

IGSN 2040 Organizational Steering Committee Workshop Report

Tacoma , WA, 18-19 July 2019

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I. Executive Summary

Outcomes

New IGSN Mission Statement drafted
Identified *Requirements and Values* for the IGSN
Recommended merging the two IGSN 2040 Steering Committees
Developed list of Key Points related to the *Requirements and Values* of the IGSN
Discontinued Scenario Planning to focus on short-term challenges

Next Steps

Establish Task Group for refining requirements and options for business model.
Investigate options for bridge funding to establish sustainable membership model.
Assess current operating costs and in-kind contributions from members as allocation agents, and the operator of the central registry.
Request a timeline for the architecture development from the Technical Steering Committee (TSC) and leads of the prototyping effort.
Continue exploring partnerships with existing, stable PID providers.

The IGSN 2040 Organizational Steering Committee (OSC) met in Tacoma, Washington, on July 18 and 19, 2019, for its first workshop. IGSN 2040 is a project funded by the Alfred P. Sloan Foundations to conduct a strategic planning effort for the IGSN e.V., the implementation organization of the IGSN Global Sample Number, with the goal to *“achieve a trustworthy, stable, and adaptable architecture for the IGSN as a persistent unique identifier for material samples, both technically and organizationally.”*

The workshop was co-located with the ESIP summer meeting. The day before the workshop, the Project Steering Committee hosted an Open Forum at the ESIP meeting in order to gather community feedback. The forum highlighted a number of concepts which include (1) the technical architecture should be open-minded towards the business model, (2) the IGSN business model should be able to accommodate the broadening community and the challenges it brings in relation to resources, and (3) the need to balance the concept of a Catalog of everything (practical purpose) vs community based specialized catalogs that serve the specific needs of a community.

During Day One of the workshop, the Principle Investigators (PI) and committee members conducted a Scenario Planning exercise in order to develop long term plans for the IGSN e.V. Scenario Planning is a method of strategic planning used for looking at the ‘unknown’ future. This exercise had been prepared with guidance from a consultant, Susan Stickley, President and CEO of Stratus, Inc. Participants were asked to consider the future of the IGSN by way of:

- Challenges to Conventional Wisdom
- Core Strategic Question Underlying Our Strategic Planning
- Brainstorm of Critical Uncertainties

- Critical Uncertainty Exercise
- Build Scenarios

A discussion on challenges highlighted that the IGSN is an established brand and has developed trust in the community. Reviewing the core strategic questions led to a discussion on the current IGSN mission statement, and the unique services IGSN provides. Participants engaged in a brainstorming activity where they identified drivers of change, and created scenarios in order to consider strategic implications of these uncertainties for the IGSN.

Proposed Mission statement:

“IGSN provides an open, shared and trusted globally unique persistent identifier system for physical samples, specimens, or artifacts in support of the advancement of knowledge.”

Discussions ultimately led to the decision to abandon the Scenario Planning, which was considered to be too far-reaching into the future, while there is an urgent need to solve short-term challenges for the IGSN. Therefore, during the second day of the workshop, participants focused on the near-term issues faced by the IGSN, such as the persistent operation of a technical infrastructure that ensures reliable, scalable, and uninterrupted registration services and PID resolution, and engaged in a follow-on discussion of the mission statement to clarify the extent of IGSN services, which is needed to explore feasible solutions. Participants discussed at length the possibility of partnering with another PID organization. A partnership could range from shared operational infrastructure to a merger. Benefits of a partnership would include reduced start-up costs and shared costs for services. Risks include a reduction of membership (if there is overlap with membership of the partner organization) and the potential impact that an alliance would have on branding, trust, and governance of the individual partners. Participants suggested that discussions with existing PID providers such as DataCite and ORCID should continue.

A review of the outcomes from the IGSN 2040 Technical Steering Committee workshop led to a discussion on the requirements and values for the IGSN. Participants created a list of needs for the IGSN organization to serve the community, operate as a functional and growing organization, and for supporting and engaging the samples community.

The workshop concluded with two recommendations: 1. to form an ad hoc Working Group that would focus on developing a business model for the IGSN, and 2. to merge the two Steering Committees to enable better coordination as both groups move forward into the second year and toward generating the roadmap. The OSC highlighted the need for additional information gathering, requesting information about current operating costs and in-kind contributions, and suggesting the TSC provide a webinar to the Allocating Agents on their current progress.

