General Management at Geo-ICT Companies and Data Acquisition Companies

There is much generic literature on general management but not specifically about management at geo-ICT companies or data acquisition companies, which is why the author has written this article. It covers the various aspects of general management at geo-ICT companies and data acquisition companies, and addresses the priorities that need to be chosen. This article is intended for current or future 'ultimate responsible persons' (URPs) within geo-ICT companies and data acquisition companies, and their advisors, including within geo-related units in the non-profit sector. The URP can differ from one company to another, although one can usually indicate this intuitively (director-major shareholder, managing partner, general manager, managing director, director, departmental manager, etc.).

When considering a geo-ICT company or data acquisition company, it is important to determine whether general management is about entrepreneurship or about management. Entrepreneurship is externally oriented, is focused on the 'what' (effectiveness) and is market oriented, whereas management is internally oriented, is focused on the 'how' (efficiency) and is oriented towards business management.

In the following aspects of general management, the emphasis is mainly on (external) entrepreneurship:

- Mission and vision
- Marketing (product-market combinations)
- Sales (product-marketing combinations/PMCs)
- Research & development / business development (new PMCs)
- Maintenance (PMCs)
- Acquisitions

In the following aspects of general management, the emphasis is mainly on (internal) management:

- Strategy
- Housing
- Finance
- Production of geo-ICT software or geodata
- Human resources
- Organisation

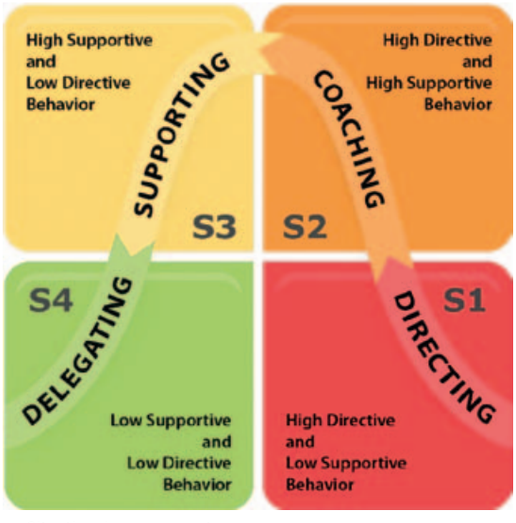
An Ultimate Responsible Person can differ between companies.

- Quality assurance regarding geo-ICT software or geodata
- Risk management regarding geo-ICT software or geodata
- Communication with shareholders and works council

The above distribution of aspects of general management to entrepreneurship (external) and management (internal) is somewhat arbitrary; many aspects contain both an entrepreneurial and a management component. Therefore, it is important that the URP of a geo-ICT company or data acquisition company has the characteristics of both an entrepreneur and a manager. In general, however, it is more important for the URP to be structurally involved with external (entrepreneurial) aspects than with internal (management) aspects. Wrong external decisions usually result in more severe damage to the company's image, cost more money and are more difficult to reverse than wrong internal decisions. In practice, therefore, the URP will often take most of the external aspects for his/her account and will often delegate most of the internal aspects to a deputy.

IN ADVANCE

It is advisable for the URP to do as much thinking as possible in advance, both when using own staff and when hiring specialists from outside. Doing as much as possible in advance has several advantages: it increases the URP's control and boosts the cultural unity, as well as saving costs in the case of hiring an external expert.



▲ *Situational management.*

In a situational management approach, the employee is managed according to the situation (to be classified in one of the four items: directing, guiding, supporting, delegating). This approach is relevant in geo-ICT companies and data acquisition companies too; employees must be managed depending on the situation rather than on the person.

GENERAL MANAGEMENT PRIORITIES

Of course, it is not possible for the URP at a geo-ICT company or data acquisition company to continuously focus on all aspects of general management. Therefore he /she will have to set priorities. To begin with, some aspects of general management only need occasional attention.

