Study on
Acceptance of
Cloud Computing
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EuroCloud Deutschland_eco e.V.
Lichtstraße 43h
D-50825 Cologne
Germany

Phone:  +49 (0)221 / 70 00 48 – 0
Fax:  +49 (0)221 / 70 00 48 – 111
E-Mail:  info@eurocloud.de
Web:  www.eurocloud.de

Editorial Responsibility:
Thomas von Bülow (Deputy Chairman)

Association Registered in Cologne, Germany
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1. Foreword

Dear Readers,

The technology of “Cloud Computing” long ago left the status of “hype” behind it. No-one who is heavily involved in the current developments in Information Technology (IT) can deny that “the Cloud” – the way in which IT infrastructure is produced, provisioned, and implemented – is changing significantly.

The integration of Cloud Computing technology is not always particularly simple; often, in fact, it is a considerable organizational and technical challenge, and it is often underestimated. Without sensible IT strategy stipulations (“Cloud policies”) at the outset, and clear quality standards in all areas that are affected by Cloud Computing (legal, taxation, technical, authentication, processes, organizational), and without appropriate project controlling, Cloud projects are at risk of failure.

Although the advantages of Cloud Computing are absolutely evident, there is very often a “wait and see” attitude. The technical risk, organizational effort and economic unpredictability hinder the development of trust in the new possibilities.

This study concentrates on this final topic:

- How is it possible to build trust in this new form of IT provisioning?
- How does it work in other sectors?
- Why was it successful in some sectors, and why did it fail elsewhere?
- How can this knowledge flow into the customer communication?
- In what ways should the Cloud Computing provider’s day-to-day operation and sales approach be dictated by this?
Thus, this study deals with a further interesting aspect in relation to Cloud Computing.

I wish to thank the authors from the Information Management Institute (IMI) at the Aschaffenburg University of Applied Sciences, in particular its director Prof. Dr. Georg Rainer Hofmann and Meike Schumacher (Dipl. Business Admin.) and the students of the IMI for the preparation of this study.

Cologne, May 2014

Andreas Weiss
Director, EuroCloud Deutschland_eco e. V.
2. Preface

The Information Management Institute (IMI) at the Aschaffenburg University of Applied Sciences works on projects in applied research and knowledge transfer in the field of Information Management. The IMI has as a particular work focus the context and the acceptance of (IT) systems, in connection with several knowledge transfer projects co-funded by the European Social Fund (ESF) and the Bavarian Ministry of Science. Knowledge transfer tackles entrepreneurial and pre-competitive issues. One of the topics is “The Acceptance of Cloud Computing”, which has developed into an indisputable hype topic.

This study is based on two investigations which were undertaken in the summer semesters of 2012 and 2013 in conjunction with student seminar papers at the IMI. The topic “The Acceptance of Cloud Computing” was initially taken on by a seminar group in 2012, namely the Business Administration students Julia Christ, Stefan Heeb, Teresa Heller, Sebastian Krebs, Benjamin Kroll, Carsten Kunkel and Eva-Maria Weber.

Acceptance factors like trust, liability and appeal were, until the publication of the 2012 EuroCloud study “Acceptance of Cloud Computing,” widely ignored in the IT community. Not least because of this, the study was accorded considerable attention from the European Cloud market. And yet, in summer 2013 there remained many unanswered questions: Are there perhaps other acceptance factors that potential customers see as important and that influence the purchasing decision? Are the correct decision makers approached for the purchase of Cloud solutions, and above all, are they efficiently addressed?

Using the findings of the 2012 study as the starting point, in 2013 twelve hypotheses on customer communication were compiled through expert surveys, which were in turn assessed by EuroCloud member companies for relevance and potential. The focus of the second study, to which the students Tatjana Döbert, Alexander Jeppe, Muhammed Bayram, Stefan Schaupp and Carsten Konersmann contributed, was the “Customer Communication of the Cloud Provider”.

Both studies were undertaken in co-operation with EuroCloud Deutschland _eco e. V.. The results were discussed and debated on multiple occasions with EuroCloud member companies and representatives from the field. The feedback flowed each time back into the further course of the respective study.
For the compendium at hand – corresponding to a “2nd Edition” of the study – the result of the students’ work has been re-worked in the form of information for interested parties and recommendations for action for providers of Cloud Computing services. Clearly, with student papers as the basis, this cannot achieve the standard of a professional management consultancy project; nevertheless we classify the results as thoroughly exploitable and practical for company practice and public discussion.

