

Organizing information management and IT for to-morrow with the Amsterdam Information Model .

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Abstract.

In the Netherlands, the Amsterdam Information Model (AIM), also known as the AIM-model, is particularly popular with government and semi-government (Abcouwer c.s, 1997). It is used to get a clear idea of the alignment between business processes, the information necessary to execute these processes and the ICT used in this. This article discusses the interpretation of six of the nine domains as distinguished by the AIM model. IT investigates, how the thirteen large organization organizations involved organise their information management and IT with a view on to-morrow. Information managers and IT managers are interviewed, how there organization dealt with the different domains distinguished in the Amsterdam Information model. In each of the six domains, products and services are delivered. The work in each domain is influenced by the work in other domains. And in each domain, there is organization and control.

The article shows that in the interpretation of the six examined domains, the "structure" domain in the information provision column and the "strategy" domain in the ICT column often have been filled only partly. Furthermore, it strikes that there are differences in the interpretation of the AIM model between the examined organizations working in the education field and the other examined government organizations. These differences become evident for example when the presence of an IT governance board is being discussed; when one speaks about the evaluation of operation domains and how the ICT strategy is considered. As compared to the other organizations, organizations in the education field more commonly have an IT governance board. Furthermore, there is less attention for keeping up with ICT developments as compared to the other organizations included in the study. The latter appear to have many ways to keep up with new developments.

Keywords:

AIM model, alignment, strategic alignment model, SAM model, Amsterdam Information Model

1. Introduction.

The issue of Business IT alignment has been at the centre of management attention for a good many years. Luftman (2008) for example, observes that business IT alignment has been in the top 10 of subjects that are considered to be the most important since 1980 and has been in first or second place without interruption ever since 1994. The strategic alignment model as proposed by Henderson and Venkatraman (Henderson et al 1993) can be seen as the starting point for this attention to alignment. The model focuses the attention on the way in which the strategy of an organization can be geared to its ICT and its impact on the business processes and their support by ICT.

The Strategic Alignment Model (SAM) as developed by Henderson et al delimits the start of a long series of articles on the alignment issue. In the course of time, many changes to the model have been suggested in order to achieve a better approach to the issue. One of those is the Amsterdam Information Management (AIM) model (Abcouwer et al 2006), which demands specific attention to issues regarding interpretation and architecture. Starting from the AIM model, we will investigate in this article how alignment can be approached using the AIM model. The article shows:

- a. how the four corner domains of the model and their interrelations are fleshed out in the year 2010 in thirteen large Dutch government organizations.
- b. what the concrete interpretation is of the three information provision domains and the three ICT domains of the AIM model in 2010.

The article is set up as follows: in paragraph 2, we will discuss the theory in more detail. Next, the method of research is elucidated in paragraph 3. In paragraph 4, we focus on how the interpretation of the theory within the researched organizations takes place in practice. The discussion and the conclusions follow in paragraph 5 and 6

2. The theoretical background.

2.1. Strategic alignment.

The Henderson and Venkatraman (1993) “Strategic Alignment Model” (see figure 1) states the alignment of the organization's wishes and the ICT required for realizing these. Henderson et al distinguish two dimensions. The first dimension differentiates between an external focus that is aimed at the environment around the organization and an internal focus that is aimed at the structure of the organization itself. The second dimension distinguishes between the business and ICT. This way, the model provides four domains that have to be in harmony in order to achieve optimum alignment:

1. the (external) Business Strategy domain;
2. the (external) ICT Strategy domain;
3. the (internal) Organizational infrastructure and processes domain;
4. the (internal) IS Infrastructure and processes domain;