Following the workshop, the project’s Executive Committee used the list of requirements and values as a focus point to analyze the workshop outcomes. They extracted Key Points from the workshop discussions, which aligned with the requirements and values identified during the workshop. These Key Points are included in this report in the appendix.

II. Workshop Report

A. Introduction

The IGSN is a persistent identifier for samples that has seen rapid growth globally both in number of identifiers issued and in the range of domains beyond the geosciences that are now using or want to use the IGSN. This is challenging the current IGSN technical infrastructure and the IGSN e.V. business model. To redesign both technically and organizationally, we created the IGSN 2040 project to explore how the IGSN can become sustainable, a more professional and trustworthy operation, and develop the architecture to support rapidly growing numbers of identifiers being requested.

The IGSN 2040 Project has two committees, a Technical Steering Committee (TSC) and the Organizational Steering Committee (OSC). The TSC is tasked with exploring and recommending how the current IGSN architecture can be modernized to scale. The TSC met in May of 2019 in Canberra for its first workshop¹. The OSC is tasked with developing a governance model with best practices for the various facets of the IGSN community and with developing a sustainable business model.

B. Goals and Objectives

- To clarify the core strategic question underlying our strategic planning together;
- To develop a set of relevant and insightful scenarios on the future environment IGSN may face;
- To develop the core strategies that will underpin the IGSN Strategic Plan with respect to the sustainability of the IGSN e.V. organization.

The OSC held its first workshop on July 18 and 19, 2019, in Tacoma, Washington. This document summarizes the discussions and conclusions reached.

C. Day One Summary

1. Report from the Technical Steering Committee

Doug Fils provided a report on the work done following the TSC workshop in May of 2019. Outcome of that workshop was the recommendation to move the IGSN registration service to a cloud-native architecture and for Allocating Agents to embed sample metadata as JSON-LD in IGSN landing pages and provide sitemaps for web crawlers to find the landing pages. The shift away from dedicated hardware to cloud-native services would greatly enhance the scalability and resilience of the system. The adoption of standard contemporary web architectures for the syndication and aggregation of sample metadata would again support better scaling of the system and would allow the reuse of existing technologies for making web hosted content findable. Doug Fils, Jens Klump, and Jess Robertson (of the TSC) have successfully conducted a test of the 'IGSN Structure Data on the Web' prototype. The results can be viewed at the following location <http://samples.earth/>.

¹ IGSN 2040 Technical Steering Committee Meeting Report, 10.5281/zenodo.3724683

2. Business Model Overview

The IGSN e.V. currently generates only a small revenue and operates based on volunteer efforts. The organization needs to develop a sustainable business model with sufficient revenue to support the professional operation of PID services. The OSC discussed examples of business models and membership tiers/fees of DataCite and ORCID. Critical questions that were addressed included:

- Should IGSN members be individuals vs entities?
- Would the IGSN provide technical support to individuals?
- What size should the organization grow to?
- Should the organization include members who do not want to register IGSNs but support the mission?

3. Review of Pre-Workshop ESIP ‘Open Forum’

The Organizational Steering Committee workshop was co-located with the ESIP Summer Meeting. At the ESIP meeting, the IGSN Executive Committee hosted an ‘[Open Forum](#)’ to provide an opportunity for the ESIP community to learn about the IGSN 2040 project and contribute to exploring solutions for a scalable and sustainable future of the IGSN.

Key Takeaways from the Open Forum

- For the IGSN e.V. needs to have clear business rules, define its purpose, and articulate the 2-3 key issues that the IGSN is designed to solve.
- The IGSN e.V. will have a hard time changing a business model if that is baked into architecture. The architecture needs to be open minded towards the business model and not the other way around.
- The IGSN e.V. needs a business model that will allow it to operate over the long-term. The current model is in strife as the agents are increasingly operating for much broader communities and this does not grow revenue and resources needed to run the organization as it does not increase the number of members who pay membership fees. The IGSN e.V. needs to figure out how to revise this structure.
- DataOne operates with a structure that makes it easy for Member Nodes to participate in. How implementable is this architecture for IGSN?
- It is unclear if the concept of a “Catalog of Everything” (practical purpose) is more useful than community based specialized catalogs that serve the needs of specific communities.
- A global portal for IGSN metadata at all Allocating Agents would be of great value. A separate meeting and discussion are needed to generate specifications for such portal.

