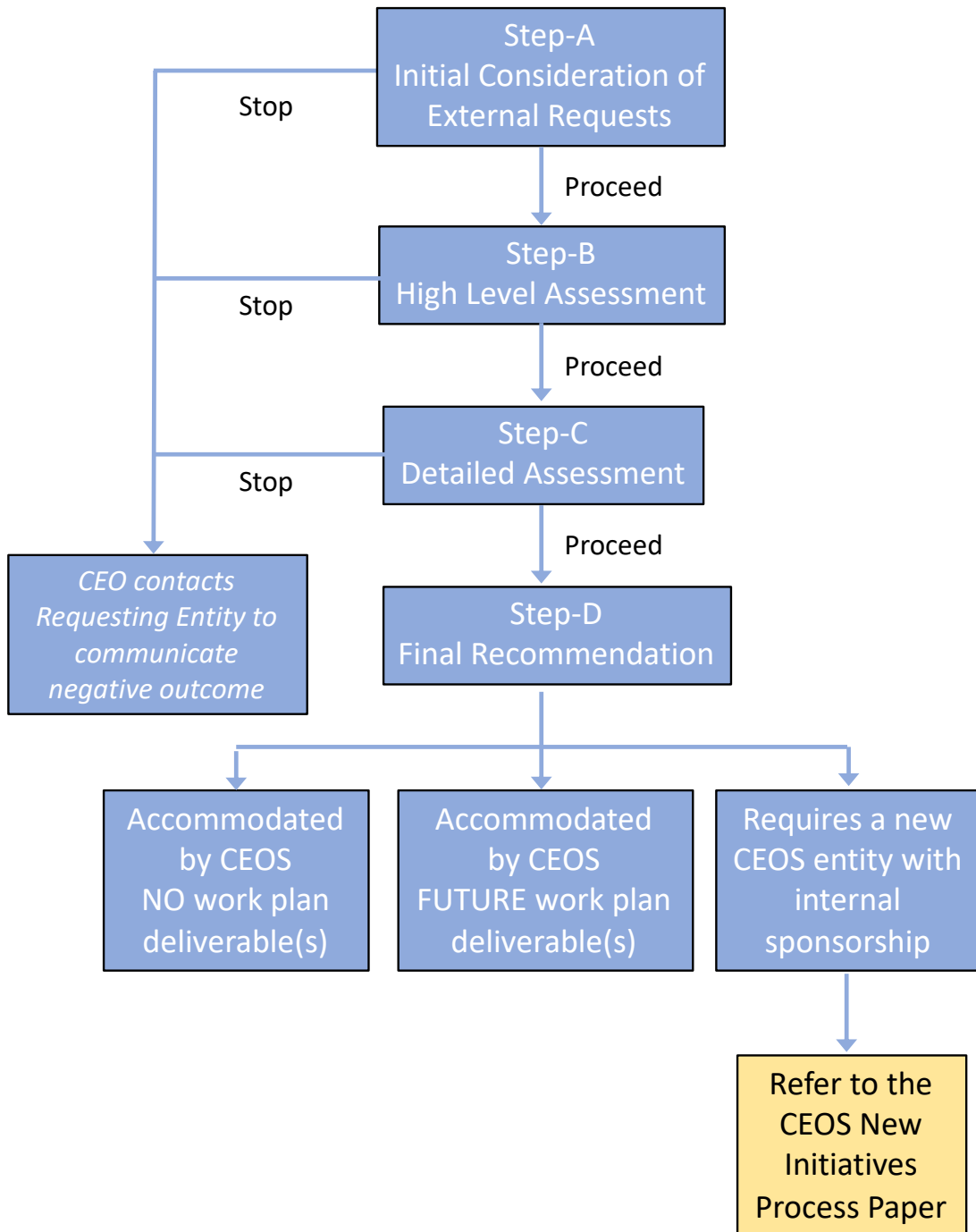# CEOS EXTERNAL REQUEST PROCESS PAPER

1   INTRODUCTION

Maintaining a balance between existing multi-year endeavors and deliverables while considering the addition of new work is essential to the sustainability, relevance, and success of the Committee on Earth Observation Satellites (CEOS) organization. CEOS must carefully evaluate external requests and their ramifications, such as new CEOS Work Plan deliverables or outcomes that may require new CEOS entities. In all cases, CEOS must examine external requests in relation to the organization's ability to meet existing commitments and its capacity to accept new commitments, as expressed in the *CEOS Strategic Guidance* governing document.

