

GeoLife Region

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1 Introduction – steps forward in three years

GeoLife Region Initiative (GLR) was launched in 2013 to make the Gävleborg region Europe's Geographic Information System capital and an internationally recognized region for the implementation of geo-technologies in the advancement of health and wellbeing. In its report for the international evaluation team, the GeoLife Region maintains that the societal and economic development must be based on human needs and that the technology is only an enabler in these efforts. In its own words, in 2014, the initiative was defined to be...

“...centred around services and technologies aimed at better understanding how location affects our life and health. It also focuses on how to drive forward the innovation of new technologies and services to support personal health and wellbeing. Another important focus is on innovative new solutions to make smart cities into places of health and wellbeing in daily life.” (Vinnväxt, 2014).

In the previous evaluation of the GLR Initiative (de Propriis, 2016), the evaluation team acknowledged the favourable progress and appreciated especially the pilot projects that were launched and the unique datasets the Initiative potentially had access to. However, the evaluation team also noticed the regulative difficulties associated to the utilisation of the data collected and organised by the Swedish National Land Survey. Additionally, there were some difficulties in establishing deeper collaboration with the health care sector and academia. During the last three years, in its ambition to promote health and wellbeing in the region and beyond, GLR has made both strategic and organizational changes (see for more, GeoLifeRegion, 2019). The strategic focus has shifted, quite largely but not only, to building technical infrastructure (incl. e.g. data lake, testbeds, visualisation platform) in the context of Gävle Innovation Arena. The GLR Initiative has been able to successfully navigate through the early challenges also by improving its organizational capacity.

2 Management

The evaluation team assesses that the management of the GLR Initiative is well established and has organised key processes for the stakeholder network efficiently. Importantly, the board is now more strategic and better prepared than three years ago to take its place in guiding the initiative and a broader stakeholder network. The initiative has addressed well the main elements of network management that are aligning perceptions, mobilising actors, and constructing shared forums for operation, and the relations between these three. The GLR initiative has been able to align the perceptions of a variety of actors so that collective action

has become possible. This has resulted to, and is caused by, the fact that the GLR initiative has been able to construct a permanent organisational field, which give the initiative its distinct form.

An initiative such as GLR raises both hopes and enthusiasm in the region, and the diversity of expectations of the many stakeholders easily remains buried underneath well-progressing collaboration and general level shared visions. Such expectations range from contributing to local/regional development and becoming the strongest Swedish hub in the field to very individualised organisational wishes and desires. Quite naturally public policymakers are looking forward to increased employment and globally leading position in an important field. Academics aim to push the scientific frontier forward but also seek to initiate focused research programmes supporting their own work, whereas, of course, firms of different sizes have their own ambitions.

In the early stages of the initiative, resources and expertise have been pooled very well around shared activities but, presumably, as the activities continue to expand, there is a danger that the variety of expectations may start diverging and challenge shared understanding of the strategy. Consequently, the evaluation team reminds about the need to systematically manage expectations, as it is one of the most important ways to leverage diversity in a complex network with a variety of needs. Expectation management and related stakeholder analysis might prove useful both in identification of new opportunities and facing future disappointments without endangering the well-established collaborative spirit. Consequently, it might be a good idea to discuss more in detail how various projects support both the overall vision of the initiative and various stakeholders contributing to, and benefiting from, it (see the evaluations of the Paper Province and Smart Housing Småland too, as all three Initiatives faces the same challenge and thus also the recommendation is the same).

3 Achievements

In this section we describe the main achievements as observed by the evaluation team.

Bold to change strategy half-way. We recognize the GeoLife Region initiative has made a brave decision in phase two by changing strategy. Sometimes making a pivot of strategy is what accelerates success and what enables one to become a recognized leader. We are aligned with the board and stakeholders of GeoLife Region: we believe that the new strategy based on delivering and enabling know-how on utilizing a data lake, is likely to help the region prosper in the innovation area of sustainable living / city and health.

Align with global trends and national/international goals. We believe it is a good move to align with global trends and national initiatives to assure future success. The decision to moving to enabling stakeholders to accelerate innovation through access to data and know-how on how to become data driven, we believe is a good move to show more results, faster. Showing results that resonates with stakeholders' agendas will be key in this last phase of the program, to fuel interest for other investment providers beyond the Vinnova funding. Hence, the idea of data-driven innovation, is a good chance of getting to where you need to be by end of phase three.