4. Scenario Planning

“Scenario planning is a systemic method for thinking creatively about possible complex and uncertain futures. The central idea of scenario planning is to consider a variety of possible

futures that include many of the important uncertainties in the system rather than to focus on the accurate prediction of a single outcome”

Peterson, et al, 2003, p.359²

In preparation of the OSC workshop in Tacoma, the IGSN 2040 Executive Committee engaged a consultant, Susan Stickley from Stratus Inc., to use scenario planning for the development of the strategic plan and roadmap. Scenario planning is a process used by organizations to consider future change and uncertainty when conducting strategic planning. Scenario planning has the benefit of pushing organizations to consider areas they might not have considered before, and to focus on strategies for adapting to future developments rather than getting things ‘right’ (Chermack et al 2013). Together with S. Stickley, the ExCom designed a set of questions that were distributed to the OSC members before the workshop to contribute their thoughts.

The list below gives a high-level overview of the points discussed in the scenario planning session.

- **Challenges to Conventional Wisdom**
 - Participants shared examples of trends or current events/activities that challenge conventional wisdom for the future of persistent identifiers.
 - Trust and branding were key takeaways from this discussion.
- **Core Strategic Question Underlying Our Strategic Planning**
 - What is the mission of the IGSN - as an organization that provides unique services?
 - Our current mission, [IGSN Statutes \(Sec. 2.2\)](#).
 - Points considered for the mission statement included
 - How to best address the concept of community
 - What are the IGSN e.V. ‘s values, how does it ensure transparency?
 - Should the IGSN e.V. focus on providing services versus defining a framework for other to build services on top?
- **Brainstorm Critical Uncertainties**
 - The group identified ‘drivers of change’ which are at play today and might impact how we address our strategic question: Technology; Community; Publications; Policies; Change in Openness; Competition; Funding; IGSN Values
- **Critical Uncertainty Exercise**
 - Based on the brainstorming activity, the group identified the most relevant uncertainties. For each uncertainty they captured two scenarios of how the uncertainty might play out in the future. See Table 3 below.
- **Build Scenarios**
 - Participants broke up into three groups. Each group was given a set of three cards from the Critical Uncertainty Exercise and were asked to consider how they might play out, and what would be the strategic implications of a given scenario for IGSN.
- **Present Scenarios**

² Peterson, G. D., Cumming, G. S., & Carpenter, S. R. (2003). Scenario planning: a tool for conservation in an uncertain world. *Conservation biology*, 17(2), 358-366.

³ Chermack, T. J., Lynham, S. A., & Ruona, W. E. (2001). A review of scenario planning literature. *Futures Research Quarterly*, 17(2), 7-32.

- Each group presented their scenario. An example outcome can be seen in Table 4 below.
- The group looked at the concepts of **Disruptive Technology** (makes IGSN redundant vs evolving more predictably) and **Organization Policies** (funder / publisher/etc. and if they might drive change or not).

Table 3: Uncertainties. Highlighted uncertainties were identified as priorities

Uncertainty	Back	Front
Competition	Unknown Future Competitor or similar ID	Business as usual, 'in-house system'; Compete with cultural views on use of identifiers; big player on the scene
Global Protocols	Unable to work with countries out of favor; sharing more difficult	Promote Openness; promote/support use of IGSN
Technology	Disruptive; evolving -> makes IGSN redundant or need significant updating	Institutional Flexibility
Community Structure	Fragmented	Consolidated/centralized
Start-up Costs	Unknown; no funds	Are available; are known
Policies within an organization	No requirements or incentives to take part; no trigger for change	NSF -> operation policies
Community Values	Isolationism; individualism - "mine"	Open science, open data; data driver that increase need for identifiers
Changing research practices	No longer need to collect samples	As open science becomes amplified
Trust	Distrust in IGSN	Trust in IGSN
Ongoing Costs for organization	Costs escalate	Stable, predictable
Funding Science	Goes up	Goes down
User Needs	Fast changing, evolving, new users, scope creep	User needs stabilized or plateau