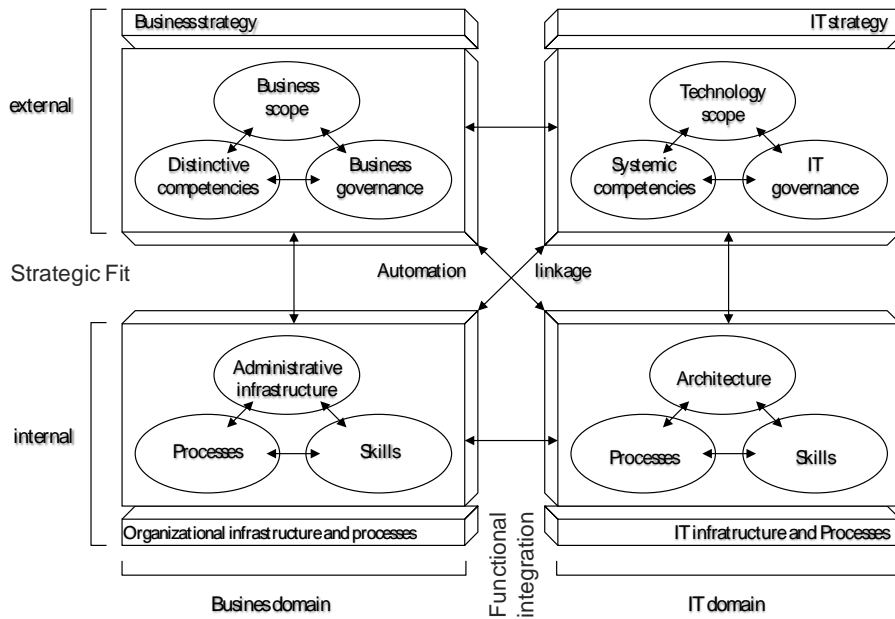


Figure 1: *The business/ICT relation according to Henderson & Venkatraman*

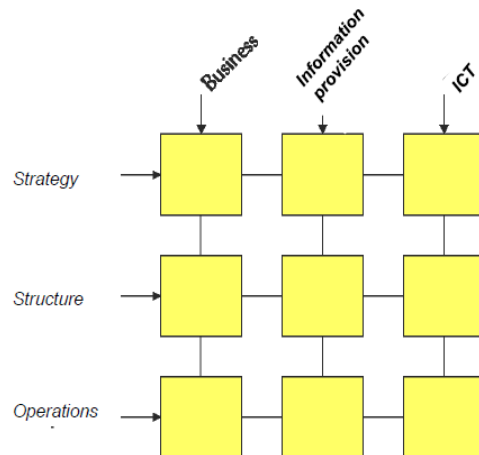


Figure 2.: *The Amsterdam Information Management model (AIM)*

Each of the four domains is made up of the following parts: scope, competencies and governance at external level and infrastructure, processes and skills at internal level. Many authors took this SAM model as their starting point for further research. At the University of Amsterdam, the Amsterdam information Management model (AIM) was developed. This model states that the connections between the four domains in the SAM

model are represented by activities to structure the organization, the information provision and the ICT on the one hand and that on the other hand, the link between the organization and its ICT often goes via an information provision function, which puts a meaning to the information that is relevant to the organization. This way, the four Henderson et al. domains are linked. Figure 2 shows the AIM model.

The first part of the article describes the concrete interpretation of the corner domains of the AIM model. The aim is to provide an insight into the manner in which organizations design the balance between organizational goals on the one hand and the application of strategic ICT on the other hand. The second objective deals with the interpretation of the six domains. Figure 3 shows for each domain what the study wished to find out: the products, what the impact there is on the domain of its neighbouring domains and the domain's organization and control.

So the research questions of the study are:

- a. How are the three domains in the field of information provision in the AIM model interpreted as regards organization and governance and which products and/or services do they yield?
- b. How are the three domains in the field of ICT in the AIM model interpreted as regards organization and governance and which products and/or services does this yield?
- c. How is the interpretation of the information provision and ICT domains influenced by the organization's wishes?

And the result shows, how the organizations have set up their information management and their ICT, preparing themselves for tomorrow.

