Function Profiles; The Sheep with Seven Legs

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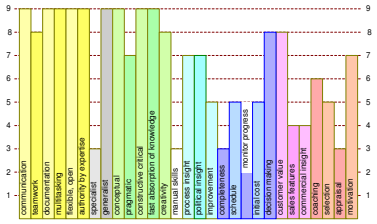

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Abstract

The profile of a system architect is quantified for a large list of system architect related characteristics. For comparison the function profiles of related functions are given as well. This profile is based on personal observations and experience.

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1 Introduction

Many human resource and line managers struggle with the questions:

- What people have the potential to become good system architects?
- How to select (potential) system architects?

Employees thinking about their careers might similarly wonder if they have the capabilities to become a good systems architect.

We list a number of characteristics of individual humans. We map the these characteristics on different jobs, such as system architect, developer, and line manager, indicating the relative importance of this characteristic for that job. We first discuss the different jobs and their typical characteristics in 2 to 7. Then we elaborate the characteristics in 8.

The attention for this subject is increasing. Recent research is being carried out by Keith Frampton, see amongst others [1].

2 Systems Architect Profile

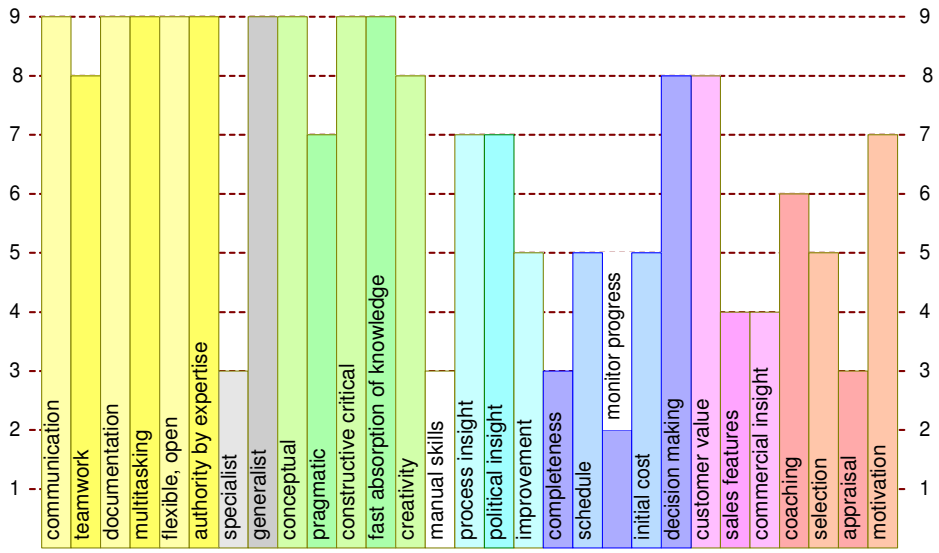

Figure 1: The function profile of the systems architect

The profile of the "ideal" system architect shows a broad spectrum of required skills. Quite some emphasis in the skill set is on *interpersonal skills*, *know-how*, and *reasoning power*.

This profile is strongly based upon an architecting style of technical leadership, where the architect provides direction *(know-how* and *reasoning power*) as well as moderates the integration (*interpersonal skills*).

The required profile is so requiring that not many people fit into it, it is a so-called **sheep with seven legs**. In real life we are quite happy if we have people available with a reasonable approximation of this profile. The combination of complementary approximations of such ideal architect allows for the formation of architecture teams. Such a team of architects can come close to this profile.

2.1 Most discriminating characteristics

In practice the following characteristics are quite discriminating when selecting (potential) systems architects:

- Generalist
- Multi-tasking
- Authority by expertise
- Balance between conceptual and pragmatic

Generalist The first reduction step is to select the *generalists only*, reducing the input stream with one order of magnitude. The majority of people feels more comfortable in the specialist role.

Multi-tasking The next step is to detect those people that need undisturbed time and concentration to make progress. These people become unnerved in the job of the systems architect, where frequent interrupts (meetings, telephone calls, people walking in) occur all the time. Ignoring these interrupts is not recommendable, this would block the progress of many other people. Whenever the people with poor multi-tasking capabilities become systems architect, then they are in severe danger of stress and burn out. Hence it is also the benefit to the person self to assess the multi-tasking characteristic fairly.