Table 4: Example of Group Scenario

<p>Middle difficulty - fewer resources since not driven by mandates, but lower and more predictable costs STILL A BUSINESS CASE, BUT DRIVEN BY DEDICATION TO GOOD PRACTICE - becomes more important to promote good practice</p>	<p>As technology evolves (predictably) IGSN keeps pace with anything that hits it and IGSN has the costs to buffer against any change</p>	<p>Low difficulty - High regulatory support with low technology disruption, i.e. Lowest uncertainty and greatest resources NEED TO BE ABLE TO INFLUENCE AGENDA TO BE HERE, need to be ready to scale, need strategy to exploit favorable regulatory environment</p>
<p>Publisher / funder / regulatory / ethical / etc. policies do not drive change / stop driving changes that promote the need / demand for identification of samples - or worst case actively discourage it (using IGSN?)</p>	<p>Mixed</p>	<p>Publisher / funder / regulatory / ethical / etc. policies (continue to) drive change (Open science, reproducibility of science) = that generate need / demand for identification of samples (using IGSN?)</p>
<p>Highest difficulty - fewer resources but higher and uncertain costs - difficult GIVE UP!!! (end-of-days plan and fund)</p>	<p>Technology is so disruptive that IGSN collapses as it cannot adapt and/or cannot find funds to adapt</p>	<p>Middle difficulty - more resources but higher and uncertain costs, still a business case but need reserve funds necessary to handle unexpected technological disruption</p>

- | |
|--|
| <p>1. Technology changes (makes IGSN redundant vs evolving more predictably)</p> |
| <p>2. Organization (funder / publisher / etc.) policies (NSF, etc.) drive change or not</p> |

D. Day Two Summary

1. Morning reflection: Review of the “Now and Near Issues”

The morning started with a reminder to everyone about the charge to look at the long-term goals/perspective for this organization. The discussion identified a common feeling that if we do not find a solution for the short term, all the investments in the now will be lost. It is important to think of the short-term issues, what we need to do right now to stabilize operations for a year or two years out,

then return to looking at the long-term. If we are redoing the entire organization over the next 2 years, that might impact the long term. What would we do instead?

2. Mission statement review

An essential element of the short-term and long-term solution is the clear definition of IGSN's scope. Therefore, the group went back to work on refining the IGSN mission statement. There was a discussion on if the focus of the statement should be community or infrastructure. Many approaches were discussed. Our value lies in building and supporting a specific community and that the IGSN not just provides the infrastructure for getting identifiers. There should be room to support both. Alternatively, we could partner with a group which could support the community while IGSN provides the infrastructure. There are implications based on funding, and what level of community we would be addressing.

Draft Mission statement:

“IGSN provides an open, shared and trusted globally unique persistent identifier system for physical samples, specimens, or artifacts in support of the advancement of knowledge.”

3. Key outcomes from the Technical Steering Committee Workshop

From the [TSC Workshop Report](#), the OSC reviewed the example workflows, the personas associated with these workflows and the assessment of the services and minimum viable product. This led to a discussion of what might be the core services, and which ones might be added as a service with a per-use fee or commercial service. It was suggested that the metadata collected through registration might be considered a commodity. There was discussion on a central catalog vs. community portals.

4. Partnership with another PID organization

The report from the TSC led to a discussion on a scenario where the IGSN services were offered under or in association with another organization. IGSN has metadata, services, and policies that address needs for identification of physical samples, but there can be benefits to avoid start-up costs and the costs for services when partnering with another PID provider, specifically if the IGSN e.V. expects a large expansion in membership as IGSN. Among the risks pertaining to a partnership are the potential loss of branding and trust, and integration with a different governance model. Membership models would need to ensure that the IGSN e.V. does not lose members/subscribers who may already be members of the partner organization.

The participants explored an example scenario that detailed various levels of merging with another PID system. Other suggested models besides merging included [fiscal sponsorship](#), which is used by many open-source projects, e.g. in the Python community, and [ENVRI](#).

5. Requirements and Values

In order to better shape the business model for the IGSN e.V. going forward, the Organizational Steering Committee decided to create a list of requirements for the organization to serve the community, operate as a functional and growing organization, and for running the IGSN community. The list distinguishes **requirements and values** and grades these as ‘exists and is done well’, ‘exists but may not be adequate for the future’, and ‘important need not yet met’. See Table 5 below.