Creating usable data lakes are hard. We further recognize the achievement of bringing 100s of data sets together and simplify the access to them through APIs, in a common place – referred to as the data lake. This is usually not a simple task, and it is clear that stakeholders have invested in, contributed to, collaborated on, and start seeing the potential in enabling these data sets across industry, academia & research, policy makers, startup ecosystems and the citizens community. Data lakes are a well-known technical strategy across industries around the world, seeking to become data driven, to accelerate new insights and thereby fuel innovation. The GeoLife Region data lake is a well-chosen step in the right direction.

Early signs of success. It should also be acknowledged that initial projects have launched and used the data lake – with success. This is a validation of the new strategy as well.

Aligning vastly different stakeholders. Shifting strategy and building a data lake with a wide variety of stakeholders involved that need to align on multiple dimensions (e.g. data, regulations, goals/agendas and privacy needs) and considering the limited technical team to deliver it, it's impressive what the region has managed to accomplish in the 2nd phase.

Shifting from membership to ownership. It is clear that the region has achieved cross-stakeholder alignment and transitioned stakeholders' and boards' position from participants to co-owners and strategy leaders or influencers. This was pointed out as essential in Phase 1 evaluation and has strongly been delivered for the Phase 2 evaluation.

Ripple-effect of municipality and academia alignment. Same goes for the university (research and academia) relationship – not only are more stakeholders involved now compared to previous phase, but the members are clearly showing ownership and interest in potential investments and wider/deeper involvement within and across their organizations - but more importantly *beyond* their organizations. As a noticeable example: the goals and strategies have officially aligned between the overall region and the university faculty – they now work and prioritize towards the same strategic goals. This is a huge success of this program – whether or not GeoLife Region was directly or indirectly involved.

Accelerated Results. Last but not least it is noteworthy the significantly accelerated results in multiple categories that had underlying substance, see numbers in the diagram below that originates from the reports provided from the GeoLife Region program management.

New services	-	2	2	2		10	16
New prototypes	1		2	6	16	115	140
New processes	1			3	15	50	69
Scientific articles	-		2	2	1	2	7
Patent applications (requested from 2016)	1					18	19
New patents	-					18	18
New companies	3	2	1	2		5	13
New establishments/ expansion investments	-	2	4	5	9	10	30

Figure 1. Results as reported to Vinnova by the GLR Initiative

We see great potential towards achieving the goal of becoming a world leading hub for sustainable living and health innovations, if phase 3 is delivered and executed well.

4 Challenges and recommendations

In this section, we describe collected observations regarding challenges that emerged as patterns across provided written materials and reports, and stakeholder interviews. It is not meant as criticism, but a mirror of the current state. Along these observations, we provide our recommendations from an outside project perspective based on our various expertise areas. It should be stated that we recognize it is a diverse geographical area, the resources are sparse, there are multiple agendas, and sometimes relationships, decisions, and aligned understanding takes time. We recognize further that we come with industry perspectives on an initiative that should mainly be identified as a program or a process. With that in mind, below follow our collected feedback of Phase 2 and the plan ahead for Phase 3 and beyond.

4.1 Realizing value to reinforce buy-in, funding, and scale

Although majority of stakeholders expressed alignment with the GeoLife Region and acknowledged its value (especially around connecting with and providing expertise) as well as the high *potential* of the data lake, it was still evident there was a gap in knowledge when it came to:

- The data lake's realized value
- The wider awareness of it beyond the stakeholder
- Deeper understanding what it is and what it can provide, but also more importantly how their specific organizations can use it and get value.

The concern we as an evaluation team want to highlight here is that the void in understanding the value will limit its ability to attract interest, funding, and further adoption. If not significantly used across stakeholders, the data lake will not become the success and then all investments have gone lost.

Example questions that came up:

- What is a data lake?
- What can it do for me / my org - how does it fit with what I am trying to accomplish or solve?
- What good is it for the citizens?
- What is FPX vs GeoLife Region vs Arena?
- Where can I go to learn about how to use the data lake?
- Can I get my data in there – how / who do I work with – what do I get in return?
- What examples are there of what others have done, that I can use to evangelize the data lake within my organization – that explains the value?

