|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No. of principle** | **Principle** | **Statement** | **Rationale** | **Implications** | **Quality dimension[[1]](#footnote-1)** |
|  | **Change control** | COOS has change control i.e. the design principles of COOS apply to national adaptation of COOS and to the revisions of the model. | The only way to provide a consistent and measurable level of quality information to users is if the whole organisation abides by the same principles. Therefore, it is recommended that local adaptations of COOS apply the design principles.  The design principles also need to be adapted to future revisions of COOS in order to ensure consistency and comparability between different versions. | * COOS adaptation/revision initiatives will not begin until they are examined for compliance with the design principles. A conflict with a principle will be resolved by changing the framework of the initiative. * Mechanisms are needed to monitor the implementation of COOS and adapt it where necessary to meet business needs. | - |
|  | **Use of agreed standards** | COOS is built upon foundations set by other standards, makes use of already available standards and helps the user to link them. | COOS provides formal presentation of all standards covering the statistical business process, information objects and the generic activities of statistical organisations.  COOS is linked to general vocabularies, data models and existing ontologies, such as DCAT, PROV, SKOS.  By COOS providing the high-level formal presentation of the concepts used in these models, it is ultimately connecting them. | * COOS is a powerful means of representing the connections between the ModernStats standards and ontology industry models, forming a bridge between the core standards for official statistics and relevant standards outside the domain. * Connecting the ModernStats models this way will help the community to highlight areas of further improvement in each model in order to support interoperability: to make them work together better. * Defining relations between statistical concepts and objects defined in other ontologies or vocabularies is one of the main objectives of ontologies. | 9 |
| 2. | **Stakeholder appeal** | COOS will help stakeholders to understand various standards and their connections. | COOS can help stakeholders to easily understand the importance of different standards and their connections in order to realise what benefits can be expected from their use. | * COOS basically means having an integrated view in place on the ModernStats models, the ontology standards and their connections. This is important for their further development and more active stakeholder involvement. COOS will therefore be a powerful way to explain to stakeholders on high level how the different standards, models are connected. * The intuitive appeal of the model should be tested with all targeted stakeholder groups. The value increases proportionally with the number of stakeholders who adopt the model. | 3 |
| 3. | **Driver for modernisation and future revisions** | COOS is a powerful in defining future modernisation and initiating revisions of the involved standards. | COOS provides ideas for the whole organisation for future modernisation activities.  With COOS connecting several models, standards, it will also be used as a guidance on how to improve each model and strengthen the interconnection between them to have better integrated models in the future. | * COOS will help the community to identify further modernisation activities to better integrate standards used in the domain of official statistics and existing ontology standards. * Whenever ModernStats standards are to be revised or further developed, COOS will be used as one of the inputs to identify areas and priorities for their revisions. * In a longer run, the use of COOS will also help to synchronize revision practices for each involved standard. * Whenever ModernStats models are developed or further developed, COOS implications will have to be taken on board for discussions. | - |
| 4. | **Reuse of existing terms and definitions** | COOS needs to optimally reuse the existing terms and definitions used by the involved models, standards. | As COOS is integrating information available in models, standards, in case of missing terms or contradictions between similar terms used in different models, using new definitions should be avoided.  The discrepancies should be communicated as a feedback to the concerned model, standard to solve the issue during an upcoming revision. | * COOS will not contain new terms and definitions that are not already used by ModernStats standards or ontology standards that are involved in the work. * Needs to harmonise existing terminology or to use new ones will be indicated to the owners of the concerned models. | 9 |
| 5. | **Simple presentation** | COOS objects and their relationships are presented as simply as possible.  COOS is aimed to provide a generic solution to users and not specific elements for different statistical domains. | Even though the use of ontology standards will ensure that the information described by COOS is understandable, it needs to be presented as simply as possible, avoiding notations and presentation styles that are known only to experts. | * COOS will not be widely adopted if it cannot be easily understood by different stakeholders. * Presentations using specific formats can be too technical for most stakeholders, therefore a non-technical presentation is needed for the wide audience. * For specific purposes, precise presentation in OWL format should also be provided. | 3, 7 |
| 6. | **Agreed level of detail** | COOS represents objects only down to the level of agreement between key stakeholders. | COOS will not represent information on the deep level of the standards but on high-level to highlight the benefits of using different models together.  Too detailed level means the presentation will not be easy for several stakeholders while too high-level imposes the risk of not realising the benefit of each standard. | * COOS must adhere to an appropriate, agreed level of detail in order to remain generic. * Stakeholders must agree on what the appropriate level of detail for COOS is. | - |
| 7. | **Adaptability and extensibility** | COOS can be easily adapted and extended to meet new/changed user needs. | COOS will need to be robust and stable to be adopted by statistical organizations, but will need ongoing review and adaptation to remain relevant to user needs. | * During the design of ontology, the organisation should identify how and in what context it will adapt it to its own use. Different national environments might define different requirements for this purpose. * Mechanisms for ongoing review and update will need to be established. * Users will need incentives to test initial versions of COOS so that it can be adapted to meet a variety of needs. | - |
| 8. | **Platform independence** | COOS does not refer to any specific IT setting or tool. | Statistical organizations use a wide range of in-house and proprietary hardware and software platforms; this environment also changes over time. COOS must be platform independent to be relevant to all stakeholders and robust over time.  COOS will provide the ontology based on ModernStats standards and common ontology models. The interpretation, presentation is not IT-specific, the formats used for the ontology does not limit its use in specific IT settings. | * COOS needs to be designed to be a generic connecting model, using a standard language. * COOS will be available as OWL format to further facilitate machine interpretability of content but it will not limit the use of ontology on different platforms. | - |
| 9. | **Formal specification** | COOS provides formal naming, definitions and descriptions of the concepts of a given domain, and the relations between these concepts. | COOS will provide a set of standardized, consistently described objects to help readers understand significant relationships among the objects in the standards involved in the ontology. | * In the field of official statistics, a number of models, vocabularies or other semantic assets already exist, but they are not often formally expressed or coherent with one another. The ontology can help an organisation in this. * Method used to specify COOS should be transparent to those not involved in the development of COOS. | 7 |
| 10. | **Reusability** | COOS is meant for repeated use and not only for a one-time investment. | Development of COOS requires stocktaking of standards to be involved in the work according to the user needs.  Once it is developed, it needs to be put in use in order to realise its benefits in harmonisation and modernisation goals. The developed solution can be used and reused by the organisation. | * COOS should be designed and developed with the motivation to be used in practice. Only with its repeated use can most of its benefits be realised by the organisation. * COOS should be designed in the way that the needs for its reuse are collected and analysed to ensure smooth transition from development to implementation phase. | - |
| 11. | **Being is up-to-date** | COOS is a solution that provides relevant information on the standards and their relationships to the users. | The ontology in itself is an up-to-date solution but it also means that the information described by the ontology is relevant to the users and outdated information are removed, new information is added. | * Representing outdated information or using not up-to-date ontology standards by the COOS means loss of interest by stakeholders. * Attention should be given to its maintenance and future revisions during the development of COOS in order to ensure its relevance. | - |

1. According to the UN Fundamental Principles of Official Statistics: <https://unstats.un.org/unsd/dnss/gp/fundprinciples.aspx> [↑](#footnote-ref-1)