

Digital Detectives – Murders in Clarusia

PAGE ONE

Introduction

The Clarus project investigated communication and forms of bias within the handling of digital forensic evidence. The research took place in five partner countries (UK, Finland, Portugal, Czech Republic and Greece) and involved forensic science practitioners, law enforcement organisations, researchers and the public.

This comic introduces the Clarusia scenario and explores the research findings from the project, specifically how digital evidence is managed in an investigation into two murders in the fictional city of Clarusia. The focus is on how information is communicated within and between individuals and teams within law enforcement and forensic science. The research highlights how information travels through the different stages of an investigation, indicating where communication can fail, and how bias can appear within systems, tools, and organisational cultures. Some examples contained in the comic were taken directly from the research.

Key themes include:

- Digital evidence work involves a constant mix of formal communication procedures and informal communications.
- Accuracy and clarity are essential for reducing mistakes.
- Technology moves faster than digital forensic systems, so practitioners rely heavily on training and knowledge sharing, as well as key ‘knowledge brokers’ who translate technical knowledge into simpler terms.
- Bias is not only personal but also embedded in structures, tools, and procedures (system bias).
- Organisational culture affects communication, hierarchy, and feedback.
- Communication practices need strengthening and support.

This story will present:

- The journey of digital evidence and the contrast between formal and informal processes.
- The gap between technological development and the tools used in practice.
- Systemic and organisational sources of bias.
- The role of culture in shaping investigations.
- Day-to-day communication challenges and opportunities for improvement.

Credits

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PAGE THREE

Title: Digital Detectives – An Introduction to Clarus

Panel 1

Image description: Professor Megan O'Neill looking out at the reader. Welcoming pose/gesture.

Word balloon (Megan): Hello! I am Professor Megan O'Neill from the University of Dundee and the research lead for the Clarus Project.

Panel 2

Image description: There are three interlocking parts to this panel, connected like jigsaw pieces. The point is to emphasise communication between the three investigators/activities.

1/ A forensic scientist outside at a crime scene in full PPE extracting DNA, swabbing a mobile phone. Police officer in background.

2/ A digital forensic examiner connecting cables to the phone to extract information in the laboratory.

3/ A forensic examiner dusting the phone for prints (again in a lab, not at the scene).

Caption 1: Clarus is a groundbreaking initiative co-funded by the European union and UKRI.

Caption 2: It is dedicated to improving communication and collaboration between forensic and law enforcement professionals involved in digital forensics.

Panel 3

Image description: Image of criminals and terrorists doing nefarious things and using computers and mobile devices.

Caption: Digital forensics plays a critical role in modern investigations, especially in combating serious crimes and terrorism.

Panel 4

Image description: Megan standing in a courtroom as evidence is given in background. She looks out at the reader.

Word balloon (Megan): Ensuring fairness, accuracy and clear communication in the investigation of these cases is very important.

Panel 5

Image description: Montage of logos of partners (research organisations, agencies, and countries). Clarus logo at centre. Perhaps this could be on a detective's whiteboard/murder board, connecting all the partners with red string.

Caption: That's why the Clarus Project brings together six academic research organisations, four forensic agencies, and three police agencies from across six European countries (UK, Finland, Norway, Portugal, Czech Republic, and Greece).

PAGE FOUR

A full-page montage of partners working together.

Image description 1: A group of professionals gathered around a table, discussing and working together (image reference: Clarus project group image).

Caption 1: The Clarus Project is an interdisciplinary collaboration, bringing together experts from a wide range of professional backgrounds.

Image description 2: Different professionals shown working. A linguist analysing text on a computer, a computer scientist working with code, and a digital forensic investigator examining a device. All three are most likely working on computers.

Caption 2: From linguists to computer scientists, forensic investigators to law enforcement professionals, we are working together to tackle the challenges of communication and digital forensic working practices in a truly collaborative way.

Image description 3: A first responder/Police officer carefully handling digital evidence such as a smart phone.

Caption 3: Our mission together is to enhance objectivity, neutrality, and fairness in the use of digital forensic evidence and investigation.

Image description 4: Three connected scenes showing forensic scientists, police investigators, and members of the public, linked by lines to show communication.

Caption 4: We focus on bridging gaps between forensic scientists, police investigators, and the public to tackle biases and errors in the examination of digital evidence across Europe.

Image description 5: A smartphone being analysed in the foreground, with multiple teams working behind it and a map showing cross-country connections.

Caption 5: The analysis of digital evidence is complex, involves multiple teams in the justice system and can involve cross-country collaboration.

Image description 6: A range of digital devices and a visual representation of cloud storage, with professionals working around them, showing rapidly changing technology.

Caption 6: This area has developed rapidly in recent years and changes frequently with new technology.

PAGE FIVE

Panel 1

Image description: Megan addressing the reader. In background behind her we seen the Clarus Lexicon.

Word balloon (Megan): By understanding how communication, organisational cultures, disciplinary backgrounds, and even language shape how digital forensic evidence is handled, investigated and reported, we can build tools and resources to empower professionals and enhance public trust.

Panel 2

Image description: Montage of focus groups, people being interviewed, diary and journal entries, etc.

Caption 1: The research within Clarus is conducted using a variety of methods, including , interviews, research diaries, focus groups, and surveys from law enforcement and forensic analysts.

Caption 2: This approach helps us gain deeper insights into the examination and communication of digital forensic evidence across Europe.

Panel 3

Image description: A panel with text / bullet points. Could be on a screen or device.

Caption/text:

The Clarus project is delivering:

- Open access tools to support clear communication, including a virtual Clarity Checker and a multi-lingual lexicon for digital forensics.
- Recommendations for changes in policy and practice.
- Training courses to upskill practitioners and an online open course to share knowledge and best practices.

Panel 4

Image description: A citizen jury working together at a table, evaluating outputs from the Clarus project.

Caption: The judicial system affects the public too, which is why it is crucial that their voices are heard. As part of Clarus, we are using citizen juries as one way to engage the public in this project.

Panel 5

Image description: A different citizen jury in a different country providing feedback to the Clarus team.

Caption: Our five juries within the partner countries provide ongoing feedback and insight that directly impacts the project outcomes.

