include the maintenance of the chain of custody, evidence preservation, the volatility and fragility of digital evidence, and the ethics regarding forensic data collection when using computer science.

All of these factors work harmoniously under the cloud of digital forensics and are taken into account when forensic investigators collect, identify, and analyse the given data. Furthermore, the investigation of digital forensic science and computer forensics is vital to the advancement of digital investigations, aids in the reduction of computer crime, assists law enforcement agencies, and assists in criminal investigations.

Why Use Digital Forensics?

Digital forensic investigations are advantageous as they aid in crime investigation and prosecution and actively contribute to civil litigation and dispute resolution.

But with these ample benefits come a few challenges. No one ever said digital forensic investigation would be easy now, did they? The more you know, the better equipped you'll be to face the potential challenges associated with this niche head-on (pun intended). Onto the challenges...

1. Increasing Volume and Diversity of Digital Data

Digital Guardian released a report that broke down the amount of digital data that is generated globally, and they then predicted the potential future figure for 2025. They found that the figure is expected to reach 180 zettabytes.

Think about how many digital devices you own. Each one has its own hub of collected data which is displayed and captured in a variety of different ways. This means that not every device has the same operating system, and the same tool of analysis cannot be used across the board. Each analysis will be unique to suit the specific device.

How Detego Global Tools Help

Patented Rapid Imaging Technology: Detego Global has developed a patented imaging technology that aims to reduce the time it takes to extract data from devices. The analysis of this data can be conducted quicker than using original methods of extraction that tend to take longer. Additionally, this feature aims to streamline the data collection process, especially when large volumes of data are being acquired.

2. Encryption and Data Protection Mechanisms

A survey that was conducted by *Thales*, titled "The Thales Data Threat Report," stated that 47% of global organisations and conglomerates use encryption extensively to protect sensitive information. Data is encrypted to ensure the security and privacy of the files on a certain device. Layers of protection make it time-consuming and difficult to decrypt, access, and analyse. The time it takes to decrypt the data may therefore hinder forensic investigations.

How Detego Global Tools Help

Detego uses a range of robust tools that incorporate AI-powered tools and AI-driven object detection. They also make use of hash matching and keyword searches to specifically target

pieces of data that are most relevant to the investigation at hand. In this way, the decryption process is streamlined, and analysis becomes more efficient.

3. **Evolving Digital Technologies**

Statista analysed the evolution of digital technologies in an interesting way. They investigated how many apps were available on the Google Play Store and Apple App Store. The concluding figure was 2.9 million apps available on the Google Play Store and over 1.96 million apps available on the Apple App Store. That's just the physical evidence of digital evolution. Imagine all of the other technologies that are in the testing and release phases. Digital technology is unpredictable as the landscape is constantly changing and adapting to the internal and external factors that are exerted on the industry. The micro and macro environments act as a catalyst in the evolution of digital technology. A few of the areas that are affected by technological developments are operating systems, storage methods, and file formats.

How Detego Global Tools Help

Detego Global introduced Detego Learning specifically to help consumers maintain and broaden their knowledge within a variety of industries. As technology evolves, so too does your mindset. Additionally, *Detego's* digital forensic tools cover all devices and workflows. This, in turn, means that each step within the digital forensic process is up to date. As a result, investigations become easier to conduct and analyse.

4. **Time Constraints and Backlogs**

The National Institute of Standards and Technology (NIST) conducted a study to determine how long it took a team of investigators to complete an average digital forensic case. NIST found that the average case processing time was 8.3 months. Another challenge that is often found when dealing with digital forensic technology is the need for quick turnaround times. Forensic investigations may need to be conducted quickly to eliminate and identify compromised information or develop solutions to forensic problems. Timely evidence collection in high-priority cases is also important for further investigation.

How Detego Global Tools Help

Detego developed a triage functionality that breaks down all the registered devices that are of importance in an investigation. Devices can be identified quickly, which helps investigators prioritise devices that can add the most value to a case and form part of high-quality, collected evidence.

5. **Skills and Expertise Gap**

In a report released by the *Center for Strategic and International Studies (CSIS)*, researchers found that there is a shortage of approximately 359,000 cybersecurity professionals in the

United States alone. Specialised skills and expertise are required to ensure that the best possible outcome and analysis is achieved. These skills are honed over time, meaning that there is a shortage of skilled investigators. Since it takes longer to train new investigators, this can hinder the progression of the investigation.

How Detego Global Tools Help

To combat the skills and expertise gap present, *Detego* developed a digital forensic tool that is intuitive, easy to use, and is equipped with guided menus. This means that even those who have little to no experience when using digital forensic tools can still use the platform effectively. This, in turn, means that investigations can be conducted quicker due to the fact that personnel don't need to go through lengthy training programs.

Digital forensic investigation is a complex field that is influenced by a range of factors and challenges. The increasing volume and diversity of digital data, complex encryption and data protection mechanisms, evolving digital technologies, time constraints and backlogs, and a gap in skills and expertise are just a few of the main challenges that the industry faces. Detego Global aims to make the digital forensic space as accessible and efficient as possible. Request a trial of Detego Global's Unified solutions [here](#).