Feedback on talks

- Very good so far, well done
- Speak to the audience where possible
- Make the best use of the time but be careful about running over, I will get more strict
- Presenting a plan at the start is not needed but some signposting of what to come may help
- Final slide – help discussion, not cute clipart
- Careful about font size: Figures should be re-drawn preferably, same applies for demos
- I’m not going to suggest dressing in any particular way but do bear this in mind for professional talks

Feedback on paper summaries

- Summarise the paper concisely and then focus on discussing the content
- No need to describe structure of the paper explicitly or implicitly
- Be specific, rather than general
  - Make every word count
- Specify “why” where possible
- Saying a paper is easy to understand is critical analysis but only quite a superficial form

Critically Reviewing the Literature

- Questions to ask yourself
  - If relevant, does it follow the scientific method?
  - Is the method used appropriate?
  - Are the results valid?
  - Do the conclusions make sense given the findings and existing work?
  - Has this study been cited by others?

A Good Literature Review

- Begins with a well formed research question
- Explores the research question
  - What work has previously addressed this question?
  - What aspects of the problem are still unknown?
  - What have others argued?
  - What needs to be done?
  - How does this affect practitioners and theorists?
- Is founded on existing & accepted theories
  - Is not simply a list of URLs

A Good Literature Review

- Locates all relevant literature
- Has a logical structure - structured by
  - Themes
  - Time
  - Experiments/trials
  - Different research approaches
  - etc
- Critically reviews the literature
  - Not just a simple catalogue of the literature
- Justifies the reason for the research

Citations are important!

- Bedrock of academic honesty
- Avoids claims of plagiarism

Citations

- Students often get citations wrong
  - Over cite, under cite or not cite at all
  - Reader can’t see an obvious research trail
  - Quoting irrelevant sources
  - Too few or too many references
  - Wrong or mixed citation styles
  - Difficult to locate referenced sources
  - Bibliography mainly consisting of URLs
  - Forgetting page reference on quotes
    - .....

Citations

- Must not copy text, ideas, analyses, etc. unless source is clearly indicated
- Must make it clear where you have used, or referred to, others' work/ideas/comments
  - If in doubt, cite!
- Reader should be able to locate your sources
  - Some journals only allow publicly available works to be referenced
- Refer to your sources unambiguously

Citations

- Use citations when
  - Quoting verbatim
    - e.g. In their study Smith et al. (2006, p.26) concluded, "*[...] people generally ignore security warnings, if they believe there is no immediate or obvious danger to them*"
  - Referring to existing research, particularly in the *related* work (literature review) section of a paper
    - e.g. Although people's actual behaviour has previously been found to be non-privacy protecting [10,45,56], this may be because of poor user interfaces [23,30], or users' goal-driven behaviour [15,21,29]
    - Use to build your "*state of the art*" argument

Citations

- Use citations when
  - Indicating that work or idea is by someone else
  - Paraphrasing
    - Same meaning but different words
      - e.g. Peoples' stated privacy preferences do not match their actual privacy behaviour (Norberg et al., 2007)
  - When copying a figure, graph, or table (beware copyright)
  - There is background material you believe the reader may wish to refer to
  - Other reasons to refer to work outside your paper

Citations

- No need to cite when
  - You have discovered the facts yourself
  - It is an original idea, theory etc.
  - It is common knowledge
    - e.g. electromagnetic radiation which can be seen by the human eye is known as visible light
    - Sometimes hard to define “common knowledge

Citations

- Good citing is almost an art – no single rule
  - Experience in writing and reading papers will help you
- Two mandatory components of a citation:
  - In the text itself
  - In the reference list
- The reference list may be
  - At the end of the paper (bibliography)
  - As footnotes (common approach for legal articles)