3. Set-up of the study.

The study was carried out by means of in-depth interviews. These in-depth interviews were held with employees in the domain of information provision and employees in the domain of ICT in 13 large government organizations in the Netherlands. The interviews used standard questionnaires; these were sent to the employees in advance. The questions in the interviews were formulated by the study group that did the research. The questions were based on the AIM theory. The interviewed organizations included six organizations in education and seven organizations outside the education area. The first included the scientific universities of Twente, Tilburg and Eindhoven as well as the three universities of applied sciences, namely the University of Applied Sciences Fontys, Holland and Arnhem/Nijmegen. The second group of organizations included the Police Force, one large government organization that deals with taxation and tax collecting, ProRai (train infrastructure), the Institute for execution of education laws (DUO), the Kadaster, the Ymere housing corporation and a pension agency.

In processing the results, the study group chose to divide these thirteen organizations into four groups, being the two types of universities, the organizations with a strong information intensive primary process and the other organizations. This way, each group comprised three or more organizations. The interviews were conducted by students of the Fontys University of Applied Sciences. They were prepared for interviewing people on this subject by means of lectures and by means of two trial interviews. For these trials, they interviewed members of the study group and staff of the Services department of the Fontys University of Applied Sciences.

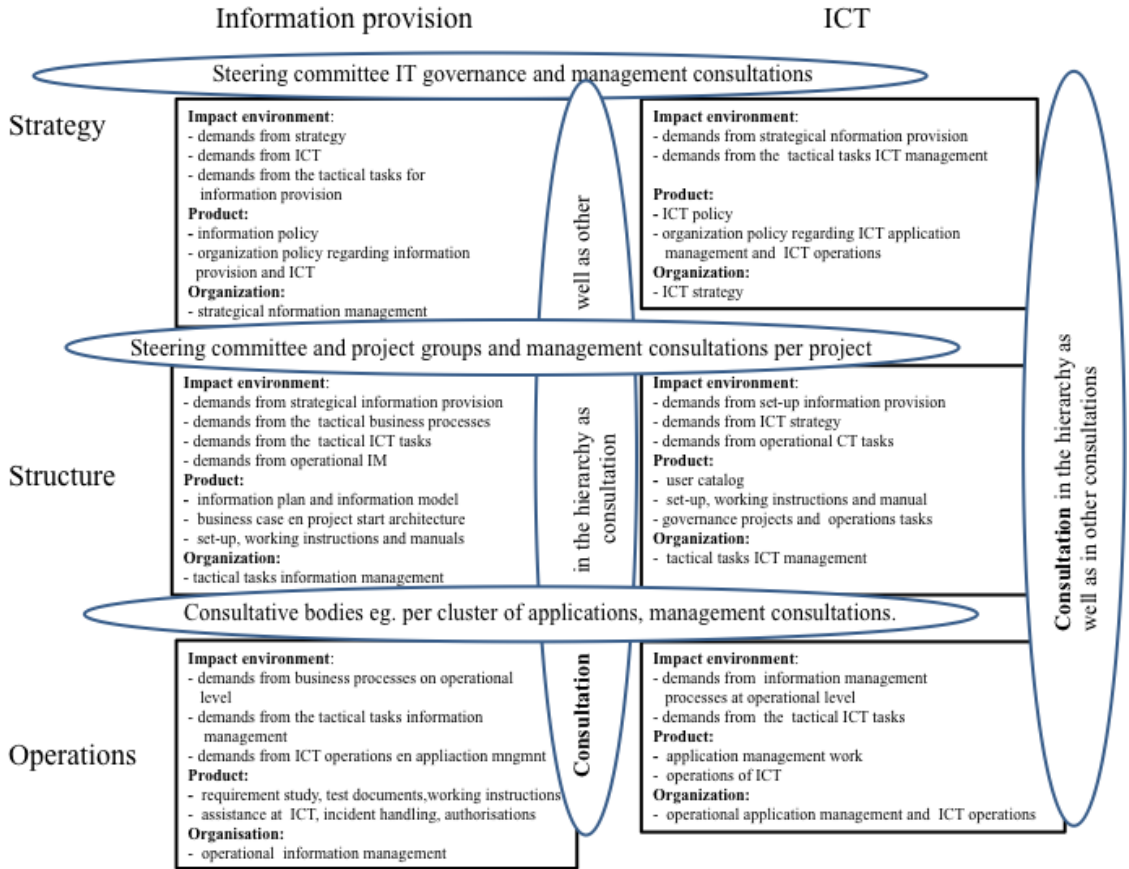


Figure 3 : *The interpretation of the information provision and ICT domains of the AIM model (the ovals outline the connections, the oblongs outline the six domains in the information provision and the ICT column)*

After this, each group of students visited two external organizations. All investigated organizations employ more than 1300 staff. The results of the study are shown in the form of tables. After reproduction of the tables, the results per group of organizations were compared with those of the other groups.