Aschaffenburg University of Applied Sciences, May 2014

Prof. Dr. Georg Rainer Hofmann
Director
Information Management Institute (IMI)

Meike Schumacher (Dipl.-Bw. (FH))
Academic Staff Member ESF Projects
KontAkS, mainproject,
KaRaBonita
3. Introduction

In political discussions, the importance and potential of Cloud Computing is assessed as high – for the German Federal Ministry for the Economy and Technology (BMWi), it is one of the “most important trends in Information Technology”\(^1\). In the year 2010, a “Cloud Computing Action Program” was started. The “Trusted Cloud” part of this program, which has as its goal “the development and testing of innovative, secure and legal Cloud Computing solutions”, was funded to the tune of 50m euros by the Ministry.\(^2\) According to the BMWi, the revenues in the area of Cloud Computing – in the sense of the contribution to the Gross Domestic Product – are expected to increase to 8.2 billion euros by 2015.\(^3\) In the European project “Cloud for Europe”\(^4\), which started in summer 2013, the topic “Trusted Cloud” was identified as one of the key action points.

Despite the obvious advantages of Cloud Computing technology, many companies and institutions retain a “wait and see” attitude as potential customers and users. The concerns are too great to consider moving into uncertain legal or statutory territory, and perhaps losing control over the company data. What is conspicuous is that the discussion is currently still dominated by technical issues. But a description of the technical features alone cannot create “real trust” or increase the acceptance amongst users. As a result, a closer look at the concept of trust in relation to Cloud Computing is surely worthwhile. For this, attention should be paid to other sectors: How other companies have already successfully built the “customer trust” necessary for “credence goods”\(^5\) – to which Cloud Computing should be counted – needs to be understood. The objective of this examination is thus to identify trust-building mechanisms in isomorphic market structures, and to transfer these to Cloud Computing.

The objective of this paper is to identify the acceptance and trust-building factors for products or services in a range of sectors. Following this, the identified mechanisms from a range of sectors will be applied to the Cloud Computing sector. In the final section, there is a prioritization of the

\(^{1}\) cf. Bundesministerium für Wirtschaft und Technologie (2012)
\(^{3}\) cf. Bundesministerium für Wirtschaft und Technologie (2012)
\(^{4}\) see http://www.cloudforeurope.eu/
\(^{5}\) Credence goods are defined as goods that require the trust of the buyer for the purchase, because their functionality cannot be verified before use or implementation – an excellent example is the matchstick: Every test necessarily destroys the product.
mechanisms which have been determined, in terms of their profitability and the organizational effort required.

In the context of this study, no representative, empirical examination of acceptance factors has been undertaken — rather, the focus has been on analyzing a few, albeit typical, cases. The paper focuses on case studies and specific objects of investigation. An examination of the technical mechanisms of Cloud Computing was also not undertaken.

The details of the procedures and the results of the individual interviews can be read in the respective student seminar papers, which are available from the IMI in Aschaffenburg.
4. Clarification of Terms and Methodological Approach

In order to guarantee a unified understanding of the terms used within this paper, several terms relevant to the topic will now be clarified. This includes the terms “Trust”, “Acceptance”, and an explanation of the methodology of “Case-Based Evidence”. For the definition of Cloud Computing and for the differentiation and description of Cloud Computing according to service models (SaaS, PaaS and IaaS), as well as according to organizational form (Public Cloud, Hybrid Cloud, Private Cloud and Community Cloud), please see the chapter “Glossary of Cloud Computing”.

4.1 The Methodology of Case-Based Evidence

In this study, an attempt has been made to ascertain the acceptance factors and the trust-building measures for Cloud Computing on the basis of Case-Based Evidence. Underlying the Information Management Institute’s understanding of Case-Based Evidence is the assumption that certain functional mechanisms can be transferred from one sector to another.\(^6\)

\[\text{Figure 1: Case-Based Evidence}\]^7

Thus, analogies, both historical and contemporary, were identified in other sectors than “Cloud Computing”. The approach here is to examine and identify the corresponding clues and factors from the examples listed below – anticipated to be isomorphic – by means of structured expert interviews with selected representatives. The central question in each respective case is how trust-building measures “function” with relation to technical products from other sectors, and which trust-building mechanisms could be transferred to Cloud Computing.

\(^6\) cf. Hofmann, Schumacher (2013)  
\(^7\) cf. Hofmann (2013)
4.2 The Term “Trust”

The term “Trust” has been the object of intensive discussion in practical philosophy since antiquity – the Roman “fides”, as with the modern “good faith”, was seen as an important legal asset. Nevertheless, or perhaps for that very reason, in the relevant literature there are more than 100 different varieties of definition and aspects to “Trust”. For example, the German word for trust, “Vertrauen” itself comes from Middle High German from the 15th century, and is defined in the Duden dictionary as “the firm conviction of the reliability, dependability of a person, thing”.

