Housekeeping

- **Teams Live – no hand raising function**
- **Post questions during session using Q&A function**
- **Questions will be addressed sequentially**
- **If you have any problems email:**
  - tom.mclarenwebb@advisory.kbrwyle.co.uk
  - Rob.SIMMONDS@devonandcornwall.pnn.police.uk

Agenda

Number	Time	Agenda item	Person leading
1	1005	Welcome	Mark Callaghan
2	1010	Keynote: Dr Gillian Tully CBE, Forensic Science Regulator	
3	1040	Keynote: Matt Tart, Principal Expert, CCL Forensics	
4	1125	Q&A • Dr Gillian Tully CBE • Matthew Tart • John Beckwith • Neil Matthews • Jim Arris • Kevin Sullivan • Paula Mulroy	
5	1220	Closing remarks	Mark Callaghan

1. Welcome

T/ACC Mark Callaghan, Deputy Programme Director, Transforming Forensics

2. Keynote #1

Dr Gillian Tully CBE, Forensic Science Regulator

Cell Site Analysis: Quality Issues

Dr Gillian Tully

Online Seminar

14 October 2020

Forensic Science Regulator
Overseeing Quality

Outline of Session

Problems to learn from

- Technical / Wording
- Differing court judgments

Guidance and standards to help

- Cellsite Appendix
- Validation approach
- Cognitive bias guidance
- Legal guidance

Next Steps

PROBLEMS TO LEARN FROM

Language

Cell siting is consistent with mobile 079XXXXXXXX having been nearby Specific Road / Adjacent Close including at, or in the vicinity of, Address of Interest at the times of calls between 21:30 hrs and 21:45 hrs.

Language

- **Consistent with**

- *R v. Puaca [2005] EWCA Crim. 300121*
  - *"Whereas 'inconsistency' is often probative, the fact of consistency is quite often of no probative value at all." Without clarification 'consistent with' can easily be misinterpreted by a lay person as meaning 'is', because the context or limitations of the finding are unknown. If the data would be expected in a number of considered or expected scenarios, clearly being consistent with one of them is not discriminating or useful."*

Language

On the language of framing conclusions:

"...none of them should ask the question "Is the evidence consistent with this man ?" unless, of course, they are asking simply whether he is excluded."

The Right Hon Lord Hughes of Ombersley
Justice of The Supreme Court

Language, precision and bias

- "vicinity" must be quantitatively defined and <u>not</u> used in a way that might imply a level of precision that is not supportable by the findings

Most likely at the location of interest

..at or in the vicinity of

...most likely at or in the vicinity of

Language, precision and bias

Phone "being at this address"

Phone "has now left this address"

Suspect X "is still in the vicinity of [site]"

Suspect Y "is no longer in the vicinity of Z's home"

Boundaries of expertise

Expert evidence ← → **Technical factual evidence**
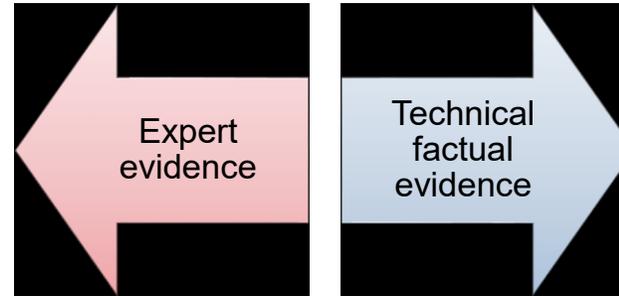
R v Calland [2017] EWCA Crim 2308
"Cell siting evidence can be powerful evidence. But it is not capable of locating a phone with pinpoint accuracy and it has other limitations. Those limitations are familiar to all who conduct and try criminal cases in which such evidence is commonly adduced. The limitations are not however necessarily familiar to the members of a jury."

"<u>in the absence of agreement between prosecution and defence</u>, evidence that a cell site was located in a particular place is not evidence that it served the nearby location in which Calland was observed, still less that it provided the best coverage of that location and would therefore be likely to have transmitted the relevant call."

Boundaries of expertise
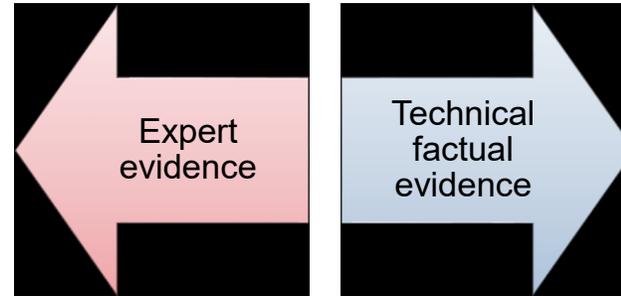
R v Calland [2017] EWCA Crim 2308

"The judge, in our view rightly, foresaw the danger that if the case were presented as the prosecution would wish it to be, the jury would be drawn into making a speculative assumption for which there was no evidential foundation."

"when questions of this nature arise <u>it is vital to focus upon the actual issues in the case</u> and on the extent to which particular features of the prosecution case are challenged. We certainly do not say that expert evidence will be needed in every case in which the prosecution wish to rely on cell siting evidence."

Boundaries of expertise

- **_R v Turner_ [2020] EWCA Crim 1241**

  - Could a 'factual' analysis of data show that a phone had travelled between two villages, separated by 7km?

    - "That was, in substance, neither expert evidence nor evidence of coverage."

      > Only if the cell at the start of the sequence of calls only served in one village (and nowhere else) and likewise the last cell in the sequence only served in the second village?

  - "I just show the mast on my maps in relation to the home address. So it's up to yourselves to kind of draw that conclusion"

    > Can lay jurors be expected to understand that a cell might be based on a close mast but pointed away from the address and as a result not serve there, or a cell based on a different mast might dominate service at the address to the exclusion of other cells?

Boundaries of expertise

- **What are the key issues in the case?**
  - ❑ Active case management: all parties have duty to assist
- Is inference/opinion required in order to assist with those key issues?
  - ❑ Appropriate case strategy
- Does every report sufficiently clearly show:
  - ❑ The limitations of what has been done?
  - ❑ Any margins of uncertainty?
  - ❑ The extent to which an inference has been reached from the findings, or the extent to which an inference is required to address the key issues?

GUIDANCE AND STANDARDS TO HELP

Codes of Practice and Conduct Appendix: Cell Site Analysis

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Codes of Practice and Conduct

Appendix: Digital Forensics – Cell Site Analysis

FSR-C-135

Issue 2

- Request and/or normalise call data records
- Present/Report
- Radio frequency (RF) propagation survey
- Cell site analysis
  - acquisition of communications data
  - processing
  - presentation of an expert report.

www.gov.uk/government/publications/cell-site-analysis

Codes of Practice and Conduct Appendix: Cell Site Analysis

Independence, impartiality & integrity

- All providers are required to demonstrate that they meet these requirements which shall include:
  - While cell site analysis may be used to propose investigative avenues (i.e. to help form a hypothesis). If a hypothesis is formed, cell site evidence should only be used to test whether that hypothesis is supported by the evidence; it should never be used to test whether the hypothesis supports the allegations or scenarios being put forward in the case independently of the evidence.
  - Terminology used in reports shall be clearly defined and imply no bias, phrases such as "in the vicinity of" may only be used if qualified, phrases such a 'consistent with' should not be used in reports unless it is clear what else this result would be consistent with.

Codes of Practice and Conduct Appendix: Cell Site Analysis

The customer must be made aware of limitations

- **Setting forensic strategy:**
  - ❑ The procedure shall include the following.
    - a. Case circumstances;
    - b. The data available (Call Data Records, cell information etc.);
    - c. The limitations of that data.
    - d. The suspect's personal situation (e.g. place of work, home address);
    - e. Known or suspected attribution of phones (and how attributed) ;
    - f. Survey requirements:
      - i. Location survey (including potential requirements for elevation, e.g. high floors in tower blocks).
      - ii. Area survey, to distinguish whether service between two or more locations can be differentiated.
      - iii. Cell Mapping, to measure the service area of a given cell.