Citations

- Citations may look like
  - “Previous experiments indicate a possible link (Smith et al., 2006)”
  - “Previous experiments indicate a possible link [1]”
  - “Previous experiments indicate a possible link [SBW06]”
- Many different citation styles
- Generally two types
  - Author-date - e.g. (Jones, 2006)
  - Numeric - e.g. [1]
  - But there are others – e.g. [MS12]

Citation Styles in Zotero

Zotero Style Repository

Here you can find Citation Style Language 1.0.1 citation styles for use with Zotero and other CSL 1.0.1–compatible software. For more information on us

Style Search

Title Search

Show only unique styles

Format: author | author-date | label | note | numeric

Fields: anthropology | astronomy | biology | botany | chemistry | communications | engineering | generic-base | geography | geology | history | humanities | law | linguistics | literature | math | medicine | philosophy | physics | political_science | psychology | science | social_science | sociology | theology | zoology

6,780 styles found:

- 3 Biotech (2013-05-10 09:45:15)
- 4OR (2013-05-10 09:45:15)
- AAPG Bulletin (2013-03-29 23:50:45)
- AAPS PharmSciTech (2013-05-10 09:40:31)
- Abhandlungen aus dem Mathematischen Seminar der Universität Hamburg (2013-05-10 09:40:31)
- Academic Medicine (2013-03-29 23:50:45)
- Academic Pediatrics (2013-04-25 09:38:16)
- Academic Questions
- Academy of Manage
- Academy of Manage
- Accident Analysis a
- Accounting Forum
- Accounting History
- Accounting, Organiz
- Accounts of Chemic
- Accreditation and Q

1. Sambrook, Joe, and David William Russell. 2001. *Molecular Cloning: A Laboratory Manual.* 3rd ed. Cold Spring Harbor, NY: CSHL Press.
2. Kötter, Peter, and Michael Ciriacy. 1993. Xylose fermentation by Saccharomyces cerevisiae. *Applied Microbiology and Biotechnology* 38: 776–783. doi:10.1007/BF00167144.
3. Pear, Robert. 2008. Crisis Puts Tax Moves Into Play. *The New York Times*, October 2, sec. Business.
4. Method and system for placing a purchase order via a communications network. 1999.
5. Hogue, Christopher W. V. 2001. Structure Databases. In *Bioinformatics*, ed. Andreas D. Baxevanis and B. F. Francis Ouellette, 2nd ed., 83–109. Life Sciences Series. New York, NY: Wiley-Interscience.