Panel 6

Image description: Megan addressing the reader. Various people in background standing behind her (forensic scientists, police officers, other professionals, etc).

Word balloon 1 (Megan): The Clarus project is committed to improving digital forensic practices through collaboration, research, and public engagement, ensuring more fairness, accuracy, and trust in the future of digital forensic investigations.

Word balloon 2: The following story will show how these digital detectives work together to advance these goals in the pursuit of justice.

Note: two versions of this page are required – one which includes the final word balloon and one without. Having a version without this word balloon will allow the three-page introductory story to be presented separately from the rest of the comic if required.

PAGE SIX

Title: A Murder in Clarusia

This is a 6-panel wordless page. Blue/green and pale yellow colour scheme. Early evening sky is cloudy but with some sunlight creeping through.

Panel 1

Image description: King Street in the centre of the European city, Clarusia in Nordland. It is 6.00pm on a warm and damp Thursday in June. The sun is still up as it is early evening (across Europe sunset ranges from 8.30pm – 10.00pm in June). The streets are damp but it is not currently raining (this has implications for evidence preservation). It is Pride month so Pride flags and bunting is visible.

Panel 2

Image description: The view has moved slightly, and a clock tower is visible showing that the time is 5.45pm. A young woman, Maria (a waitress) is tidying an outside table at Café Indigo. She will later be a witness. In the distance, about to walk past the café, is Noah. He is a

young man of 27 years of age perhaps resembling Scott Pilgrim. He is wearing all black work clothes and is on the way to Beloved, a gay bar, to start his shift. We can see some small graffiti on a wall, barely noticeable. It is the logo of the Rattlesnake Brotherhood.

Panel 3

Image description: The view has moved slightly again, with the café now just going out of frame. Noah walks past a few brightly dressed young people. A girl with pink hair waves a small Pride flag. The area is in the early stages of filling up with the nighttime crowds – there are people about but sparse compared to what will be later. It is a Thursday so mid-week, so not weekend crowds – but this is popular night for Beloved.

Panel 4

Image description: The bar Beloved is now visible. Noah passes a man who is in shadows, leaning against the wall of the bar and holding up a camera. There is a small ‘click’ sound effect of a photo being taken.

Panel 5

Image description: Close-up of a smiling Noah. This is the photo that has just been taken. Noah is wearing a staff ID badge. It says ‘Beloved Staff’ and has the Beloved Bar logo. Underneath in larger handwriting it says ‘Noah’.

Panel 6

Image description: Noah opens the door to Beloved and steps inside to begin his shift. The man in shadows is barely visible in the background, but we have the sense he is watching Noah.

PAGE SEVEN

Panel 1

Image description: Maria (the café waitress) walks home from work.

Caption (Police notebook/electronic device): The witness, Maria Kolman (19), a waitress at Café Indigo on King Street, was walking home at 6.00pm.

Panel 2

Image description: Maria sees the violent attack. Noah is being attacked in the street outside the bar by a shadowy figure.

Caption. She saw a conflict between an aggressive man and the victim in King Street near the Beloved Bar.

Panel 3

Image description: Maria in the foreground looking shocked, calls emergency services. In the background the shadowy figure runs off, an item falls out of (their back pocket?) into nearby bushes.

Caption: As the witness called for emergency services, they saw the assailant running off. The assailant either lost or threw an item into nearby bushes.

Panel 4

Image description: Overhead view. Paramedics are working on Noah. Blood splatters on the street.

Caption: 6.15pm Paramedics provide emergency care. The victim is badly injured and unconscious.

Panel 5

Image description: Maria talking to the police, pointing to the bushes. An ambulance is visible as are paramedics.

Caption: 6.25pm. The witness described the violent assault and pointed out the location of the discarded item to the police.

Panel 6

Image description: The ambulance leaves with Noah and Police process the scene, putting up crime tape and holding the public back from entering the crime scene. The members of the public from earlier are there, looking shocked and upset. Hugging each other. The girl with pink hair still holds the small Pride flag. A Police officer comforts Maria.

Caption: 6.30pm: Police officers protect and process the crime scene.

PAGE EIGHT**Panel 1**

Image description: Noah is the emergency room/operating theatre of the local hospital. Desperate attempts to save his life.

Panel 2

Image description: Large panel. Crime tape is up around the two areas (where the attack took place and the bushes) and uniformed Police officers are positioned at key areas such as road or paths entering the area, directing members of the public (non-witnesses) away. One officer is interviewing the girl with pink hair, who is crying. The police officer is taking notes. Another police officer stands beside the crime scene tape by the bushes, pulling on protective gloves.

Caption: The first moments at a crime scene can involve many tasks and priorities which need to be coordinated effectively.

Panel 3

Image description: Overhead view of a smartphone lying on the dirt/rubbish next to the bushes. The smartphone has a transparent acrylic case cover.

Caption: A smartphone with an acrylic case was found in the bushes.

Panel 4

Image description: It is not raining, but there are grey skies, threatening rain, and the ground is wet from previous rainfall. A uniformed police officer (Constable 1) picks up the phone (wearing gloves). A crime scene tech is nearly with a camera in their hands (indicating that a photo has been taken of the smartphone/evidence in situ).

Caption: Anxious about water damage, police at the scene photograph the evidence in situ then secure the phone themselves rather than wait for crime scene specialists.

Panel 5

Image description: Constable 1 touches the screen (wearing gloves) and the smartphone lights up, indicating it is in live mode. It requests facial ID authentication to gain access. The icon in the upper right corner indicates low battery. In the upper left side it can be seen that the phone is connected to the Clarusia Comms telecom provider as well as a 5G mobile network.

Caption: The phone lit up when touched, indicating it was in live mode. It was locked and the battery was low.

Panel 6

Image description: Constable 1 is told off for touching the phone by Crime Scene Manager 1. Perhaps indicate the role of Scene Manager 1 with a badge or a caption/label that indicates

that they are the Crime Scene Manager. *Crime scene manager would most likely be Inspector rank in UK – similar in other countries*

Caption: A senior police officer arrives to take charge of the scene a

Senior police officer (acting as Crime Scene Manager): You haven't done the digital evidence training have you? Put the phone in the bag.