Codes of Practice and Conduct Appendix: Cell Site Analysis

Validation is about providing objective evidence that the method is fit-for-purpose

user requirements

specification

risk assessment

acceptance criteria

validation plan

validation exercise

acceptance assessment

validation report

statement of validation completion

implementation plan
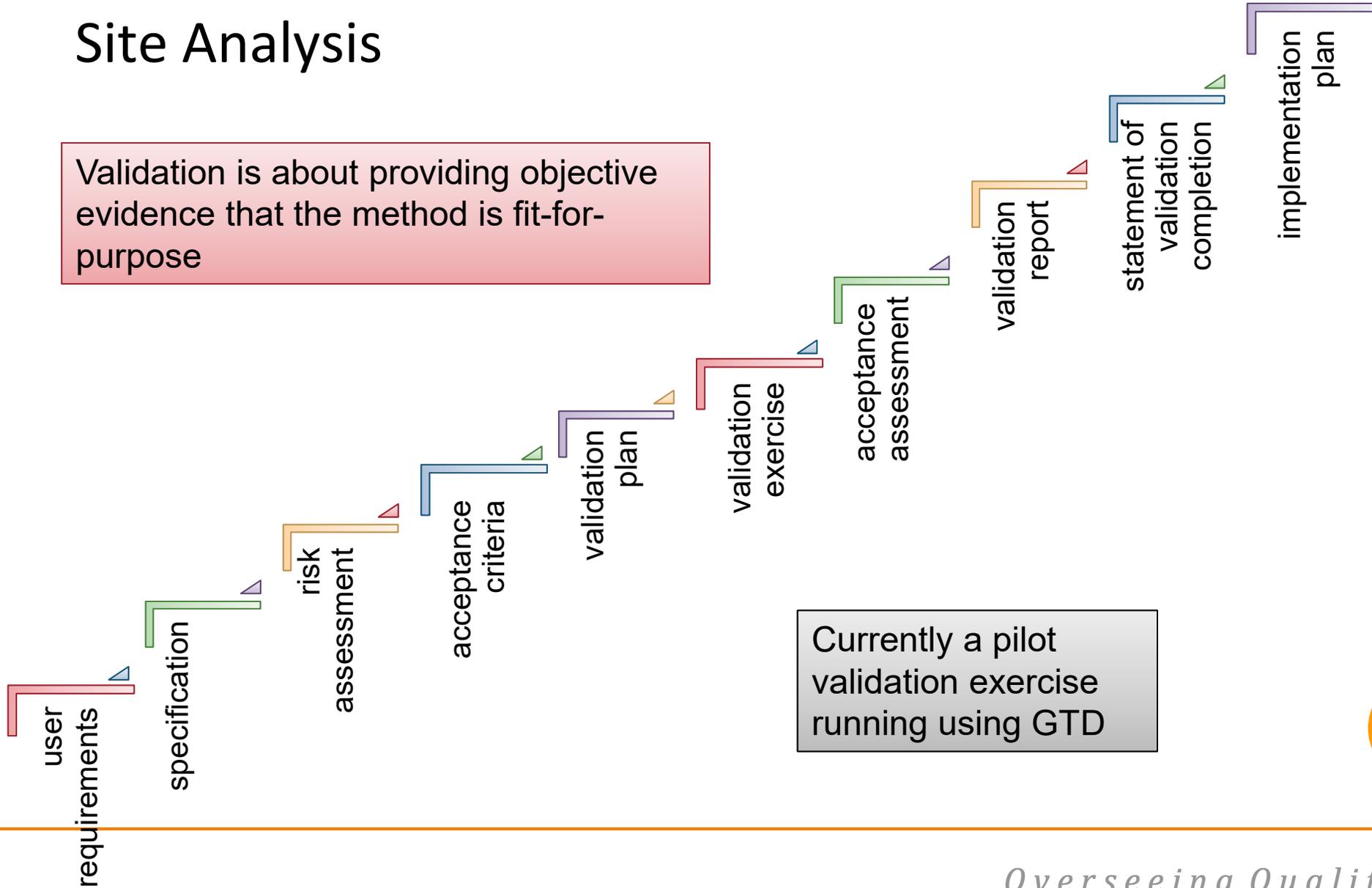
Currently a pilot validation exercise running using GTD

Codes of Practice and Conduct Appendix: Cell Site Analysis

- Reports to investigators or to courts produced from cell site analysis and radio frequency propagation surveys may be:
  a. Factual, produced by technical staff acting as witnesses; or
  b. Evaluative, including an interpretation and/or opinion by staff competent to provide expert evidence.

- Providers shall ensure that all staff who provide factual evidence based on scientific methodology are additionally able to demonstrate, if required the following.
  a. Whether there is a body of specialised literature relating to the field;
  b. That the principles, techniques and assumptions they have relied on are valid; and
  c. The impact that the uncertainty of measurement associated with the application of a given method could have on any conclusion.

Cognitive bias

- **Subconscious, not deliberate malpractice**
- **Can't avoid risk just by trying hard**
  - Process design, e.g.
    - Controlling task-irrelevant data flow
    - Blind checks

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Guidance

Cognitive Bias Effects

Relevant to Forensic Science Examinations

FSR-G-217
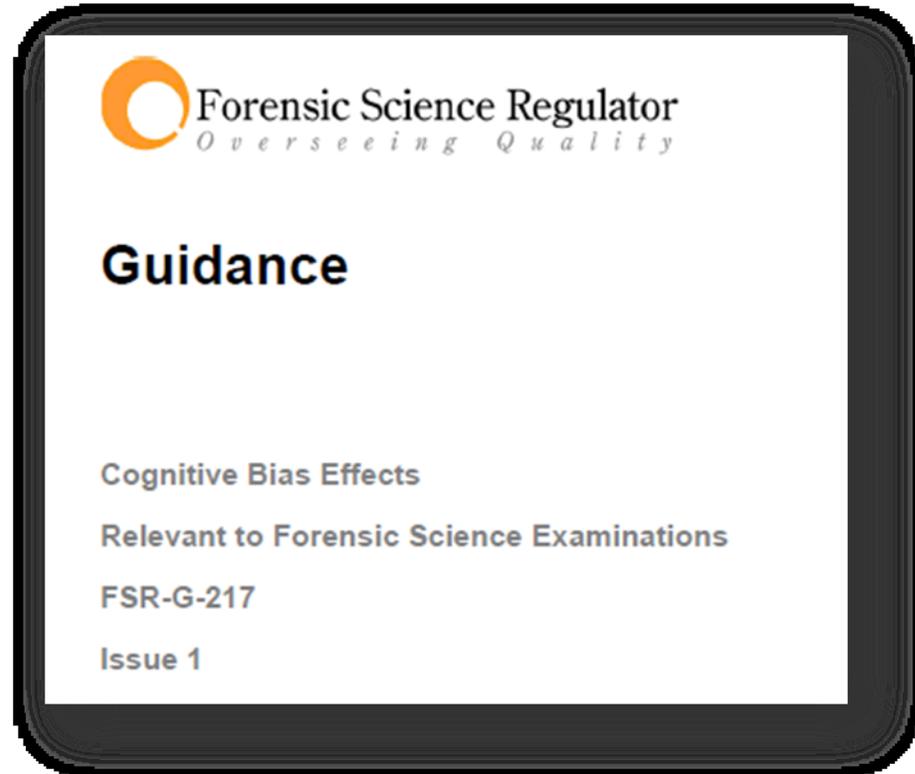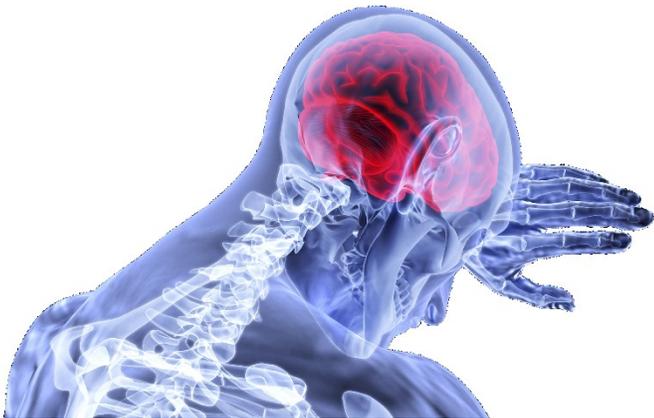
Issue 1

Legal obligations on experts

- https://www.gov.uk/government/publications/legal-obligations-issue-8
  - Crim PR
  - Crim PD
  - Case law

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Information

Legal Obligations

FSR-I-400

Issue 8

Report Content

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Forensic Science Regulator Guidance

Expert Report Guidance
FSR-G-200
Issue 4

www.gov.uk/government/publications/expert-report-content-issue-4

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Forensic Science Regulator Guidance

Non-Expert Technical Statement Guidance
FSR-G-225
Issue 2

www.gov.uk/government/publications/non-expert-technical-statements-issue-2

In development…

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DRAFT

Forensic Science Regulator

Codes of Practice and Conduct

Development of Evaluative Opinions

FSR-C-118

Draft 0.52

- Before doing anything, conduct a pre-assessment
- After analysis, evaluate of the observations given each of two mutually exclusive propositions

- So what is the probability of observing these call data records and these survey results:
  - IF the prosecution proposition (Hp) is true?
  - IF the defence proposition (Hd) is true?

