

Taxonomy Oversight Group (TOG) - Taxonomy Evaluation Document

RAG Status Explanation

- **Green** – on schedule for the milestone to be met.
- **Amber** – challenges exist, but they are realistically manageable, and the milestone should be met.
- **Red** – the milestone will not be met or are unlikely to be met
- **Blue** – Complete
- **Black** – not started

Named Taxonomy	O*NET	
Background	O*NET is a US-based system which measures, for each occupation, the importance of different skills and abilities. This is done through a combination of the input of job evaluation experts and surveys of job incumbents. The system measures job requirements in terms of 177 different elements, covering around 1,000 occupations. O*NET was first published in 1998 and is well established in research uses.	
Task Group	Skills	
	RAG	Go to Green action required
		RAG (date)
1. Definition A taxonomy is the process of naming and classifying items into groups within a larger system according to their similarities and differences. The	The O*NET (The Occupational Information Network) programme is the US's primary source of occupational information. The skill taxonomy within it categorises skill areas at the top most level as Basic Skills & Cross Functional Skills and further into 7 mid-level and finally comprehensively defines 46 lower level skill areas (e.g. Reading, decision making etc.). Now data collected for careers on these 46 different skill areas makes it possible to compare and evaluate skill requirements across the world of work.	

<p>resulting structure of terms which can be either flat or hierarchical in nature, is used to provide a conceptual framework for discussion, analysis or information retrieval.</p>	<p>Similarly, there are taxonomies existing for knowledge areas, tasks, work activities and several other important aspects of the world of work.</p> <p>The system measures job requirements covering around 1,000 occupations. O*Net aligns to the Standard Occupational Classification (SOC) system is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. O*Net aligns to the Standard Occupational Classification (SOC) system is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data.</p>	
<p>2. Purpose There must be clarity about the role of the taxonomy in a specific circumstance. What is the problem that the taxonomy is trying to resolve? A good taxonomy should be built with the end user in mind. It must be up-to- date, relevant and sufficiently detailed to be fit for purpose. If end users find that the taxonomy fails to meet their requirements, they may amend or substitute categories for their own purposes, thereby reducing the overall comparability and relevance of the taxonomy.</p>	<p>The O*NET Program is the nation's primary source of occupational information. Valid data is essential to understanding the rapidly changing nature of work and how it impacts the workforce and U.S. economy. From this information, applications are developed to facilitate the development and maintenance of a skilled workforce. It is regularly updated and easily accessible. It provides robust and meaningful descriptors of job requirements.</p> <p>The taxonomy is a well-established and reliable source of information which has taken over two decades to compile. It is widely used in the USA and elsewhere, including by the Organisation for Economic Co-Cooperation Development (OECD), academics, decision makers and society at large.</p> <p>It was not however developed for the UK market. UK and US job roles may differ, reflecting technology usage, commercial patterns, industrial profile, legislation, regulation and the economy. At a practical level, the O*NET-SOC occupational hierarchy does not map directly to UK SOC 2010, and some granularity is lost, with some occupations lacking a match or relying heavily on averaging. O*NET does not provide any link between skills and UK qualifications. Further work is also required (underway) to complete a crosswalk between O*net and the UK SOC 2020.</p>	
<p>3. Complexity The level of complexity must</p>	<p>The US taxonomy is the most heavily resourced and comprehensive worldwide. It would be unfeasible given the amount of investment required for the UK to develop</p>	

adequately reflect end user requirements with challenge given to any additional level of detail within the taxonomy that doesn't have a compelling purpose. An unnecessarily complex taxonomy has the potential to negatively impact adoption.

"Everything should be made as simple as possible, but no simpler." (Einstein)

from scratch a UK version with a comparable level of complexity. Crosswalks are therefore a necessity in order to reflect UK requirements.

There remains an issue around how O*net defines skills opposed to work activities.

4. Balance
Does the taxonomy have a sense of balance? If some high-level groupings have just two or three sub-categories whilst other have considerably more, this could reflect user need or may be a sign that the balance of the taxonomy requires further consideration. Exceptions to this may include e.g. Country, and other unambiguous long lists which can be presented alphabetically. Care must also be taken to ensure that there are no 'empty' categories within the taxonomy.

Every occupation requires a different mix of knowledge, skills, and abilities, and is performed using a variety of activities and tasks. These distinguishing characteristics of an occupation are described by the O*NET Content Model.

O*net allows you to select skills from six skill groups: Basic Skills (10), Complex problem-solving skills (1), Resource management skills (4), Social skills (6), System skills (3) and technical skills (11). O*net also attributes different knowledges and abilities to roles.