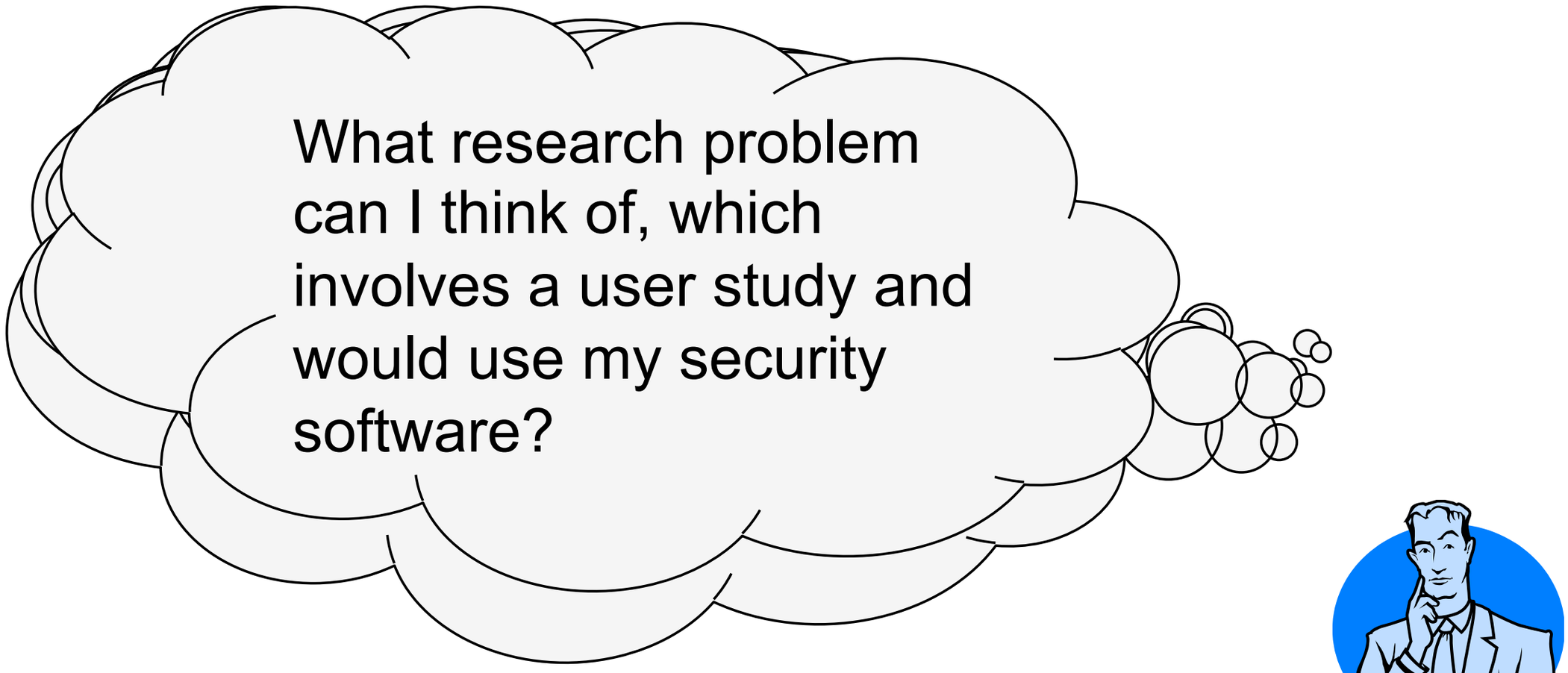
Citations

- Make sure you pick the correct citation style for the journal, conference etc. you are submitting to
- Using a bibliographic tool like Zotero you can switch between citation styles very quickly
  - www.zotero.org
- Generally, in UCL Computer Science assignments citations are numeric, e.g. [1], or hybrid, e.g. [SJ02]

Goals of citations

- Shows reader you have carried out a thorough literature survey
- Makes reader more likely to view the results of your study seriously/favourably
- Shows respect for the ideas of others

Poor Research Design



- What is wrong with this approach?

Research Design in Context

- Remember to follow the scientific method
  - Identify the research problem
  - Specify purpose of research
  - Determine hypotheses/research question
  - Carry out a literature review
  - **Determine best research method**
    - **Study, develop software, mathematical proof**
  - Carry out research - data collection
  - Analyse data
  - Report results
  - Draw conclusions from research
  - Adjust theory

Research Types

- Primary research
  - Using primary sources and/or data
  - Often used by historians – e.g. studying ancient documents
  - Analysis of raw data from existing or new studies
- Secondary research
  - Using secondary sources
  - Synthesis or analysis of existing discussions of primary sources
  - Case studies
  - Meta-analyses
  - Literature survey