- LR is simply the ratio of these probabilities

Development of Evaluative Opinions Appendix

Balance

Logic

Robustness
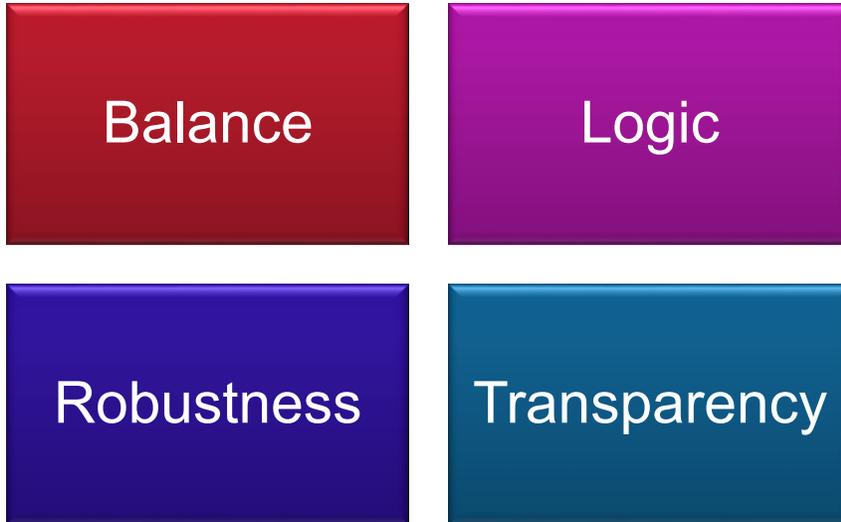
Transparency

- Evaluating the probability of obtaining your set of results under Hp and Hd helps to achieve balance and satisfies logic

- Validation ensures robustness

- Requirements in the appendix to ensure transparency

Overseeing Quality

Illegitimately transposing the conditional

- People have a tendency to assume that a conditional probability and its inverse are similar:
  - The probability of a sheep having 4 legs is very high
  - Because this animal has 4 legs, it has a very high probability of being a sheep

Illegitimately transposing the conditional

- People have a tendency to assume that a conditional probability and its inverse are similar:
  - The probability of a sheep having 4 legs is very high
  - Because this animal has 4 legs, it has a very high probability of being a sheep

Illegitimately transposing the conditional

- People have a tendency to assume that a conditional probability and its inverse are similar:
  - The probability of a sheep having 4 legs is very high
  - Because this animal has 4 legs, it has a very high probability of being a sheep
- The probability of your observations given a particular proposition is NOT the same as the probability of that proposition.
- To swap them is called illegitimately transposing the conditional, e.g. "it is likely that the phone was in area X"

We should always be sure to be talking about the probability of our observations (findings/results) IF the proposition is true: e.g. the findings are more likely if the phone was in area X than if it was not.

NEXT STEPS

Pilot accreditation

- Pilot using Cell Site Appendix to the Codes

- We have supplied ground truth data to assist with validation

- The outcomes will inform any changes needed to the appendix and confirm if ISO 17025 is an appropriate standard for assuring the quality of cell site analysis work

At that stage, a decision will be taken about the standard and a date by which it should be achieved. This will be reflected in the Codes.

Accreditation is only the external assessment to demonstrate that an organisation is compliant with the standard and is in control of its own quality

Quality Standards

Don't leave it to the last minute:
good guidance already in place

Really think about the requirements
– never just tick boxes

Don't work around procedures,
change them if they don't work

Questions/Comments in the panel session

With thanks to:

The Forensic Science Regulation Unit,
in particular, Simon Iveson

# 3. Keynote #2

Matt Tart, Principal Expert, CCL Forensics

Cell Site Analysis:
Roles and Interpretation

Matthew Tart

Principal Expert

Process – Technical Procedure Driven
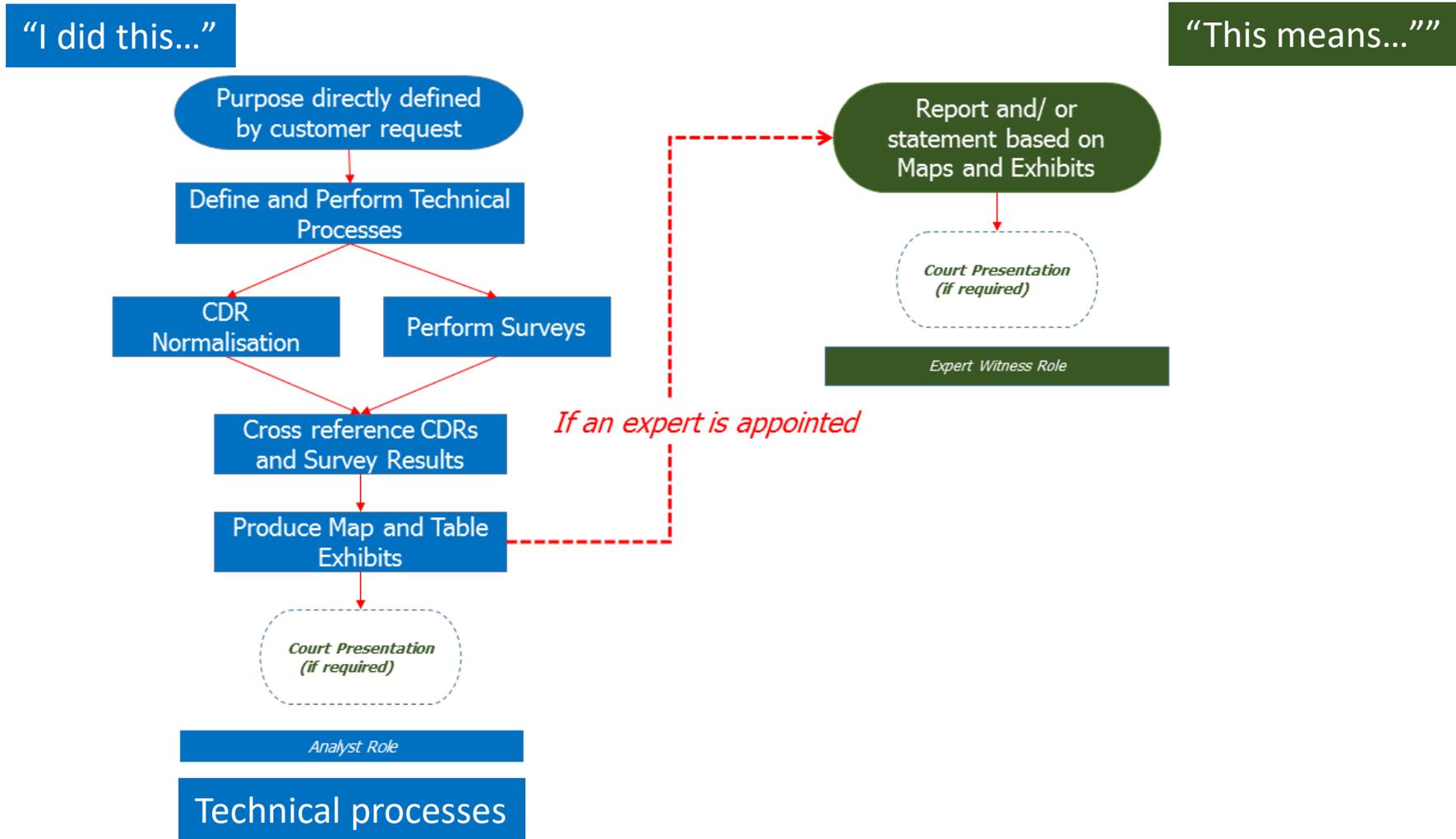
Interpretation - 1
Explaining a technical Term – e.g. Normalising Call Data Records

Date	Time	Type	Duration	A Digits	B Digits	Redirecting Digits	IMEI	Ring Time	Site	Postcode	CI	Last CI	Last Cell Postcode
09-Aug-11	21:43:53	Mobile Terminating	00:00:16	740****296	44753****094'		359429037264390	00:06	REYNOLDS HOUSE	B19 2RH	300374 1069	300374 1069	B19 2RH
09-Aug-11	23:29:15	Mobile Terminating - SMS MSC	00:00:00	44782****743	'44753****094'		359429037264390	00:00	REYNOLDS HOUSE	B19 2RH	300374 1069		
10-Aug-11	00:22:08	Mobile Terminating	00:00:11	778****074	'44753****094'		359429037264390	00:15	I.I.IONICA BARRY JACKSON HOUSE	B6 5BW	300374 8c98	300374 8c98	B6 5BW
10-Aug-11	00:31:59	Call Forward	00:00:02	740****296	'44753****094'	7539698094		00:00					
10-Aug-11	00:45:27	Call Forward	00:00:01	740****296	'44753****094'	7539698094		00:00					
10-Aug-11	01:00:04	Call Forward	00:00:02	740****296	'44753****094'	7539698094		00:00					
10-Aug-11	01:28:38	Call Forward	00:00:03	794****382	'44753****094'	7539698094		00:01					
10-Aug-11	02:28:33	Mobile Terminating	00:05:21	777****909	'44753****094'		359429037264390	00:06	REYNOLDS HOUSE	B19 2RH	300374 1069	300374 1069	B19 2RH
10-Aug-11	03:16:52	Mobile Terminating	00:00:28	777****909	'44753****094'		359429037264390	00:10	REYNOLDS HOUSE	B19 2RH	300374 1069	300374 1069	B19 2RH

| Date	Time	A Digits	IP Address	Access Point Name	Duration	Data Volume (Up)	Data Volume (Down)	IMEI	Cell Id	Site Postcode
09-Aug-11	21:44:25	4475****094	10.35.255.197	blackberry.net	00:37:17	28369	360647	3594290372643900	300374 1069	B19 2RH
09-Aug-11	22:31:08	4475****094	10.35.47.209	blackberry.net	01:53:21	55393	1822864	3594290372643900	300374 1069	B19 2RH
10-Aug-11	01:46:06	4475****094	10.35.162.173	blackberry.net	00:39:18	61010	712527	3594290372643900	300374 1069	B19 2RH
10-Aug-11	02:25:43	4475****094	10.33.141.201	blackberry.net	12:00:00	273689	3828238	3594290372643900	300374 1069	B19 2RH