Constable 1: Sorry boss, I just wanted to check if the messages were still open on the phone.

Panel 7

Inset Panel (Megan)

Word balloon (Megan): Our research shows that there is variability in how devices are handled at crime scenes. Analysts would prefer that handling of evidence is minimal, but investigators will often need information urgently.

PAGE NINE

Panel 1

Image description: Interaction between Crime Scene Manager 1 and Crime Scene Tech in white forensic jumpsuit. Crime Scene Manager 1 points at the phone that Constable 1 is holding, along with an evidence bag, which they are preparing to put the phone into.

Crime Scene Manager: Have you finished processing this?

Tech: 'Yes, ready for packaging now'

Panel 2

Image description: Constable 1 carefully puts the phone into an evidence bag and then into a faraday bag while the Crime Scene Manager 1 looks on.

Caption: The phone is put into an evidence bag and then a faraday bag to block any incoming signals.

Panel 3

Image description: POV over the shoulder of the Crime Scene Manager 1 as they fill out a paper form which needs to accompany the phone and which is attached to the outside of the faraday bag, which Constable 1 is still holding. An evidence number and other written details are visible.

Caption: An evidence form detailing the contents of the faraday bag is completed.

Word balloon (Constable, to Crime Scene Manager 1): Boss, who do I give the bag and form to?

Panel 4

Image description: Squawk of the Constable's radio. Constable 1 and Crime Scene Manager 1 listen to the message.

Electronic word balloon: Be advised. The hospital reports that the victim is in critical condition. Weapon appears to be a knife...

Caption: 6.45pm. An update on the victim's status was received. The hospital reported that the victim has sustained four stab wounds in the stomach and chest area.

Panel 5 – change in location

Image description: Another Police officer (Constable 2) is speaking to the manager of Beloved and reports the victim's identity over the radio.

Word balloon (Constable 2, speaking into radio): The manager of Beloved Bar has identified the victim as Noah Jensen, a barman.

Panel 6 – change in location

Image description: Dramatic scenes at the hospital. Noah is unconscious and deathly pale as the doctors are losing the fight to save his life.

PAGE TEN

Three long thin panels going the width of the page. It should be clear that the first two panels are scenes in different locations

Panel 1

Image description: Long panel (full width of page). Back at the police station Constable 1 completes an examination request on a computer.

Caption 1: Back at the station the police complete an examination request on a computer.

Caption 2: 7.00pm. A request was made for the digital forensic analysis lab to extract information from the phone urgently – within 24 hours.

Caption 3: The request includes a full extraction (copy of the phone), and for analysis to be undertaken on GPS data, social media, messages/call data and all saved files (including images) from the last year to the present.

Panel 2

Image description: Long panel (full width of page). The request is received by the Digital Forensic Lab, where the person overseeing the lab talks to a colleague who is working on a computer and types the reply.

Caption: The Digital Forensics Lab.

Word balloon (Lab Manager): Tell them that we might not be able to get into the phone at all but will try. Even 48 hours might not be possible. It's out of office hours, workloads are high, resources are stretched, we still have staff on overtime for that massive fraud case, and who knows how much data there will be on this phone to sift through.

Panel 3

Image description: Long panel (full width of page). Split panel showing the Police officer and the Lab Manager speaking via telephone.

Word balloon 1 (Constable 1): I understand the pressures, but...

Word balloon 2 (Lab Manager): We'll do our best, but it takes time to run each analysis that is requested and to produce a clear and accurate report... Give us 72 hours.

Panel 4

Inset panel (Megan)

Word balloon 1 (Megan): Of course, the police are keen to move quickly in order to apprehend the suspect. Every second counts in an investigation, but analysis takes time.

Word balloon 2 (Megan): In some countries there is an intermediate step when requesting or negotiating device analysis. For example, in Portugal the Public Prosecutors Office would need to be involved.

PAGE ELEVEN

Panel 1

Image description: Large montage of the Digital Forensics Lab doing the various requested forms of analysis.

Caption 1: A digital forensic examiner connects the phone to a forensic device/computer to acquire the data

Caption 2: A digital forensic examiner analyses the data and reviews the results

Caption 3: A digital forensic examiner writes a forensic report with findings from the exhibits.

Panel 2

Image description: Back at the Police Station a police supervisor phones Clarusia Comms, the phone service provider, for information on the phone's locations over the last 48 hours in effort to trace key locations the person carrying the phone has been, and to identify the named person for the phone account. Split panel shows police on the phone to an operative at Clarusia Comms. The company branding is all over the office.

Caption: The police contact the internet service provider for the smartphone recovered from the crime scene.

Word balloon (Constable 1): Hello Clarusia Comms? Did you see the query that was emailed? We need to know everywhere that phone has been in the last 48 hours.

Word balloon 2 (Clarusia Comms Operative): I can give you subscriber data quickly, but you will need to request authorisation for location and call records.

Panel 3

Image description: Constable 1 stands next to a police supervisor who sits at a computer requesting authorisation for phone location data using a computer form.

Caption: The police put in a request to access phone location data.

Panel 4

Image description: The hospital emergency room. The battle to save Noah's life is over.

Word balloon (Doctor): Time of death is 8.00pm.

PAGE TWELVE

Title: An Escalation

Another 6-panel wordless page, like the start of the previous story.

Panel 1

Image description: Another street in Clarusia, the same night. It is 8.00pm, so nearing sunset. We see a row of closed shops, cafes, etc.

Panel 2

Image description: Another view of the street reveals that the nighttime crowds are starting to gather.

Panel 3

Image description: Several people are coming out of a small arthouse cinema. It has been screening Tarkovsky's *Stalker*. In the crowd there is a tall well-built man (Thomas) with his wife and 11-year old son. The wife wears a chic dress has a pearl necklace. The second victim, later known to be called Mo Turah, exits the cinema behind them. He is on his way to Beloved for a night out. He is 19 years old and wearing a Pride t-shirt.

Panel 4

Image description: A shadowy figure follows Mo down the street.

Panel 5

Image description: Close-up on Mo, who looks happy and carefree. Over his shoulder we see the shadowy figure approaching Mo in a threatening manner. He is pulling something from his pocket.