The phenomenon “Trust” is probably as old as human co-existence. It is the prerequisite and basis of all purposeful social bonds. Without trust, no cooperation is possible in human life, and the freedom of action of the individual would be limited to the simplest, most immediately transactable activities. With advancing specialization of work into sub-processes and the accompanying increase in complexity of modern society, the examination of trust from the perspective of economic aspects gains in importance: Operative distrust is economically impractical, extremely complex, and expensive.

For the further treatment of the topic, the generally accepted definition from Jean-Jacques Rousseau will be used, which defines trust as “a psychological state which results from the intention to accept one’s own vulnerability on the basis of the positive expectation of the intention or behavior of another”.

Two assumptions form the basis of this definition:

In principle, (bilateral) trust presupposes that both sides have a certain freedom of action, on which the expectations of the players rest. Without such freedom, or alternatives, there is no need for trust, as there is absolute certainty about future actions. However, such certainty in the future as would make trust superfluous occurs in the fewest of situations – and not at all when

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8 cf. Hartmann (2011)
9 cf. Fink et al. (2010)
10 cf. Bibliographisches Institut
12 cf. Tomasello (2010)
14 One only needs to remember the enormous costs of the culture of mistrust in the border protection bodies of the former GDR.
thinking about the current set of issues relating to trust in the context of outsourcing or other services.

A further component of the definition is one’s own vulnerability, or the concern about the possibility of disadvantageous future developments. Trust arises when the truster, despite being aware of their own vulnerability, nonetheless makes the decision to expose themselves to the uncertain future actions of another.

*Trust enables the reduction of the complexity to a – for both sides - controllable level.*

Within his system-theoretical approaches, Niklas Luhmann\(^{16}\) differentiates two mechanisms in the “reduction of complexity through trust”: the elimination of individual dangers in the process of decision-making, and the choice of alternatives according to their success and not according to standards.\(^{17}\) The second mechanism, the choice according to success, is formed on the basis of a further, more central mechanism of trust-building. Humans measure trust against the fulfilling of expectations.\(^{18}\) Trust is a *phenomenon which can strengthen itself through feedback loops.* Many small steps, also called trust thresholds, are used to continuously compare the previously expected future with the actually resulting present situation, and with this, to justify the trust which had been applied. Such successful iterations lead to an increasing level of trust (see Figure 2: Level of Trust and Trust Thresholds). In this relationship, trust and control are mutually determining.\(^{19}\)

*Without trust, there can be no control, and without control, no trust.*

A high level of trust can therefore only be established in the mid-term or long-term if the “advance payment” in trust has been justified, allowing trust to continue. This basis becomes even more relevant in the further process in the discussion of whether the promise of certain technical characteristics, which are (for the trusting person) difficult to verify, is trust-building or not.

\(^{16}\) cf. Luhmann (2000)
\(^{17}\) cf. Diekmann (2007)
\(^{18}\) cf. Diekmann (2007)
\(^{19}\) cf. Möllering (2005)
When people – as a result of too much complexity – are no longer capable of making a real verification, then they fall back on symbolic implications. Here again, it revolves around the above-mentioned feedback loops, wherein the sum of the symbolic implications is assessed, and on the basis of this it will be decided whether the trust will be continued or withdrawn. Through these symbolic verifications, the focus on aspects relevant to trust has a negative impact on the trustworthiness, as it foregrounds the justification for distrust. Here again, the relevance of this topic for the current examination is clear, as an advertisement for a secure product which has the argumentation of an outstanding configuration of technical security mechanisms can, in certain circumstances, result in exactly this security issue again becoming the focus of the question of trust.

“The greatest opponent of trust is fear”

If the fear or insecurity arises that the trust is not justified, then the “advance payment” in trust will not even be offered, or it will be connected with increased burdens such as price mark-downs, excessive monitoring or re-insurance.

In the case studies examined here, the question also arises as to why people trust organizations such as banks. Trust in organizations is known as “Systemic Trust”. Organizations can in principle appear as a participant in the trust context, but cannot be equated to individuals. Systemic trust consists essentially of trust in the control mechanisms inherent in the system and in the access points to the system.