Call No.	Date	Time	Comment	Calling Number	Receiving Number	Call Type	Duration	First Cell	First Cell Name	First PostCode	Last Cell	Last Cell Name	Last PostCode
094.116	09/08/2011	21:43:53		7407****296	0753****094	Incoming Voice	00:00:16	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.117	09/08/2011	21:44:25		4475****094		Data	00:37:17	300374 1069	Reynolds House	B19 2RH			
094.118	09/08/2011	22:06:39		0753****094	7411****501	Outgoing Voice	00:00:50	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.119	09/08/2011	22:29:10		0753****094	7411****501	Outgoing Voice	00:01:46	300374 1070	Reynolds House	B19 2RH			
094.120	09/08/2011	22:31:08	New event, same LAC	4475****094		Data	01:53:21	300374 1069	Reynolds House	B19 2RH			
094.121	09/08/2011	23:29:15		0782****743	0753****094	Incoming Text	00:00:00	300374 1069	Reynolds House	B19 2RH			
094.122	09/08/2011	23:37:28		0753****094	0794****382	Outgoing Voice	00:00:03	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.123	10/08/2011	00:22:08		0778****074	0753****094	Incoming Voice	00:00:11	300374 8c98	I.I.Ionica Barry Jackson House	B6 5BW	300374 8c98	I.I.Ionica Barry Jackson House	B6 5BW
094.124	10/08/2011	00:31:59		7407****296	4400****094	Call Forwarded	00:00:02						
094.125	10/08/2011	00:45:27		7407****296	4400****094	Call Forwarded	00:00:01						
094.126	10/08/2011	01:00:04		7407****296	4400****094	Call Forwarded	00:00:02						
094.127	10/08/2011	01:28:38		0794****382	4400****094	Call Forwarded	00:00:03						
094.128	10/08/2011	01:46:06	New event, same LAC	4475****094		Data	00:39:18	300374 1069	Reynolds House	B19 2RH			
094.129	10/08/2011	02:25:43	Continuation	4475****094		Data	12:00:00	300374 1069	Reynolds House	B19 2RH			
094.130	10/08/2011	02:28:33		0777****909	0753****094	Incoming Voice	00:05:21	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.131	10/08/2011	03:16:52		0777****909	0753****094	Incoming Voice	00:00:28	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.132	10/08/2011	03:20:45		0753****094	0777****909	Outgoing Voice	00:00:15	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH

# Technical Interpretation - 1
Illustrating mast locations
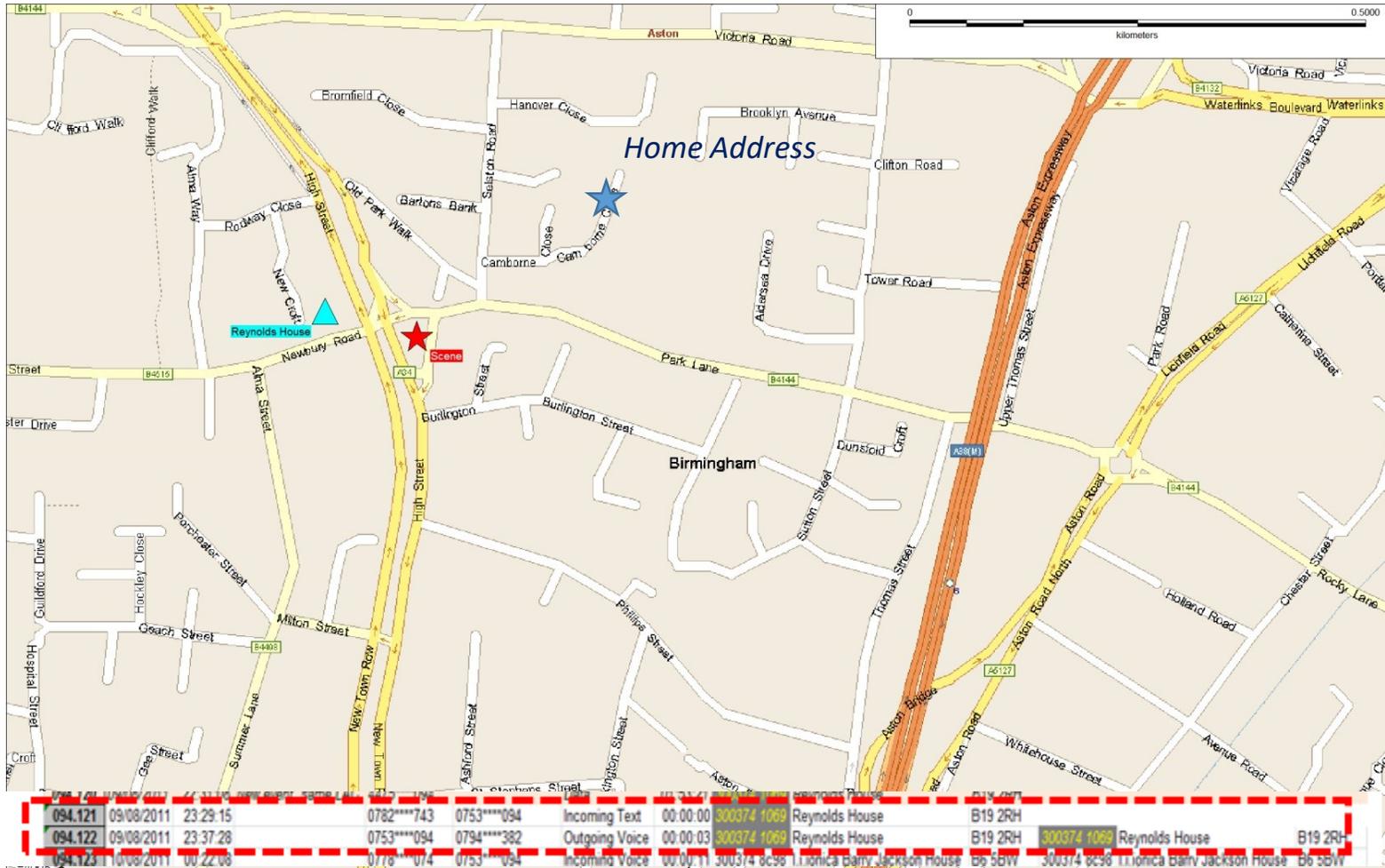
[in the period of the offence the phone]
"used cell 300374 1069 in the Aston area of Birmingham"

Interpretation - 2
Presenting survey results
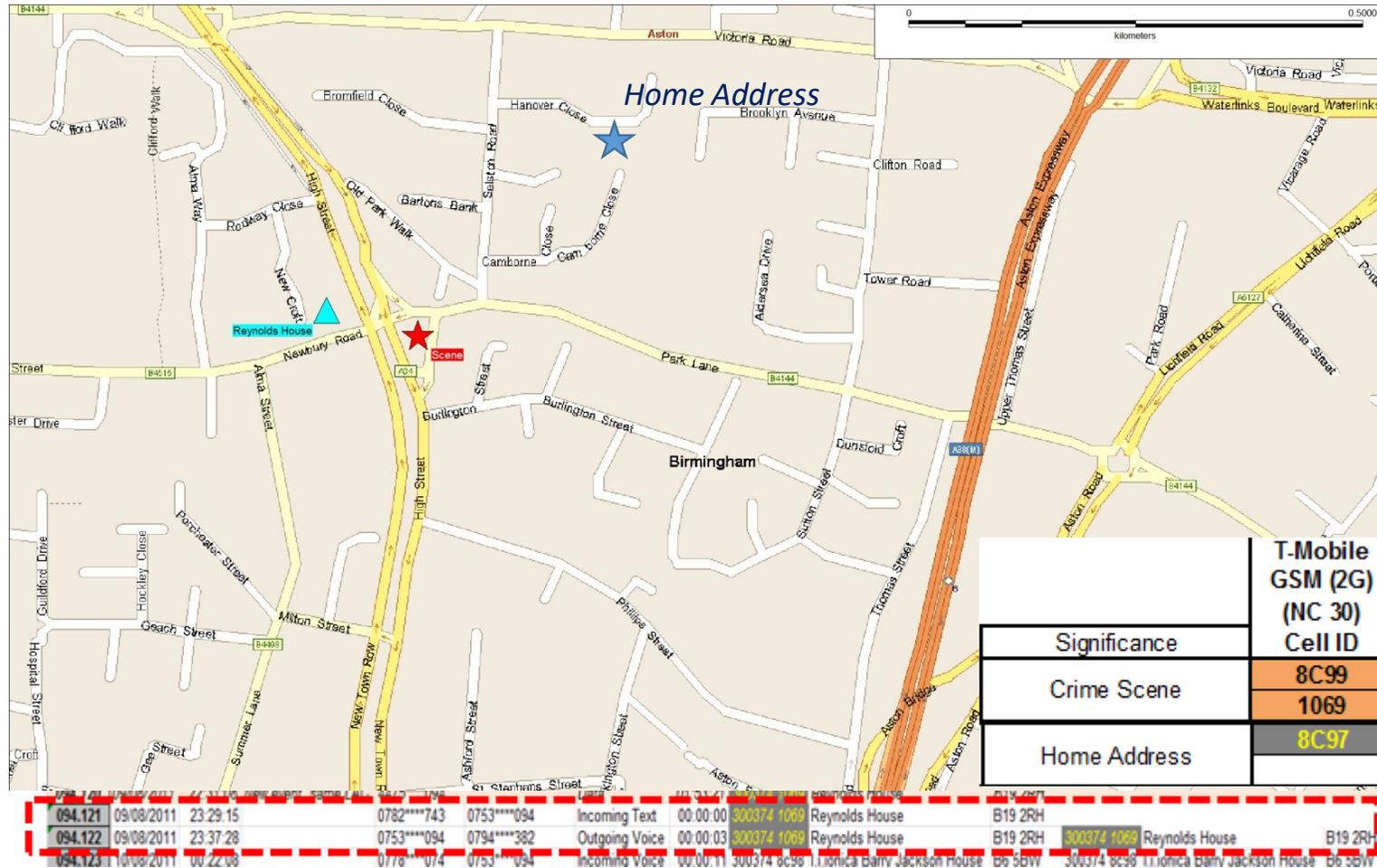
"Cell ID 1069 is a serving cell at [the scene]"

