Software Reviews: NVivo 11 for Windows, Mac and Teams

**NVivo 11 - Distinguishing features and functions**

This document is intended to be read in conjunction with the ‘Choosing a CAQDAS Package Working Paper’ which provides a more general commentary of common CAQDAS functionality. This document does not provide an exhaustive account of all the features and functions provided by NVivo 11 but is designed to highlight some of its distinguishing features. The Comment section at the end details our opinions on certain aspects of functionality and usability. See also Silver & Lewins (2014) Using Software in Qualitative Research: A Step-by-Step Guide, 2nd Edition, https://study.sagepub.com/using-software-in-qualitative-research and the QSR International website.

**Background**

http://www.qsrinternational.com/  
Tom Richards and Lyn Richards developed NUD*IST (the predecessor to NVivo) in the 1980s at La Trobe University, Melbourne, to support Lyn Richards’ research. QSR International now develops NVivo. There are several NVivo versions. The Windows version has three editions, Plus, Pro and Starter. NVivo Starter provides features for managing and analysing textual source materials, providing text and coding queries and some charts and diagrams to visualise data. NVivo Pro has all the functionality of NVivo Starter with an expanded set of features – enabling work with text, audio, video, images and spreadsheets. Integrate information from bibliographic and referencing software (e.g. Endnote, RefWorks). Use more powerful querying tools including matrix coding queries. Create project and concept maps to show associations in data. Use NCapture to capture social media content for analysis. If you work or study at an academic institution with an NVivo site license it is likely you will have access to NVivo Pro. NVivo Plus has all the functionality of NVivo Pro with an additional set of specialized tools for automated processing of large datasets - automatic identification of themes and sentiments, and automatic creation of social network visualizations from social media or other data. The Mac version contains most, but not all, of the same functionality as NVivo Pro. NVivo for Teams supports concurrent working for multiple users. This review focuses on NVivo Plus. For a detailed comparison of functions in different versions see http://www.qsrinternational.com/product

**Minimum System Specifications (recommended by developer)**

- **Windows version** 2.0 GHz dual-core processor or faster  ■ 4 GB RAM  ■ 1680 x 1050 screen resolution or higher  ■  Microsoft Windows 7 or later  ■  Approximately 8 GB of available hard-disk space  ■  Internet connection  ■  Internet Explorer 8 or later, Google Chrome 44 or later  ■  For NCapture: Internet Explorer 10 or later, or Google Chrome 44 or later  ■  For the NVivo Add-In for OneNote: Microsoft OneNote (2007 or 2010) and Microsoft Word (2007 or 2010)  ■  Mac version: Mac computer with an Intel Core i5, Core i7, or Xeon processor  ■  Mac OS X 10.9 (Mavericks) and above  ■  4 GB of RAM  ■  1440x900 screen resolution  ■  4 GB SSD of available disk space  ■  Internet connection  ■  Google Chrome 44 or later (required for NCapture)  ■  2.0 GHz Pentium 4-compatible processor or faster  ■  NVivo for Teams: 4 GB RAM  ■  25 GB of available hard-disk space  ■  Intel x86-compatible (32-bit) processors or Intel x64-compatible (64-bit) processors are supported. Itanium (64-bit) processors are NOT supported  ■  Internet connection  ■  Internet Explorer 7 (or later), or Firefox 40 (or later) is required to access NVivo Server Manager

**Figure 1. Different project items available in different Windows NVivo Editions**
Structure of work in NVivo 11

Data are imported into an NVivo project such that one project file contains everything, unless you are working with multi-media when it is recommended to keep large files ‘un-embedded’ to reduce project file size and increase processing speed, or when you are using the ‘Externals’ Sources feature that links to websites or files stored elsewhere on your computer. ■ The NVivo (Windows) interface is modelled on MS Outlook™ providing familiarity ■ NVivo handles Unicode data, therefore text in virtually any language including character based languages (e.g. Japanese, Mandarin) can be displayed ■ The user interface can be displayed in English, Chinese (Simplified Chinese), French, German, Japanese, Portuguese or Spanish ■ The main workspace comprises the Navigation View (providing access to project folders e.g. sources, nodes, maps, queries etc.); the List View (listing items within each folder); and the Detail View (where the content of an item is displayed) ■ Functions can also be accessed via main menu tabs ■ Various aspects of the user interface can be customized according to preference ■ Multi-level ‘undo’ function allows recent steps to be re-traced.

