Discussion
Comparative study of international healthcare terminology centers

Healthcare Terminology Management Center (HTMC)

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1. KEY FINDINGS

The analysis of the existing documentation about 5 countries that have implemented a central management of reference semantical resources and the conduction of four phone interviews enabled the project team to highlight several key organization patterns and services offer shared by the integrality of those international centers. These directions have helped building the French CGTS' core components.

For every analyzed item, the case of every country is evaluated to underline international good practices. Operational conclusions for the CGTS conclude each section.

1.1. Organization and governance

The study identifies distinct organizations managing references semantical resources. A shared model appears to be a team of at least 5 FTW within a public organization in charge of publishing terminologies aiming for more national interoperability.

1.1.1. Centers' position within the Healthcare Institutional Ecosystem

The five studied countries have a specialized terminologies unit within a public institution:

- Germany: Medical Vocabulary Office (M3) /DIMDI ; another team is in charge of drugs and medical devices' IT systems ;
- Netherlands : Terminologiecentrum / Nictiz ;
- Portugal : Centro de Terminologias Clinicas (CTC) ;
- Norway: A Terminologies Service is being created within the Direktoratet for e-Helse ;
- Canada : Interoperability standards Unit / INFOROUTE.

The studied teams are funded by the public sector. Two specific models can be identified:

- An independent center led by the Minister of Health: Netherlands, Canada ;
- A center directly associated to the Ministry of Health: Germany, Norway, Portugal.

The terminology governance is **never delegated to the private sector, neither to organizations not working in the interoperability field**. In the case of Germany, where the technical interoperability is managed by Gematik, both organizations are public.

These units all have the position to be the users' privileged contact point regarding terminologies and interoperability:

- The Portuguese center, merging of the Minister of Health' services, the central administration of the healthcare system (ACSS) and the general direction of health (DGS) has been created as an independent center in 2015, when Portugal joined SNOMED International ;
- The Dutch center reunites since 2015 all the semantical work realized by the Nictiz. It collaborates with the ecosystem and represents the unique entrance and helpdesk point for terminologies;
- Norway is creating a specific center for the beginning of 2019.

These centers systematically collaborate with other healthcare systems local organizations:

- The Canadian center is a federal center, the authority in charge of terminologies being at the provinces level. He is the main contact point of the medical sector regarding terminologies at the federal level ;
- The German center directly collaborates with the WHO as a collaborating center and many other sector organizations maintaining other terminologies in the Netherlands (RIVM, Regenstrief, nurses' organizations) ;
- The Norwegian center collaborates with other organizations: Norwegian National Health Agency maintaining the ATC, the Norwegian Nurses Association, SNOMED International's task forces.

Their organization is highly centered around interoperability scope :

- In the case of 3 centers, the main goal is to support interoperability (Norway, Netherlands, and Canada) ;
- The German center acts as a reimbursement terminologies' reference center. Interoperability is dealt with another technical agency, the Gematik. Nevertheless, it remains part of the DIMDI « Medical Information » department in charge of interoperability. It has developed with the German "PMSI" implementation and reimbursement terminologies. Another team is in charge of drugs and medical devices IT systems ;
- The Nictiz, umbrella organization of the Dutch center, products content and standardizes this information for more interoperability.

Lessons for the CGTS :

Existing units managing reference terminologies, individual or attached to interoperability teams, confirm the creation of a French CGTS. The latter will be the privileged contact point for terminologies' users.

Distributing semantical resources represents a public service. Contacted terminology centers are all public-funded. As such, the ASIP Santé, French E-Health Agency appears to be the best candidate to host the CGTS.

1.1.2. Missions

The main role of terminologies centers is to publish accredited versions of reference terminologies in operational formats for users :

- Germany centers publish and update official terminologies ;
- Norway distributes many terminologies and is the international organization distributing ICPC-2.

All the studied teams also entail an expertise and a supporting role in national interoperability projects and at the service of users regarding their terminologies needs :

- In Portugal, the center has for main missions to advise users regarding semantic interoperability as well as standardizing terminologies uses ;
- The Canadian center entails supporting terminologies use, in the perspective of national interoperability, around several strategic projects ;
- The German center is directly involved in interoperability projects ;
- Norway supports projects implementing terminologies, such as a project of electronic health record at the center of the country.