The *CEOS New Initiatives Process Paper* (endorsed by CEOS in March 2014) describes the process through which CEOS develops, reviews, and approves a new initiative that originates within the organization. This *External Request Process Paper* addresses requests that originate outside of the CEOS organization and do not currently have CEOS sponsorship. This process paper presents the systematic review and decision-making approach CEOS will use in addressing external requests. More specifically, its purpose is to provide guidance on three elements: 1) how the CEOS organization will consider, review, and channel requests from external sources to the appropriate entities in CEOS; 2) the process by which CEOS will make its assessment and offer feedback to the source(s) of the external request; 3) the outcome and recommendations of the CEOS assessment.

The Group on Earth Observations and data user communities worldwide are making an increasing number of requests of the CEOS organization for data and information products to address their specific project needs. CEOS must prioritize and clearly delineate when, where, and how it will address these requests effectively. The growing awareness and utilization of Earth observation data, products, and tools present important challenges and opportunities for the CEOS organization, which must also work to broaden the number of CEOS Agencies that actively contribute to its mission and objectives.

2 DECISION TREE

The following decision tree summarizes the process for (a) Consideration of external requests, (b) High-level assessment of external requests, (c) Detailed assessment of external requests, and (d) Final recommendations. A more detailed description of each step is found in the following sections.

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                    ┌──────────────────────────┐
                    │        Step-A            │
         Stop       │ Initial Consideration of │
    ┌───────────────│   External Requests      │
    │               └──────────────────────────┘
    │                           │ Proceed
    │                           ▼
    │               ┌──────────────────────────┐
    │    Stop       │        Step-B            │
    ├───────────────│  High Level Assessment   │
    │               └──────────────────────────┘
    │                           │ Proceed
    │                           ▼
    │               ┌──────────────────────────┐
    │    Stop       │        Step-C            │
    ├───────────────│   Detailed Assessment    │
    │               └──────────────────────────┘
    │                           │ Proceed
    ▼                           ▼
┌──────────────┐    ┌──────────────────────────┐
│ CEO contacts │    │        Step-D            │
│ Requesting   │    │  Final Recommendation    │
│ Entity to    │    └──────────────────────────┘
│ communicate  │
│ negative     │
│ outcome      │
└──────────────┘
```

Step-D branches to:

- Accommodated by CEOS NO work plan deliverable(s)
- Accommodated by CEOS FUTURE work plan deliverable(s)
- Requires a new CEOS entity with internal sponsorship → Refer to the CEOS New Initiatives Process Paper

3 INITIAL CONSIDERATION OF EXTERNAL REQUESTS (STEP-A)

New external requests will be managed by the CEOS Executive Officer (CEO). Discussions with the CEOS Chair and/or the SIT Chair may be needed to determine whether such requests are acceptable for further consideration and a high-level assessment (Step-B). The CEO shall manage all communications with the external requesting entity including schedules and decision outcomes (positive or negative), and maintain a log of external requests. Following review by the CEO, CEOS Chair and SIT Chair, a decision shall be made to proceed to Step-B (high-level assessment).

The following requirements shall be considered during this initial consideration step:

- Does the request originate from a relevant external entity?
- Is the request sufficiently clear on its objectives and needs?
- Does the request align with the CEOS strategic goals and objectives as defined in the CEOS governing documents?
- Is the request appropriate for CEOS, rather than for another existing coordination group or private sector organization/association?
- Do the CEO, CEOS Chair and SIT Chair believe this request should continue to the high-level assessment step?

If the answer to all of the questions above is "yes", then the CEO will recommend continuation to Step-B in order to conduct a "High-Level Assessment". In addition, the CEO will contact the external requesting entity to communicate the outcome of Step-A. The expected duration of Step-A is less than one month from the time of the receipt of the external request.

4 HIGH-LEVEL ASSESSMENT OF EXTERNAL REQUESTS (STEP-B)

The high-level assessment of external requests will be managed by the SIT Chair, supported by technical advice of the CEOS Systems Engineering Office (SEO) and guidance and support of the CEO. These requests shall be shared with the CEOS Secretariat (at a minimum) and all CEOS Agency Principals (if desired) to gain feedback and to participate in the high-level assessment. The following requirements shall be considered during this high-level assessment step:

- Is there sufficient clarity in the request to perform a high-level assessment and, in particular, does it contain well-formulated requests to CEOS Agencies?
