

Digital Forensics – Investigation Report

CASE ID : 1

DATE : 25/04/2026

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ORGANIZATION : Quantum technology

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Case background :

Quantum Tech, a company that specializes in digital technologies, including AI, reported an unauthorized access to their proprietary patent database in August 2024. The patent was a new AI chip called Neuro and whose ID is QT-AI-2025.

The primary suspect of the investigation is Emma, a senior engineer who recently joined the company. Joe is another suspect that would have acted as intermediary for Emma between her and a rival company, Nexgen.

Evidence Inventory :

Evidence ID	Description	Acquisition Method	Hash values	Chain of custody
1	Huawei POT LX1 P Smart	Bit-by-bit image with Cellebrite	SHA256	Delivered by Dr. Nitheesh Murugan Kaliyamurthy to Mathis Fenot on 12/03/2026
2	Nokia Model C2 2 nd Edition	Bit-by-bit image with Cellebrite	SHA256	Delivered by Dr. Nitheesh Murugan Kaliyamurthy to Mathis Fenot on 12/03/2026
3	Samsung GSM SM-A137F Galaxy A13	Bit-by-bit image with Cellebrite	SHA256	Delivered by Dr. Nitheesh Murugan Kaliyamurthy to Mathis Fenot on 12/03/2026
4	Detected Model Note 14	Bit-by-bit image with Cellebrite	SHA256	Delivered by Dr. Nitheesh Murugan Kaliyamurthy to Mathis Fenot on 12/03/2026
5	Emma's USB Flashdrive	Bit-by-bit image with Autopsy		Delivered by Dr. Nitheesh Murugan Kaliyamurthy to Mathis Fenot on 19/03/2026

Table 1 - Evidence Inventory

Note : The Huawei phone can be identified as Emma's phone, given the name to which the messages are addressed, and the Samsung phone as been identified as Joe's phone.

Methodology :

Only certified tools were used during the investigation, thus following the legal procedure of digital forensics investigations. The tools that were used are:

- Cellebrite Physical Reader V 7.72.0.10
- Autopsy

Cellebrite physical Reader was used to analyse the images of the different phones that were submitted, while Autopsy was used on the image of Emma's USB flash drive.

The methodology used was to :

- First open the images of the phones using Cellebrite Physical Reader.
- Then, the second immediate thing to do was to verify the integrity of the images by calculating their hashes.
- Once these two first steps were done the following one was to analyse the emails, locations, messages and archives present on the different phones.