Interpretation - 3

Interpreting the data to provide possible explanations for it

Call No.	Date	Time	Comment	Calling Number	Receiving Number	Call Type	Duration	First Cell	First Cell Name	First PostCode	Last Cell	Last Cell Name	Last PostCode
094.116	09/08/2011	21:43:53		7407****296	0753****094	Incoming Voice	00:00:16	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.117	09/08/2011	21:44:25		4475****094		Data	00:37:17	300374 1069	Reynolds House	B19 2RH			
094.118	09/08/2011	22:06:39		0753****094	7411****501	Outgoing Voice	00:00:50	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.119	09/08/2011	22:29:10		0753****094	7411****501	Outgoing Voice	00:01:46	300374 1070	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.120	09/08/2011	22:31:08	New event, same LAC	4475****094		Data	01:53:21	300374 1069	Reynolds House	B19 2RH			
094.121	09/08/2011	23:29:15		0782****743	0753****094	Incoming Text	00:00:00	300374 1069	Reynolds House	B19 2RH			
094.122	09/08/2011	23:37:28		0753****094	0794****382	Outgoing Voice	00:00:03	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.123	10/08/2011	00:22:06		0778****074	0753****094	Incoming Voice	00:00:11	300374 8c98	T.Ionica Barry Jackson House	B6 5BW	300374 8c98	T.Ionica Barry Jackson House	B6 5BW
094.124	10/08/2011	00:31:59		7407****296	4400****094	Call Forwarded	00:00:02						
094.125	10/08/2011	00:45:27		7407****296	4400****094	Call Forwarded	00:00:01						
094.126	10/08/2011	01:00:04		7407****296	4400****094	Call Forwarded	00:00:02						
094.127	10/08/2011	01:28:38		0794****382	4400****094	Call Forwarded	00:00:03						
094.128	10/08/2011	01:46:06	New event, same LAC	4475****094		Data	00:39:18	300374 1069	Reynolds House	B19 2RH			
094.129	10/08/2011	02:25:43	Continuation	4475****094		Data	12:00:00	300374 1069	Reynolds House	B19 2RH			
094.130	10/08/2011	02:28:33		0777****909	0753****094	Incoming Voice	00:05:21	300374 1069	Reynolds House	B19 2RH			
094.131	10/08/2011	03:16:52		0777****909	0753****094	Incoming Voice	00:00:28	300374 1069	Reynolds House	B19 2RH			
094.132	10/08/2011	03:20:45		0753****094	0777****909	Outgoing Voice	00:00:15	300374 1069	Reynolds House	B19 2RH			

	T-Mobile GSM (2G) (NC 30) Cell ID
Significance	
Crime Scene	8C99
	1069
Home Address	8C97

[during the period of the offence the phone]
"used cell 300374 1069 in the Aston area of Birmingham"

"Cell ID 1069 is a serving cell at [the scene]"

".... The data ...is consistent with ... having been in the Aston area of Birmingham ... at or in the area of [the scene]..."

APPARENT PROBATIVE VALUE

Interpretation - 4

Forensic Inference –
Interpreting the results in the light of hypotheses

- **The location of the phone is not in the records**
- **Any assessment of where it was at the time of the call event is inference**....

....implication...?

  - How safe is that inference?
  - What are the uncertainties in source data?
  - What are the uncertainties in the processes used to analyse that data?
  - How discriminating is the inference drawn?
  - How should all of that uncertainty be assessed and expressed?
- **What question is being addressed**?
  – Is it appropriate?
  – Was it answered?

Uncertainties – Technical Interpretation - CDRs
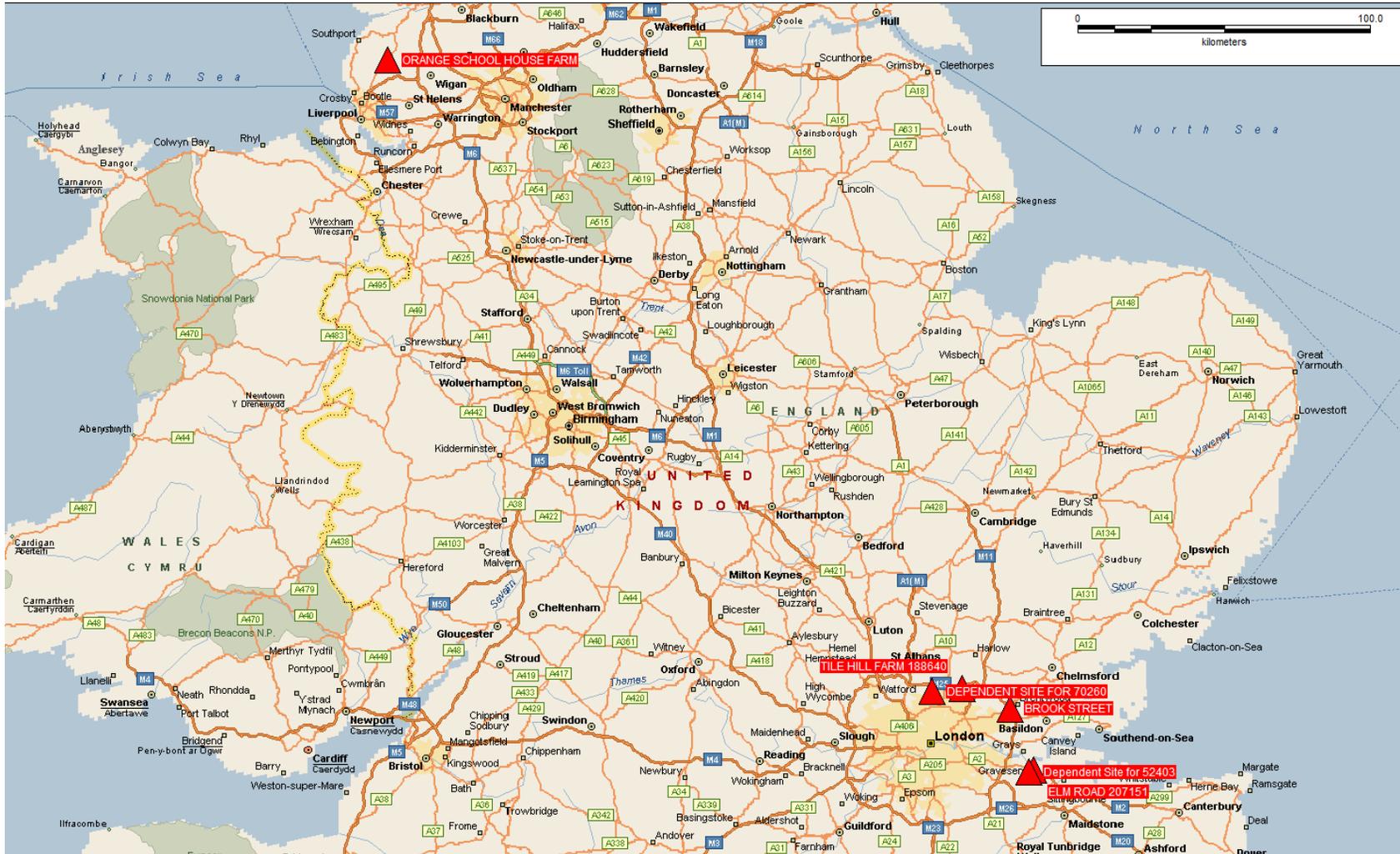
Date	Time	Duration	End Time	Calling Number	Receiving Number	Type	Start Cell ID	Start Azimuth	Start Site Name	Start Easting	Start Northing	Start Postcode	Mast distance apart
31/05/2017	10:00:00	00:00:00	10:00:00	07******515	GPRS	Outgoing Data	35389	10	DEPENDENT SITE FOR 70260	530527	198434	EN2 8AA	10
31/05/2017	10:15:00	00:00:00	10:15:00	07******515	GPRS	Outgoing Data	42325	250	TILE HILL FARM 188640	540492	199529	EN9 3QN	18
31/05/2017	10:30:00	00:00:00	10:30:00	07******515	GPRS	Outgoing Data	55351	180	BROOK STREET	557116	192799	CM14 5QP	0
31/05/2017	10:45:00	00:00:00	10:45:00	07******515	GPRS	Outgoing Data	54665	180	BROOK STREET	557116	192799	CM14 5QP	306
31/05/2017	11:00:00	00:00:00	11:00:00	07******515	GPRS	Outgoing Data	53549	60	ORANGE SCHOOL HOUSE FARM	343030	411154	L40 7ST	326
31/05/2017	11:15:00	00:00:00	11:15:00	07******515	GPRS	Outgoing Data	39944	90	Dependent Site for 52403	563736	171283	DA13 9RE	2
31/05/2017	11:30:00	00:00:00	11:30:00	07******515	GPRS	Outgoing Data	3983	240	ELM ROAD 207151	565143	171973	DA12 5LF	2
31/05/2017	12:00:00	00:00:00	12:00:00	07******515	GPRS	Outgoing Data	39944	90	Dependent Site for 52403	563736	171283	DA13 9RE	4