None of the centers has a coercive power but entail to guide terminologies uses in their territory. Hence, reducing terminologies' number around several key reference terminologies (SNOMED CT, ICD, ICF) represents the first step for a better terminologies use's coordination and for an improved interoperability.

A single portal or a national identified contact point eases the interactions with users and vendors :

- The German Medical Vocabulary Office is also a WHO collaborating center for terminologies such as the ICD or ICF. It then acts as a single publication portal easing exchanges between stakeholders ;
- In the Netherlands, the Nitctiz facilitates interoperability by standardizing data. The terminology center has for main goal to reduce the number of terminologies in use ;
- The Canadian center elaborates communication norms (syntax and vocabulary) non-opposable which are after negotiated between provinces ;
- The first missions of the Norwegian center are gathering national principal terminologies, elaborating a semantic expertise at the service of interoperability projects.

These tasks can eventually be extended when a center plays an additional role for one or several terminologies :

- NRC (Norwegian and Dutch centers) ;
- WHO Collaborating Center (German center).

Lessons for the CGTS:

Publishing in a standardized way (version, format, documentation) used terminologies (reimbursement, interoperability) is a fundamental good practice that needs to be implemented.

The CGTS could embrace the role of expert center regarding terminologies and support to national interoperability projects.

As being neither a NRC nor a WHO collaborating center, these tasks must be prioritized around publication and expertise.

1.1.3. Teams and Resources

Four teams in charge of semantic resources out of five have a current staff below 5 FTW :

- 3,6 FTW in the Netherlands, assisted by ten employees on temporary projects (such as SNOMED CT's translation) ;
- 4,3 FTW in Canada, divided between 7 employees ;
- 4,5 FTW in Portugal ;
- 5 FTW in Norway, among which 3 interns and 2 external consultants.

The team of the DIMDI represents the most important of the interviewed teams, composed of 11 persons involved in semantic works as a WHO collaborating center (translations, alignments, national extensions).

Human resources are also differently used according to the countries and existing tasks:

- In Norway and the Netherlands, 1 person is in charge of 3 to 4 terminologies for interoperability ;
- In Germany, 1 person is in charge of a single terminology (construction project, maintenance, management, development of semantic resources). One person works full time for answering interrogations regarding the ICD and reimbursements ;
- in Canada, 2 persons are in charge of a single terminology (interoperability, support…).

Teams are composed of various background profiles (medicine, pharmacists, informaticians and documentalists).

- Germany made the choice of employing a majority of doctors;
- The Netherlands encourages skills diversity (medical coding, information analysis, informatics and linguistics, AI, project management, knowledge of the hospital field, human resources, implementation, and scaling).

Additional employees (part-time work, external consulting and members from other teams) can intervene in temporary translation and alignment activities.

The DIMDI hires 12 persons on temporary projects. In general, secondary activities (communication, juridical) are either mobilized internally or externally. These employees are generally not part of the center (except in Portugal, which directly employs a communication consultant).

Moreover, the task of the WHO collaborating center or NRC implies additional human resources :

- Norway follows the SNOMED International's directives and hires people having a solid terminologies expertise as well as technical staff.

Most of the centers report a growing interest in terminologies and an activities' increase (Germany, Netherlands, Canada).

Lessons for the CGTS:

International centers' staff sizes are coherent with the CGTS's predictions (7 FTW in 2019/2020).

Regarding prioritized missions for the CGTS, number of mobilized employees could be between **4 and 20 FTW**. However, for basic activities (publication without high users' support), at least **3,6 FTW** are needed for 2 to 15 terminologies.

1.1.4. Governance

The four international centers generally don't have a specific governance, except the one of their umbrella organization.

Only two centers have (or target to have) their own governance:

- Portugal is ruled by its three trusteeship administrations (ACSS, SPMS, DGS);
- Norway targets to implement a specific governance composed by:
    - An Executive Board (Direktoratet for e-helse or Minister of Health) ;
    - An Advisory Board of e-health services providers.

A specific governance for terminologies management existed in Canada with a Strategic Board and an Advisory Board. It was considered rigid and inefficient.

Governance organizations are diverse with a single strategic level or a double strategic and operational level.

- The Netherlands has an Executive Board and a Supervisory Board (teachers, doctors, or medical organizations' directors). A report is addressed to the Ministry of Health every 3 months ;
- The governance of the Norwegian Direktoratet for e-helse hinges on a priorities committee, a national board, and an academic committee.