For example, once the mission, vision and strategy have been established – often after an intensive and time-consuming process – it will usually be sufficient to check and maintain them just once or twice a year (at fixed times) for several years afterwards. Similarly, when it comes to housing, in the case of rented business premises this issue only demands attention towards the end of a rental period, and if the property is owned it usually requires even less frequent attention. It is wise to terminate the contract immediately at the start of the rental period to avoid having to remember the notice period. But for the short period of time that the issue of housing requires attention (whether for rent or purchase), it makes intensive demands on a manager's time! During this process, it is important to estimate the right number of square metres needed because the company will be renting/buying for the long term.

Conversely, finance is an issue that needs the URP's constant attention. After all, ultimately the URP is always responsible for making sufficient profits. Furthermore, the URP must have some affinity (and his/her deputy must have great affinity) with the production of geosoftware and geodata. Firstly, that affinity will enable the URP to stay alert to a potential conflict of interests between the production department and other areas of the company. Secondly, it will help the URP to keep or get critical projects on track. This is good for risk management and gives the URP internal and external authority, contributing to a high-quality image for the company in the market. Thirdly, the URP must be able to decide what has to be executed within the company and what can be structurally outsourced.

It is important that so much is executed within the company itself, that sufficient competences remain in place to translate client wishes into production and to guide the outsourcing, including the important aspect of quality assurance. Fourthly, it is important to have a realistic picture of the costs/hours of production. Much work is outsourced to low-cost countries by geo-ICT companies and data acquisition companies. Thanks to increasing automation, the share of manual production is decreasing, making labour costs less significant. Having said that, outsourcing decisions are not made based on production aspects alone. Another important aspect is whether the activities concern the core business or not.

EXTERNAL VIEW

It is very important that the URP approaches his/her company with an external view in order to see the opportunities and threats for the company in the market (external) and strengths and weaknesses within the company (internal). By having a feeling for these elements of the SWOT analysis, the URP has an even stronger sense of the company's mission, vision, strategy and positioning. The URP also has an understanding of the choice of products and services in the market (PMCs) and/or clusters thereof which must be in line with the SWOT analysis, the mission, vision, strategy and positioning of the company. The aim is to logically subdivide the company's activities into PMCs/clusters of PMCs that are as unique as possible, since the choice of PMCs determines the current and future market position of the geo-ICT or data acquisition company.

MARKETING

The PMCs then have to be marketed and sold. Technical people sometimes associate marketing with nothing more than presence at trade shows. However, marketing revolves around creating coherence and alignment between all aspects so that the geo-ICT or data acquisition products or services can be sold at the maximum price. Some people do not realise that marketing is different from sales; in fact, marketing is the preparatory work for sales! The influence of marketing should already be felt in the choices regarding development. The company should strive to develop new services or products that can be positioned with as little competition as possible. This is called the 'blue ocean' strategy, in contrast to the 'red

ocean' in which there are too many fish (i.e. too much competition) and they attack each other, turning the water red.

Another advantage of early contact between the Marketing and Development departments is that this is good for the balance between the technology push (technological development) and market pull (marketing on basis of market needs). The geo-ICT and data acquisition sectors are both driven by continuous technological advancements, but there must be a (latent) need from the market!

▲ *Automation has made it possible to capture large quantities of geodata.*

IMPORTANCE OF PMC DECISIONS

It is important to choose the PMCs, and to cluster similar PMCs, to optimally meet the following requirements:

- The PMCs must remain unchanged for at least two or three years to facilitate financial monitoring
- Similar PMCs should be grouped together to form a stable cluster from which PMCs are produced and/or sold. Such a cluster needs to be healthy and managed by a cluster manager. People and other resources have to be allocated for a reasonable time (two to three years) with budgets for development, sales, software production, maintenance, etc.
- Everything that the cluster manager cannot influence must be financed from outside the cluster (general overheads, part of the costs for housing, human resources management, office automation costs, etc.)