Uncertainties – Technical Interpretation - Surveys

- What assurance can there be that all of the legitimately serving cells at a location have been selected?
  - Validation of the method, both the equipment and the manner in which it is used
  - Assessment of uncertainty – false positives, false negatives
- Validation helps inform what opinions can, and cannot, be safely expressed from the data

Uncertainties
Technical Interpretation - Surveys

Radio Channel List - EE		
GSM	**UMTS**	**LTE**
645-869	10761	522
	10786	547
	10811	1617
	10836	1667
		1808
		1811
		3026
		3029
		3350
		6225

- A survey is a sampling method, and there is uncertainty in the results
     It is unlikely to be "the whole truth"
- Opinion of which cells serve at a location, or the service area of a given cell, is informed by the survey data and not defined by it. Other views may be formed, even from the same data.

protecting
responding
investigating

Questions to address

What cells were detected at the locations of interest, and do they occur in the CDRs?
- Known to be flawed, errors of omission, tendency to mislead

Question defined in terms of a technical process. Is this even a reasonable question to address?

A more useful question is:
Would the call data be expected given the scenario:
- Proposed by the Prosecution
- Proposed by the Defence
How discriminating are the findings?

Technical Interpretation

Investigative inference

"Phone A used Cell ID 1069 during the period of the offence"

"Cell ID 1069 was detected as a serving cell at the scene"

"The data …is consistent with … having been in the Aston area of Birmingham … at or in the area of [The Scene]"

APPARENT PROBATIVE VALUE

A more appropriate question
Evaluative inference

| Call No.	Date	Time	Comment	Calling Number	Receiving Number	Call Type	Duration	First Cell	First Cell Name	First PostCode	Last Cell	Last Cell Name	Last PostCode
094.116	09/08/2011	21:43:53		7407****296	0753****094	Incoming Voice	00:00:16	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.117	09/08/2011	21:44:25		4475****094		Data	00:37:17	300374 1069	Reynolds House	B19 2RH			
094.118	09/08/2011	22:06:39		0753****094	7411****501	Outgoing Voice	00:00:50	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.119	09/08/2011	22:29:10		0753****094	7411****501	Outgoing Voice	00:01:46	300374 1070	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.120	09/08/2011	22:31:08	New event, same LAC	4475****094		Data	01:53:21	300374 1069	Reynolds House	B19 2RH			
094.121	09/08/2011	23:29:15		0782****743	0753****094	Incoming Text	00:00:00	300374 1069	Reynolds House	B19 2RH			
094.122	09/08/2011	23:37:28		0753****094	0794****382	Outgoing Voice	00:00:03	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.123	10/08/2011	00:22:08		0778****074	0753****094	Incoming Voice	00:00:11	300374 8c98	T.Tonica Barry Jackson House	B6 5BW	300374 8c98	T.Tonica Barry Jackson House	B6 5BW
094.124	10/08/2011	00:31:59		7407****296	4400****094	Call Forwarded	00:00:02						
094.125	10/08/2011	00:45:27		7407****296	4400****094	Call Forwarded	00:00:01						
094.126	10/08/2011	01:00:04		7407****296	4400****094	Call Forwarded	00:00:02						
094.127	10/08/2011	01:28:38		0794****382	4400****094	Call Forwarded	00:00:03						
094.128	10/08/2011	01:46:06	New event, same LAC	4475****094		Data	00:39:18	300374 1069	Reynolds House	B19 2RH			
094.129	10/08/2011	02:25:43	Continuation	4475****094		Data	12:00:00	300374 1069	Reynolds House	B19 2RH			
094.130	10/08/2011	02:28:33		0777****909	0753****094	Incoming Voice	00:05:21	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.131	10/08/2011	03:16:52		0777****909	0753****094	Incoming Voice	00:00:28	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH
094.132	10/08/2011	03:20:45		0753****094	0777****909	Outgoing Voice	00:00:15	300374 1069	Reynolds House	B19 2RH	300374 1069	Reynolds House	B19 2RH

Would the call data be expected if the phone was:

- at the scene, as alleged by the Prosecution
- at the alibi location , as alleged by the Defence

Does the service area of Cell ID 1069 include the scene and/ or the alibi location?
- i.e. can we distinguish between the locations, and if so with what assurance?
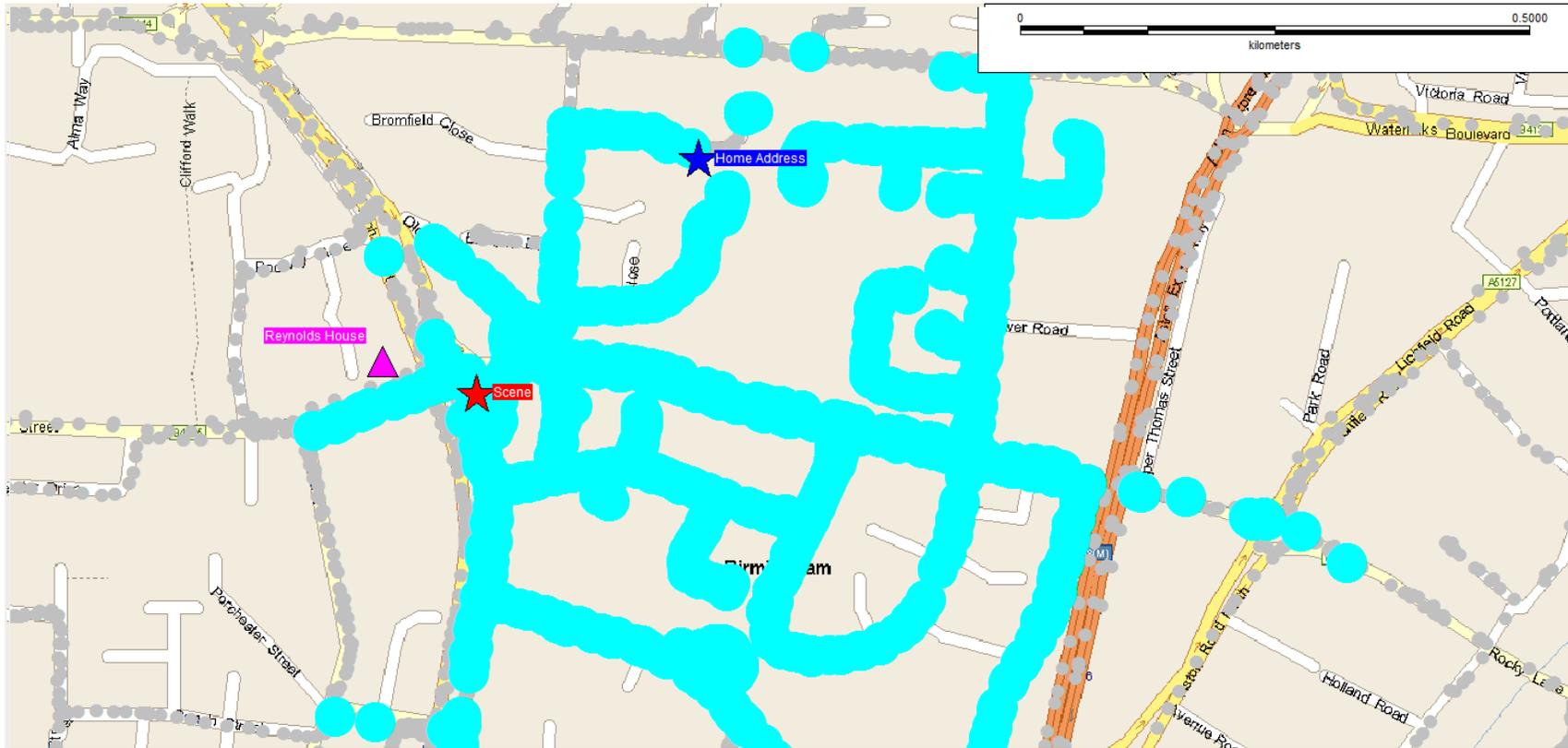
Cell ID 1069