When it comes to the control mechanisms, the existence of such mechanisms alone builds trust, even when they are not actively used by the truster. The truster is content in the knowledge that, if in doubt, there is the possibility to check the actions of the opposite party. In reality, such mechanisms can be found, for example, in the context of the right to information for shareholders in a corporation or the partners in a cooperative. Access points are usually people: here the trustworthiness of the person is transferred to the system - the term for this is “borrowed” trust.

21 Von Braun (2012)
23 Möllering (2005)
4.3 The Term “Acceptance”

Every change in IT infrastructure inevitably brings with it adjustments to user behavior, for which the question of acceptance arises. This is particularly the case when these changes result in a paradigm shift – as with Cloud Computing. Even the change to the IT landscape of a company which is driven by the users themselves, associated with the – typical and increasing in recent times – catchphrase “Bring Your Own Device” (BYOD), also raises, along with technical and legal questions, the question of acceptance. In the context of “Requirements Engineering” – analysis of needs – a certain concentration can be seen on the determining of an objective need. Here it is admittedly often ignored that a simple matching of need and supply is not always sufficient for the creation of demand in practice. For the latter to occur, the acceptance of the supply by the consumer is still an important and essential (!) prerequisite. Acceptance requires, in turn, the trust of the consumer in the supplying party.

The question of the actual acceptance of IT systems by the customer – active acceptance in the form of purchase and use, as well as passive acceptance in the form of tolerance of use by third parties – often seems not to have the necessary status. Active acceptance with purchase includes as a rule the payment of a purchase price, while in passive acceptance (tolerance) somewhat the financial converse occurs, in the sense of a compensation payment etc.

<table>
<thead>
<tr>
<th>Active/Passive</th>
<th>Acceptance, Agreement</th>
<th>Tolerance, Acquiescence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context:</td>
<td>Cost, Effort</td>
<td>Cash Adjustment,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compensation</td>
</tr>
<tr>
<td>Subject:</td>
<td>Individual, Persons</td>
<td>Groups, Organizations</td>
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Here is an informative example illustrating this abstract issue: Thirsty people have the need to drink something. If these people have the necessary financial means, then, for example, the purchase of mineral water would be possible – from the need, an objective demand develops (objective demand is equivalent to need plus financial means). One person appears, offering mineral water in paper cups; in actual fact, this offer corresponds to need
precisely from the objective (!) perspective, but the thirsty individuals do not trust the offer subjectively (!), because they see the product “mineral water in paper cups” as unreliable because it is not offered in sealed bottles and as a result some kind of contamination can be suspected. The demand (purchase on the basis of need) will not occur, despite the need, in the event of a lack of acceptance. A lack of passive acceptance, in contrast, is apparent when parents who are not themselves thirsty refuse to allow their thirsty children in the same situation to drink the suspect mineral water.
5. Examination of a Range of Sectors Using Case-Based Evidence

5.1 Choice of Cases

Sector Examination: Tangible versus Intangible Goods – Automotive Industry

The automobile was chosen as the “representative” of a tangible good. Here, the question of interest is how acceptance is generated for a technical system (car) that is technically almost impenetrable for the user (driver). It will also be considered how “encapsulation”, such as ABS, functions, where the user is dependent on a system without having any further influence, or the possibility to check or change. Along with the “encapsulation” of technical functions, legal aspects, such as the function of the general operating permit, will be considered.

Sector Examination: Tangible versus Intangible Goods – Banking Sector

An industry in which trust plays a key role is the banking sector. Here, what is above all interesting is how trust is signaled and gained. The trust-building function of re-insurance, such as the insurance funds of cooperatives and guarantor liability of the Sparkasse banks, will be closely examined.

Networks with IT Services – Using the Examples of DATEV eG and DE-CIX from eco e. V.

DATEV, as the provider of software for taxation consultants, financial auditors and lawyers, has a de-facto monopoly position. DE-CIX, a subsidiary of eco e. V., is an organization for P2P exchange in the Internet. As these organizations have been offering services corresponding to the Cloud model Software-as-a-Service for years now, they provide a suitable object of examination with regard to trust-building mechanisms in the Cloud sector – here again, trust-building structures are significant.

5.2 Presentation of the Cases Examined

5.2.1 Automobile Industry – The Car

In the daily use of the car, it is often forgotten what a complex system is hidden under the bodywork. At the same time, there are risks involved – indisputable, but taken into account and accepted – in its use in traffic, which can be a danger life and limb. How has this trust in the technical system of the car come about, even though the user has almost no technical understanding of it? What role do technical functions like ABS or the legal framework conditions play in this? In the following section, the acceptance and trust-building factors of this sector will be analyzed and will be transferred to Cloud Computing on the basis of the superordinate research question.