Authority by expertise The attitude of the (potential) architect is important for the long term effectiveness. Architects who work on the basis of delegated *power* instead of *authority by expertise* are often successful on the short term, creating a single focus in the beginning. However in the long run the inbreeding of ideas takes its toll. Architecting based on know-how and contribution (e.g. *authority by expertise*) costs a lot of energy, but it pays back in the long term.

Conceptual thinking and pragmatic The balance between conceptual thinking and being pragmatic is also rather discriminating. Conceptual thinking is a must for an architect. However the capability to translate these concepts in real world activities or implementations is crucial. This requires a pragmatic approach. Conceptual-only people dream up academic solutions.

3 Test Engineer Profile

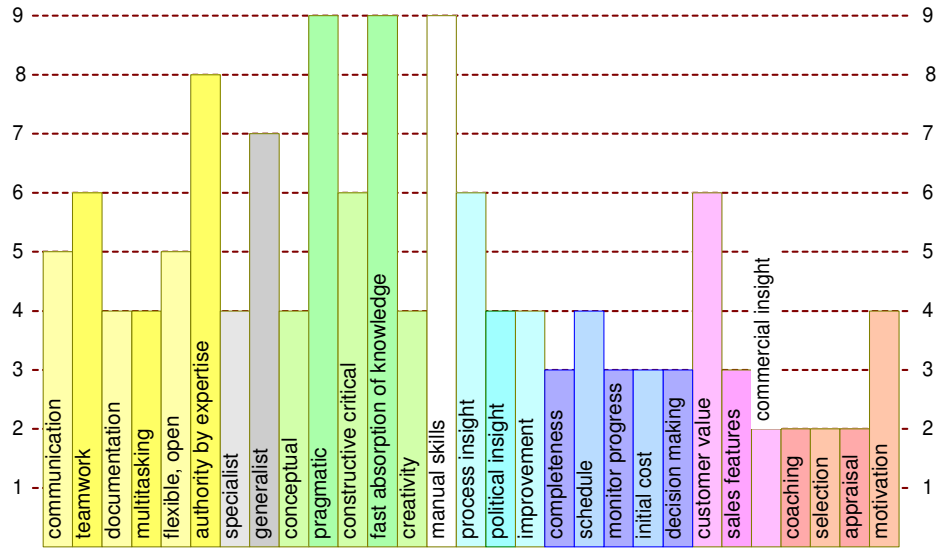

Figure 2: The function profile of the test engineer

The *test engineer* function at system level requires someone who *feels* and *understands* the system. Test engineers are capable of operating the system fluently and know its quirks inside out.

The main difference between an architect and a test engineer is the different balance between **conceptual thinking** and **practical doing**. Test engineers often have an excellent intuitive understanding of the system, however they lack the conceptual expression power and the communication skills to use this understanding pro-active, for instance to lead the design team.

4 Developer Profile

The core value of developers is their specific discipline know-how. Good developers excel in a limited set of specialties, knowing all tricks of the trade. On top of this they should be able to deploy this know-how in a creative way. In today's