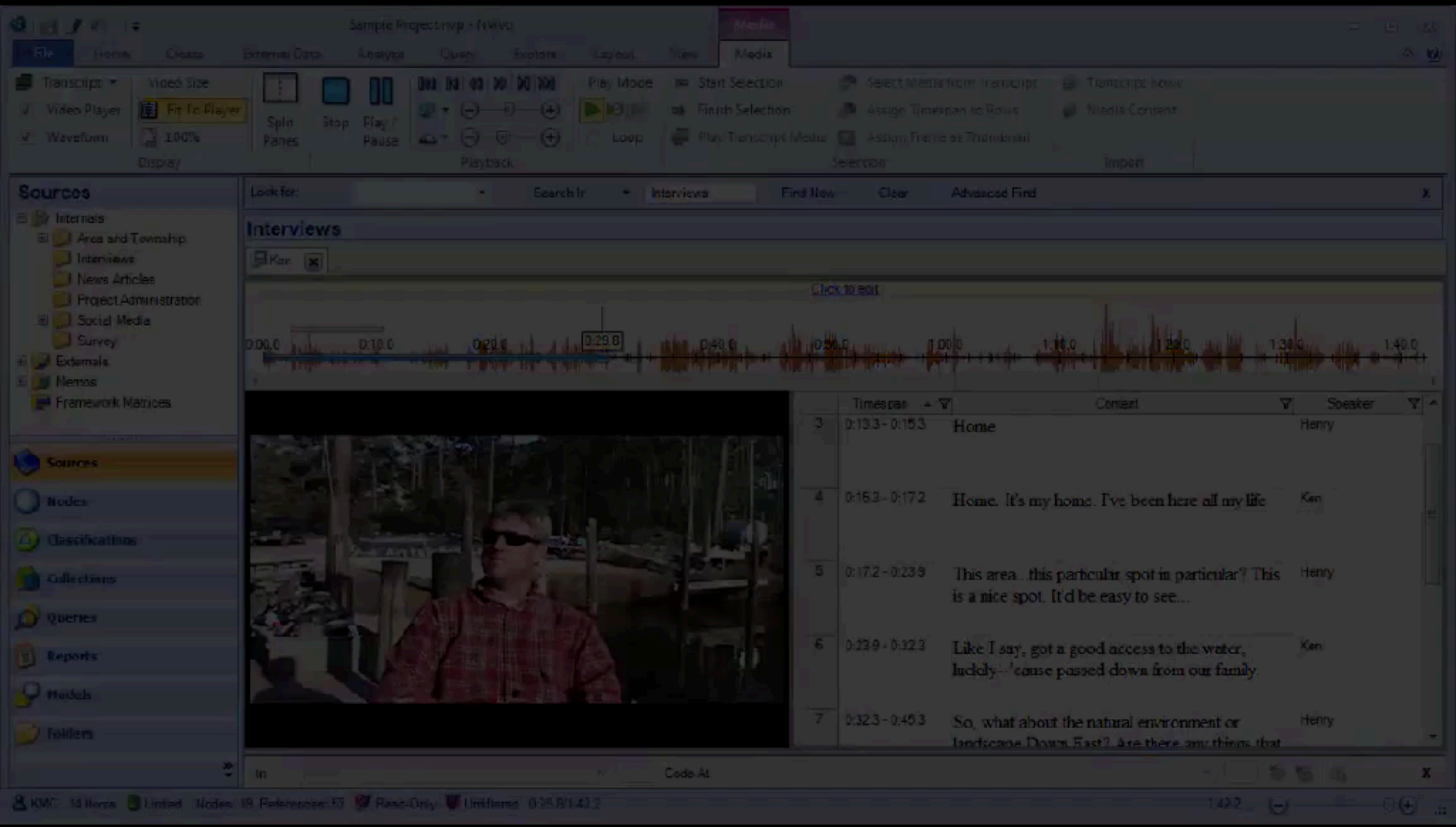
Qualitative Research

- Often a fairly broad research question
- Good for exploratory research
- Address questions about human behaviour
- Data collected is usually word-type
- Used in social and management sciences

Qualitative Research

- Not quantifiably measuring variables
- Not looking for relationship between variables
- Expensive and time consuming to undertake
- Usually small sample sizes