1. **Green: Exists and is done well**
2. **Yellow: Exists but may not be adequate for the future**
3. **Red: Important need not yet met**

Table 5: List of requirements gathered at the Tacoma meeting.

Requirement	Value
1. Persistent branding	1. Integrity of Governance
2. Persistent service	2. Community liaison
3. Scalable services (ability to grow)	3. Expertise in samples
4. Infrastructure for outreach (communication, outreach, liaisons, advocacy)	4. Advocacy
5. Project manager to speak for the organization (person, presence)	5. Domain agnostic/community agnostic (all samples are equal)
6. Dedicated income source	6. Provide a value to people who are using IGSNs
7. Administration and Business services	7. Standards Based
8. Community liaison	
9. Advocacy	
10. Expertise in samples	
11. Technical expertise within IGSN	
12. Governance	
13. Agility to respond to community needs specific to samples	
14. Global operations	
15. Technical support	

6. Next steps and closing remarks

The workshop ended with a discussion on what would be the next steps for the IGSN 2040 project and the OSC.

The OSC identified the need for resources to sustain the membership model until a new business model has been put in place, and to support better exchange and gatherings of the technical groups such as the technical staff of Allocating Agents. The OSC also discussed the relevance of in-kind support and recommended that an analysis of current in-kind contributions and their financial value be done.

A concern was raised that the unclear roles and responsibilities of the IGSN e.V. versus Allocating Agents versus sample registrants may cause duplication of effort. For examples, Allocating Agents may be generating landing pages for samples of organizations that maintain their own (preferred) metadata catalogs and landing pages, potentially generating unnecessary costs for Allocating Agents. This emphasized the need for clarifying roles and responsibilities in a new architecture.

The suggested next steps included

- Identify costs for services.
- Identify possible revenue streams.
- Based on possible costs and revenue, generate a budget plan for the IGSN e.V.
- Request stakeholder feedback for the budget plan

In order to better estimate costs, the IGSN e.V. needs to identify all current in-kind contribution and their value, including development and design, leadership and management, and technical support.

The following list of action items was agreed upon:

- Establish an OSC working group for refining requirements and business model.
- Schedule technical meetings for allocating agents to prevent divergence/duplication.
- Establish timelines for the architecture development and prototyping.
- Establish a working group for short term funding.
- Identify a person to help facilitate discussions with the tech groups on the business model.
- Extract key points from this meeting into a [Key Points](#) document (included as Appendix D).

IV. Appendix

A. Participants

1. Project Steering Committee

- Kerstin Lehnert LDEO, lehnert@ldeo.columbia.edu
- Lesley Wyborn ARDC / ANU, lesley.wyborn@anu.edu.au
- Jens Klump CSIRO, jens.klump@csiro.au
- Sarah Ramdeen LDEO, sramdeen@ldeo.columbia.edu

2. IGSN 2040 Organizational Steering Committee

- Adrian Burton ARDC, adrian.burton@ardc.edu.au
- Patricia Cruse DataCite, patricia.cruse@datacite.org
- Helen Glaves BGS, hmg@bgs.ac.uk
- Dimitri Koureas dimitris.koureas@naturalis.nl
- Lindsay Powers USGS, lpowers@usgs.gov
- Erin Robinson ESIP, erinrobinson@esipfed.org
- Shawn Ross Macquarie University, shawn.ross@mq.edu.au
- Laure Haak ORCID, l.haak@orcid.org (*remote participation*)

3. IGSN 2040 Technical Steering Committee

- Doug Fils (TSC) Ocean Leadership, dfils@oceanleadership.org

B. Relevant documents

- [Full meeting notes](#)
- [Pre meeting materials](#)
- [TSC workshop report](#)
- Related resources
 - [Resources shared by OSC members](#)
 - [Service-Oriented and Sustainable Infrastructure for IGSN: DataCite Perspective](#)
 - [Technical Steering Committee Workshop Outcomes -- Future Vision and Services](#)
 - [ESIP Open Forum Notes](#)