Their objectives are also diverse:

- Norwegian, Dutch and Canadian governances are centered on interoperability:
    - Canadian governance possesses a Directors Board on Interoperability composed by clinicians and healthcare organizations managers ;
- The German governance of the DIMDI is focused on terminologies.

They are often specific to the national healthcare system organization:

- The Infoway Executive Board (Canada) includes provincial Health Ministers, because of the federal organization ;
- The role of the DIMDI is ruled by the law for some national terminologies (ICD, ICF). Policies regarding other terminologies are determined by the Länder (regions).

These governances can possess an Advisory Board composed of the main healthcare and welfare sector's organizations (insurances, hospital federations…) :

- Germany has the KKGA, advisory board on classifications, of which the DIMDI mainly follow its recommendations ;
- Norway owns an academic board.

These advisory boards can intervene directly with stakeholders (Germany) or with operational workgroups.

Lessons for the CGTS:

The choice of a proper governance for the CGTS appears to be not relevant. The governance of ASIP Santé, supported by an Advisory Board would ensure the governance of the CGTS.

In international centers, there is a logic of governance coherence depending on the centers' orientations. Regarding these orientations, governance can follow two models:

- The governance of the CGTS can be attached to the interoperability governance ;
- The governance of the CGTS can focus on terminologies if its missions are beyond interoperability (like the German DIMDI).

1.1.5. Roadmap

Every center has a specific roadmap depending on its missions and its maturity. This roadmap is established on a yearly or a multi-yearly basis or is either directly integrated into the umbrella organization's roadmap.

In the centers, major terminologies' activities (SNOMED or ICD) and users' feedbacks on these terminologies contribute significantly to the roadmap's elaboration. Projects on other terminologies can be added to the roadmap if these projects find their funding or the users are deeply interested.

- Norway has for first mission to handle used terminologies' distribution and to support a structured electronic patient record experiment (experiment of the SNOMED CT);
- Canada structures its action around 2 specific programs: e-prescription and access for Canadians to medical information and numeric services) ;
- Germany doesn't have a specific roadmap outside terminologies' distribution. Projects are added depending on fundings and priorities (for instance translation and scaling of ICD 11 in 2019).
- The Netherlands have two distinct roadmaps:
    - A quadrennial plan at the Nictiz level.
    - An annual plan at the Terminologiecentrum level.

Lessons for the CGTS:

The CGTS must be able to plan its activity. An annual roadmap, part of a multi-yearly vision, must be elaborated. It has to collect major users' needs and projects which have found funding. It could be a proper section of the ASIP Santé roadmap.

1.2. Missions and Services Offer

If the references terminologies' diffusion and a dedicated team is shared between the studied countries, their services offer differs regarding their models and adopted orientations. The CGTS must define its objectives and draw services offer from international good practices depending on its internal resources.

1.2.1. Terminologies Diffusion

1.2.1.1. Terminologies Index

The interviewed countries diffuse a limited number of terminologies and focus their action on reference terminologies answering to the users' needs :

- SNOMED CT, ICPC, LOINC, ATC, ICF ;
- All of the studied centers publish at least one terminology between ICF and SNOMED, sometimes both (Portugal, Norway, Netherlands) ;
- Canada and Netherlands prioritize the use of a single pivotal terminology (SNOMED CT) to cover their interoperability needs. Reducing semantical resources is the main target.
    - 2 countries use at least other terminologies, among which the LOINC for biological data exchanges;
    - Other used terminologies are specific to other fields: for instance, local data value sets in Canadian provinces and radiology, drugs or medical devices terminologies in the Netherlands;
    - Canada with 2 structuring axes (prescription and electronic health record) requires only 3 main terminologies (SNOMED CT, Canadian version (pLOCD) and drug terminology).

Other terminologies can complete needs (about a ten):

- Portugal deals with 11 Terminologies and develops 7 'indexes', specific data value sets for an application, composed of reference terminologies codes (essentially SNOMED CT);
- Germany makes available 10 terminologies and links for 4 others. It favors references terminologies uses, perfectly adapted to professional use (i.e. ICD for pathologies and OPS for procedures' reimbursement (French CCAM)) ;
- The Norwegian center will handle about a dozen terminologies used in specific professional use cases (among which WHO terminologies). It also manages the SNOMED CT which is currently experimented on an electronic health record project. It intends to develop a terminologies index. LOINC is not in use.
- Canada distributes 9 reference Terminologies, among which the SNOMED CT and the LOINC as well as Nursing Data Standards. The use of ICD 10 is compulsory in Canada and diffused by another organization.