4. Theory in practice.

4.1. The interpretation of the four corner domains.

Figure 4 shows the interpretation of the four corner domains and their connections within the AIM model. This figure demonstrates that per group of organizations and as far as the interpretation of the four domains is concerned:

- a. Regarding the interpretation of the four domains themselves:
 - a.1. The organization strategy domain: three groups of organizations have a clearly defined strategy. At the universities of applied sciences, this is less often the case. Here, people work more from project to project.
 - a.2. The ICT strategy domain: as far as ICT is concerned, people do not watch the trends in all cases. This occurs in 50%-67% of all organizations.
 - a.3. The operations of the primary process domain: Three out of four groups periodically evaluate the functioning of the primary process. In the universities of applied sciences group, this only happens when problems occur.
 - a.4. The delivery of ICT domain: their work is 100% evaluated in virtually all organizations. In general, this evaluation concerns technical aspects and not the functional quality of the delivered products and services.
- b. With respect to the links between the domains;
 - b.1. The link between the organization strategy domain and the operations domain: In general, this goes via the hierarchy and involves the usual necessary reports.
 - b.2. The link between the organization strategy domain and ICT strategy domain: in the education field, there is in 84% of all cases an IT governance board, on which the management of the organization and ICT management have a seat. In the other organizations, this occurs in less than 50% of all cases.
 - b.3. The link between the ICT strategy domain and the ICT operations domain: this link is filled in differently. Sometimes this link is given by the architecture, sometimes by handholding and advice, sometimes the strategy is translated into a product catalogue.
 - b.4. The link between the organization's operations domain and the ICT operations domain: In general, information management is taken care of at operational level. Information management at operational level means that the user is functionally supported when using ICT. This functional support includes training, providing advice, providing explanations, taking care of authorisations, solving of problems and it is the immediate contact between users and the ICT department.

With regard to the interpretation of the corner-domains of the AIM model, this part of the study reveals that in general there is an organization plan, a clear evaluation of the technical side of ICT operations and that the primary processes in an organization is also regularly checked. In this, the occupation of the ICT strategy domain lags behind. With regard to the links between the domains, it is remarkable that there is usually an IT governance board in the education field and that in general, operational information management has been set up.

4.2. The interpretation of the information provision and ICT domains.

4.2.1. The Information Provision domains: impact, products/services and organization.

The interpretation of the information provision domain by the investigated organization is given in figure 5. The figure highlights the mutual impact of the domains, the products and services of each of the investigated domains and the organization and control of each domain. From the figure, it becomes clear, that:

