

Why Contact centers do not use Architectures

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Abstract

Even when an organization which also exploits its own call-center is working seriously on architectures, the actual call-center is almost always left out of the architectures. The current popularity of architectures has not made it into the world of contact centers, yet.

The most-important reason for this is the fact the large historical-gap between the technical telephony-world and the business-process world. In telephony, two copper wires and the ability to count from 0 to 9 are enough to get things to work. The importance of this technology is the biggest in the phase of *call centers* where only phone-calls are dealt with. With the further development of multi-media contact-centers, the importance of the telephony technique becomes smaller as compared to information structure and business rules. In terms of the Zachman Framework, in call-centers the level of the business model and technology model are defined. It is the system model in-between which is completely missing.

This is very likely just a matter of time since with the decrease of importance of telephony technique in contact centers, the other disciplines will become more important to the management. In two to five years, we will see the first successful architectural results for contact centers.

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1 Introduction

In this paper, some thoughts of why contact centers are almost invariably left out of architectural projects are highlighted. The author is fairly new to the game of architectural thinking. However, as employee of one of the leading companies on contact-center technique, he spends considerable time at some of the larger contact-centers of Europe. In all companies where architecture is serious business, it is clear that the contact center itself is - at best - only partially involved in the architecture project.

This paper describes:

- **what a contact center is:** To explain what type of business this paper applies to.
- **history behind contact centers:** This is important since some of the reasons for not participating in architecture projects are historic.
- **role of information:** This explains why there is a need for architectures in contact centers.
- **how contact centers appear in the Zachman Enterprise Framework:** Views the contact center in terms of Zachman. The goal of this is to find at what level of an organization, architectural thinking is missing the most.
- **concluding remarks:** This mentions some very basic questions by which a very crude measure of architectural participation is made. This chapter finishes the paper with some conclusions.

Throughout this paper, the terms *call center* and *contact center* are used. The important technical-difference is that a *call center* only deals with voice calls and a *contact center* is capable of communication via fax, email, web-chat, etc., as well. In terms of business development, the *call center* is older than the *contact center*.

2 What is a Contact Center?

A contact center is: *The total of hardware, software, information, business-rules, and personnel which enables a cost- and time-efficient massive communication between an organization and third parties with which information is to be exchanged.* Key terms are:

- massive:
The entire process is scalable such that huge volumes of contacts can be processed in a controllable and efficient way. Yearly contact-volumes of up to 20.000.000 are possible.
- cost-efficient:
The largest expense-factor is usually the personnel. Performance measurement and optimization of agent-capacity are characteristic for contact centers.
- time-efficient:
Next to agent-efficiency, minimization of waiting times is a goal.

A contact center usually has lots of employees (agents), working in groups and handling contacts which are queued for these groups. These can be in- or outgoing contacts, and these can be phone-calls, faxes, emails, web-chats, etc..

A modern contact center handles the credo of having *the right information at any place at any time by any means*. This means that more and more contact-centers operate on a 7x24 basis and can be reached by any medium. It also means that there is actually information to be shared.

The Monetary unit in the contact-center world is information. The vast number of information requests is the reason for having large agent-groups and highly-automated systems. The demand for efficiency comes from the fact that the agents form the biggest cost-factor, and the requirement from the customers for quick and adequate service.

In the ideal contact-center, every contact can be given a value *before* it is processed. This value is then translated into priority which impacts how fast it is answered, thus optimizing the total value of the contact center. The rules by which contacts are distributed over groups and agents, and by which prioritization takes place are the organization's business-rules for the contact center. The total of these business rules, the agent-staffing, and all information-sources they use form the intelligence and capacity of a contact center. Hardware and software provide the means for getting up and running.

3 Some History

Contact centers originate from the reception-functionality in organizations and the growing demand for information exchange. A traditional reception cannot deal effectively with the growing contact-volume. When contacts can somehow be segmented, different rules can be applied to different contacts. These rules can concern treatment and routing and with that, a contact-center functionality is born.

The following forms of contact-center like functionalities exist:

- Reception
Calls which are placed to an organization's general phone-number arrive at the reception and are distributed manually to the final destination. There can be several receptionists who take and distribute these calls. There is no segmentation, business rules are limited to opening hours. Information at this level is limited to what is in the organization's phone-book and the present/absent overview of the employees. Technique is strictly limited to telephony.
- Contact group
First level of segmentation takes place. Business rules are applied to the specific number to which customers call and which routes to a group of specialized agents. Contacts can be incoming or outgoing. Information at this level is specific for the segmentation. (Examples are: order-status, product-info, emergencies, etc..). Technique is strongly focused on telephony and some application on the desktop for accessing the specific information-system.
- Call Center
Several incoming points-of-contact exist. all calls are distributed over different groups according business rules. Information can be very diverse. There is still a strong link with telephony, however, various information-systems and applications can be used by agents. Integration between the computer world and the telephony world makes a start. An example of the implementation of just the routing business-rules can be seen in Figure: 1.
- Contact Center
Contacts can be phone- fax- email- web-chat-, etc.. All these are distributed over several groups of agents according the organization's business-rules. Strong integration between telephony and computer. The voice-channel is just one of the channels by which contacts can

take place. This means that telephony is no longer - per definition - the strongest field.