The needs for new terminologies are identified from semantical projects and field requests. Acquiring a terminology is determined by the difficulties to manage basic terminologies.

Lessons for the CGTS:

The number of managed terminologies differs and is around **tens of reference terminologies**. As being not a SNOMED CT NRC, the CGTS needs to **define users' needs** and to be in capacity to fit them with a **panel** of distinct and defined terminologies.

It must avoid the multiplication of terminologies and ensure its diffusion and the good use of available semantical resources.

1.2.1.2. Terminologies Management

Interviewed international centers have a limited management terminologies role. They sometimes create content (translation) and manage the evolution of some terminologies for their countries, as well as associated data value sets:

- When the center is z WHO collaborating center, for the ICD or other WHO terminologies (Germany for the ICD and the ICF;
- When the center is a NRC for the SNOMED CT (Canada, Norway, Netherlands):
    - Norwegian alignments between SNOMED CT and other Norwegian terminologies.

They directly collaborate with producers (workgroups participation, users' feedbacks) and bring their expertise for semantical projects. They manage especially licenses and other juridical modalities.

- Germany collaborates with other translating organizations;
- The Netherlands work depending on the projects, they play a part in the patient electronic record or in the patients' involvement in healthcare. They design the interoperability around « Clinical building blocks », information models including minimal clinical concepts to standardize information. They are articulated around reference terminologies (SNOMED Ct, LOINC, INCP, ICD 10, ICPC 2);
- Portugal operates a follow-up of the versions it publishes. Terminologies management is however achieved by other organizations.

Lessons for the CGTS:

The CGTS must not develop management's terminologies tasks without being WHO collaborating center or a SNOMED CT NRC. It must ensure a coordinating role and directly works with production units to fit the users' needs.

It could also offer data value sets depending on professional uses. For translating activities, the CGTS should be legitimized by the production unit.

1.2.1.3. Publication of Terminologies

All centers publish terminologies for free and manage old versions. Versions updating is facilitated thanks to a **multi-terminology server (MTS, SMT for Serveur Multi-Terminologies in french).**

The four interviewed centers possess a multi-terminology server for producing and diffusing terminologies. The main goal is to improve productivity as well as being conformed with quality standards (version, format, intellectual property).

4 centers have developed their own SMT:

- The **Netherlands** have developed their SMT based on the ART-DECOR tool;
- The **DIMDI** has developed internally a tool like a SMT enabling it to publish updated terminologies versions;
- **Canada** uses the tool Terminology Gateway;
- **Norway** actually uses the tool volven.no compiling a part of published codes in Norway. HealthTerm of the CareCom society has been chosen as a new SMT. This tool is currently being deployed (January 2019).

They can also use SNOMED International resources (MLDS), like in the Netherlands.

- Portugal had for project to develop a SMT, which was not implemented and is now limited to an index published in an Excel or PDF format. It possesses its proper wiki which can store terminologies.

Diffusion formats are at least in an Excel or PDF format, in free download. Other formats can also be made available: txt, odt, csv…

- in Canada, terminologies are published in an Excel format. For subsets developed by Infoway, FHIR, and HL7, API are made available ;
- Norway publishes using a xlsx and pdf format ;
- Germany publishes in several formats (pdf, odt, txt,csv), privileging the XML and the PDF, mainly used by German users ;
- Portugal doesn't have a SMT and publishes on its wiki, resources directly downloadable in a PDF or XLS format.

International centers also use support tools for terminologies' management and production:

- Germany uses the tool 'Classification Toolkit' co-developed with WHO for producing and maintaining WHO files ;
- The Netherlands use their diffusion platform ART DECOR as a semantical resources production tool. It is associated to another production and communication norms' test platform ;
- The Netherlands also use TermSpace, webtool with advanced functionalities for SNOMED CT: concepts' creation, translation maintenance, data value sets' creation ;
- Canada diffuses support norms management tool (organization browser, messages transmission, SNOMED CT browser) and specific tools for developers. They also use a specific tool for support requests (InfoRMS) ;
- Norway provides an online research tool (Finnkode) where users can research and compare terminologies codes (ICD-10, ICDC-2, ICF).