5. Ownership and Governance
There must be a clear owner of the taxonomy and governance policies in place for maintaining and updating the structure. It is the responsibility of the owner or custodian to maintain the classification in line with any agreed national or international process for revision, update and amendment. This responsibility includes maintaining any supporting materials associated with the taxonomy. Governance policies should define who does which tasks, procedures for performing tasks, and feedback mechanisms for suggesting changes and improvements.

National Center for O*NET Development is responsible for maintaining and updating the taxonomy.

Support is provided by the Human Resources Research Organisation (HumRRO) to update the occupations descriptions. Tasks, alternate titles, and exclusionary titles for SOC-level and detailed O*Net-SOC occupations.

The taxonomy is currently missing is a UK point of contact for anyone interested in learning more about O*Net and for disseminating relevant information to interested UK parties. It is proposed that going forward ONS could act as the UK coordinator.

6. Accessibility
The taxonomy and supporting materials must be hosted in an appropriate location with clear sign posting to direct users to its location. It should be available in accessible downloadable formats that are suitable for user needs.

All materials are hosted on O*Net website. Materials are provided in plain English and use appropriate language to user needs. Questionnaires are available in both English and Spanish.

My Next Move is an interactive tool for job seekers and students to learn more about their career options. My Next Move for Veterans is designed to help U.S. veterans learn about their civilian career options. Mi Próximo Paso is a Spanish-language tool for job seekers and students. To better reach their audiences, these sites use simplified language and content display designed to be easy to understand by a wide variety of readers.

<p>Materials should be provided in plain English and use language appropriate to user needs.</p>	<p>O*net also offer opportunities for users and stakeholder to connect via social media including Twitter, Facebook and YouTube.</p> <p>The Americanised language may lead to some consistency issues with UK occupations and descriptors which would need to be addressed should the taxonomy be adopted for UK purposes.</p> <p>Machine readable data: https://www.onetcenter.org/linkToOnet.html#machine</p>	
<p>7. Interoperability The taxonomy must, where possible, adopt/align to existing national and international standards. A new taxonomy should have the ability to map to existing sources enabling the accurate, effective, and consistent exchange of data between sources. Detail should also be provided where any instances of overlap with alternative taxonomies occur.</p>	<p>Most crucial is that the taxonomy has an occupational classification that aligns to ISCO and therefore has the underpinnings required on which to base a UK skills version. Additionally, there already exists a cross walk to UK SOC 2010, there is a need to ensure that this is replicated for SOC 2020.</p> <p>https://www.onetcenter.org/crosswalks.html</p> <p>Developers are encouraged to link to O*NET sites from within their own websites and applications. Link to Us at O*NET Resource Center (onetcenter.org)</p>	
<p>8. Supported The taxonomy should be supported by additional materials such as detailed scope notes. This will ensure that new terms that are synonyms for existing</p>	<p>Documents are publicly available outlining changes to the taxonomy and terms and detailing occupations that have been added or removed. O*net also provide a resource centre with online tutorials etc available to support users.</p>	

categories are correctly recorded and not otherwise added as new categories. A single term with a definition overlapping that of another term, or a misplaced hierarchy, can disrupt the whole taxonomy. Therefore, no new term should be added to a taxonomy without a formal approval or review process.

TOG may want to consider the development of more accessible supporting guidance which could be hosted on the public facing repository to aid those less familiar with the taxonomy and provide a broad overview of what materials are available.

A recognised benefit of O*net is the ability to feed in a set of skills and a relevant occupation be output, something not currently possible with the ESCO system.

9. Well defined terms
The terms within the taxonomy should strive to be unambiguous and mutually exclusive. The taxonomy must also provide a structured way of handling terms that do not fit into a prescribed category. This includes the provision of adequate space in which to attribute those entries classified as n.e.c. (not elsewhere classified) or n.o.s. (not otherwise specified). Failure to do so may result in an inability to assign data or an unmanageable 'miscellaneous' category containing dissimilar entries.

O*net aligns to the principle. In the main the occupation groups were felt to align very well e.g., a journalist in the UK is the same as a journalist in the US. O*net enables the look up of an occupation to immediately reveal a huge amount of information about that role and the skills involved. There remains some difficulty in determining the difference between a skill/knowledge/ability which O*net distinguishes between.