Panel 6

Image description: Close-up on the attacker's hand clutching a knife which glints in the dying sunlight.

PAGE THIRTEEN**Panel 1**

Image description: Mo is lying on the ground covered in blood. A man stands over him wielding a bloody knife. Thomas sees the violent attack and looks terrified, using his arm to shield his horrified wife and child.

Witness Thomas Veit (31) saw a man attacking the victim, Mo Turah, with a knife at 8.00pm on Castle Street.

Panel 2 Image description: An ambulance arrives.

Panel 3

Image description: Thomas speaking to the Police to report the attack. Medics rushing around in background.

Caption: 8.15pm. The witness was questioned but struggled to recall specific details.

Panel 4

Image description: Thomas watches the shadowy figure running towards a black SUV.

Caption: They observed the attacker running away from the scene towards a black SUV.

Panel 5

Image description: The attacker clambering into the SUV.

Caption: The witness says the offender jumped in the passenger side, and the car drove off at high speed. They did not observe the licence plate number.

Panel 6

The ambulance rushes through the city, past red traffic lights, siren blaring.

Caption: The medics rushed the victim to the hospital.

PAGE FOURTEEN**Panel 1**

Image description: The emergency room at the hospital. Mo is pronounced dead by a doctor who examines him on arrival.

Word balloon (Doctor): He's gone. Two in one night...

Panel 2

Image description: Back at the second crime scene Constable 3 is using tape to block off the scene. A message comes over the radio to update the police so that they know this is a murder scene.

Electronic word bubble (from Constable 3's radio): News from the hospital. the second victim died. That's two murders tonight. Stand by everyone for further information.

Panel 3

Image description: Police have the area of the attack cordoned off. There are uniformed officers, including Constable 3, outside the tape directing passers-by or asking them questions. A forensics team in white overalls/PPE is taking photos of evidence and collecting blood samples for DNA analysis.

Caption: 8.30pm. The forensics team get to work photographing the scene and collecting blood samples.

Panel 4

Image description: Crime Scene Manager 2 is speaking to another senior police officer. In the background Constable 3 continues to take a statement from Thomas in a quiet area outside the cordon. His family is nearby and the mother consoles her son.

Word balloon 1 (Crime Scene Manager 2): It looks like these two attacks may be linked. This could be serial killer.

Word balloon 2 (Senior Officer): And during Pride Month... could be a hate crime. We'll need to warn the public.

Panel 5

Image description: Montage of police canvassing bars and other establishments (cafés, clubs, etc) **looking for other witnesses and asking nearby businesses for CCTV (can this be shown by pointing to a CCTV camera talking to a waiter outside a café?** . At the center of the montage

Constable 3 is speaking to another officer in the bar close to staff.

Word balloon (Constable 3): I think these murders are definitely connected, and obviously homophobic attacks. We could be looking at a serial killer, so be vigilant.

Panel 6

Image description: A more senior police officer takes Constable 3 aside. The Bar Manager and employees are in the background looking terrified.

Word balloon (More Senior Police officer): Look, I know it's likely these attacks are linked, but until it's confirmed please just keep establishing the facts, and avoid speculating

Panel 7

Image description: Press conference warning of potential pride risk, bars are advised to close for the evening. Senior Police officer in formal uniform speaks to the press.

Word balloon (Senior Police officer): Our investigation has determined that the attacks in Clarusia may be hate crimes related to the celebration of Pride Month. Bars and clubs are advised to close for the evening. We are pursuing various lines of inquiry.

Caption: When emotions are running high it is important to communicate with the public clearly and calmly.

PAGE FIFTEEN

Panel 1

Image description: An investigator at a computer with two screens checking traffic cameras/traffic light cameras for a speeding Black SUV in area. There are several images of this on the screens, providing a potential lead (the license plate from the SUV is spotted on a speed camera and the image is blown up so it is legible).

Caption: Examination of traffic cameras reveals images of a speeding black SUV leading to the identification of the license plate number.

Panel 2

Image description: Split panel - the Senior Police officer phones the Digital Forensics Lab and speaks to the Lab manager from earlier. They request that the Lab makes analysis of the phone their highest priority as it is now linked to a potential spree attack and there is a high potential for further risk to life. Clock in lab reads 8.35pm.

Word balloon 1 (Senior Police officer, speaking on phone): Please make the analysis of the phone from the first incident your top priority. These two cases may be connected. . More lives may be at risk tonight.

Word balloon 2 (Lab Manager) Will do. I'm bringing in more on-call analysts to take over. The extraction has been completed already so an analyst has been assigned to process the data and produce a report. We're moving as quickly as we can. You will need to submit a second examination request for the same phone, to expand what we are looking for in relation to the second attack.

Panel 3

Image description: (x2) Analysts entering the office with travel mugs/looking tired. Some are wearing colourful hoodies.

Word balloon: (Lab Manager) Hey everyone. Thanks for getting here so quickly. The supervising officer in charge has escalated the urgency of this case. We need to produce **the** a report tonight – but we need to make sure it is accurate!

Panel 4

Image description: Large panel similar image to above but flipped so that the characters are on opposite sides of the panel and analysts are hard at work. Clock says 8.51pm. The Lab Manager calls the Senior Police officer. Surrounding montage of things that are mentioned. Word balloon 1 (Lab Manager): I've sent an email with the informal report from the analysts but wanted to update you directly too. EXIF shows that photos of the bar and the first victim were taken the day before the attack, and another photo is of the same victim just minutes before he was attacked.

Word balloon 2 (Senior officer): Ok, so indications are that this was pre-planned....wait, what exit? Is it something showing in the photo?

Word balloon 3 (Lab Manager): No, not exit, EXIF, it's the metadata behind the image.

Captions sit next to each of the analysts, detailing what they have uncovered:

- Messages to an unknown number indicate that the phone owner had discussed plans for the attacks over the preceding two weeks – the phone is therefore confirmed as evidentiary. A name is mentioned that is likely the name of the phone owner.
- Most of the messages are in a foreign language.
- The name of potential owner of phone is Joe Malman.
- There are photos of the Beloved bar, and some selfie photos of two different men plus other photos showing various individuals walking in the area of Beloved bar.
- One of photos shows the first victim and was taken right before the attack. (we see the photo on a computer screen)
- GPS has not been active. It was turned off.
- Social media analysis of the phone is ongoing. No update on that yet.