The URP must be closely involved in the selection of PMCs and their marketing, sales and development. Such decisions should not be delegated. However, PMCs have far-reaching significance beyond these aspects. In fact, it is good to base all operations on the PMCs. These can be monitored very well financially and analysed using a BCG Matrix as question marks, stars, cash-cows or dogs. This indicates whether activities (development, marketing, sales, maintenance) have to be developed, consolidated, reduced or stopped for the respective PMC. As mentioned above, from a commercial point of view the PMCs should be positioned as uniquely as possible in order to minimise competition. Unique positioning is not only determined by the product (or service) itself, as technical people still often think, but also by the other 'P's in the marketing mix: price, place, promotion and personnel. One danger of the PMC approach is that one can be inclined to focus only on the existing PMCs, paying too little attention to new PMCs. Therefore it is good to make someone responsible for the development of new PMCs (i.e. business development) in addition to the employees responsible for existing PMCs.

For those geo-ICT companies and data-acquisition companies that work for government authorities – and many of them do – it is extremely important to closely follow the policies and developments within government and to align their PMCs with them. Both in companies and in government, the trend is shifting from georegistration to geomonitoring and then to geoprediction. Automation has made it possible to capture large quantities of geodata, e.g. through laser scanning.

BUSINESS MODELS

Generally speaking, the market is much more likely to accept a new product/service (P) than a new sub-market (M). Therefore, companies are advised to favour the development of new products and services for existing clients. If a company wants to enter a new market segment, this may be a reason to buy (part of) another company including its clients. With regard to acquisitions, it is worth mentioning that the leading Dutch quality newspaper NRC recently reported that "almost every industry has to deal with companies with business models like the start-ups of Airbnb and Uber". Why should this not be the case in our industry? Airbnb and Uber are built around the smart use of ICT, especially the use of apps. The size of the own workforce is minimal in these companies, and they frequently work with independent third-party professionals. There is one big difference with the geo-ICT and data acquisition sectors: in our industry, the necessary level of education is much higher. In the geo-ICT and data acquisition industry, only a few companies fit into the Airbnb and Uber trend. Longer-standing companies in geo-ICT and data are focused on ensuring quality. While quality is definitely an issue, it has become less important because of a lack of knowledge regarding how quality should be measured (e.g. using the Baarda method of testing). As the importance of quality decreases, the relevance of the seemingly easier-to-measure price increases. When it comes to quality, the old adage 'The devil is in the detail' often applies, and the quality (or lack of it) often only becomes apparent at stress moments. Longer-standing companies are more likely to have a quality system in place than start-ups. Those companies with a quality system usually improve their quality over time as they implement lessons learned in the quality system for subsequent projects.

ACQUISITIONS

Although acquisition of (parts of) companies is a very complex topic that cannot be dealt with thoroughly here, it should be pointed out that acquisitions are not commonplace and, when they do occur, they are always strategic decisions involving the senior management. In purchasing another business, the acquiring company's aim will often be to acquire PMCs that it does not currently have itself but which are essential for a healthy future. We see evidence of this when start-ups in the geo-ICT and data acquisition sector are taken over by longer-standing companies.

The geo-ICT aspect is becoming increasingly important for data acquisition companies too. However, it can be very difficult for data acquisition companies to find a geo-ICT company that is a good cultural fit and hence could be a potential takeover target. Without

a cultural fit, the acquired employees will subsequently leave, resulting in the acquiring company buying a geo-ICT company – often at great expense – without a workforce, leaving little more than an empty shell! If there is a great risk of such a situation arising, data acquisition companies are recommended to build their own geo-ICT unit instead.

A company's culture is based largely on its approach to human resources and quality assurance. Therefore, it is important for the URP to make his or her mark in close consultation with the works council. This does not mean that the URP has to spend a lot of time on these issues; much of the workload can be absorbed by the human resources and quality assurance professionals, whether inside or outside the company. However, they need clear direction on policy from the URP. For example, in terms of quality assurance, the URP should proactively indicate how the company should position itself in terms of quality, i.e. high quality at a high price, or lower quality at a lower price.