- Does the request relate to the Group on Earth Observations (GEO) Work Programme or a global policy framework (e.g., UN-SDG, UNFCCC, SBSTA, GCOS, Sendai Framework)?
- Is there a benefit to internal and/or external stakeholders? This value should be societal benefit, but may also be monetary.
- Is Earth observation data relevant to the needs of this request?
- Assess the feasibility of a potential contribution from CEOS Agencies. Are the type of observations, resolution and frequency of observations compatible with the Earth observation data resources of CEOS Agencies?

Following a decision to proceed to the detailed assessment phase (Step-C), the CEO shall manage all communications with the external requesting entity, including schedules and decision outcomes (positive or negative). In addition, the SIT Chair shall report on the outcomes of this assessment at

a CEOS Secretariat meeting and at a CEOS SIT or Plenary meeting. The expected duration of Step-B is one to two months due to the need to engage the CEOS Secretariat and CEOS Agency Principals.

If CEOS decides to continue to Step-C (detailed assessment), the following requirements shall be met before proceeding:

- CEOS shall identify the Members, Associates, and CEOS entities (e.g., SEO, WG, VC, AHT) as well as potential external experts that will be involved in the detailed assessment process (Step-C). This detailed assessment process may require significant resources and time to adequately assess the details of the request and the related Earth observation resources.

5   DETAILED ASSESSMENT OF EXTERNAL REQUESTS (STEP-C)

The detailed assessment of external requests will be managed by the SIT Chair, supported by technical advice of the SEO and guidance and support of the CEO. This assessment shall be supported by identified CEOS Members, Associates and CEOS entities as defined at the conclusion of Step-B.

Many of the external requests made to CEOS will involve data preparation and delivery, as well as expert technical support to enhance the use of that data for end users. This data preparation and support may require significant funding, personnel, and time. In order to consider whether or not to make such an investment, CEOS Agencies need to clarify the associated requirements and intended outputs through dialogue before any potential decision to support. Therefore, it is critical that CEOS engage with the appropriate users in the **value chain** to maximize the potential use and impact of the satellite data (see Appendix A). This engagement should occur through existing CEOS entities or may require a new ad hoc CEOS team.

The following criteria shall be considered during this detailed assessment step:

- Which specific Agencies and CEOS entities would be involved in addressing this request?
- Is the proposed activity well-aligned with existing activities of CEOS (e.g., Virtual Constellations, Working Groups, or other initiatives)? If so, identify those activities and entities.
- What data/information products would CEOS generate in support of this initiative/task and when would those products be needed?
- Assess the detailed feasibility and affordability of the external request and its intended outcomes. CEOS Agencies must possess the necessary personnel and fiscal resources to support a new initiative so it can fulfill its intended outcomes.
- Are there additional CEOS Agency policy considerations that would encourage or discourage their involvement (e.g., overarching data policies or prevailing public/private partnerships)?
- Assess CEOS current priorities and commitments. Taking into consideration existing priorities and commitments, can CEOS Agencies and entities support the intended outcomes of this external request?

> This assessment should also address the relevant value chain for indicated need, both with regards to clarity on the process and the identified stakeholders for each phase of the value chain. A proposed overview of a questionnaire to assess these aspects of the value chain are included in Appendix B

In order to assess the preparedness of the user community to engage with CEOS and to improve the effectiveness of CEOS to respond to new user community requests, a set of questions should be addressed by CEOS in the detailed assessment process (Appendix A). .

At the conclusion of the detailed assessment phase, a report shall be presented by the SIT Chair, first to the CEOS Secretariat and second, to the CEOS community at a CEOS principal-level meeting (i.e., a CEOS Plenary or CEOS SIT meeting). In consultation with the CEOS Secretariat, the CEOS executive officer shall manage all communications with the external requesting entity, including decision outcomes (positive or negative) from the assessment. The expected duration of Step-C is less than 6 months, as the outcomes of the detailed assessment shall be presented at a major semi-annual CEOS meeting for Agency review.

6   FINAL RECOMMENDATION (STEP-D)

External requests that reach this final recommendation phase have been carefully reviewed within the CEOS organization and have received positive results. At this stage, CEOS must consider how the external request will be accommodated within the existing CEOS framework. The following list of recommendations will be considered:

a) The external request will be accommodated by one or more CEOS Agencies or CEOS groups (may involve a non-CEOS partner) but WILL NOT require new tasks in the CEOS Work Plan. It is expected that the work associated with the external request will be completed by CEOS in less than one year.