NVivo


Sample Project.nvp - NVivo
Media
File
Home
Create
External Data
Analyze
Query
Explore
Layout
View
Media
Transcript
Video Player
Waveform
Video Size
Fit To Player
100%
Split Panes
Stop
Play / Pause
Display
Playback
Play Mode
Loop
Start Selection
Finish Selection
Play Transcript Media
Select Media from Transcript
Assign Timespan to Rows
Assign Frame as Thumbnail
Transcript Rows
Media Content
Import
Selection
Sources
Internals
Area and Township
Interviews
News Articles
Project Administration
Social Media
Survey
Externals
Memos
Framework Matrices
Look for:
Search In
Interviews
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Ken
Click to edit
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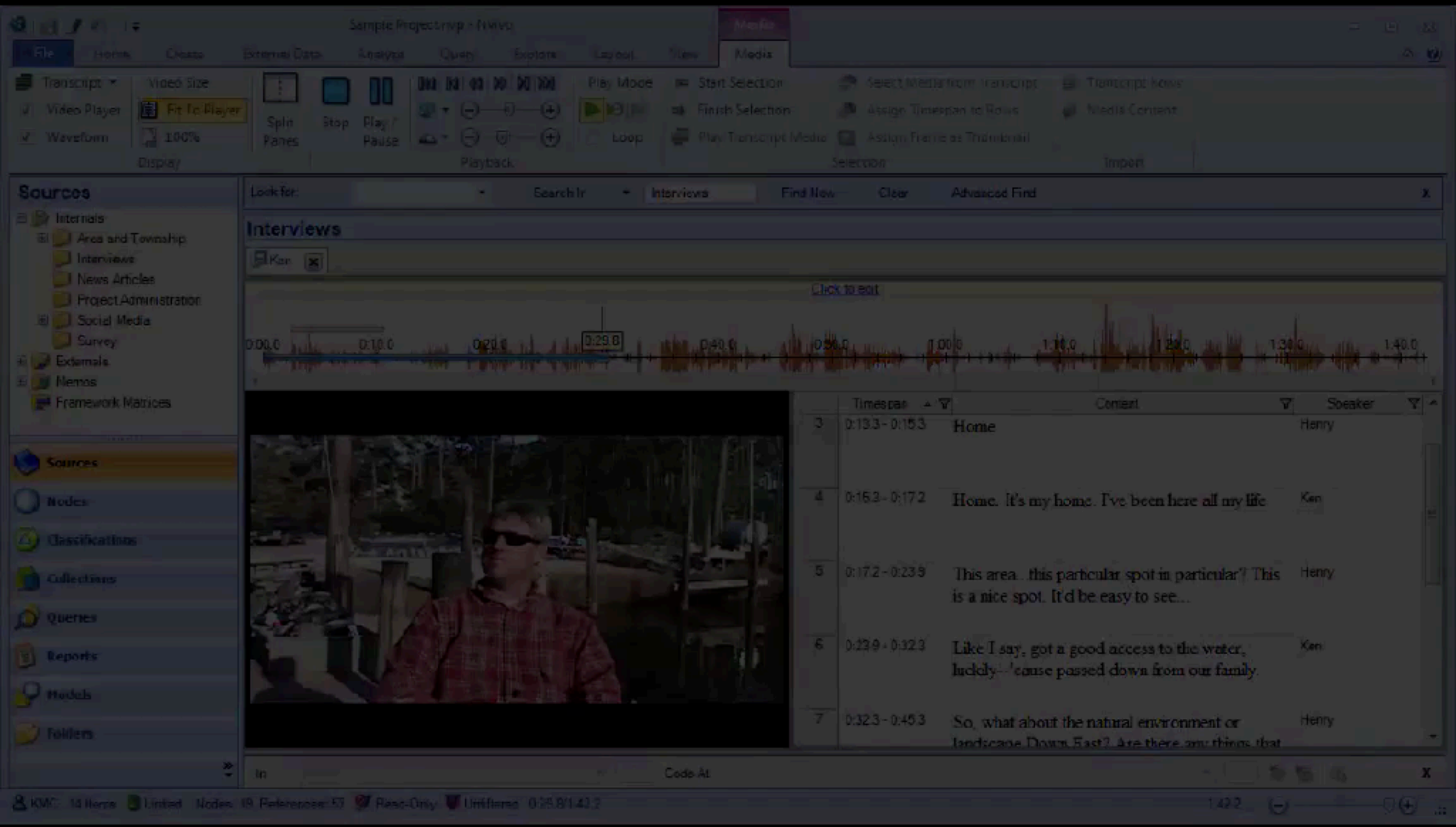
1:00.0
1:10.0
1:20.0
1:30.0
1:40.0
Timespan
Content
Speaker
3
0:13.3 - 0:15.3
Home
Henry
4
0:15.3 - 0:17.2
Home. It's my home. I've been here all my life
Ken
5
0:17.2 - 0:23.9
This area...this particular spot in particular? This is a nice spot. It'd be easy to see...
Henry
6
0:23.9 - 0:32.3
Like I say, got a good access to the water, luckily--'cause passed down from our family.
Ken
7
0:32.3 - 0:45.3
So, what about the natural environment or landscape Down East? Are there any things that
Henry
Sources
Nodes
Classifications
Collections
Queries
Reports
Models
Folders
In
Code At
KMC: 14 Items
Linked Nodes: 19 References: 57
Read-Only
Uniltems
0:29.8/1:42.2
1:42.2