Lessons for the CGTS:

The tooling of the CGTS is key for its good running. All centers are tooled or project to implement a SMT, which the CGTS must develop.

In the first time, before deploying a SMT, terminologies can be provided in **direct downloading** under a XLS or PDF format.

Additional support terminologies management tools could also be developed and diffused to editors and users if there are sufficient resources.

1.2.2. Community and Users Support

Users' support in international centers remains basic, except in Canada.

Indeed, the Canadian center, in a collaborating and co-building logic, developed an exchange platform (Infocentral). It enables different communities (clinicians, semantical, industrials, e-health decision-makers) to collaborate and follow interoperability projects.

International centers offer services to users: support, formation, information on terminologies :

- support: « helpdesk », phone or mail ;
- answers to extending demands or changes of terminologies ;
- communication, documentation and users' guides ;
- formation, e-learning or forwarding to semantical resources producers.

The main limits to this support is the level of available resources: hence, communication through single posts on social media (LinkedIn, Twitter) will be privileged over time-consuming newsletter.

1.2.2.1. Needs Collect

International centers have a process more or less established for needs collection. For most advanced centers, a process exists with a specific planning so that users can share their needs in terminologies updating (DIMDI) or a specific tool (Infoway et InfoRMS). The amount of queries through these processes is quite significant:

- The amount of modification queries in Canada is up to 150 queries a month for the SNOMED CT and between 300 and 500 a month for the pCLOCD ;
- Germany receives hundreds of queries a year for each terminology. Every year, between 2000 to 3000 are modified or added.

Other centers made the choice to collect needs through a more flexible process. All centers share their generic email address on their website, sometimes with their phone number.

- Germany opens a phone line between 8 am to 5 pm.

Semantical projects and workgroups on terminologies can then share their needs.

- Portugal organizes workshops including most of the professional medical orders as well as administrative stakeholders;
- The Netherlands use ongoing projects to collect needs and maintain a support email. Changes are decided with experts once in a year;
- Germany uses workshops on ICD and OPS (KKG) to collect needs.

Canada also uses to collect communities' needes its Infocentral platform.

Lessons for the CGTS:

The CGTS must be able to collect users' needs and answer to them. It should at least maintain a **generic email address.**

For terminologies most in used, if the CGTS has the ability to modify the terminology, a fill could be made available.

A support process, coming with a specific tool is not considered as a priority. It could still be an option after the CGTS implementation.

1.2.2.2. Animation of a Users' Network

Animating a users' network is lowly formalized and developed, because of a lack of resources in the centers. They adopt a reactive attitude and answer to solicitations. All centers answer to users and needs. They collaborate with healthcare sector's stakeholders (professionals, patients associations, regional cooperation, editors…) (Netherlands, Canada) :

- Portugal offers interoperability advice and implementation support to terminologies adoption ;
- The Netherlands offer an help desk office and answer to solicitations;
- Norway is the single contact point and provide advice and orientations.

Canada, the most advanced country in terms of users' network animation, maintains online communities on forums where document sharing and online presentations are common. Users can suggest new communities.

- Portugal implemented such an online forum but users were not involved.

Some centers organize workshops with users' groups and participate in conferences.

- Germany participates in presentations on specific topics. It also organizes workshops (LOINC, ICD-11).

Lessons for the CGTS:

The CGTS must adopt, as international centers, support solutions. It must answer users' solicitations and must participate in events and conferences to support interoperability.

If the number of FTW is enough, animating an online user community could increase interactions between users, editors, and producers and would foster experience sharing.

1.2.2.3. Formation

Formations on specific terminologies are in general realized by the production units. Lack of resources among international centers, encourage the e-learning.

- Canada diffuses webinars and e-learning formations through its Infoscribe tool;
- Norway uses its platform learn.didac.no ;
- Portugal shares the SNOMED International eLearning link.

All centers share documentation to support terminologies' uses.

- Germany provides explanatory documentation and can share links to external resources;
- Norway publishes users guides ;
- The Netherlands wrote a white paper on terminologies' main uses.

Some centers provide conferences on terminologies.

- The Netherlands organize classes and conferences on SNOMED CT demands, where organization can be asked via email. Depending on needs, some formations can be created ;
- Germany participates in conferences and can present interoperability and terminologies.