Summary of observed challenges

- Only the stakeholders know about the data lake – not their organizations
- What data lakes are and can serve is not common knowledge or well understood
- Few understand its value which prevents further buy in (and potential co-funding and wider adoption)
- The report and web site use technical terms to describe both initiatives and what it is – not story-telling ways to explain to a common user what it can do for them

Our recommendations

- Urgently create a go-to-market strategy and execution plan (with assigned owners)
- Find or create efficient tools or methods to
- Help stakeholders understand value
- Help stakeholders evangelize value and increase footprint with the intended consumers (researchers, analysts, entrepreneurs, industry representatives...)
- Use common language / stakeholder's terms and examples from their contexts to explain
- Rev your web pages on a quarterly basis, to make continuous improvements – based on user flows and feedback, to decrease confusion over time
- A go to market strategy – entailing, but not limited to:
 - 1. Create a content plan**
 - a. Who are all the roles and stakeholders and users that need information and knowledge
 - b. What type of content would they need (how to, agenda, definition blurb...)
 - c. How do they consume content (tutorial, verbal, written form, email...)
 - d. What are the places each content should be present / linked
 - e. Execution plan – who does what when, for whom, and where... - i.e. create the content and publish /distribute it according to plan
 - 2. Document success stories** (“sunshine stories”) – a few per stakeholder type – in all forms appropriate, based on the content plan
 - 3. Revamp the web site hierarchy** – FPX / GEO-LIFE / ARENA / DATA LAKE --- how are they different, how should they link to each other, should they link to each

other, which content for whom where...with clear definitions, it will be easier for the right user to consume the right information and navigate easily – more self-serve of information and knowledge

- a. Create a landing page for all content organized based on 5W
 - i. What
 - ii. Why
 - iii. For Whom
 - iv. Where
4. **Create a clear communication plan** – what to communicate, how, to whom, by when – and who owns what
5. **Design a marketing plan** – maybe even staff this full time to cover regional, national, international
 - a. What events or what channels can be used to get the various success stories, definitions, and awareness / messages out to the right audiences?
 - b. What does each event / channel engagement entail?
 - c. When to participate where and how

4.2 Enable self-service & simplify adoption

Even the most technical stakeholder we talked did not fully grasp all the data sets and how they could benefit his organization. There needs to be more examples and more easy ways to get insight from the data sets. How-to tutorials, demo-videos, and stories – the stories were the strongest feedback pattern we heard in this context as well, as that would help motivate putting the strongest resources within each org on this project, which would accelerate adoption.

Summary of observed challenges

- Organizations don't have the skills to get value out
- Risk of becoming the bottleneck to get value out, will limit adoption and scale and prevent focus on other future priorities over time

Recommendations

- Consumption tools / documented APIs
- How-to tutorials
- Maybe a lab environment where users can try out querying the data sets
- Nothing beats demos and visualization
- Data sampling along with descriptions
- “so my mom would understand when and why to use it”, examples – not just descriptions, examples that makes sense for the stakeholders' organizations
- A go-to hub of community-based knowledge-sharing – think stackoverflow.com for this hub..

4.3 Long-term data lake strategy

Data lakes are not just created, they need to be continuously maintained. Is any data getting irrelevant? Who owns quality and relevance marking of data? Who owns the maintenance and feature asks on the APIs? Who covers security patching etc for tool integrations? Are there processes established that are clear?

- Summary of observed challenges
- Data Lakes takes continued efforts
- Future success increase demands on scale and automation

Recommendations

- Plan for scale from the beginning
- How do I get my data in – what is allowed, governance, security, what tools → define a process, provide tooling, services, or partners to help, be specific, make it “automatic” and “canned” as far as possible – variations bring the challenges...
- How do I cover the cost of adding data – service model, fees for sustainability → before you give it away, what to you get in return?
- Have “share your success story” as a sign up requirement and/or follow up form?
- To access data, contribute your own or pay a fee??
- Upgrades, security, governance, monitoring → plan for ongoing tasks and iterations to keep it running
- Start small, re-evaluate often, automate → to help scale with success
- Find partners who will help scale on-boarding or specify what is needed to help organizations prepare → adoption is key, focus on scaling and simplifying
- Create a know-how community / network / on-line forum → scale skills, so you don’t become the bottleneck
- Rev processes on a regular basis as you grow, evaluate automating bottlenecks

4.4 GeoLife Region/FPX confusion

During the interviews with the stakeholders, there were many interviewees, who were not able to differentiate between the GeoLife Region Initiative and FPX. Furthermore, there was confusion about what their roles are. Moreover, such fundamental questions as ‘what is a region’, ‘what is the GLR organization’ and ‘how do they all work together’ were hanging in the air. We recognize that all these questions were explained in the written material, but, unfortunately, this information has not been internalized by the stakeholders.