Figure 2. NVivo 11 for Windows, Plus Edition User Interface

Data types and format in NVivo 11

NVivo supports importation of various text, audio/video, graphic and spreadsheet formats. Editions vary according to exactly which file types are supported, e.g. Windows Starter edition can only import text formats. ■ See QSR website for full list of supported formats by edition. ■ Material can be directly imported from several other programs, including Survey Monkey, Facebook, Twitter, Endnote, RefWorks, MS Access. ■ NCapture is a browser add-on designed for NVivo to capture web-content for import.

Closeness to data and interactivity in NVivo 11

Sources are viewed in the Detail View ■ Tabs provide quick access to multiple opened sources, which can be ‘undocked’ for side-by-side display ■ Text does not line wrap ■ Viewing coded data initially lifts segments out of source context ■ Hyperlinks provide in-context highlighting of coded segments within original sources ■ Linking devices (see below) increase integration between project items.

Coding scheme in NVivo 11

Codes are stored as ‘Nodes’ and the ‘Node System’ can be as hierarchical or un-hierarchical as required ■ Four folders store different types of Node: Nodes, Cases, Relationships, Node Matrices. Sub-folders can be created to customise Node types. ■ Contents of folders are viewed in the corresponding List View ■ Nodes can be used for storing conceptual codes but can also be used for other purposes ■ Cases store information about entities such as people, places and organizations, to which known characteristics (e.g. demographic data) can be associated ■ Nodes can be moved within and between folders, merged, renamed, recoded, assigned colour ■ Relationships connect other project items and can act as Nodes themselves i.e. the ‘evidence’ for the relationship they express can be coded at them ■ Node Matrices are where the results of Matrix Queries (see below) can be stored ■ The All Nodes folder allows access to all Nodes, regardless of type ■
Sets, which operate as short-cuts, enable the grouping of Nodes (and/or other project items) from multiple folders in additional ways.

**Coding processes in NVivo 11** Various ways to code, e.g. ‘drag and drop’, paragraph coding, ‘In Vivo’ coding, auto-coding ■ The Quick Coding bar and the Ribbon can be used to create new nodes and to code at recently used nodes ■ Auto-code inherent structure within Sources, e.g. speaker sections in focus-group transcripts, broad topic areas in semi-structured interviews, responses to open-ended survey questions, etc. ■ The Plus edition includes options for automatically detecting and coding sentiment and themes using built-in algorithms.

**Basic retrieval of coded data in NVivo 11** Basic retrieval of coded data happens by opening a Node and viewing content in the Detail View ■ Detail Views are ‘live’, allowing re-coding without returning to original source ■ Side tabs offer alternative visualisations of Detail View content – options vary according to data type. ■ Coding stripes display coding visually, sequentially throughout a data file, or associated with data coded in a particular way. Colour assigned to Nodes can be shown in the Coding Stripes view ■ A ‘coding density bar’ shows how much coding exists and co-occurrence with other Nodes ■ ‘Highlight coding’ shows content coded at particular groups of codes.

**Data organisation in NVivo 11** Factual organization happens via the use of Classifications and Attribute-Values which can be associated with Sources or Cases ■ Where a Source pertains to an exclusive entity the use of Source Classifications is sufficient ■ For more complex research designs (for example where different speakers occur within a Source, such as with focus-group data, or where multiple sources relate to the same respondent, such as with longitudinal research, Node Classifications offer more flexibility) ■ Attributes and their values can be imported from a text file or spreadsheet and associated with Sources or Nodes ■ Search Folders (similar to Sets) can be used to gather data stored elsewhere in the project relating to a particular project sub-sets.