Corner domains:		Links between the corner Domains					
Organization strategy	ICT strategy	Operations strategy	Operations ICT	Link Organization/ ICT strategy	Link Organization strategy/organization operations:	Link ICT strategy/ ICT operations	
Education field							
a. Universities							
(Tilburg, Enschede, Eindhoven)	strategic plan present sometimes translated into scenarios	in 67% ICT policy plan/automation plan. In 33% separate dept.	in 67% of cases periodic structural screening	periodical evaluation by e.g. system owners	ICT governance model proposed. In 67% of cases information management part of ICT	in 67% there is of an enterprise architecture. In 33% evaluations e.g. of the information portfolio	via the architecture or via the information/ ICT plan
b. Universities (3x) (InHolland, HAN, Fortys)							
	varies strongly from project to project, scenarios rarely used	in 50% developments followed. Sometimes trendwatchers.	incidental process evaluation, often only in problems	own ICT evaluated on technique. No comment until all hell is let loose.	Steering comm. decide via hierarchy and information policy. Steering comm supported by information management independent of ICT	checks the steering comm or the results achieved	In 67% not really present.
Other government organizations							
a. Government organizations with a primary process that is to do with money (taxation/collecting, OCW/DUO, pension execution (3 pieces))							
	policy plan or concern architecture present	developments followed and discussed. In 67% trendwatchers or teams on eg. vision and life cycle development.	in 33% testing on goals using Policy plan and information plan. Otherwise mainly actions geared towards the customer interface problem or only action	In 33% not done, in 33% since 1/1/2010 customer evaluation. In 33% audits and there are SLA's.	via architecture. In 33% of all cases an IT governance board.	via hierarchy and reports	via CIO board, via architecture or if not applicable: works via projects.
b. Government organizations with other primary processes (Ymere, Kadaster, Prorail, Police)							
	in 75% there is a business plan.	in 50% trendwatching. In other cases either the wishes come from the inform. managers and the key users or from ICT.	in case of problems in 50% structural evaluations.	100% evaluations, but sometimes link with the use.	in 50% of all cases a CIO board.	via hierarchy and reports, sometimes not available	many ways: sometimes via product catalogue, sometimes handholding

Figure 4 :
The interpretation of the four corner domains and their mutual relations

		The three domains of information provision, the centre column in the AIMI model			Structure			Operations		
		Strategy			Structure			Operations		
		Impact other domains	Products and services	Organization and control	Impact other domains	Products and services	Organization and control	Impact other domains	Products and services	
Education field	a. Universities (Tilburg, Enschede, Eindhoven)	Principles originate from policy plans: sometimes standardization and consolidation, own requirements for research support & education	Information plan and working towards control from information management.	In 33% IT governance board supported by information management. This is in 67% of the investigated organizations part of the ICT department.	Policy rules for data, standards from architecture and information and ICT strategy.	Link between strategic policy and operations: information management hardly present. Information model per project, in 33% project start architect.	For large projects there is a steering committee that reports to the IT governance board.	Working towards a uniform operational information management. Demands regarding reliability, integrity and security of ICT (RIS policy)	Fairly operational information management: no support at definition of requirements for new/other ICT support.	
	b. Universities (3x) (Inholland, HAN, Fontys)	In 67% of all organization the demands come from the strategy. In 33% of all cases mainly from ICT and mainly concern architecture and security	Information plan available and in 67% of all cases there are architecture principles	Steering committee information policy supported by independent department information management.	Demands often from ICT and often project oriented. In 33% from steering group.	Information model and projects developed via agreed methodology. In 33% project start architecture.	In 33% interpreted via steering and project groups, in 33% by department information management. In 33% per product/service.	RIS demands from ICT, audits ICT demanded in annual plans	Operational information management services that support university broad applications are under development or are already present	
Other government organizations										
	a. Government organizations with a primary process that deals with money (taxation/collecting, OCW/UDO, pension execution (3 pieces))	Demands from business plan, sometimes a domain vision document, sometimes a business function model.	In 67% information plan present with information model. Always architecture present.	IT governance board in 33% present. At other 67% only central information management.	Demands from enterprise architecture and from information plan.	In 67% project start architecture. In all cases projects according to agreed method executed.	Steering committees at in 67% from SLA's and project groups. In 67% per subject information management. In 33% there is a central demand organization.	In 75% demands from a RIS perspective. In other 25% there are strong requirements to the data organization from the law.	In 67% operational information management set up. In 33% there is no operational information, but ICT gives direct support.	
	b. Government organizations with other primary processes (Vnere, Kadaster, Prorai)	From operations in 50% reliability, integrity and security (RIS) demands. In 50% demands to reduce complexity and standardize ICT provisions	Varies: In 50% information policy, in 25% information laboratory, in 25% scenarios are mapped	in 75% there is a sort of IT governance board in 25% only department information management part of ICT.	Demands for efficiency and for customer satisfaction. Not always process owners present.	Always project start architecture. Sometimes information model present.	Project groups for connections. In 50% in business information management. In 50% process owners present.		Daily support given by operational information management. In 50% this is set up centrally as well as decentrally.	