In the business plan, there is a “Stakeholder description Future Position X and GeoLife Region”, which lists the Owners Future Position X, Funders Future Position X, Cluster stakeholders Future Position X, Funders GeoLife Region, GeoLife Region steering group and Project parties GeoLife Region in equal order and their roles are described. It might enhance network management if all these parties, and their roles were better known by the stakeholders. It could be of good value for the regional stakeholders to know more also about the other

stakeholders, their roles and relationships. They would be able to act more efficiently if they understood better the organisational set-up. An organizational diagram to present an overview would be a useful tool to explain and improve understanding of the roles and relations.

Summary of observed challenges

- Not clear for all partners what GeoLife Region and FPX are; not clear for how they are connected.

Recommendations

- Make branding also internally.
 - More targeted information on what GeoLife Region and FPX is, why it is established, what the purpose and goals are and how it works
 - Tell the story and tell the concrete success stories to illustrate
- Connect individual organisation strategies with the one of GeoLife Region and vice versa

4.5 Future funding

During our interviews, we did not get any clear answers to how the continuation of GeoLife region would be organized and funding secured after the Vinnväxt funding ends. EU funding and the Region were mentioned as possible sources for funding. We think it is too uncertain to rely on only a few sources of possible income since political and economic landscapes change over time. We would recommend having a funding strategy on top of the business plan. The funding strategy should be made already now, and it could contain both alternative funding possibilities and also anchoring the Initiative in stakeholder organisations in the region. A strategy for the future should be created with all the stakeholders involved. Another possibility is to develop a business model for creating real income from the data lake.

Summary of observed challenges

- Future funding of GeoLife Region is not adequately planned yet
- Focus is on a few and potentially insecure sources (EU, Region)

Recommendations

- Make a strategy for future funding now (and improve it over the next three years)
 - Develop a model to create the value of the Data Lake
 - Look into combinations of funding including private sector
 - Find out what will make the organizations/companies pay for data
- Find a self-sustaining economic model – get inspiration from others

4.6 Focus areas – specific sub-goals

It is clear that a lot of work has been put into the business plan and the action plan and they describe well via work packages what actions will be taken. There is also a good description of

the vision, mission and infrastructure. We find that the description of the vision and mission are quite broad, which can make it difficult to make all stakeholders pull in the same direction, and hence creating even bigger results. However, a narrower focus (accompanied with a list of concrete goals) might serve the Initiative better than the current broad one. The action plan explains all the actions that will be taken but does not describe the exact measurable goals that have to be reached. One way to take steps in this direction could be, for each action, to describe in more detail how, and with which concrete steps the related goal will be reached.

Summary of observed challenges

- The focus area of GeoLife Region is too board
- The focus level between the vision and Data Lake is not clear

Recommendations

- Identify a few focus areas that support your vision (from the thematic areas of health, wellbeing (employment) and sustainable city (Smart City?))
- Identify the main challenges to be solved - the main problems
- Identify 5-7 concrete goals that are measurable (not activities) – and have measurable effects, where the data will be used (you can have data and activities without getting effects)

4.7 Maintenance and operations, funding for it

Together with the data lake a whole technical infrastructure has been created in the region. It also consists of a reality testbed and a 4D model of it, a blockchain testbed, a visualization platform, a digital community and a policy lab. This is very impressive. Our concerns are that the physical and digital infrastructure will be expensive to run and maintain with the right skills for the tasks. At the same time, it could be a challenge to get the stakeholders to put the resources into it in the long run, one challenge being that stakeholders putting resources into the feeding the data lake or the other parts of the infrastructure, might not be same as the ones getting the benefits. We recommend finding a model (as a part of the funding strategy) to keep the whole infrastructure and especially the data lake running also after the existing funding runs out.