b) The external request will be accommodated by one or more CEOS Agencies or CEOS groups (may involve a non-CEOS partner) and WILL require one or more new tasks in the CEOS Work Plan. It is expected that the work associated with the external request will be completed by CEOS in more than one year.

c) The external request will require a new CEOS entity (e.g., Ad Hoc Team, Virtual Constellation, Working Group) and sponsorship by an existing CEOS entity or Agency. All future activities related to the external request shall use the guidance defined in the *CEOS New Initiatives Process Paper*.

APPENDIX A: USER COMMUNITY CHECKLIST

Data user communities that are making specific external requests of CEOS have varying degrees of maturity and/or preparedness. CEOS should have a means of assessing this at an early stage of engagement with a new user community. It is worth noting that all external requests, whether they originate from an emerging partner or a mature partner, have implications for the type, quantity, and duration of resources that CEOS Agencies would be asked to make available. Therefore, these indicators should be ascertained at an early stage. It should also be noted that CEOS Agencies make decisions affecting their personnel and resources according to their respective cycles and programmatic priorities, and these may or may not be compatible with the timing and support needed for some external requests to CEOS.

In order to assess the preparedness of the user community to engage with CEOS and Earth Observation data and products, and to improve the effectiveness of CEOS to respond to new external requests from user communities, the following questions should be considered in the detailed assessment process:

- Is the User Community (UC) making the request of CEOS already making active use of EO data?
- Has the UC expressed needs or is it able to express quantitative requirement for the spatial and temporal resolution of data products?
- Does the UC have specific requirements for the latency of the data products that are received, and is it capable of estimating what impact different latency of delivery will have on its application?
- Does the UC have specific quantitative requirements on the accuracy of delivered data and products, and is it able to make use of uncertainty information, in its application, if this is provided?
- Does the UC have a complete overview of the value chain of which it is at one end, and CEOS is at the other? Does it have existing working relations with necessary intermediaries (e.g., modeling community, application developers in its field)?
- Does the UC have the necessary access to complementary data from other sources (in-situ, socio-economic, etc.) and understand how it would integrate this with a EO data in addressing its application?
- What are the Information technology skills within the specific UC; is it comfortable in dealing with large raster datasets?
- Does the UC have an understanding if its needs for information systems, portal, tools, interfaces to make best use of the data? Is it able to sustain this infrastructure on its own in the long-term?
- Does the UC understand the broader needs of its constituents for Capacity Building and training? Is it able to sustain that training own its own in the future?
- Is the UC capable in assessing the outcome of the support received from CEOS through demonstrable long-term impact on its application or policy area?

APPENDIX B: VALUE CHAIN CHECKLIST

The figure below attempts to position the various CEOS entities on the "Data Value Chain" from data acquisition to data use. The intention is to make visible the fact that the different CEOS entities do not necessarily have the same function, but can be clustered into three broad groups (red, blue and green) which address different parts of the Data Value Chain.

− The CEOS entities in red are focused on coordination of the sensors and satellites and preparation of the primary data products, primarily the Virtual Constellations (VCs).
− The CEOS entities in blue provide agency "core-business" functions that ensure data acquired from similar satellites operated by different agencies are intercomparable (Working Group on Calibration and Validation, WGCV) and discoverable (Working Group on Information Systems and Services, WGISS). Capacity building (Working Group on Capacity Building and Data Democracy, WGCapD) is also included in this category.
− Further downstream, the CEOS entities in green, including Working Groups (WGs) and Ad-Hoc teams (AHTs), are focused on interaction with the user community. However, it must be noted that some of the VCs act all along the value chain (e.g., Sea Surface Temperature, SST-VC). It is believed the connections to various parts of the chain come through these VCs, WGs and AHTs. Communication between these entities will support feedback across the value chain to improve how CEOS provides data and maximizes its impact.
− In addition, there is a "feedback loop" between all of the value chain components (in yellow) that allows for adjustment for any single element. For example, changes in the end user goals may require changes in CEOS data collection and processing, or changes in technologies may change how user communities connect to data or how CEOS collects and processes the data.