NVivo


Sample Project.nvp - NVivo
Media
File
Home
Create
External Data
Analyze
Query
Explore
Layout
View
Media
Transcript
Video Player
Waveform
Video Size
Fit To Player
100%
Split Panes
Stop
Play / Pause
Display
Playback
Play Mode
Loop
Start Selection
Finish Selection
Play Transcript Media
Select Media from Transcript
Assign Timespan to Rows
Assign Frame as Thumbnail
Transcript Rows
Media Content
Import
Selection
Sources
Internals
Area and Township
Interviews
News Articles
Project Administration
Social Media
Survey
Externals
Memos
Framework Matrices
Look for:
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Interviews
Find Now
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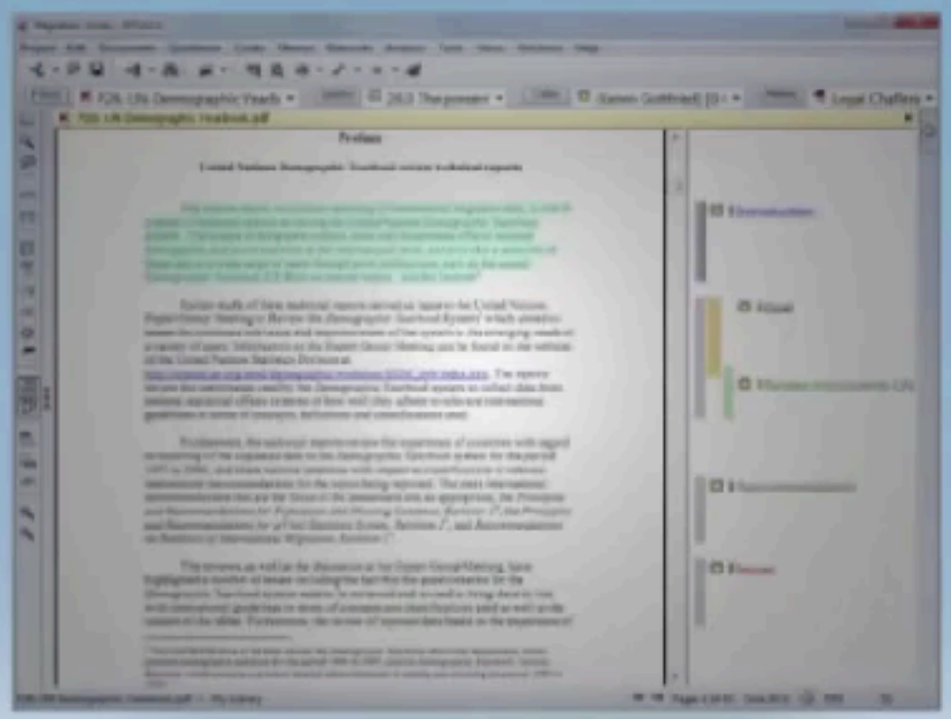
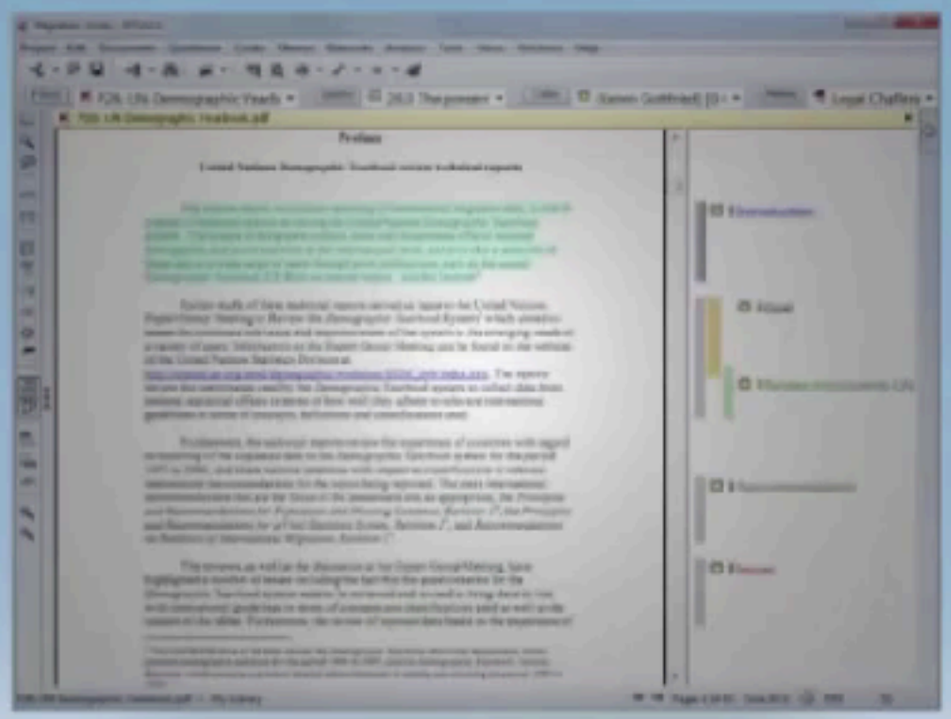
Atlas TI