It is not entirely correct to call this the history of contact centers since even the most-sophisticated contact-center is likely to still have a reception. Historically seen, the evolution from reception to contact center is dictated by the contact volume and the complexity and diversity of the information.

The way these functionalities are treated in an organization can be very diverse depending on the role the contacts play. If an organization has a contact center as face to the world and gets its business from its contact center, then it is obvious that it is treated differently then when it concerns some complaints-number which is required by law. The way in which the business rules are defined depends strongly on the role of these contacts.

Management information about the productivity of agents and the volumes of handled contacts are vital for optimizing the contact center. There are even contact centers which sell service-level as main product. For these, management info is the source of information by which they generate revenue.

4 Role of Information

Contact centers know two types of information: info about the performance of the contact center, and information which is exchanged between the contact center and third parties.

The first of these two was already present and well structured in the call-center phase. However, its use has always been simple. Although there is an awful lot of data available not very much is done with it except getting some indication of volume-growth, estimating tomorrow's optimal staffing, and measuring production of agents.

The latter is now very much in the phase of structuring. Contact-center agents have limited computer-screen area and might be working with dozens of different gui's and information-systems. This is very inefficient and enforces emphasis on information-systems integration and computer-telephony integration. This was also present in the voice-only call-center, however, the change to multi-media comes together with a different type of customer. The current generation of customer seeking contact are much more willing to use and fluent with different media than some 10 years ago.

Unfortunately, contact centers still have a very clear and distinct history in telephony. This results in some ambiguous behavior in the sophisticated contact-centers. On the one hand, integration demands deep knowledge of the business-processes, ICT, and the information-structure. On the other hand, the performance-measurement is still strongly shaped after the style of the call-center. This last is - unfortunately - also the information which is used for managing the contact center, and to make things even worse, this is mostly done by employees who used to do this for a call center.

Since it is impossible to look in the future, the ideal CC does not exist. The ideal contact center:

- **knows beforehand that someone is going to want to exchange information**

This allows for making the segmentation entirely according your own business-rules (as opposed to being strongly influenced by the whims of customers) and optimize the information-process.

- **knows which value any contact represents *before* it is handled**

This allows for optimizing the efficiency with respect to value.

These two can be considered the *Holy Grail* of contact centers.

5 Architecture

5.1 Current Situation

Practically every organization which is seriously defining Architectures and has a contact center is behaving rather ambiguous. On the one hand, information and integration of information-systems are very important. On the other hand, the historical background of simple technology still separates the telephone-style operation and management from the information-style.

If we consider business-, information-, ICT, and HR-architectures, then for the contact center:

- Business architecture:
Here is some activity, however, it is entirely business-driven. The role of the contact center is defined here. If the contact center sells service-level, or whether the contact center is a cost-center is part of the BA. The idea that *information at any time by any means* requires more emphasis on information is only just beginning.
- Information architecture:
Most contact centers are not into this, yet. Reason is that the technology ideas and the business ideas are far apart and most contact centers do not realize this.
- ICT architecture:
Is somewhat developed for the technology. From the information-system part, lack of an IA results in ad-hoc actions in the ICT. Technological developments are not always applied for business-reasons. Quite often, new systems are used for the simple reason that the old one is no longer supported. What this means for the BA is not always clear.
- HRM architecture:
Is fairly-well developed since in a contact center, employees form the main cost-factor.

The Zachman Enterprise Framework (see Table: 1) is used to get some insight of where contact centers lack architectural definition. In Table: 2, those items of the Zachman Enterprise Framework which are developed are filled-in. In this table, the middle level of the System-model is empty. The levels above (business-like) and below (technical) are developed to some extent. It is this middle System-level where the main task of the Information Architect is performed: namely have the business world and the technical world act as one.

The main reason for the missing items at system-level is the gap between the telephony-technology and the business-reason for having a call-center. Telephony-systems are descendants of the strict-technological telephone-switches in which huge relay-banks, massive cables, technical specs concerning damping, voltages, and echoes were technically interesting and business-wise uninteresting. Opposite, what a business did with the telephone line was of little interest to the technicians.