**Writing tools in NVivo 11** Writing can happen in several spaces. ■ Memos are a type of Source that can be created at any time or imported. Memos can be linked to one existing Source or Node and their content can be coded like any other Source. ■ Annotations are comments linked to particular segments within Sources. They can be outputted along with raw or coded data as endnotes and are centrally listed in Collections. ■ Framework Matrices were designed to support Framework Analysis but can be used for a range of other purposes, providing a way of summarizing source data in a tabular format of cases by themes ■ All project items have Description fields where the function of the item can be defined.

**Searching and interrogating the dataset in NVivo 11** Seven types of Query (Starter Edition only has Text Search, Word Frequency and Coding Queries). ■ Text Search (for individual or collections of words and phrases) ■ Word Frequency Query (for counting words across all sources, or subsets, providing limited Key Word In Context (KWIC) retrieval) ■ Coding Query (simple queries to find e.g. where cases with a particular attribute are coded at a particular node, or advanced queries allow searching for position of nodes in the data (e.g. Boolean or Proximity operators). ■ Matrix Coding (compares pairs of project items and displays in a table). ■ Compound Query (search for specified text in or near coded data). ■ Coding Comparison Query (to compare how different team members have coded sources, using Kappa coefficient to measure percentage agreement ■ Group Query to find associated project items ■ Queries can be scoped to individual or collections of Sources, Nodes, Folders, Sets ■ Query Results can be previewed, saved and outputted as snapshots ■ Queries can be saved and re-run.

**Linking devices in NVivo 11** Three types of Linking device ■ Memo Links: Link a Memo to one other entire data source (another Source or a Node) ■ See Also Links: Data segments (called references) within Sources can be linked to other segments within the same or another Source ■ Hyperlinks: Link data segments to externally held files or websites ■ Note - Annotations (see above) and Relationship Nodes (see above) are sometimes referred to or thought of as linking devices. In addition, Connectors are ways of linking project items within Maps (see below) but they operate differently because they only exist within particular Maps.

**Mapping in NVivo 11** Three types of Map. ■ Mind Maps are designed to brainstorm ideas and have a ‘central idea’ from which other ideas branch. Nodes can be created from the ideas created in Mind Maps. ■ Concept Maps are designed to express connections between concepts and data. Existing project items can be added to Concept Maps and linked using connectors ■ Project Maps display the items and links in an NVivo project
according to work done elsewhere in order to explore ■ Underlying data can be accessed from project items within Maps.

**Figure 3. Examples of some NVivo visualisations.**

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**Other visualisation tools in NVivo 11** Various additional ways to visualise connections, ideas and findings ■ **Charts** (e.g. column, bar, pie) show different aspects of a project, e.g. items associated to a Node, Source or other item. ■ **Tree maps** and **Sunburst maps** hierarchically visualise volume of coded data ■ **Cluster analysis** tools group data according to similarity using various visualisations, e.g. 2D and 3D Cluster Maps, Dendograms, and Circle Graphs. ■ **Comparison Diagrams** visualise the similarities and differences between two project items ■ **Explore Diagrams** show all the associations of an individual project item ■ **Word clouds** and **Word trees** respectively display frequently occurring and searched-for words in selected Sources or Nodes. Surrounding context can be accessed from Word Clouds and Word Trees and they can be outputted as graphics

**Output in NVivo 11** Project items e.g. sources or nodes can be printed or exported in several qualitative and quantitative formats (e.g. .rtf, .docx, .pdf, .xls, .html, xml) ■ **Predefined Reports** summarise elements of a project (e.g. project summary, Source summary, Node summary, Coding Reports) ■ **Extracts** allow specific content to be identified for outputting ■ Tables and graphic visualizations can be outputted in different formats.