Atlas TI



Quantitative Research

- Narrow research question
- Empirical investigation of quantitative properties and their relationships
  - Need to clearly identify variables for experiment
    - Different types of variables (see later slides)
- Data collected is numeric

Quantitative Research

- Data analysed with statistical methods
  - Correlations, regression, means, standard deviations, chi-square (χ^2) for categorical data etc.
- Looking for relationships between variables
  - Correlation and causation

Tools for quantitative research

- Excel
  - Dangerous: easy to make errors, scales poorly, limited number of techniques
- R
  - Excellent set of libraries connected to mediocre programming language
- Python
  - Good set of libraries connected to good programming language
- Julia
  - Promising approach, but still in rapid development

Repeatability in analysis

- Repeatability is just as important in analysis as it is in performing experiments
- Tools can help here
  - Minimum requirement: version control (e.g. Git, Subversion, Mercurial, Bazaar)
  - Strongly recommended: tool to manage experimental runs: e.g Sumarta, Vistrails
    - Logs what tools were run and from where output came from (version and parameters)

Mixture of Methods

- Possible study #1
  - Code transcripts from focus groups (qualitative)
  - Answers from a survey (quantitative)
    - Categorical variables e.g. age, education
    - Investigate relationship between categorical variables and codes from transcripts
      - Chi-square analysis

- Possible study #2
  - Q methodology – identify different viewpoints
  - Participants order statements - “Q-sort”
  - Results of Q-sort undergo factor analysis