Figure 5 :
Interpretation of the three Information provision domains per group of

A. Relating to the strategy domain of the information provision column:

- a.1. Impact of other domains on this domain: the products in this domain in general originate from policy plans or business plans. Sometimes, there is a business function model, sometimes there is a domain vision document. In the group government organizations, where processing of information is not the core activity, this is slightly different. Here, one states that the requirements for the information provision domain originate from the operational process and concentrate on requirements for arriving at more standardization and consolidation of facilities.
- a.2. Products and services: there is an information plan available in the group of organizations working in the education field. In the other organizations in the public sector, this is not always the case.
- a.3. As regards organization and control, the IT governance board is on the rise. This board is always present in universities of applied sciences. In the other groups of organization, this is not always the case.

B. the “structure” domain of the information provision column:

- b.1. Impact of the other domains to the work in this domain: In general, the demands originate from the customers. Universities of applied sciences are an exception in this respect. Here the demands often come from the side of ICT.
- b.2. Products and services: in general, there is a project start architecture available for each project and people work according to a method.
- b.3. Organization and control: the emphasis is on the presence of steering committees and project groups per project. There does not always seem to be a link between strategy and operational information management tasks.

C. the operations domain of the information provision column:

- c.1. Impact of the other domains: in general, data management has to meet high demands with regard to legislation. Besides, there is a strong emphasis on requirements regarding reliability, integrity and security of data, especially in the organizations in the education field.
- c.2. Products and services: the services are performing operational information management tasks and these tasks have a strong operational focus. Hardly any help is given to define new requirements for ICT.
- c.3. Organization and control: in the universities, the set up of operational information management is spread out in various places. In the universities of applied sciences, this forms part of the facility department.

When looking at the interpretation of the information provision domains, it seems that one generally uses business plans for fleshing out strategic information management. The work in the strategic domain often leads to an information plan. In the education field, having an IT governance board seems to be the norm. As regards the requirements given to the strategic information provision domain, these requirements mainly come from the business domains. With regard to this, the universities of applied sciences form an exception: currently, the requirements mainly originate from ICT. In the “structure” domain, people work methodically and often use a project start architecture. In the operations domain, one mainly uses steering committees and project groups. The link between strategic information management and operational information management is rarely made. There is almost always operational information management. This operational information management is not always controlled rigidly by the strategic information provision domain.

4.2.2. The ICT domains: impact, products and organization.

The interpretation of the ICT domain by the investigated organization is given in figure 6. The figure highlights the mutual impact of the domains, the products and services of each of the investigated domains and the organization and control of each domain. From the figure, it becomes clear that:

- A. With regard to the ICT strategy domain:
 - a.1. Impact of the other domains: the demands on the ICT strategy generally originate from SLA's or from the operational domain;
 - a.2. Products and services: in general, an automation plan is available.
 - a.3. Organization and control: the task, as far as it is performed, can be carried out either by the information provision domain or by the ICT domain.

- B. With regard to the ICT structure domain:
 - b.1. Impact of other domains: the requirements are mainly coming from the information provision architecture domain or from the business domains.
 - b.2. Products and services: service catalogues are especially used in the universities of applied sciences and in organizations with a non-information-intensive primary process. Government organizations with a strongly information intensive primary process usually have a roadmap with reference architectures.
 - b.3. Organization and control: in general, ICT products and services are made using steering committees and project groups.

- C. With regard to the ICT operations domain:
 - c.1. Impact of the other domains on this domain: In general, the demands are generated from the wish for more reliability, integrity and security (RIS requirements) of data and from the need for standardisation.
 - c.2. Products and services: the aim is to deliver working applications and infrastructures.
 - c.3. Organization and control: application management and exploitation department. Sometimes, this department also takes care of part of the operational information management.

With regard to ICT, the ICT strategy domain seems to be interpreted to a lesser degree. Nevertheless, an automating plan is generally in place. The output consists of application management and exploitation management tasks.