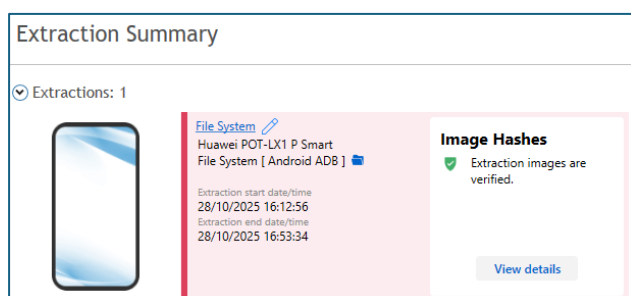


Figure 3 - Huawei Screenshot from Cellebrite

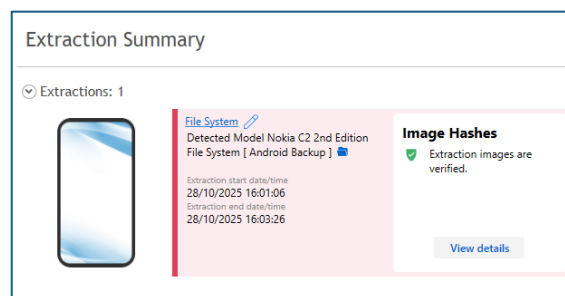


Figure 2 - Nokia Screenshot from Cellebrite

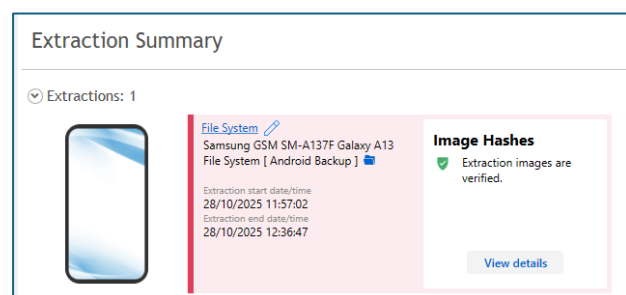


Figure 1 - Samsung Screenshot from Cellebrite

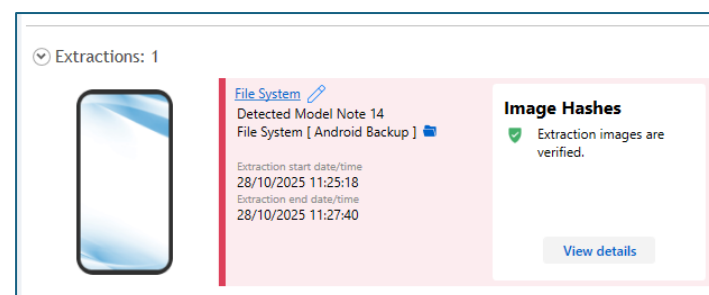


Figure 4 - Android Screenshot from Cellebrite

As shown in the images captured from Cellebrite Physical Reader, the integrity of the images is guaranteed by the calculus of their hashes.

Findings :

Timeline of the events :

21/08/2024 : Emma asks Joe for help

Emma contacts Joe and tells him she has access to some highly valuable information from Quantum Technology. It is regarding their new patent, the AI chip called Neuro. She asks him if he knows a potential buyer.

At this point of time Emma is in India while Joe is in Germany. We do not have any data on Norman's position.

22/08/2024 – 20/11/2024 : Search of a potential buyer

From the 22nd of August to the 9th of September, Joe is traveling, searching for a potential buyer for the patent that Emma has access to. He travels to Scotland, France, England and has meetings with contacts and clients of his. He manages to find a potential buyer working for NSI compa.

21/11/2024 – 30/01/2025 : The wait

During this period there is no more communication between the different parties.

31/01/2025 : Deal is done

On the 31st of January 2025, Emma, after talking with Joe about reaching other customers, hands over the Blueprint to Norman in exchange for 5 millions offshore.

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Locations

ID	Start time	End time	Location	Source	Suspect
L346 – L352	21/08/2024	21/08/2024	Hannover, Germany	Media locations	Joe Marsh
L267 - L345	21/08/2024	26/08/2024	Palakkad, India	Google Photos	Emma Johnson
L235 – L237, L240 – L246	29/08/2024	31/08/2024	Glasgow, Scotland	Media locations	Joe Marsh
L232 – L234	31/08/2024	31/08/2024	Hereford, England	Media locations	Joe Marsh
L226 – L231	04/09/2024	04/09/2024	Swansea, Walles	Google Photos	Emma Johnson
L225	04/09/2024	04/09/2024	Swansea, Walles	Media locations	Norman Smith
L219 – L224	04/09/2024	04/09/2024	London, England	Media locations	Joe Marsh
L210 – L218	05/09/2024	05/09/2024	Chassieu, France	Media locations	Joe Marsh
L176 – L179	08/09/2024	08/09/2024	Swansea, Walles	Google Photos	Emma Johnson
L157 - L175, L180 - L209	05/09/2024	16/09/2024	Lyon, France	Media locations	Joe Marsh
L156	21/09/2024	21/09/2024	Helsinki, Finland	Gmail	Emma Johnson
L153 – L155	14/10/2024	14/10/2024	London, England	Media locations	Joe Marsh
L102 - L152	15/10/2024	18/10/2024	Paris, France	Media locations	Joe Marsh
L095 – L101	18/10/2024	18/10/2024	Bristol, England	Media locations	Joe Marsh
L090 – L094	16/11/2024	16/11/2024	Neath, Wales	Google Photos	Emma Johnson
L087 - L090	16/11/2024	16/11/2024	Cardiff, Wales	Google Photos	Emma Johnson
L072 – L084	20/11/2024	22/11/2024	Wigan, England	Media locations	Joe Marsh
L048 - L071	22/11/2024	23/11/2024	Doha, Qatar	Gmail, Google Photos	Emma Johnson
L011 - L046	15/12/2024	16/12/2024	London, England	Media locations	Joe Marsh
L001 - L010	30/12/2024	25/01/2025	California, US	Gmail	Emma Johnson