C. Agenda

1. Day 1 (18 July 2019)

09.00 - 9.15	Workshop Opening <ul style="list-style-type: none"> ● Opening and Welcome ● Housekeeping and logistics
09.15-10.15	Orienting Ourselves on the Strategic Context <ul style="list-style-type: none"> ● Intro to Organizational Steering Committee - scope, members Review of the TSC workshop outcomes <ul style="list-style-type: none"> ● Presentation from Doug Fils (9:30am) ● Review of Mission/Vision created by TSC <ul style="list-style-type: none"> ○ Technical Steering Committee Workshop Outcomes -- Future Vision and Services Report out from the Open Forum at ESIP
10.15-10.30	Coffee/Tea break
10.30-11.00	Challenges to Conventional Wisdom – Sharing Our Pre-work
11.00-11.45	Core Strategic Question Underlying Our Strategic Planning
11.45-12.00	Brainstorm of Critical Uncertainties
12:00 - 12.45	Lunch -- Exhibit Hall B (4th Flr)
12.45 - 2.30	Critical Uncertainty Exercise Continues <ul style="list-style-type: none"> ● Complete brainstorming and clustering (15 mins) ● Identify relevant and most uncertain (30 min) ● Explore how critical uncertainties playout (1 hour)
2.30-3.00	Build Scenarios <ul style="list-style-type: none"> ● Round 1
3.00-3.15	Coffee/Tea break
3.15-4.30	Build Scenarios cont. <ul style="list-style-type: none"> ● Round 2 (30 mins) ● Round 3 (30 mins) ● Share key scenarios (15 mins)

4.30-5.00	Present Scenarios
5.00	Adjourn for the Evening
6:30 - 8.30	Dinner

2. Day 2 (19 July 2019)

8.30 - 9.00	Morning Reflections, Choosing Scenario
9.00 - 9.35	Deep Dives <ul style="list-style-type: none"> ● Strategic Implications of the scenario for IGSN. (15 min) ● Brainstorm Opportunities and Threats for IGSN. (20 min)
9.35 - 10.00	Coffee/Tea break (<i>ESIP Break is 9.45-10.00</i>)
10.00 - 10.50	Deep Dives Cont. <ul style="list-style-type: none"> ● What is the optimal strategic positioning of IGSN within the research infrastructure in this scenario? (20 min) ● If you knew this was the future IGSN would face, what strategies would you need to start pursuing now to prepare for this scenario? (30 mins)
10.50 - 11.20	Share Strategic Insights
11.20 - 11.50	Compile Set of Core Strategies
11.50 - 12.35	Core Strategies Discussion Continues
12.35 - 1.00	Next Steps and Closing Remarks
	Close of Workshop
1.15 - 2.15	Lunch -- Exhibit Hall B (4th Flr)

D. Key Points

In the afternoon of day two, the Organizational Steering Committee created a list of needs for the IGSN organization to serve the community, operate as a functional and growing organization, and for running the IGSN community. The list will be used in shaping the business model going forward.

An initial list of 22 high level points was created during the session, it was then separated into two groups - requirements and values. The items on the lists were then evaluated for the following conditions - if it 'exists and is done well', if it 'exists but may not be adequate for the future', and if it is an 'important need not yet met'. The original lists created during the meeting can be found in the day two summary.

Following the workshop, the Project Steering Committee extracted key points raised during the workshop that aligned with these requirements and values. The results were then re-assessed and the list of requirements was reorganized around emerging themes.

The table below lists the 7 themes and the individual requirements points identified during the workshop. Table two contains the list of values. Each table is followed by the associated key points extracted from the workshop discussions.

1. Requirements

- Green: Exists and is done well
- Yellow: Exists but may not be adequate for the future
- Red: Important need not yet met

Table 1: Final list of Requirements

1. Governance
a. Governance
b. Leader to speak for the organization (person, presence)
c. Dedicated income source
2. Branding
a. Persistent branding
b. Agility to respond to community needs specific to samples
c. Global operations
3. Persistent Service
a. Persistent technical & community service

b. Administration and business support
4. Scalable Services (Ability to Grow)
a. Scalable services (ability to grow)
5. Dedicated Income Source
a. Dedicated income source
6. Infrastructure for Outreach:
a. Infrastructure for outreach (communication, outreach, liaisons, advocacy)
b. Community liaison
c. Advocacy
7. Support
a. Expertise in samples
b. Technical expertise within IGSN
c. Technical support