RISK MANAGEMENT

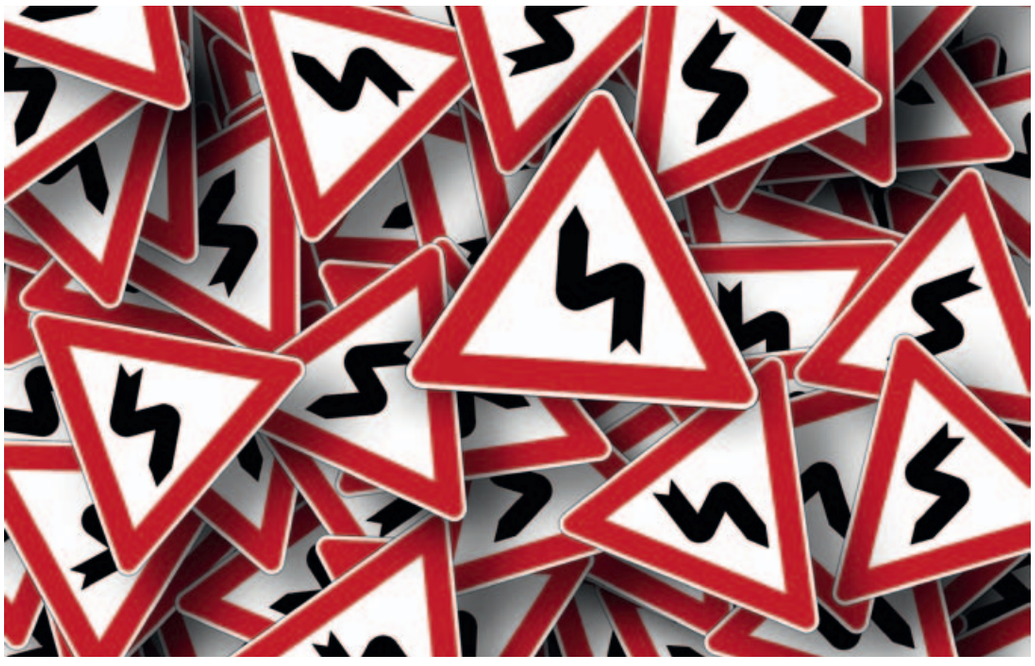
Most geo-related projects involve high risks, so it is important to control and manage the risks, both before and during a project.

Risk management prior to the project:

- Adhere to the certification requirements relating to the main processes. Certification forces a systematic approach to work and a structured approach to communication. However, certification does not solve all problems. There are plenty of examples of the wrong work being done, albeit according to the certificate.
- Encourage continuing professional development, given the rapid technological developments in geo-ICT and data acquisition.
- Beware not to over-specify the contract. This has the following negative effects:
  1. There is little room left for the (innovative) input of the geo-ICT and data acquisition companies;
  2. Assignments become too complex;
  3. The project can be attributed to a specific contractor.
- Functional procurement approach: this has the big advantage that contractors can bring their innovative abilities into the project.
- Set the lower limit: It is in the contractor's interest that the projects are not too small and have an easy part so that the contractor can recoup the knowledge costs.
- Set the upper limit: On the other hand, there is also an upper limit for the contractor, since the bigger the project is, the more risk it entails. If the upper limit is exceeded, the risks are unacceptably high.
- Include cancellation and amendment clauses: A cancellation clause enables a contractor to stop a project without excessive consequences, for reasons beyond the company's control. In practice, this will not happen easily, but only after the contractor has incurred considerable costs. In terms of amendment clauses, clients are generally unwilling to accept a clause that enables the contract to be changed on the contractor's initiative.
- Pay attention to fines and bonus clauses: These are mainly included at the client's request, and the two (fines and bonuses) go together. For a contractor, a fine on a project that is not running well is usually just the tip of the iceberg because the contractor will also have already incurred high costs.
- Identify the risks and formulate solutions in advance: The contractor should consider various project scenarios and indicate the perceived risks, including how to minimise them and which actions will be taken if the risks arise. The contractor must discuss this with the client.