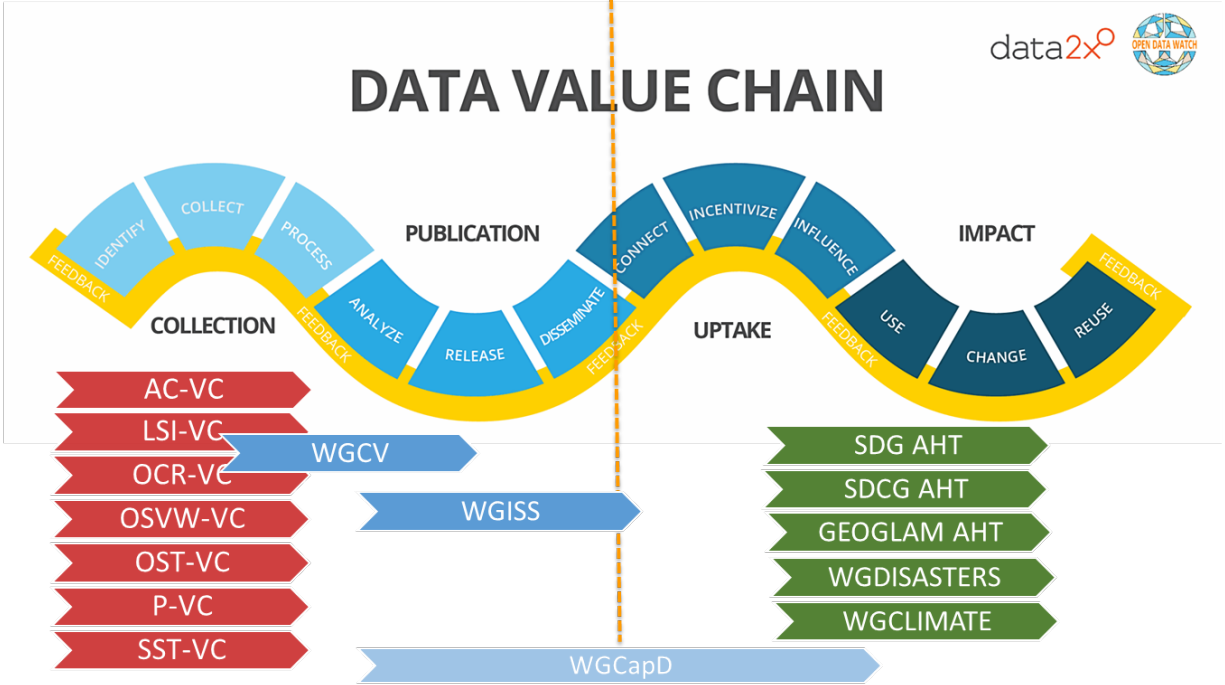
To date, several existing CEOS entities (e.g., Joint CEOS-CGMS Working Group on Climate; Working Group on Disasters) and recently transitioned CEOS entities (e.g., Ad Hoc Space Data Coordination Group for GFOI; Ad Hoc Group for GEOGLAM) have been successful in working with external stakeholders, assessing requirements for satellite datasets, tools and services and making connections to intermediate or end users to validate that these CEOS outputs address the needs of both ends of the value chain ... global policy and users. CEOS has been most effective in addressing needs of the end-to-end value chain when it has established positive working relationships with intermediate/expert user communities of the primary satellite products who can further translate these into tailored products and services for the end user communities.

Virtual Constellations &
"Core business" Working Groups

"Thematic" Working Groups &
Ad-hoc teams

Observations/measurements

Actionable Information

DATA VALUE CHAIN

data2x   OPEN DATA WATCH

COLLECT

IDENTIFY

PROCESS

PUBLICATION

CONNECT

INCENTIVIZE

INFLUENCE

IMPACT

FEEDBACK

ANALYZE

FEEDBACK

DISSEMINATE

FEEDBACK

USE

FEEDBACK

REUSE

COLLECTION

RELEASE

UPTAKE

CHANGE

AC-VC

LSI-VC

WGCV

SDG AHT

OCR-VC

SDCG AHT

OSVW-VC

WGISS

GEOGLAM AHT

OST-VC

WGDISASTERS

P-VC

WGCLIMATE

SST-VC

WGCapD

The same value chain approach could be applied on a case-by-case basis to new external requests as they occur. It would allow CEOS to assess the end-to-end maturity of the specific need/request and identify where the request falls on the value chain. In order to assess this, an initial questionnaire is proposed as the basis for this evaluation.