Cell ID 1069 was the most commonly used cell in the CDR. The second most common was Cell ID 8c99 also detected in the surveys serving a similar area of Aston, and beyond. Two thirds of all calls were handled by one cell or the other, other cells used much less often

"Phone A used Cell ID 1069 during the period of the offence"

"Cell ID 1069 was detected as a serving cell at the scene"

"….and at the alibi location"   **NO   PROBATIVE VALUE**

Discrimination of findings and language used
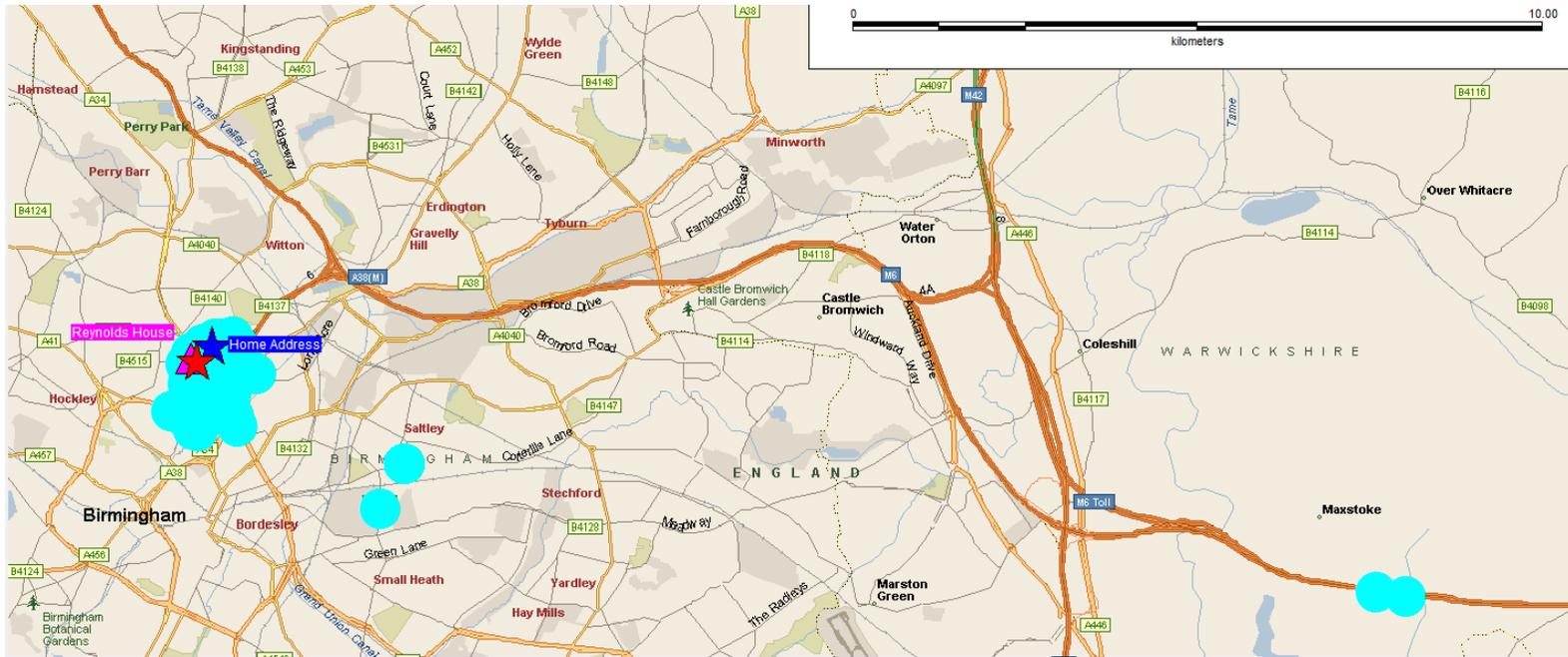
"Consistent with being..at or in the vicinity of the scene… in the Aston area of Birmingham"

"Consistent with" being :

….At the Scene…. And at the alibi location….

….In Aston… and 17km from Aston…

*….in the area in which the phone is most often used…. whatever that area may be*

"'consistency' is quite often of no probative value at all.." [R v Puaca]

"…half a mile away is not in normal English at the place, and you could have explained that" [R v Brookes]

"…unhelpfully conflated the location of a particular mast with the question of what safe inferences can be drawn about the telephone using it" [R v Calland]

False Negatives

LOI	Location Name	Address	Post Code	Significance	T-Mobile GSM (2G) (NC 30) Cell ID
1	Barton Arms PH			Crime Scene	8C99
					1069
6	Hanover Close	Aston	B6 5ES	Home Address	8C97

T-Mobile (GSM)
- 8c97
- 8c99
- 1068
- 1069
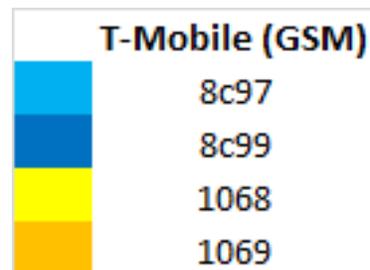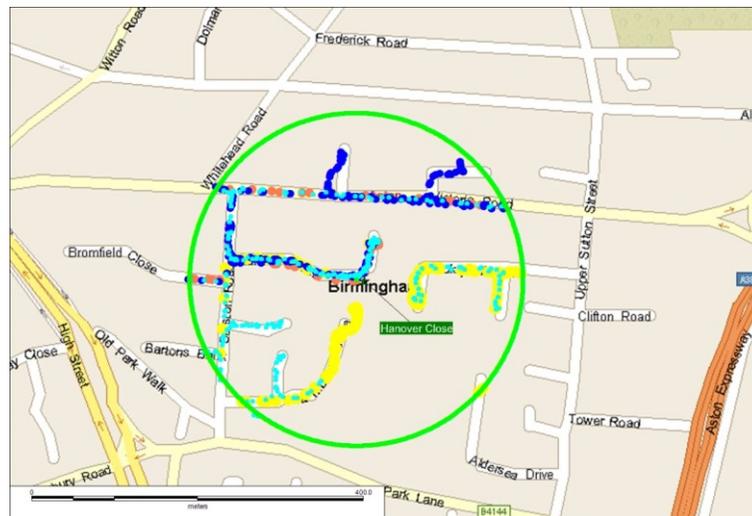
One cell detected as serving at the home address using method #1
Four cells detected serving using method #2
…..Should this affect how the survey results are interpreted?
….Are they "factual", to be taken at face value?

What if the phone had used 8c99 instead of 1069?
….8c99 was the second most commonly used cell, after 1069….

Reliability of evidence

<mark>*"Consistent with being..at or in the vicinity of the scene… in the Aston area of Birmingham"*</mark>

Balanced? *— The expert should address at least one pair of propositions usually one based upon the prosecution issue and one based upon an alternative (defence issue). If a reasonable alternative cannot be identified then the expert may address only the one proposition but will make it clear that he cannot evaluate the strength of the evidence.*

Logical? *— The expert will address the probability of the evidence given the proposition and relevant background information and not the probability of the proposition given the evidence and background information.*

Robust? *— The expert will provide opinion that is capable of scrutiny by other experts and cross-examination. They will base their opinion upon sound knowledge of the evidence type(s) and use wherever possible verified databases. They will be satisfied that the results of the tests and examinations upon which they have based their opinion are themselves robust.*

Transparent? *— The expert will be able to demonstrate how they came to their conclusion. They will set out in the statement or report the basis of their opinion viz.:*

- *Hypotheses addressed.*
- *Test or examination results.*
  - *The background information used in arriving at the conclusion.*
  - *They will be able, if required, to provide the data used and its provenance.*

Forensic Environment - Court

Roles

Investigative Mode
- Produces theories in terms of likely explanations of data
- Assists investigation
- Offence focus (may not even have suspects yet)
- Iterative process
- Ranks likely explanations to refine theories (<u>probability of scenarios given evidence</u>)
- Risk of misleading

Evaluative Mode
- Assists court process
- Defendant focus
- Assesses data in the context of presented scenarios (<u>probability of evidence given scenarios</u>)

Forensic Environment

Hierarchy of Propositions

How to start to define a question....