1. Governance

- We need an IGSN leadership group to:
 - Lead IGSN to the next level
 - Focus on articulating the 2-3 key things that IGSN is designed to solve
 - Get better clarity of the business rules
 - Underwrite the operations required to get the community together for better coordination
- We need a funded project manager to speak for the organization (person, presence), a specialist person who:
 - Deals with business services, taxes, compliance with German law, etc.
 - Markets the concept.
 - Coordinates writing of papers, conference attendance
 - Provides advocacy to funders, policy makers, etc.
 - Desired characteristics/responsibilities:
 - Links to the IGSN e.V. President
 - Has knowledge of income considerations/expertise

- Expertise in samples

2. Persistent branding of IGSN

- IGSN has a core/current user community and we do not want to lose people who have already bought into IGSN.
- As IGSN is increasingly seen as a persistent identifier for samples and its branding is strong, we need to define:
 - What IGSN actually is:
 - What are the unique services that the IGSN needs to provide that defines its mission?
 - How valuable are these services?
 - Do they need to be maintained in the longer term?
 - What does IGSN represent in commercial terms
 - What is the critical space it occupies?
 - What IGSN's governance is
 - How IGSN can become a critical service that sustains organizations and helps meet their missions?

3. Providing a Persistent service

- IGSN has persistent services: With the current model, these services are at risk and changes must be made to maintain their persistence and trustworthiness.
- To ensure that the services are persistent and trustworthy we need to define:
 - How IGSN supports its services
 - How users pay for them
 - How the infrastructure (e.g., landing pages) will be maintained in the longer term to build trust.
- We need to consider the possibility of IGSN being offered as a service under another organization like DataCite?
 - Technical Related issues:
 - The Technical Steering Committee (TSC) is working on making the services more stable, efficient, scalable, and persistent.
 - The aim of the TSC is to keep services unbundled, so that changes in technology would not impact services, and to automate as much as possible.

4. Scalable services (ability to grow)

- As IGSN has seen rapid growth on both a global and expanded domains level, we need IGSN to grow to a sustainable service that can:
 - Scale to provide billions of identifiers
 - Incorporate new domains
- We need to investigate how other persistent identifiers in science handling scaling
- Are current users of the service going to invest in updating their existing infrastructures
- We may need to drop services
 - Technical Related Issues
 - Scaling could be easy from a technical viewpoint
 - The TSC explored changing the current architecture to enable scaling to billions of samples. A successful test can be seen at <http://samples.earth/>

5. Dedicated income source

- Current funding model is €500 per member: there are 24 members: income is €12,000 a year.
 - This pays for the annual meeting, but there are no funds for:
 - Maintaining a website or the registry
 - Staff time for renewing technology,
 - Ensuring a sustainable operation.
 - Staff to run and grow IGSN:
 - Could there be another income stream that comes with the governance
 - For the bigger players, it costs more than €500 to process the invoice.
 - We do not expect 500 orgs to join to get the income we need.
- Current funding model is too low for what we offer:
 - Members pay the same fee regardless of size, but this does not relate to the numbers of samples each member is registering.
 - There is a wide range in size and financial capacity of our members:
 - We have individual universities as allocating agents.
 - We have organizations setting up as national agents (e.g., the BGS wants to set up as the national allocating agent for the UK, Geoscience Australia is the allocating agent for 7 surveys).
 - We have members who do not run as an allocating agent, they would like to but they are too small.
- Current operation relies heavily on volunteer effort so:
 - Progress is slow.
 - Helping new members, offering services, is slow.

- Financially we need a viable, scalable funding model that:
 - Copes with the range and financial capacity of our members
 - Takes into account the:
 - Increasingly fine granularity that IGSN's are applied
 - Decreasing number of allocating agents due to mergers
 - Enables the organization to grow
 - Is not specific to allocating agents
 - Ensures sustainability of IGSN
- We may need an interim solution where we get additional funding to put new developments from IGSN 2040 into operation
- Technically, the funding model requires:
 - Definition of what technical developments are necessary for IGSN to be sustainable; and
 - Identification of which components can be built in a coordinated manner.
- We need the resources, including dedicated staff to run community advocacy (as a guide, an infrastructure project should spend ⅓ in outreach and engagement).