Lessons for the CGTS:

The CGTS should publish an explanatory documentation regarding terminologies, using a sheets' format. For more specific formations, it could integrate production units' links and would eventually be the contact point to organize sessions.

Conception of specific formations is not a priority.

1.2.2.4. Communication

International centers, except Portugal, don't rely on proper communication services but on the umbrella organization's.

- Portugal is the only center to have a proper website dedicated to terminologies.

The biggest query from users is the publication of terminologies' updating dates. The latter can be easily communicated through a newsletter, privileged choice for most of the centers (Germany, Canada, Netherlands). This notification can also be done through a diffusion terminologies tool.

- The MLDS tool offers an automatic notification to SNOMED CT users

Updates are made available on explicative pages regularly updated and published by the majority of the centers (Canada, Germany, Netherlands).

Some centers have an occasional use of social media:

- Canada animates a users' community under several formats: electronic journals, blog, RSS, LinkedIn, Twitter, Facebook, YouTube… and uses online communities as an internal social network;
- The Netherlands use LinkedIn ;
- Norway uses LinkedIn, Facebook, Twitter or YouTube at the organizational level.
  The impact evaluation of communication by international centers is rare and remains basic.

Lessons for the CGTS:

The CGTS must be able to communicate on updating terminologies' dates to users. It then essential to have a specific website or newsletter.

For other communication needs, the CGTS could use communication tools of the ASIP Santé or of the interoperability framework.

1.2.2.5. Support

All international centers publish documentary assistance resources: explanatory sheets on terminologies, practical guides… allowing users to solve their problem in an independent way.

When these resources are not enough, either the contact mail of the center or a phone number. At least 1000 queries are received every year, depending on organizations.

- Germany uses a standardized process to collect needs: a contact form and a phone number open from 8 am to 5 pm. It deals around 1600 queries a year, two-thirds of these answers are made by phone, the other third by phone;
- Canada receives 150 modification queries a month regarding SNOMED CT, hence around 1800 annual queries.

This support can be externalized. Hence, the DIMDI use an external consultant to run its service through a specific tool (JIRA).

Lessons for the CGTS:

Regarding support to users, the CGTS should implement at least a FAQ and explanatory sheets on terminologies as well as an email address to provide a first level of assistance.

As not being a terminologies producer, complex demands could be dealt directly with production units.

If there are sufficient resources, the CGTS could use a ticketing tool or for the first time follows demands through Excel.

1.2.3. Terminologies Production: Management Project

1.2.3.1. Animating a Production Units' Network

Centers don't animate a formalized production units' network. They establish bilateral relationships with producers, essentially international producers in charge of a terminology of national interest (WHO, Regenstrief, SNOMED International):

- Germany has thorough exchanges with WHO, with the DIMDI being a WHO collaborating center ;
- The Netherlands don't have frequent contacts with organizations in charges of terminologies ;
- Portugal publishes the production of terminologies from other entities (SPMS, ACSS), that can be considered as production units. They don't have a formal authority on them ;
- Canada uses online communities to exchange with terminologies' producers ;
- Norway slowly collaborates depending on terminologies and projects.

The bilateral contacts are key for a good updated terminologies diffusion, in particular, due to juridical issues of licenses.

Lessons for the CGTS:

The CGTS must be able to maintain individual **relationships with production units** of the terminologies it publishes. Based on the CI-SIS terminologies, it should determine the operation mode with small production units and would favor individual exchanges with significant production units (those in charge of WHO's terminologies or LOINC).

1.2.3.2. Hiring and Animating an Experts' Network

All centers work with experts through workgroups, or ad hoc contracts:

- The Netherlands or Germany have experts among their teams ;
- The Netherlands animates a doctors' network, which can be mobilized on specific projects ;
- Norway relies on workgroups and public organizations for expertise ;
- Germany asks external experts for juridical problematics (licenses).

These experts can be remunerated but not all centers recommend it:

- Germany only remunerate its experts for a significant project such as translation ;
- The Netherlands and Norway don't pay their experts.

This information can lead to the interrogation of the experts' motivation and external interests.

Lessons for the CGTS:

The CGTS will intend to collaborate with experts without mobilizing necessarily financial resources. This collaboration could be composed of workgroups or ad hoc contracts depending on CGTS' projects.

Financial resources could sometimes be necessary to ensure the expert's impartiality regarding the study or the ongoing project.