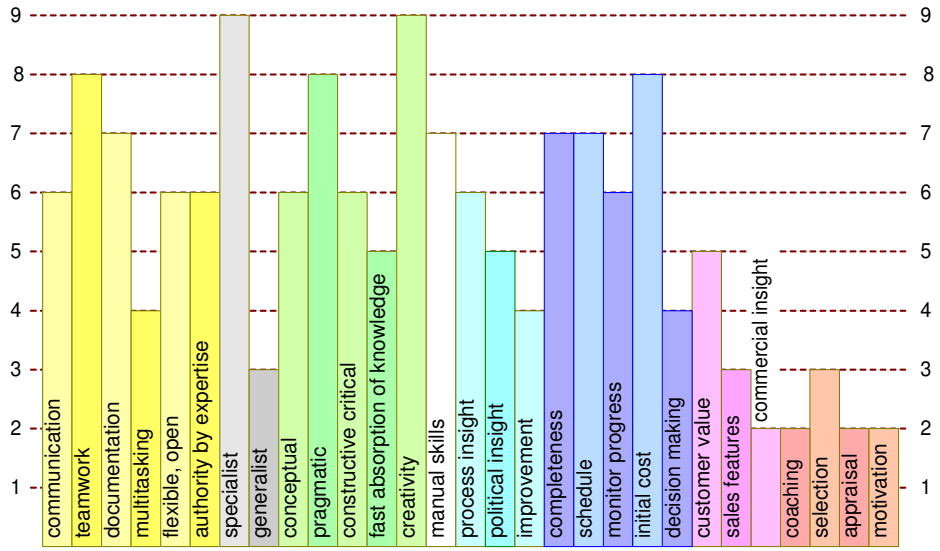

Figure 3: The function profile of the developer

large development teams a reasonable amount of *interpersonal skills* are required as well as *reasoning power* and *project management* skills.

5 Operational Leader Profile

The *operational leader*, for instance a project leader, is totally focused on the result. This requires *project management* skills, the core discipline for operational leaders.

The *multi-tasking* capability is an important prerequisite for the operational leader too. If this capability is missing the person runs a severe risk of getting a burn out.

Note also that the operational leader functions as kind of gatekeeper, where the *completeness* is important.

6 Line Manager Profile

The *line manager* manages the intangible assets of an organization: the people, the technology and the processes. Technology and process know-how are tightly coupled with people, this know-how largely resides in people and is deployed by people. *Human resource management* skills and *process* skills are the core discipline for line managers, which need to be supported with sufficient *specialist* know-how.

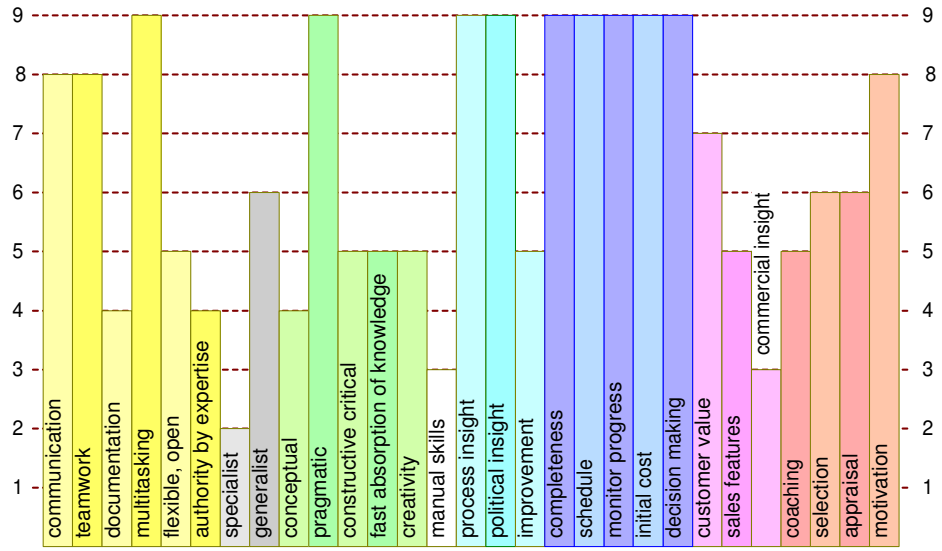

Figure 4: The function profile of the operational leader

7 Commercial Manager Profile

The *commercial manager* needs a commercial way of observing and thinking. This way of thinking appears to be fuzzy and not logical for technology oriented people. From technology oriented perspective a strange *mind warp* is required to perform a commercial manager function.

The commercial manager is a valuable complement to the other functions, responsible for aspects such as salability and value proposition.

8 Definition of Characteristics

8.1 Interpersonal skills

communication The ability to communicate effectively. Communication is a two-way activity, presenting information as well as receiving information is important.

teamwork The ability to work as member of a team, in such a way that the team is more than the collection of individuals.

documentation The ability to create clear, accessible and maintainable documentation in a reasonable amount of time.

multi-tasking The ability to work on many subjects concurrently, where (frequent) external events determine the task switching moments.