Panel 5

Inset panel with Megan.

Word balloon (Megan): Clarus research has identified that responding to hierarchical decision structures and organisational pressure in addition to the challenges of understanding technical language between different specialisms can introduce error or bias. It's important that those working in the system are equipped and trained to mitigate against this.

PAGE SIXTEEN

Panel 1

Image description: The operator at Clarusia Comms from before is speaking to a colleague. Clock says 9.03pm.

Word balloon (Clarusia Comms Operator): The phone's sim card is connected to a man named Joe Malman. The registered address is a PO box.

Panel 2

Image description: The Supervising police officer from before provides a police Digital Investigation team with the updates (These are not the same people not the analysts in the lab, so they should look different).

Word balloon 1 (Supervising Police officer): Clarusia Comms have confirmed the name of the suspect. Can you do an open-source search for this Joe Malman's social media and online presence?

Word balloon 2 (Digital Investigation Officer): We'll get on it.

Caption: The Police Digital Investigation Team receives the latest information.

Panel 3

Image description: The offices of a local newspaper. The office is quiet, but not empty. People at work. A journalist sits at their desk, the RBH (Rattlesnake BrotherHood) logo appears in a chat room message on their computer. The message, posted by someone with the alias Hate_them_all says 'Get ready. A new day is dawning'. They are speaking on the phone.

Word balloon (Journalist): Yes officer, an anonymous source just got in touch to point me towards a chat room that the terrorist group Rattlesnake BrotherHood use. You should check it out...I think they might be responsible for tonight's attacks. I'll send screenshots.

Panel 4

Image description: Close-up of screen. Hate them all says in the chat 'The government has allowed disgusting Pride parades – there will be blood on the streets!'

Panel 5

Image description: Split panel. The journalist is speaking on phone to Constable 1, who looks excited to hear the lead.

Word balloon (Journalist): And my source... they provided the name of the person posting as hate_them_all... Joe Malman.

Word Balloon (police officer): Thank you for letting us know, please send over whatever information you have to us'

PAGE SEVENTEEN

Panel 1

Image description: The Senior Police officer in charge of the investigation provides the open-source and other online researchers (Digital Investigations Team) with the information from the journalist.

Word balloon (Senior Police Officer): An independent lead which comes to us from the Press has verified the name of the suspect – Joe Malman.

Caption: 9.45pm. The evidence from the journalist is integrated with the evidence that has **already** been gathered and is now taken forward by the Digital Investigation Team.

Panel 2

Image description: An online investigator searching social media and websites for information about Joe Malman and Hate_them_all. Perhaps a flurry of searches and results, some relevant, some not, surrounding them.

Caption: The online investigators are tasked to search the internet for references to the Rattlesnake Brotherhood and activity by the alias Hate_them_all, and to look for connections to Joe Malman.

Panel 3

Image description: The Facebook (FaceChat) style social media profile of Mark Fenway, someone closely associated with RBH. The profile picture is the RBH logo. There is an image of a burning Pride flag in a post that was published earlier that day (it says 'Posted 3 hours ago'). Hate_them_all has liked the post.

Panel 4

Image description: The Police receive the tip about Mark Fenway from the online investigators. Police officer at computer, They have the FaceChat page described above on one screen and a police database open on another. We see information related to Mark Fenway. The Supervising officer is standing nearby.

Word balloon 1 (Police officer at computer): This Mark Fenway has double citizenship in Nordlandia and Latveria, where he seems to be living currently. RBH is an established terrorist group there.

Word balloon 2 (Supervising officer): Contact FaceChat to make an official request for background information on Hate_them_all and any key members RBH. It will take a few days, but we'll need this information later if this gets to court.

Panel 5

Image description: The Supervising police officer receives a further update from the open-source investigators.

Word balloon 1 (Police officer): Sir, the specialist online investigators have also just found social media posts linking the Hate-them_all username and a person living here in Clarusia.

Word balloon 2 (Supervising Police officer): It's time to escalate this to the counter-terrorist team.

PAGE EIGHTEEN

A large central panel (Panel 1) surrounded by separate panels showing actions taking place, connected of flowing from Panel 1.

Panel 1

Image description: Large panel. A senior counter terrorism officer (give him more prestigious looking formal uniform) is now in charge of the investigation and coordinating responses. He would be in a big meeting/coordination room – he would call people to him. Clock says 10.01pm. There would be map of Clarusia in the room somewhere with key points on map labelled – on a table rather than on a board. Each officer in the room would be holding either a personal device with case details on or will have printed the case notes to bring along.

Word balloon 1 (Supervising officer): Can I have your attention everyone. Following developments in the case the Counter Terrorism team will now take over the coordination of the investigation.

Word balloon 2 (Senior Counter Terrorism officer - a senior officer but not as senior as the supervising officer): Good evening. Thank you for your hard work this evening. As there may be a terror connection to the murders tonight new systems of communication will be immediately put in place.

Word balloon 3 (Counter Terrorism officer/Sergeant rank): For security reasons only our secure communications channels should be used to share information and the analysis team leader will now coordinate directly with the senior investigator through these secure channels. Please inform all investigators of this change.

Panel 2

Image description: A group of uniformed officers gaining entry to a house. Radio cackle on officer standing next to person with the ram, saying good to go

Caption: Having obtained the necessary authorisations Police conduct address checks on the individuals that have been identified.

Panel 3

Image description: Close-up of Counter Terrorism officer. The clock in the background says 10.10pm.

Word balloon (Counter Terrorism officer): I want information on this Rattlesnake BrotherHood group from our international partners. Please request any information about their leadership, motives, and methods. I especially want to know about any homophobic and anti-Pride messaging or activities.

Panel 4

Image description: A uniformed officer in another country (Latveria) reading instructions from a screen. There are some analysts at computers. Latverian crest on wall.

Caption: Police in the neighbouring country of Latveria are asked to check their databases for information.

Word balloon (Latverian Police officer): Ok, so Clarusia's Counter Terrorism team are asking if Latverian police have information on this Rattlesnake BrotherHood group. Any homophobic attacks? Let's go! And let's get a translator who speaks Claurusian in here.