Summary of observed challenges

- It is expensive to operate the Data Lake
- It requires the right resources and skills
- How can you make the participants put the right resources and expertise into this work?
- Planting/harvest syndrome

Recommendations

- Find a model for making the organisations put their experts' resources into it, and distribute revenues fair

- Buy expertise elsewhere
- Tell success Stories

4.8 Quality and continuity of data

Even though all the data use in the technical infrastructure as a whole and especially in the data lake have the potential to create value, we think there is a point in looking more into this. Hard as it might be, we would recommend trying to prioritize some data over the others and especially when acquiring new data. The worst-case scenario is that GRL spends a lot of time and energy in getting data with low value. For example, most data related to human health and wellbeing will probably have a high potential value. There may be a challenge in getting the same specific data over a long time with the same quality. Development of a model for ensuring the quality of data will go hand in hand with a funding strategy.

Summary of observed challenges

- Getting the right data (the ones that are most likely to create value)
- Who ensures the quality of the data? Big problem if you make solutions that cause damage due to data with poor quality.
- Ensuring the continuous inflow of the same type of data and maintaining the quality at the same level
- Data is only worth a lot if the businesses can be guaranteed for having an access to the same data "tomorrow" (otherwise they cannot build a solid business)

Recommendations

- Prioritize which datasets you will put an extra effort into getting
- Find a model for securing quality and decide who will be responsible for it

4.9 Urgency – multi-actor setting slow things down

It is highly complex to work in networks with many stakeholders. It is time-consuming to make decisions and to mobilise all the stakeholders in the same direction. This is very understandable, as the stakeholder representatives can have difficulties in getting their organisation to understand and support the vision and see the value for themselves.

Summary of observed challenges

- It takes a too long time to get actors on the same page to be able to move forward
- Decision making takes time

Recommendations

- Find and communicate the necessary steps in the network to create urgency ("burning platform")
- Make a time plan for decisions and actions in the strategy
- Add stronger element of "how" into the action plan

5 Conclusion

The Evaluation Team appreciates the very good progress of the GLR Initiative but also raised some topics to be deliberated for the future. Overall, the evaluation team was impressed with the progress made by the initiative after the previous evaluation. It has been able to mobilise key stakeholders across the triple helix (academia, business and local/regional policymakers) and secure a strong commitment from the relevant parties. The initiative is playing a catalysing role in the region. The team hopes that the Initiative remembers the risks involved in putting all eggs in one basket – or in one lake – and reminds of the need to be aware of various contingencies and have plans B, C and D ready.

Finally, the evaluation team wishes the Initiative all the best - keep up the good work, but do not get stuck in analysis paralysis – it is time to execute and move forward.

The evaluation team recommends Vinnova to continue funding the GLR Initiative. It also recommends responsible parties to deliberate carefully the observations and recommendations presented in the report.

References

- Vinnväxt - A programme renewing and moving Sweden ahead. Vinnova Information. VI 2014:04
- GeoLife Region - Report 2016-2019 for phase 2 International evaluation (2019)
- de Propriis, L., Sotarauta, M., Hecker, P. A., Ayazi, R., Time, B., Belis, J., Pursula, T., Saddler, J. & Werner, M. 2016. Shaping the Future now - Good Start! International evaluation of Geo Life Region, Smart Housing Småland and The Paper Province 2.0. Vinnova Report. VR 2016:11. Swedish Governmental Agency for Innovation Systems/Verket för Innovationssystem; Stockholm.

Appendix 1. Miscellaneous to mull over

- Get advisors who have built data lakes in the industry, learn from them
- Focus on regional success first – to secure funding beyond Vinnova
- Ask each stakeholder representative to come up with the top 2-5 questions they are struggling with answering
- Ask if you can help answer it, if they would be able to help fund the initiative forward to help answer other questions down the road
- If yes, put in a near term roadmap bucket
- If maybe, put in a medium-term roadmap bucket
- If no, put in a long term roadmap bucket to re-evaluate later
- For each short term roadmap item, see if you have or can easily acquire the data into the data lake
- Help with connections or partners or resources to help a project launch to start answer the question (example projects: research project, master thesis project, startup, citizen hackathon...)
- Publish results and report, and go back to the stakeholder and ask for a funding plan
- Make a lot of noise about the success everywhere, to attract other stakeholders
- Put the example success and the documented how-tos on your web-hub
- Rinse and repeat
- Once you have successes with each type of stakeholder (academia, startup, industry, and policy maker) go national, then international
- You have a lake, now you need to focus on solving some hard problems with it (unemployment + health, traffic + health anything goes that is in the municipalities, industries, or academia's interests) – start producing visible results and evangelize them in any way possible
- Funding should be your #1 problem to solve in this phase