Table 2 - Locations of the suspect from August 21st 2024 to January 25th 2025

From the extracted locations of the different phones that were provided as proofs for the investigation, it is possible to pinpoint the location of the suspect at a certain moment and thus confirm what they communicated to each other.

When Joe told Emma that he was on his way to meet a contact in Glasgow for a meeting on the 29th of August 2024*, several pictures he took situated him at Glasgow Airport and then into the city. On the 14th of October 2024, he told Emma that he was going in Paris to get some deals**, and this second occasion the coordinates of the pictures he took situated him in Paris.

*See “table : Messages”, Message ID M338

**See “table : Messages”, Message ID M341

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Communication analysis :

Discussions :

Chat ID	Participants	Timestamp	App
C16	Joe Marsh Emma Johnson	21/08/2024 05:43:22(UTC+1) to 31/01/2025 10:24:11(UTC+0)	WhatsApp
C18	Joe Marsh Emma Johnson	09/09/2024 16:55:59(UTC+1) to 09/09/2024 16:57:16(UTC+1)	Instagram
21	Norman Smith Emma Johnson	31/01/2025 12:47:10(UTC+0) to 31/01/2025 12:53:09(UTC+0)	Facebook

Table 3 - Chats between the suspects

WhatsApp Chat :

During the chat number 16, Emma began the discussion by telling Joe that she had access to the new AI patent and that she was searching for a potential buyer, something for which Joe could help her. Joe then travelled to meet different clients and updated Emma on the process.

It is also the chat Emma and Joe used to communicate when Norman demanded a change of plan to verify with each other if they should continue the deal or not.

Instagram Chat :

In the chat 18, Joe indicates to Emma that he found someone interested in NSI compa.

Facebook Chat :

Chat 21 is the only chat we found between Norman and Emma. In this discussion Emma asks if Norman is ready to proceed with the deal. Due to some complications, Norman asks for the Blueprint to be delivered in chunks and then talks about 5 million being send offshore.

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Messages :

ID	From	To	Timestamp	Source	Content
M330	Emma	Joe Marsh	21/08/2024 10:58:21(UTC+1)	WhatsApp	I have access to some highly valuable information from ABC technologies. It's related to our new AI based Neuro product. I'm thinking about selling it to someone interested.
M332	Emma	Joe Marsh	21/08/2024 11:10:36(UTC+1)	WhatsApp	Not exactly Joe, but I trust you can find the right buyer. The competition must be eager to get their hands on this tech.
M338	Joe Marsh	Emma Johnson	29/08/2024 15:10:34(UTC+1)	WhatsApp	Hi there, just nearing to some wonderful offers. I am flying to Glasgow to meet a contact over there for a meeting. Will keep you posted
M357	Joe Marsh	Emma Johnson	09/09/2024 16:57:16(UTC+1)	Instagram	I found someone in NSI compa. He is interested. He needs to know the level of information, you would be willing to share. Could you provide any information on that?
M341	Joe Marsh	Emma Johnson	14/10/2024 19:57:38(UTC+1)	WhatsApp	Hi there, travelling back to France this time Paris to get some good deals. Will update you once a deal is nearer
M360	Emma	Norman Smith	31/01/2025 12:47:10(UTC+0)	Facebook	Norman, Joe told me u r ready to proceed. Lets keep this clean and quick
M362	Norman Smith	Emma Johnson	31/01/2025 12:49:52(UTC+0)	Facebook	Almost.We need the. Blueprint in chunks Too risky in one go.
M366	Norman Smith	Emma Johnson	31/01/2025 12:53:07(UTC+0)	Facebook	Agreed.First part releases, and 5M offshore reflects. Simple

Table 4 - Messages extract

Here is an extract of the messages. The messages selected point to Emma being the culprit of the theft of the patent.