10. Revision and Maintenance

A successful taxonomy must have a regular revision and maintenance process in place. This must be undertaken in a timely manner to account for change. An ongoing commitment of resources will be required to ensure that it remains relevant and fit for purpose. All changes should go through a defined review process. There should be no ad-hoc or knee jerk reactions to user requests for changes to the taxonomy. Any and all changes must be clearly labelled and communicated to enable accurate cross reference.

The level of commitment and resource provided by the US to the maintenance and development of the taxonomy mean that it is the most comprehensive taxonomy available worldwide.

O*net has a strong and continuous revision and maintenance process in place. It is updated using input from industry experts and surveys completed by a broad range of workers in each occupation. The initial database was released in 1998 and was then converted into SOC-based in 2000. Main updates took place in 2006; 2009; 2010; 2018; and most recently 2019.

See doc for more info: https://www.onetcenter.org/dl_files/TaxonomyDev2019.pdf

11. Metadata

Metadata is a set of data that describes and gives information about other data. It is crucial that appropriate metadata is recorded about the taxonomy. Metadata provides a structured reference and can cover a wide range of topics. Typical examples would be: Title,

The SKOS Core Vocabulary is an application of the Resource Description Framework (RDF), that can be used to express a concept scheme as an RDF graph. Using RDF allows data to be linked to and/or merged with other data, enabling data sources to be distributed across the web, but will be meaningfully composed and integrated. <https://www.w3.org/TR/2005/WD-swbp-skos-core-spec-20051102/>

SKOS excels at defining and referencing URIs for named entities but describing and managing their relationships is sometimes more highly articulated in other schemas like owl.

Subject, Description, Coverage, Date, Creator, Format etc.

Metadata is provided by the O*NET database to provide users with information that will help evaluate the quality and use of the data. User determine which metadata items are used

<https://www.onetcenter.org/dictionary/20.1/excel/introduction.html>

Has detailed information on the data collection called occupation level metadata.

- O*NET-SOC Establishment Response Rate
- O*NET-SOC Employee Response Rate
- O*NET-SOC Eligible Expert Response Rate
- O*NET-SOC Case Completeness Rate
- Total Completes for O*NET-SOC
- Data Collection Mode
- How Long at Current Job
- Industry Division (major group codes (SIC within division in parentheses)
- North American Industry Classification System (NAICS) Sector

Metadata is provided at item level and occupation level.

For each domain elements, additional rating level statistics, such as standard error and data flags are in place providing a description of the quality of the data values.

Metadata is available here: <https://www.onetcenter.org/search?s=metadata>

*Assessment under review from the ONS metadata team

12. Methodology
The method by which a taxonomy was derived must be freely available to users. Open code used to inform the taxonomy should be made available where possible as should details of individuals that contributed via committee to the taxonomy development.

The O*NET database was initially populated by a group of occupation analysts and is now regularly updated with data collected from job incumbents or occupation experts.

O*net is provided open source and is available to download free of charge. Detailed information relating to the methodology used is freely available at

<https://www.onetcenter.org/search?s=methodology>

<p>13. Engagement Strategy here must be a clear strategy in place to provide users with adequate opportunity to contribute to the revision cycle and communicate any changes in the taxonomy. All users should be made aware of the review or revision process and encouraged to participate in any stakeholder engagement. Updates must be provided regularly and should include details of any 'New Terms', 'Deleted Terms', 'Merged Terms', and 'Split Terms'. Any changes to the structure, content or methodology of the taxonomy should be communicated as early as possible to allow users sufficient time to prepare for implementation.</p>	<p>O*NET maintains a mailing list for product releases, database changes and updates, and other important O*NET project developments. Those interested can also stay informed with their Facebook page external site, Twitter feed external site, or RSS feed.</p>	
<p>14. Future Proof Over time new content will appear which will need to be assimilated into the taxonomy. A successful taxonomy must have the scope to incorporate new or emerging elements.</p>	<p>O*net meets criteria of principle, however, with an ongoing revision process in place in the US, sufficient resources would be needed to be identified continue to update the taxonomy if it were to be adopted to UK needs.</p> <p>The significant investment provided by the US suggests that this would be a logical taxonomy to adopt.</p>	

Without sufficient forward planning in place the original, well-structured taxonomy may quickly become outdated. Careful consideration of each of the principles outlined, alongside expert, topic-specific knowledge will help to ensure the long-term effectiveness of the taxonomy.

One point of note is that 'technology' is currently found as a subset within O*net and is not currently classed with the skills. There may be benefit to a UK system in being able to incorporate this to show the specific tech skills that may be required for a specific role.

Final decision and recommendations:

TOG agreed to endorse ONET at its meeting on 16th March 2022

Date:

21st March 2022