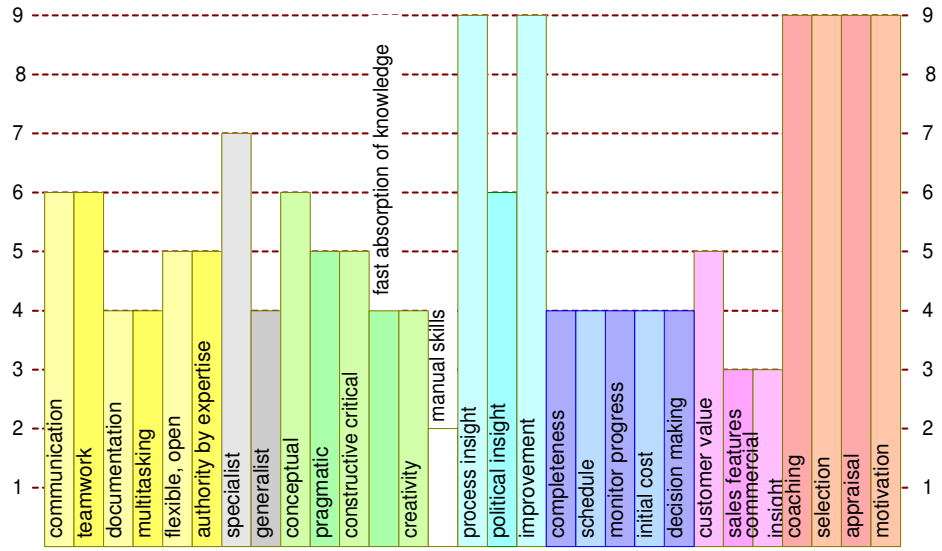

Figure 5: The function profile of the line manager

flexible, open The attitude to respect contributions of others, the willingness to show all personal considerations, even if these are very uncertain, the willingness to adopt solutions of others, even in case of strong personal opinions.

Note that this overall attitude does not mean that a flexible and open person always adopts the ideas of others (chameleon behavior). The true strength of this characteristic is to apply it when necessary, so adopt an alternative solution if it is better.

authority by expertise The personality which convinces people by providing data, instead of citing formal responsibilities. Hard work is required before authority by expertise is obtained; a good track record and trust have to be build up. Authority is earned rather than being enforced.

8.2 Know-how

In terms of characteristics the know-how is qualified in 2 categories, generalist and specialist.

Generalist The persons which are always interested in the neighboring areas, how does it fit in the context? How does the “whole” work.

Specialist The persons which are always interested in knowing more detail.

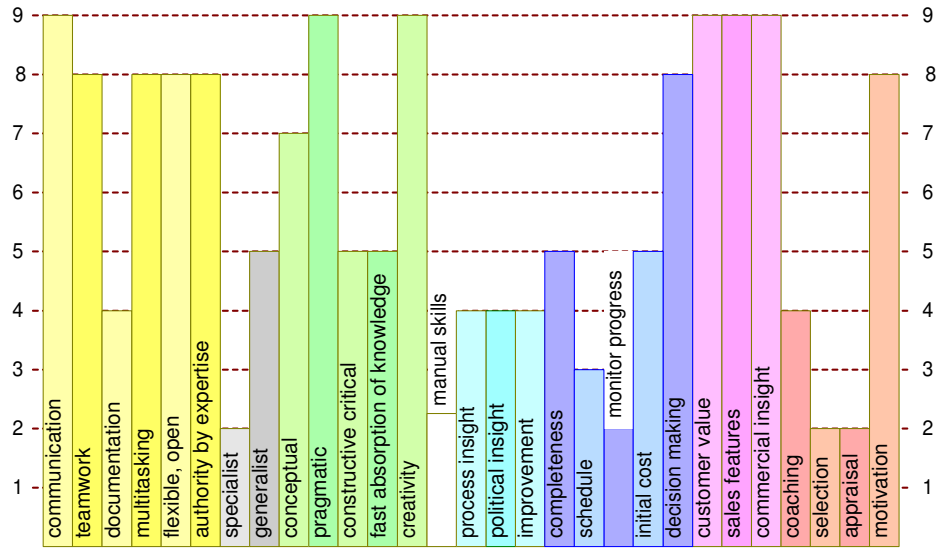

Figure 6: The function profile of the commercial manager

8.3 Reasoning Power

conceptual The ability to create the overview, to abstract the concepts from detailed data. The ability to reason in terms of concepts.