From architectural point of view, the world of contact centers is running some 5 years behind as compared to the world of business and IT.

Some explanation of these items:

Business-like items:

- **Service level:** This is the ultimate measurement in a contact center. This is what is sold, or communicated to the media.
- **2-way communication:** Is what is supposed to happen.
- **One virtual contact-center:** Can we act as one point of contact, even though contacts are distributed over several locations?
- **Customers:** Whom we work for.
- **Politics, law, market-development:** External reasons which can impact contact volume.
- **We have/want/need to:** Reasons why we want to exchange info.
- **Inbound/outbound:** Do we handle incoming contacts, only, or do we initiate contacts ourselves as well?
- **Multi-site call-center:** Is there a difference between the sites?
- **Estimate of contact volume:** Can we estimate the future contact-volume?

Technological items:

- **Table description:** Structure of data-tables in databases.
- **Server function:** Dial-tone server, database-server, answering machine, email-server, etc..
- **Line- and server-capacity:** Capacity calculations.
- **Agent seat:** What does agent-x need for doing his work?

Table 1: Zachman Framework for Enterprise architecture

	(What) Data	(How) Function	(Where) Network	(Who) People	(When) Time	(Why) Motivation
Scope (contextual)	List of things	list of processes	List of locations	List of Organizations	List of Events	List of Business goals and strategies
Business model (conceptual)	Semantic Model	Business process model	Business logics system	Work flow model	Master schedule	Business plan
System model (logical)	Logical data model	Application architecture	Distributed system architecture	Human interface architecture	Processing structure	Business rule model
Technology model (physical)	Physical data model	System design	Technology architecture	Presentation architecture	Control structure	Rule design
Detailed representations (out-of-context)	Data definition	Program	Network architecture	Security architecture	Timing definitions	Rule specification

Table 2: Call centers in terms of the Zachman Framework

	(What) Data	(How) Function	(Where) Network	(Who) People	(When) Time	(Why) Motivation
Scope (contextual)	Service level	2-way communication	One virtual contact-center	Customers	Politics, law, market-development	We have to, We want to, We need to,
Business model (conceptual)	Service level	Inbound, outbound, exchange info	Multi-site call-center	Inbound, outbound	Estimate of contact volume	Service level
System model (logical)						
Technology model (physical)	Table description	Server function	Line- and server capacity	Agent seat	Schedule for program-change	List of routing rules
Detailed representations (out-of-context)	Data definition	Call routing program	Network architecture	Screen lay-out	HW/SW update schedule	Call routing rules

- **Schedule for program-change:** Different programming to match changes in function, volume, distribution, etc..
- **List of routing rules:** which rules override other?
- **Data definition:** Which data is in table-x?
- **Call-routing program:** The routing-program.
- **Network architecture:** How systems are connected (TCP/IP, ISDN, etc.).
- **Screen lay-out:** How does application-x appear to agents?
- **HW/SW update schedule:** Systems life-cycle.
- **Call-routing rules:** We never want a caller to wait for longer than 60 seconds.

6 Conclusions

The following questions may give an idea of the architectural-maturity of a contact center. If any question must be answered with “no”, then that points to one of the missing fields in the Zachman Framework.

- **Is there understanding of the relation between data and the business?** That is: are we looking at data of which we know it makes sense to look at since it helps directly in making business decisions? This also impacts the meaning of data over time when the function of persons, programs, or routing-constructs sometimes changes.
- **Will any new application cooperate with the existing applications when it goes live?** If not, then introducing new applications has a high trial-by-error character.
- **Do all requests for solutions define the problem?** If request starts with: “can you build xyz?”, then the underlying assumption is that whatever xyz is, the requester probably believes that it solves his problem. This is not so certain at all unless xyz follows from architectural deduction to solve the problem.
- **Is a change considered an opportunity for further improvement?** Or should the system behave exactly the same as before the change? If the latter is the case, then why change at all?
- **Any change on one location will not result in surprises at other locations or for the business in general?** If surprises do occur, then there is trial-by-error character between locations.
- **Will the agent desktop remain unchanged with partial change in agent-tasks?** If that is not the case, then the applications which are used by the agents are either incompatible or simply not integrated at all.
- **Is there a business-related schedule for deleting detail-data?** If all detail-data is kept for ever, you may be looking at 2Tb per year. If all detail-data is kept, then it is likely that this is done because it is unknown what is important and what is not.
- **Are routing rules a logical result of business rules?** If there is no logical relation, then it is likely that there is no agreement between technology and business about what is important and what is not.

In two- to five years time, the architectural thinking will be used in the contact-center world. For this to happen, it is necessary that the management shifts emphasis from technology to the information point of view.