5. Discussion.

During the study, it became clear that it is no easy task to specify the theory on the AIM per domain as distinguished by the AIM. The study has tried to indicate per domain, which products or services the domain supplies; how things are set up for supplying these products and services and what influence the activities in the surrounding domains have on the activities in a particular domain. This enabled investigation of the interpretation of the AIM model. Next, the practice of the study showed that the model is a clear means of communication. It appeared not possible for the researched organizations to go into the actual interpretation of the domains univocally. This has influenced the conclusion part of this research.

The study was carried out at government organizations and universities. The reason being that in the Netherlands, this model is mainly applied by these two groups. In doing so, there proved to be more similarities between universities with regard to the interpretation of the domain as compared to the other government organizations. In the opinion of the researchers, the reason for this lies in the fact that universities do cooperate more often at coordinating levels.

6. Conclusions.

Figure 2 shows the AIM model. The second column of this AIM model consists of the Information provision tasks. The third column is made up of the ICT tasks. The study shows that the “structure” domain in the information provision column and the strategic task in the ICT column are not always interpreted. Alignment at strategic level between the domains at strategic level by means of the set-up of an IT governance board does take place in the field of education. In the other organizations, this is not always the case.

When in the future, the tasks in the information provision column and those in the ICT management column are separated; one has to be sure that all information provision domains are interpreted fully. Otherwise, separation of information provision and ICT domain and allocation of the tasks of these domains to two different independent organizations will often result in an organization lagging behind with the interpretation of its information provision domains. The research made clear that the domains in the information provision column are often still under construction. This especially goes for the information provision “structure” domain. However, the other domains in this column are also not always and everywhere fully interpreted and they are certainly not always aligned to each other.

Authors

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The three ICT domains, the column at the far right in the AIM model.

	Strategy	Products and services	Organization and control	Impact other domains	Products and services	Organization and control
Education field						
a. Universities (Tilburg, Enschede, Eindhoven)	Varies, sometimes demands from SLA's, sometimes process owner. Trend towards integral information	There is an automation plan or a ICT architecture document.	In 67% of all cases the ICT strategy plan is made by a department, part of ICT management. In 33% at information management.	Demands from architecture and budget. Furthermore, demands from European Union procurement laws.	Architecture is set and within this projects according to standards	Steering comm. for large projects and consultation.
b. Universities (3x) (InHolland, HAN, Fontys)	Information management under development. Often only demands from projects.	Automation plan present that sets standards.	Department ICT/ service unit ICT draws this plan up.	Demands come from organization business or from the line and functional managers in the business. Also from automation plan.	In 67% services catalogue and projects always done in conformity with guidelines laid down in handbooks.	Steering and project groups set up. Work usually by ICT done.
Other government organizations						
a. Government organizations with a primary process that is to do with money (Taxation/collecting, OCGW/DUO, pension execution (3 pieces)	Requirements from demand laid down in 67% in SLA's. In this agreements demands are given for RIS-subjects.	Automation plan or concept concern architecture	Varies. In 33% responsibility ICT operations. In 33% there is ICT demand. In 33% at CIO office as support IT governance board.	Sometimes from architecture, sometimes from Corporate Information Plan (CIP), sometimes from demand/supply model with catalogue	In 67% roadmap with reference architectures. Cooperation conform handbooks set up in 33% of cases.	ICT business with use of steering committees, project- and workgroups.
b. Government organizations with other primary processes (Vmere, Kadaster, Prorail)	Varies, requirements from demand in 50% cases. In 25% laid down in annual plan.	ICT blueprint and automation plan	In 75% of all cases ICT board of directors decides. In 25% a governance board is used.	In 50% explicit RIS demands. In 25% from chains and emphasis on standardisation and consolidation. In 25% management contract	Blueprints and architectures. In 75% use of catalogue.	Application mngmt working with project and steering committees.

Figure 6: Impact on, products and organization of the ICT domains.

De vier hoekvlakken en hun onderlinge relatie.