Questions:

1. What do you understand by a value chain for Earth Observation?
2. Where would you position yourself on the value chain based on the Schematic shown above?
3. Do you have a clear understanding of the other key actors at various stage of the value chain in which you are involved?
4. Starting from the right-hand side of the schematic can you describe briefly the type of actionable information which is expected at end of the value chain?
5. Can you identify the user(s) that make use of this information?
6. Focusing on the application development pillar of the value chain, can you indicate what indicators and application are produced and which models and/or data integration mechanisms are involved?
7. On this application pillar are you aware which institutions, if any, have the specific role of providing the sustained transformation/service to deliver the needed "application"?
8. Referring to the second pillar on data production, do you have a clear view of the products generated and their requirements?. Do you believe that these are fit-for-purpose and responsive to the needs of the downstream aspects of the value chain?
9. Do you have a clear understanding of the institutions who have responsibility for the sustained production of the needed products?
10. Addressing the first Pillar, on sensing i.e. the observations themselves, do you have clear understanding on the types of observations required, their source and long-term sustainability?.
11. Do you have clear understanding on the key organisation(s) providing these observations and making them readily available? Do these entities provide guarantees/assurances on the availability of the observation into the future so that the value chain can be sustained?
12. What added-value do you see in the coordination capability provided by CEOS in enabling the effective implementation of the value chain? Do you have additional means to ensure that the actors/stakeholders at all stages of the value chain are able to interact with each other?

Schematic Template:
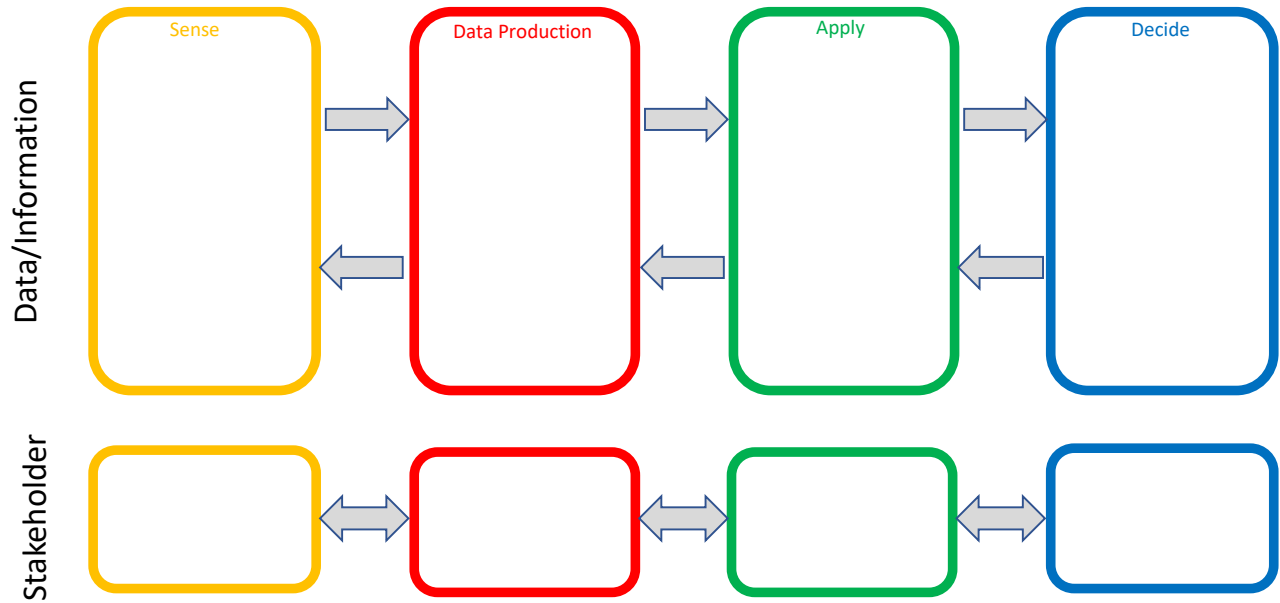
External requesters should fill in the value chain template (above) indicating keywords for the main elements. Please also indicate in the boxes underneath each pillar the key stakeholder involved at each step of the value chain]. The CEOS organization will work with requestors to complete this template and address the questions in this Appendix.