Panel 5

Image description: Back in the Digital Forensics Lab, the analysts have completed the extraction of the phone and all the analysis, but there are some images they need someone from the investigation team to see in person. Conversation between analyst and investigator.

Word balloon (Analyst): Thanks for coming in. We found another series of photos which were taken on the phone tonight, we think these are photos of the second victim, can you confirm?

Word balloon (Investigator): Yes, that's the second victim shown there Also, this photo was taken around the area of the attacks. -

PAGE NINETEEN

Panel 1

Image description: Joe Malman being arrested at his front door, having just opened it. He is wearing loose fitting comfy indoor clothes, not the clothes he was wearing earlier. He is wearing a smartwatch. He looks angry.

Word balloon 1 (Police officer): Joe Malman, you are under arrest.

Caption: 10.30pm. Suspect Joseph Malman arrested at his home address based on information from the Digital Forensics Lab.

Panel 2

Image description: Constable 1 removes Malman's smartwatch and prepares to put it in an evidence bag **then a faraday bag** (another officer is holding these). Other officers enter Malman's home in order to search it. **s**

Word balloon (Joe Malman): Hey, my watch!

Panel 3

Image description: Constable 1 calls a known colleague that they are friendly with from the digital evidence lab.

Word balloon (Constable 1): Hey Anna, it's Paul, I have this smartwatch. Can you help me? What digital evidence can I get from it? I'm not sure what to put into my examination request form!

Panel 4

Megan in a circular panel.

Word balloon 2 (Megan): Digital forensics is an ever-shifting field with which is hard to keep up. Clarus research highlights the importance of being able to access advice on processes and technicalities. This 'preparatory communication' most often happens informally between existing contacts within the system, as seen in this interaction between the police officer and the analyst. However, these communications can also introduce vulnerability to bias.

Word balloon 2 (Megan): It's natural to ask someone you are friendly with for help. This can be a good way to share expertise, but they might not be most knowledgeable person, and they may influence you in risky ways.

Panel 5

Image description: Anna replies to Constable 1. [note: Ruth is Lab manager, listed at end of comic)

Word balloon (Anna): Oh, a smart watch, I've not handled one of those before. Think you just treat it like a phone? Maybe ask Ruth

Panel 6

Constable 1 completes the evidence examination request form for the smartwatch with help from Ruth. The form has a case number and a linking code. It should not be treated 'just like a phone'

Speech bubble (from ruth): A smart watch gives us some different opportunities from a phone, lets make sure we capture them in the request.

Caption: 10.45pm: An evidence examination request form for the smartwatch is completed, asking the digital forensic analysis lab to examine the smartwatch. All data stored on the watch is to be extracted. This is a serious case, so search boundaries are expanded as appropriate. - Smartwatch doesn't hold much data.

Additional panel (already added by Katy) an updated request is submitted for further analysis of the phone from crime 1

Panel 7

Image description: Investigators in the Digital Forensics Lab are working on the smartwatch and the phone.

Caption: A request is also made to investigate any links between the smartwatch and the mobile phone recovered from the first crime scene.

Panel 8

Image description: Team from the Digital Forensics Lab compiling their reports.

Caption 1: The phone and smartwatch are found to be linked to each other and the suspect, Joe Malman.

Caption 2: Two days after the attacks analysis from the two devices is sent as two separate evidence reports along with evidence of the two devices being linked.

PAGE TWENTY

Title: Malman Interviewed and Convicted

Panel 1

Image description: A large panel taking up two-thirds of the page. There is a montage of evidence with Joe Malman being interrogated in the centre. His lawyer is present, along with two police detectives. Evidence swirls around this interrogation accompanied by captions.

Caption 1: The Digital Forensic evidence from the recovered smartphone and smartwatch reveals that...

Caption 2: Joe Malman was in the vicinity of the attacks at the times of both attacks

Caption 3: He messaged a key player in RBH about his plans for the attack and the motive regarding Pride.

Caption 4: He was encouraged by RBH members to carry out the attacks and create as much fear as possible – pointing to terrorism.

Caption 5: Another person in Clarusia is implicated as the driver of the black SUV – that investigation is ongoing

Caption 6: Malman used the alias 'Hate_them_all' in the RBH chatroom based on access to social media on the devices and evidence found by the specialist online investigators.

Caption 7: Malman and his SUV driving accomplice had planned further attacks the same night, but the active witnesses and police presence changed their plans.

Caption 8: Malman and his accomplice had planned to start again in another city, as indicated by recovered phone messages.

Panel 2

Image description: Police detectives and analysts meeting with lawyers to review documents.

Caption: Police detectives and analysts may meet with lawyers for the prosecution and the defence for several reasons, often clarifying the evidence presented in documents or the various forms of digital evidence.

Panel 3

Image description: Malman in an interview room being told by detectives that he is being charged with the murders. He looks dejected.

Caption: Malman is charged with the murders on the basis of the digital evidence that has been collected.

PAGE TWENTY-ONE

Panel 1

Image description: Large panel taking up half the page. Joe Malman in court. Judge giving his sentencing final statement towards. There is a screen showing the photo of Noah the day before the attack and the photo taken of the victim immediately before the attack. Caption 2 and 3 would be accompanied by circular inset panels showing things that have led up to the court room scene.

Note: lawyers should not be in the traditional UK court room clothing as this will not be representative of all European countries. Judges almost universally will be in black robes. No wigs though.

Word balloon (Judge): Mr Malman, you tried to say you were not there at the time of the attack but it is clear from the evidence provided, crucially this phone being linked to your name, your fingerprints found on the phone, the phone is linked to the smartwatch you were wearing at the time of your arrest, and these images taken the day before and moments before the attack, that you are the perpetrator of this vicious and hateful act.

Caption 1: The trial of Joe Malman.

Caption 2: The lead investigator has created a packet of evidence for the prosecutor which includes all the Digital Forensic evidence gathered in this case.

Caption 3: Joe Malman's defence lawyer is provided with access to all Digital Forensics reports and uses an independent analyst to examine its integrity and to produce a report for the defence.