Risk management during the project:

- Arrange a trial delivery: A geo-ICT or data acquisition project usually involves large amounts of data, and it is essential that all types of project data appear in the trial delivery. The trial delivery is also a good way to match the expectations of the client and the contractor. Fast trial delivery is essential to prevent or eliminate many misunderstandings.



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MORE INFORMATION

- Risico-management bij geodetische en Geo-ICT projecten, Jos Anneveld and Ronald Vroom, *Geo-Info 2017-1;* Marketing en sales bij Geo-ICT en data acquisitie bedrijven, Jos Anneveld, *Geo-Info 2017-1*, pp 24; Algemeen management bij Geo-ICT bedrijven en data acquisitie bedrijven, deel 1, Jos Anneveld, *Geo-Info 2017-3* and Algemeen management bij Geo-ICT bedrijven en data acquisitie bedrijven, deel 2, Jos Anneveld, to be published in *Geo-Info*.
- Eliott Aronson, Timothy Wilson & Robin Akert, 2011, *Social Psychology* (7th Edition), Amsterdam: Pearson Education, Benelux.
- Wikipedia, strength-weakness analysis
- Wikipedia, BCG Matrix.

- Formulate critical projects that the contractor strictly monitors from above: While describing a project as 'critical' ensures it receives extra attention, there is also a risk of creating unnecessary bureaucracy. A loss-making project should definitely be labelled 'critical', but of course other criteria can be chosen too. For critical projects, improvement points should be formulated and it is a good idea to monitor progress weekly.
- Build in enough contact moments between contractor and client: A geo-ICT or data acquisition project to develop a product or service requires input from both parties. It is important that the contractor and the client have enough contact moments, starting from the very beginning of a project. Not all contact moments must be face to face; for example, the client and the contractor can keep a digital log, allowing them to specify the project in detail.
- Set a realistic deadline: Healthy time pressure is important in a geo-ICT or a data acquisition project, as in any other project. However, excessive time pressure leads to errors. Meanwhile, too little time pressure allows attention to fade and that can also cause errors. A quick trial delivery of a small part involving all the essential elements of the project helps to create healthy time pressure, and production is greatly increased when the trial delivery has expired. In the final phase of the project, production is much lower and a large part of the team can be removed from the project.
- Communicate with shareholders and the works council: Since the above-mentioned issues should be broadly summarised for the shareholders and the works council, this communication must always be coordinated by the URP. It is also extremely important that the URP is the first point of contact in case of initiatives by shareholders or works councils.

CONCLUDING REMARKS

General management of a geo-ICT company or data acquisition company involves many aspects. The ultimate responsible person (URP) must therefore set priorities. Some areas require only occasional attention, whereas other aspects must be handled by the URP or may be delegated by him/her within or outside the company. In the case of delegation, it is important that the URP thinks about the issues in as much detail as possible in advance in order to determine the policy and, in the case of delegation outside the company, to save costs. ◂

ABOUT THE AUTHOR

During his career, Jos Anneveld has gained extensive experience in formulating missions, visions and strategies for organisations and departments, and in implementing policy in line with these visions. In doing so, Jos has always aimed to achieve cohesion between positioning, marketing, sales, execution, technological development, organisation, personnel and finance. Jos is familiar with various public authorities, energy, water and telecom companies, contractors, and oil and gas companies. His area of expertise lies in setting up long-term international collaboration between government bodies, knowledge institutes and the private sector, with a special interest in solving complex problems at strategic, organisational and project level.

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