pragmatic The ability to accept non-ideal solutions, to go after the 80% solution. The ability to connect ”fuzzy” concepts to real world implementations.

constructive critical The ability to identify problems, formulate the problems and to trigger solutions. The term *critical thinking* is also used. Note that critics serves a constructive goal: to achieve better results.

fast absorption of know-how The ability to jump into a new discipline and to absorb the required know-how in a short time. Systems architect are never able to know all about the technologies used in the systems. This capability helps them to get the right knowledge when needed.

creativity The ability to come with new, original ideas. A specific subclass of this ability is lateral thinking: applying know-how from entirely different areas on the problem at hand.

8.4 Executing Skills

Manual Skills The ability to **do** things, for instance build or test something. This ability is complementary to the many ”mental” skills in this list of character-

istics.

8.5 Process Skills

process insight The ability to understand specific processes, the ability to recognize the de facto processes, the ability to asses formal and de facto processes, both the strong points as well as the weak points.

politics insight The ability to recognize the political factors: persons, organizations, motivations, power. The ability to use this information as neutralizing force "depoliticizing": facts and objectives based decision making instead of power based decision making.

improvement drive The ever present drive to improve the current situation, never getting complacent.

8.6 Project Management Skills

Completeness The ability to pursue **all** information. This is often done by means of spreadsheets or databases. Large collections of issues are maintained and processed.

This ability is often complementary to, or even conflicting with, the ability to create understanding and overview: the parts view versus the holistic view.

schedule The ability to create schedules: activities and resources with their relationships, scheduled in time.

monitor progress The ability to monitor progress, the ability to chase people, and the ability to find and resolve the causes of delays.

initial cost The ability to create initial cost estimates and to refine these into budgets. The ability to understand and reason in terms of initial costs. Initial costs are the one time investments needed to develop new products and or businesses.

decision making The ability to make choices and to handle the consequences of these choices.

8.7 Commercial Skills

customer value The ability to see and understand the value of a product or service for a customer. The ability to asses the value for the customer.

sales feature The ability to recognize features needed to sell the product. The ability to characterize the relevant characteristics of these features ("tick-mark only", "competitive edge", "show-off", et cetera).

commercial insight The ability to think in commercial terms and concepts, ranging from “branding” to “business models”.

8.8 Human Resource Management Skills

coaching The ability to coach other people; help other people by reflection, by stimulating independent thinking and acting.

selection The ability to select individuals for specific jobs. The ability to interview people and to asses them.

appraisal The ability to asses employees and to communicate this assessment in a fair and balanced way.

motivation The ability to make people enthusiastic, to motivate them beyond normal performance.

9 Acknowledgements

Pierre America applied fine tuning of translations, spelling and capitols. Lennart Hofland suggested an improvement for the description of the commercial manager. Sjir van Loo suggested an increase of coaching and selection skills of the architect. Keith Frampton pointed me to recent research about this subject.

References

[1] K. Frampton, J. M. Carroll, and J. A. Thom. What capabilities do IT architects say they need? In *10th United Kingdom Academy for Information Systems (UKAIS) Proceedings*, 2005.

[2] Gerrit Muller. The system architecture homepage. `http://www.gaudisite.nl/index.html`, 1999.

History

Version: 1.0, date: August 19, 2010 changed by: Gerrit Muller

- textual changes
- redraw diagrams
- changed status to concept

Version: 0.6, date: May 21, 2010 changed by: Gerrit Muller

- layout change in description of characteristics

Version: 0.5, date: January, 2006 changed by: Gerrit Muller
- added a reference to an article by Keith Frampton

Version: 0.2, date: December 7, 2001 changed by: Gerrit Muller
- added a paragraph to the description of the commercial manager
- increased coaching and selection skills of the architect 2 points, increased selection skills operational leader with 2 points.

Version: 0.1, date: September 12, 2001 changed by: Gerrit Muller, Pierre America
- removed dutch words
- changed spelling of the title

Version: 0, date: January 29th, 2001 changed by: Gerrit Muller
- Created on the basis of an earlier presentation "Function profiles", profile.ppt
- Added characteristics:
  - Creativity
  - Decision making
- Added descriptions of the characteristics
- Profile of a commercial manager