Caption 4: No exculpatory evidence is found, despite the defendants claim to have an alibi, which is not supported by the evidence.

Caption 5: Joe Malman is convicted

Panel 2

Image description: Large panel taking up the second half of the page. Night/early evening. A memorial/vigil is held for Noah and Mo outside Beloved Bar. Witnesses and others from earlier are present, including Maria, Thomas, the Beloved manager, the pink haired girl, still holding a mini pride flag, and the journalist. Constables 2 and 3 are there, and the supervising Police officer and Crime Scene Manager 1. Many in the crowd hold candles. There are prominent Pride flags. Some wear Pride t-shirts. A banner says 'Noah and Mo – Rest in Pride'.

PAGE TWENTY-TWO

Panel 1

Image description: Professor Megan O'Neill speaks to the reader.

Word balloon (Megan): The story you've just read is about how the Police and various professionals, and especially Digital Forensic specialists, work together to investigate crimes.

Panel 2

Image description: A headline of a newspaper with photographs of the victims. The headline says 'Two Slain in Hate Crime Attacks'.

Caption: The two murders in this story were hate crimes seemingly motivated by homophobia. tie in the counter terror aspect to help talk about cross-jurisdiction communication (this is done well in the lettered pencils)

Panel 3

Image description: The phone in the gloved hand of the police officer at the scene of the first crime.

Caption: The mobile phone was a vital piece of evidence and the close communication and cooperation between the Police and the Digital Forensics team, and several other professionals, enabled the extraction, preservation, and presentation of data which serves as evidence in the investigation.

Panel 4

Image description: Megan in front of a world map.

Word balloon (Megan): Of course, there are differences in different places. For example, in Scotland some of the requests made in this story would first have to go through the Digital forensics Gateway and be vetted by a Police sergeant.

Panel 5

Image description: A Scottish Gateway sergeant communicating with a digital forensics lab.

Caption: Under such a system the sergeant would have to decide whether the request is proportionate, legal and necessary. The Gateway sergeant can request changes or deny requests outright. If approved, the gateway sergeant would then forward the request to the Digital Forensics lab. It is not the same system everywhere though. In Portugal there is no formal gateway and this role is covered by the Public Prosecutor and Investigating judge.

Panel 6

Image description: Megan addressing the reader.

Word balloon (Megan): The Clarus project was created to understand and refine these networks of communication and cooperation and to develop models for best practice in the relationship between law enforcement, digital forensics, private companies, and the wider justice system.

Panel 7

Image description: Banner panel at bottom of the page with the call-to-action.

We have several resources that can be used to explore the research of the Clarus project and the tools that were used in more detail. You can find

- Our free online course about digital forensic evidence
- Try our Clarity checker tool
- Use our multi-lingual lexicon for forensic science
- If you are a specialist we also have training available for experts
- Give us feedback

QR CODE TO WEBSITE

Character Bios

Victims and suspects

- **Noah Jensen** – First victim; barman at Beloved.
- **Mo Turah** – Second victim; attacked later the same evening.
- **Joe (Joseph) Malman** – Main suspect and perpetrator; linked to phone and smartwatch evidence.

Police and investigation team

- **Constable 1** – First officer handling key evidence (phone, smartwatch).
Rachel – fourth year as a constable, is dedicated to the role and has always wanted to be a police officer.
- **Constable 2** – Helps identify victim (Noah).
Frank – first year in this position. His favourite activity in his spare time is hiking.
- **Constable 3** – Works second crime scene; shares information with public.
John has been a police officer for two years, would like to move up in the police as soon as possible.

Senior Police

- **Senior Police Officer (Supervising Officer)** – Oversees investigation.
Tobias has just had twins and loves his job. -
- **More Senior Police Officer** – Challenges assumptions and rumours.
Andrew has 3 labradors that he really loves. He also loves his job.

Crime Scene Personnel

- **Crime Scene Manager 1** – Oversees first scene.
Elliott has many years of experience. In his spare time he likes to go hiking.
- **Crime Scene Manager 2** – Oversees second scene.
Emma likes to go on sailing holidays and used to compete in races.
- **Crime Scene Technician(s)** – Process physical and digital evidence.
Jack is considering going into research and taking on a PhD. In his spare time he loves taking holidays to unusual destinations.

Specialist Units

- **Digital Investigation Team Officers** – Conduct online/open-source searches.
Jacob, is thinking about proposing to his partner. Has a huge social group of friends that he sees every weekend. He loves his job.
- **Counter Terrorism Officer (Senior)** – Takes over investigation.
Will is considering if he pushes to be promoted or stays where he is until he can retire because he likes his current position. Outside of his job he loves wild swimming.
Counter Terrorism Officer (Sergeant rank) – Implements new communication rules.
Hannah loves her job but likes to compete in ultramarathons when she has the time.

Digital Forensics and Technical Experts

- **Lab Manager (Digital Forensics Lab)** – Coordinates analysis and communicates with police.

- Ruth – has worked as a lab manager for 5 years, knits hats and cardigans for babies that she donates to the local hospital's neonatal ward **Digital Forensic Examiners / Analysts (multiple)** – Extract, analyse, and report data.
- **Anna** – Digital forensic analyst informally contacted by Constable 1. Likes to tour distilleries on her days off.
- **Digital Investigation Officer** – Conducts open-source intelligence work.
Martin – is currently learning Spanish so he can speak to his partner in their native language

PAGE TWENTY-THREE

Inside Back Cover / Contributor Bios

Chris Murray is Professor of English and Comics Studies in the Division of Humanities, University of Dundee. He is director of the Comics Studies Creative Research Hub (CSCRH) and co-editor of *Studies in Comics* (Intellect) and UniVerse Comics. He has collaborated with comics artists to produce several comics for research and engagement purposes. This includes writing scripts for a number of educational comics and several adaptations of science fiction literature.

Heather Doran is the Public Engagement Manager at the Leverhulme Research Centre for Forensic Science, University of Dundee. She is a member of the Public Communication of Science and Technology (PCST) committee. LRCFS engages with multiple audiences including members of the public, schools and all parts of the justice system through a variety of methods including publications, virtual games, experiences and classroom sessions. The Centre has contributed to science festivals around the UK and publishes a popular podcast (Inside Forensic Science).