Offence

- Did the accused commit the offence?   LEGAL QUESTION - JURY

Activity

- Would the data be expected given the suspect undertook specific actions? (those actions are usually related to the offence)

Source

- Does A match B?
    - How sure are we of that?
    - How discriminating is that match?

AFSP Standard applied to Cell Site
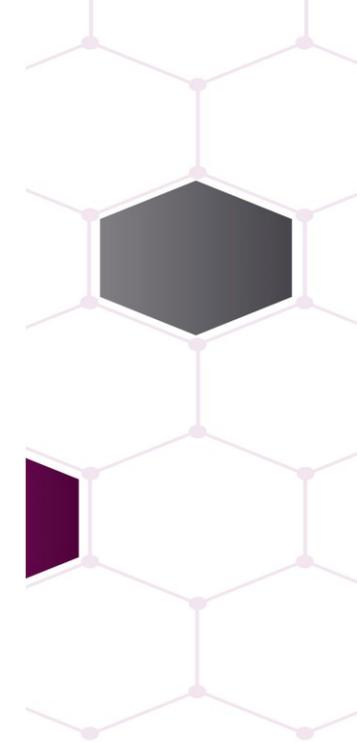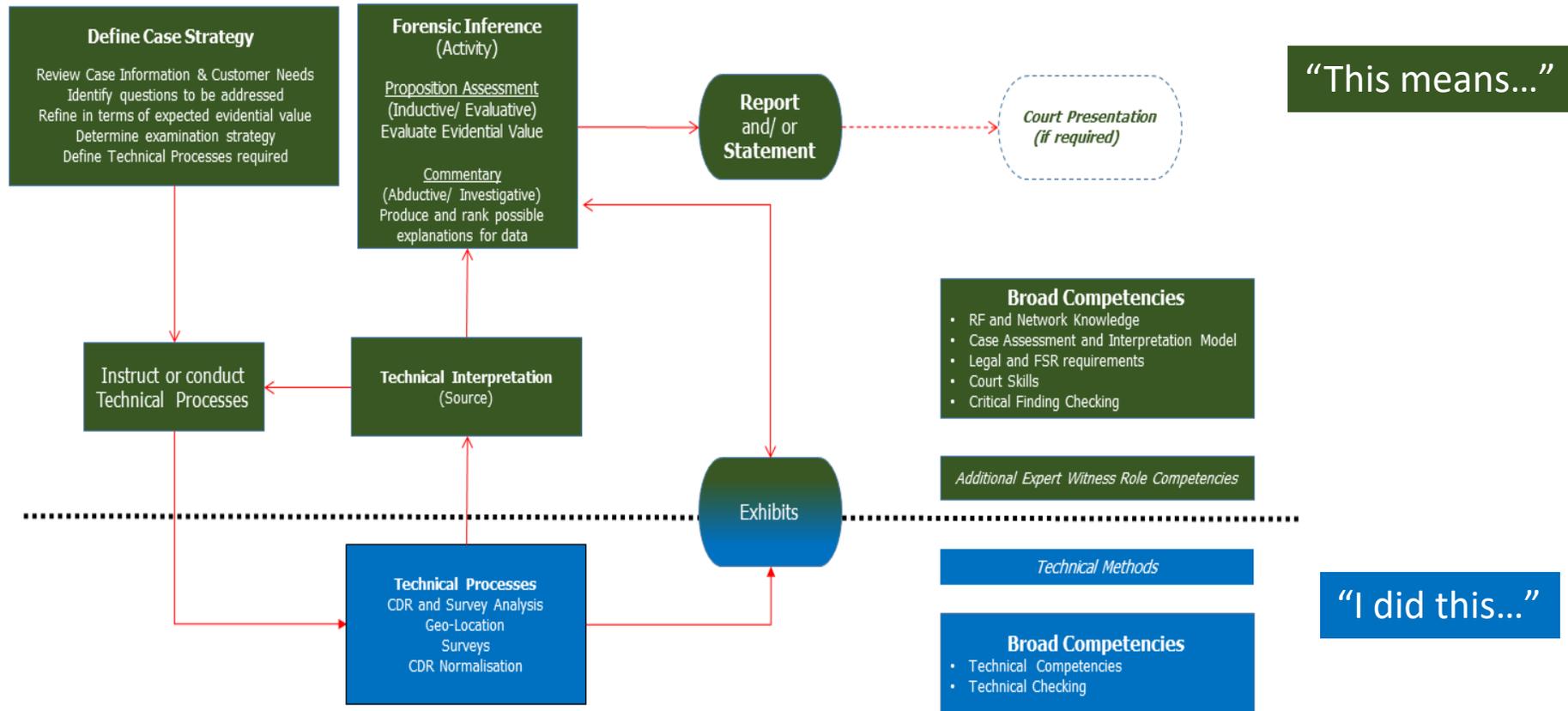
Thank You

Skills, Knowledge, Understanding
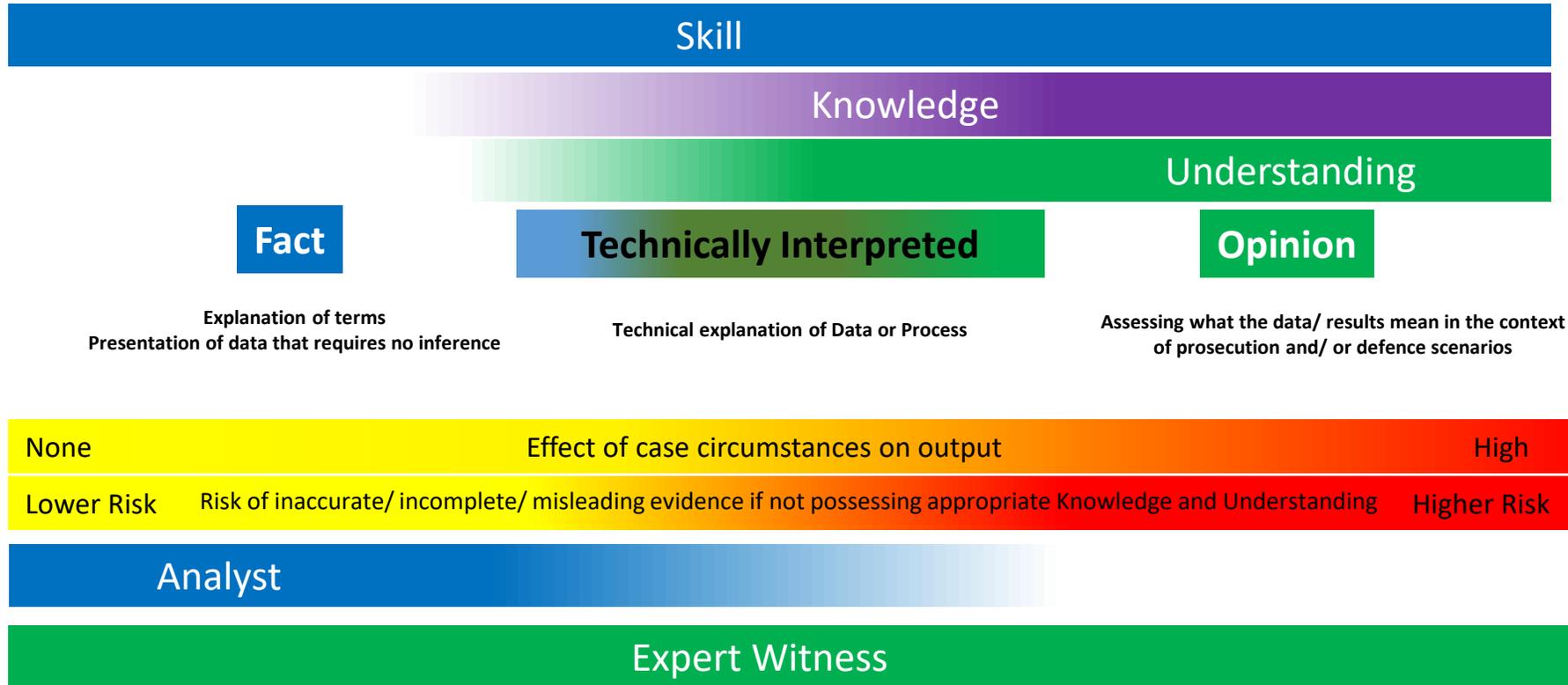
4. Q&A

- **Dr Gillian Tully CBE, Forensic Science Regulator**
- **Matt Tart, Principal Expert, CCL Forensics**
- **Neil Matthews, Technical Support Manager, East Midlands Special Operations Unit**
- **Jim Arris, East Midlands Special Operations Unit**
- **John Beckwith, Digital Forensic Science Capability Lead, TF**
- **Kevin Sullivan, Standards and Accreditation Subject Matter Expert, TF**
- **Paula Mulroy, Training and Competence Manager, FCN**

5. Closing remarks

T/ACC Mark Callaghan, Deputy Programme Director, Transforming Forensics

www.fcn.police.uk

https://knowledgehub.group/group/fcn

https://knowledgehub.group/group/transforming-forensics