Email analysis :

The emails present within the phones' images are not concluding, as they are spam emails and do not present any form of communication between the different parties.

Call analysis :

The call analysis as well do not apport any further proofs to the investigation, as the phone calls that could be studied are either missed or unanswered.

Files analysis :

ID	Name	Device	Path
F156	Open.7z	Nokia	Detected Model_Nokia C2 2nd Edition.zip/sdcard/Android/media/com.whatsapp/WhatsApp/Media/WhatsApp Documents/Open.7z

Table 5 - Files extract

The zip folder named Open contains a Docx file of the same name that is locked under a password.

Using open-source tools such as JohnTheRipper to decipher the hash of the password and the Hashcat to recover the password, we were able to open the file. The password was "Neuro2023".

This file contains information about an offshore bank account at Global Offshore Bank & Trust, under the name Emma Johnson. This bank is situated in the Cayman Islands. and the account requires a minimum of 500.000 \$ to avoid any fees.

Suspects roles :

Emma Johnson

Emma Johnson is identified as the primary perpetrator of the corporate theft. The communication analysis clearly shows that she initiated the process by contacting Joe and explicitly stating that she had access to highly valuable proprietary information related to the AI chip "Neuro" (QT-AI-2025).

As we can see with the final messages exchanged between her and Norman, her motive is primarily financial, as demonstrated by the agreement of a 5 million offshore transaction.

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Joe Marsh

Joe Marsh acted as an intermediary facilitating the transaction between Emma and potential buyers. Some discussions between him and Emma confirm that he was responsible for identifying and contacting interested parties, as well as travelling across multiple countries to negotiate deals.

His motive appears to be financial as well, and while he did not possess the stolen data himself, his role was essential in enabling the transaction.

Norman Smith

Norman Smith is identified as the buyer of the stolen intellectual property. The evidences from the Facebook communication show that he negotiated the terms of the transaction, including requesting the blueprint in chunks to reduce the risks and confirming the offshore payment of 5 million.

The motive of Norman is to benefit his company by acquiring confidential intellectual property from a competing organisation.

Conclusion

It is possible to conclude this investigation by stating that Emma Johnson initiated the theft of proprietary information related to the AI chip “Neuro” (QT-AI-2025). Communication records demonstrate clear intent to sell this information in exchange for illicit funds through an offshore account.

Joe Marsh facilitated the operation by acting as an intermediary, identifying potential buyers and coordinating meetings across multiple locations.

Finally, Norman Smith was the buyer, negotiating delivery conditions and confirming payment arrangements.

The evidences collected support allegations of attempted theft of intellectual property, corporate espionage, and unlawful data transfer.

Recommandations

It is recommended that Quantum Tech conducts an audit, as to prevent other events like this from occurring. It is also recommended that they implement stricter access control mechanisms for sensitive data. They should also monitor internal communications and unusual data access patterns.

For law enforcement, it is counselled that they initiate legal actions against Emma Johnson, Norman Smith and Joe Marsh for theft of intellectual property, corporate espionage, and unlawful data transfer, and that they also investigate the offshore account at Global Offshore Bank & Trust (Cayman Islands)

Notes :

In her message of the 21st of May 2024, Emma talks about ABC technologies and how she acquired the new AI based Neuro product, when in the document we received at the beginning of the project the society is called Quantum Technology.

It is the same for NSI Compa and Nexgen, Norman seemingly works for NSI Compa but in the initial document it is Nexgen that is mentioned.