Megan O'Neill is Professor of Criminology in the School of Humanities, Social Science and Law at the University of Dundee. Her work focuses on aspects of police culture, stop and search, community policing, public sector pluralisation in policing, technology in policing and surveillance practices of the state. Her work is largely qualitative, with a particular focus on ethnography, blending theoretically informed research with applications for developing policing practice.

Amy Long an interdisciplinary researcher with projects centred in psychology, human geography and criminology. Her work focusses on policing and security, particularly how policing is perceived to be good or successful, and considerations of vulnerability, human rights, and the role of technology in policing.

Ailsa Mackintosh is an Online Learning Developer at the Leverhulme Research Centre for Forensic Science, University of Dundee. Her work focuses on public engagement, science communication and the development of accessible online learning. She creates educational and engagement resources for a range of audiences, including schools, families and members of the public, with a focus on making complex research accessible and engaging.

Clara Morriss is a Public Engagement Co-Ordinator at the Leverhulme Research Centre for Forensic Science.

Katy Stone is a Scotland-based artist, illustrator and comics creator. Her work includes comics and illustration for education, research and public engagement, and she has collaborated with organisations including MTV, Universal Music Group and The British Museum, with features in outlets such as *Vogue* and *Cosmopolitan*. She has a background in ecology and conservation, and has previously worked as a ranger, wolf handler and horticulturalist. Alongside writer Phillip Vaughan, she is also the co-creator of the horror/sci-fi anthology comic *Singularity*.

Phillip Vaughan is Senior Lecturer in Technical Art & Visual Effects at Abertay University. Professional work includes productions with the BBC, Sony, DC Comics, Warner Bros, EIDOS, Jim Henson Company, DC Thomson and Rebellion. Published work includes *Braveheart*, *Farscape*, *Star Trek*, *Wallace & Gromit*, *Teletubbies*, *Tom & Jerry*, *Commando*, *2000AD* and *Superman*. He is the co-creator of *Singularity*, a horror/sci-fi comic launched on Kickstarter with Katy Stone.

Notes

This story is in four sections. There is an introduction and three parts to the main story. The first part of the story takes place over 2 hours. The second part starts on the same evening. The third and final part involves the interrogation and trial of the suspect. The story is set in Clarusia, a fictional European city in a fictional European country which is in some ways an amalgam of the five partner countries in the project (the UK, Finland, Portugal, the Czech Republic, and Greece). The aim of the comic is to explore the research findings from the project, specifically how digital evidence is managed in an investigation into two murders. The focus is on how information is communicated within and between individuals and teams within law enforcement and forensic science. The research highlights how information travels through the different stages of an investigation, indicating where communication can fail, and how bias can appear within systems, tools, and organisational cultures. The comic is narrated by Dr Megan O'Neill.

Characters

Some characters recur across the story and others just appear for one panel.

Introduction

- Dr Megan O'Neill – the narrator
- Forensic scientist in full PPE
- Police officer
- Digital forensic examiner/analyst
- Forensic examiner/analyst
- Linguist
- Computer scientist
- Criminals and terrorists
- Members of the Clarus project
- The citizen juries

A Murder in Clarusia

- Noah Jensen – a 27-year old man who we see going to work at Beloved Bar. He is severely injured in a homophobic attack, is transported from the scene by emergency services, and later dies in hospital.
- Maria Kolman – a young woman of 19 who works at a café near to Beloved Bar. She sees Noah as he makes his way to work. She speaks to officers at the crime scene.
- The assailant/suspect – He takes a photo of Noah as he goes into work then leaves the scene. He is initially a shadowy figure who we can't identify.
- Uniformed Police Officers – generic European style police uniform
- Constable 1 – Paul, a uniformed police officer in his early 30s.
- Constable 2 – Gillian, a uniformed police officer in her late 20s
- Crime Scene Manager 1 – John, a burly experienced officer in his late 50s. A bit overweight, bald, with a grey beard.
- Beloved bar manager
- Witnesses, including a young woman with pink hair dressed up for a night out / night club
- Paramedics at the crime scene
- Doctors and nurses at the hospital
- Digital Forensics Lab manager and employees
- Clarusia Comms Operative

An Escalation

- Mo – a young man of African descent in his early 30s wearing a Pride t-shirt
- An assailant – looks the same as the previous attacker – in shadows, not seen clearly
- Thomas Veit – a tall man in his late 30's
- Martha Veit – wife of Thomas. Wears a chic black dress and pearls
- Bruce Veit – their 11-year old son
- Constable 3 – a young uniformed Police officer
- Crime Scene Manager 2 –
- Senior Police officer –
- Joe Malman – revealed as the attacker of Noah and Mo, and later revealed to be part of the terrorist group RBH (Rattlesnake BrotherHood) and the person behind the hate_them_all username
- The driver of SUV that the attacker jumps into after the second incident. Not clearly seen
- Digital Investigation Officer and team
- Journalist
- Senior Counter Terrorism officer
- Police in body armour
- Latvian Police officer
- Digital analyst – Anna

Malman Interviewed and Convicted

- The detectives interrogating Malman
- Malman's legal representative
- The judge at the trial
- The prosecuting lawyer
- The defence lawyer
- Scottish Gateway sergeant

Locations

A Murder in Clarusia

- Crime Scene area 1 - King Street in Clarusia, near the gay bar Beloved where the first attack occurred and the victim is found. Blood and remnants of Ambulance activity are lying around the street in the aftermath of the attack
- Crime Scene area 2 – Some bushes where the mobile phone is found on top of some withered leaves and fast-food packaging waste.
- Beloved Bar
- Hospital emergency room
- Police Station
- Digital Forensic Lab
- Clarusia Comms offices

An Escalation

- Crime Scene 3 – area of second attack – four blocks from last attack (so similar area/look)
- Exterior of small arthouse cinema
- Hospital emergency room
- Press conference room
- Digital Investigation team's office
- Clarusia Comms offices

- Online – RBH's social media/chat room and FaceChat page
- Journalist's home
- Latverian Police officer's office
- Suspect's home

Malman Interviewed and Convicted

- A police interview room
- An office where police talk to lawyers to explain evidence
- A courtroom