6. Infrastructure for outreach (communication, outreach, liaisons, advocacy)

- It is important how IGSN articulates its services and their roles across many stakeholders. We need:
 - To aim our communications to support building communities
 - at two levels:
 - the large scale – the organizations; and
 - Individuals.
 - That does not just emphasize best practices.
 - Infrastructure to support outreach that:
 - Has consistent messaging and is delivered with clarity;
 - Emphasises the 'plus' that we offer over other identifier schemes;
 - Encourages openness;
 - Promotes/supports use of IGSN;
 - Builds capacity;
 - Communicates any changes in the organizational and technical aspects and how different these changes are relative to what is current;
 - Where relevant is done to be consistent with messages from other identifier communities.
 - Resources to staff and run community advocacy:
 - There needs to be a balance between hired and volunteer
 - They are in addition to the technical experts or vocabulary experts

- Any infrastructure project should spend $\frac{1}{3}$ in outreach and engagement.
 - To scale up outreach to provide forums and engagement across domains:
 - Should we follow the DataCite example -- In managing the consortium, the members do the outreach and support in their country.
 - To include training
 - Technical Related Issues
 - Technical staff are not necessarily the best at doing community outreach.
 - Just running the servers is not the concern, the staff is the main concern, and running the community advocacy etc.
 - A broader membership also helps you listen to the needs of the community, and be more responsive with less outreach costs.

7. Support

- This support is in addition to work done in administration/business and liaison activities: and should be available to the whole community (that is on a wholesale not a retail level).
- We need to provide expertise in samples (per se) that:
 - Enables users to know what are the best practices around collecting samples and sub sampling.
 - Applying identifiers to those samples
- We need to provide technical expertise
 - To an agreed authoritative source
 - To build a global IGSN Open Source community that with specialist expertise:
 - Sets the requirements
 - Identifies those components that can be reused or built together
 - Connects islands of development
 - That knows about and is able to leverage developments from each allocating agent
 - That there is currently no consistent way of doing some of the Allocating Agent processes makes it hard to provide 'central' support
 - Technical Related Issues
 - The technical architecture needs to be open minded towards the business model. We must consider limitations of baking in aspects into the architecture, especially things that impact the business model.
 - Should we provide technical assistance with registration of samples?
 - If designating that allocating agents are a part of the architecture, you are going to constrain yourself. And your communication, support, and uptake.

- Should adding a search engine be a core service?
 - IGSN’s metadata is our commodity.
 - It could highlight the value to funders; act as a marketing tool.

2. Values

Green: Exists and is done well

Yellow: Exists but may not be adequate for the future

Red: Important need not yet met

Table 2: Final list of Values

Integrity of Governance
2. Community liaison
3. Expertise in samples
4. Advocacy
5. Domain agnostic/community agnostic (all samples are equal)
6. Provide a value to people who are using IGSNs
7. Standards Based

1. Integrity of Governance

- Trust in the organization.

2. Community liaison

- IGSN is community driven, it is not just about infrastructure.

3. Expertise in samples

- Expertise in samples is what differentiates IGSN from other identifiers. If it is just a persistent identifier, a DOI would be sufficient.

4. Advocacy

- We have major programs who are ready to provide more.
- Is it part of our mission to establish a global idea of how and why it is important to do this all together?

5. Domain agnostic/community agnostic (all samples are equal)

- Can IGSN exist without being domain agnostic/community agnostic. One value of IGSN comes from driving the best practices.
- Multiple communities, domain agnostic or spanning. Concern -- To build this community might be beyond the scope of the services of an identifier.

6. Provide a value to people who are using IGSNs

- Cover a space to be critical. What are the unique services that the IGSN needs to provide that defines the mission?
- We want IGSN to become a critical service that sustains organizations and help meet their missions.
- We support reproducible research, reuse of samples, appreciating the relevance of samples in research and science
- Important to consider how we grow and maintain the benefit of our services.

7. Standards Based

- Collecting from the community best practices and making them available.
- Related example – it is the view of ORCID to have one stop resolvability, there is not one metadata standard, but a centralized place that would federate out to the different places. This may not be possible today but a valuable model to consider.