**Team working in NVivo 11** Several features for working collaboratively if using the standalone installation ■ Different users split work and import projects into one another (a ‘merge’ process) ■ **The Event log** automatically records changes to a project, keeping track of team member’s actions ■ Contributions can be viewed even after separate projects are merged ■ See who originally created a project item, who last modified it and what content individual or several team members have coded ■ Coding stripes can be used to view and compare coding undertaken by different users ■ Queries can be run on work completed by team members (e.g. query all the coding undertaken by one team member) ■ ‘Coding comparison’ queries can show the percentage of coding agreement or disagreement amongst teams, or researchers can use a query to obtain a measurement for coding reliability called the ‘kappa coefficient’ ■ **NVivo for Teams** is an additional service installed on a server connected to a network where NVivo projects are saved ■ **NVivo for Teams** enables multiple users to access and work simultaneously on each centrally stored NVivo project and to see each other’s changes ■ **NVivo for Teams** allows working with more data sources and have larger audio/video sources embedded in projects ■ See QSR website for more information on NVivo for Teams.

**Comment on NVivo 11:**

**QSR’s goal of normalisation** is achieved to some extent with the use of the MS Outlook interface in the Windows editions - as long as you are familiar with MS Outlook you should find it easy to navigate around the software. However, this interface is somewhat restrictive as only one type of project item can be viewed at a time i.e. either sources, or codes, or sets, or queries etc. **This impacts on the sense of simultaneous contact you have**
across different aspects of your work. The Mac version is not yet fully equivalent to the Windows version which can cause issues for users who need to cross platforms.

The Codes stripes margin display is interactive and you can manipulate what you wish to see, although this display is less easy to read than in most other CAQDAS packages. The coding density stripe is unique to NVivo and analytically useful. Also unusual and useful is the flexibility to select your choice of codes to view in the margin, whether against sources or coded data. This offers simple ways of interrogating data in terms of co-occurring codes without using the more complex Query tool.

Sets are flexible in NVivo. The ability to add items of different types (e.g. nodes and sources and query results) to the same Set is unique amongst software reviewed here. This provides useful ways to isolate parts of a project, or to group aspects of work together for many different analytic or practical reasons. However, not all project items can be added to Sets (e.g. Maps) and this can be restrictive in analytic terms.

The query tool is extremely flexible and the range of query result visualisations is good. Matrix queries in particular offer flexible ways of conducting multiple searches at one time and accessing results qualitative and quantitative results concurrently. The ability to save the way queries are built and the way they are listed provides a useful history of repeatable interrogations. Dialogue boxes for creating queries are not very user friendly (particularly in Windows editions) but they need to be used to ask even quite simple questions of data and coding.

Linking tools are not as versatile in NVivo as in most other CAQDAS packages. While it is possible to hyperlink between points in the text, because of the way linkages are presented in the data for practical reasons it is difficult to use this tool extensively as it doesn’t allow you track linkages easily. The inability to link a memo to more than one other source or node is restrictive. Relationships however, provide alternative ways of coding and linking which suit certain types of analysis particularly well, for example, when hypothesis testing, for visually representing identified patterns or as an additional layer of coding.

Visualisation tools provide useful ways to summarize different aspects of work. Maps allow the creation of connections which need not affect any other aspect of work. The Chart tool is easy to use and versatile, offering a range of useful ways to visualise how data has been coded. A variety of charts and tables can be generated and they are interactively connected to data. The Matrix Query result is particularly versatile. Given the usual non-quantitative basis of sampling qualitative data, charts tend to reduce qualitative data to possibly questionable quantitative levels. On the positive side these tools can be seen as ways to step back and view (indications only) of trends across the data.

The new automated insights tools (sentiment and theme coding) offer alternative ways for those with large data sets or limited time to explore the content of data. However, the lack of ability to determine the basis upon which these tools function is restrictive and means significant amount of cleaning up is needed. Their value is therefore limited in comparison to similar tools in other CAQDAS packages.

Handling non-textual data directly is user-friendly with options to create indirect, parallel (possibly synchronized) notes alongside the media. Multimedia dimensions in NVivo currently provide a useful range of tools allowing the user to work directly (coding, annotating the media) or indirectly (coding/annotating notes about the media)

Output options are varied and content can be specified in several ways, but the Reports feature takes time to familiarise with and it can be difficult to achieve the desired result. Output can be generated in several formats, but is not always easy to manipulate once outside NVivo, for example in a word processor application.

### Further Reading