5.2.1.1 Analysis of Trust-Building Factors in the Automotive Case

Appeal in the Area of Private Customers

One of the most important findings is that the market acceptance of the car on the part of the private customer is quite obviously strongly influenced by psychological factors. This includes, for example, the manner in which the sales showrooms have been designed or the salesperson’s friendly service. Here, it centers on whether the customer feels comfortable during the purchase process. In other words, a salesperson who is impolite to the customer or an unpleasant atmosphere in the showroom dramatically reduce the chances of a successful sale.

This is the case not only for the automotive area, but in principle for all products and services which need to convince their customers, as a result of the oligopolous supply-driven market or the introduction of new products to the market. The automotive sector, through more than a century of history, has recognized and embodied this factor. It is also striking that car...
manufacturers attempt, through comprehensive marketing measures, to build the attraction to the product in private customers from the very first awareness of the product. This occurs, in turn, as a result of the psychological fact that people trust above all other people. To achieve this, advertisements often make use of celebrities as ambassadors, or tell short, amusing stories that every normal user can empathize with from their own daily experience. In addition to this, the advertising industry uses further psychological phenomena in order to awaken interest in the customer, such as cuteness.

Comprehensive Service in the Commercial Area

It can be stated that commercial customers have their focus on factors other than those of private customers: Value is placed less on psychological factors than on the comprehensive service from the car dealership. The relationship to and the communication with the customer takes place through a travelling salesperson who can go directly to the customer’s company. Depending on the volume or the type of customer, for example a fleet customer or a franchise customer, the service is more comprehensive. Services like a pick-up and drop-off service, or the handling of financing or leasing contracts, remove a significant burden from customers in connection with the purchase of business vehicles.

Irrational Decisions

Irrational decisions are made by people in every life situation. Irrational decisions are to be understood as actions that are contrary to “common sense”, but are nonetheless undertaken. As can be seen in the expert interviews, decisions made irrationally occur particularly commonly in association with the purchase of a car. Often, the larger and higher-priced models are seen as objects of prestige which accompany a certain social status. Here, the focus is on the driving enjoyment, the performance, the design and the technical features. So that customers can have the driving experience, all car dealerships offer free test drives, in order to awaken emotions in the potential customer. Through the test drive, the customer will be convinced of the advantages of the car, although, seen rationally, a smaller car with less power and fewer features would be completely sufficient. In conclusion, it is clear that many car purchases are not based on rational considerations, but instead, emotions contribute a good portion to the purchase.
Usefulness is Greater than the Risk

People tend to suppress unpleasant factors. The perception of risk is shaped by a judgment which is subject to many assessments and distortions. Simply the thought that the driver puts themselves at risk of accidents is often completely suppressed. The increased risk is only accepted because, in the eyes of the customer, it is outweighed by the usefulness. This can take a range of forms, such as the gaining of extra temporal flexibility or independence. Further, the expert interview brought to light the idea that many potential car-buyers are initially reluctant to pay extra for optional accessories, even though this would reduce the risk of damage or an accident, and later costs for repairs could be saved: The costs incurred in an accident without the Parktronic System amount to around 800 euros for a damaged bumper bar. The customer could invest this money just as easily in a Parktronic System, and would then reduce the risk of an accident, and gain an advantage.

Transfer of Liability onto Third Parties

If problems arise after the purchase of a vehicle, the customer can immediately contact the seller or the manufacturer, in order to have it solved. Thus, the customer does not bear the costs in the case of damage, provided that the damage was not the fault of the customer. The manufacturer and the seller therefore carry certain co-responsibility for the proper functioning of the vehicle. If a customer has had the experience that the seller reacts inappropriately to cases of defects or damage or even to dissatisfaction with the product, then the customer will not purchase another vehicle from this dealership. The seller should therefore have an increased interest in providing comprehensive customer service. Through this, the customer experiences an increased feeling of security.

The most important contribution to the transfer of liability to third parties is, however, made by the legally required third-party insurance, which is necessary for every motorized vehicle driven on public streets. Automobile third-party insurance law is largely unified within the European Union. The risk is transferred from the individual person to a large number of car drivers. In the case of damage, the person responsible is not liable with private

This point also contributes to an increased feeling of security for the automobile driver. If drivers were liable with their own private finances for damage that they cause, they would presumably use public transport more frequently.

Stable “Traditional” Vocabulary

Using unchanging and simple or intuitive vocabulary for the products or product parts in a sector or area seems, at first glance, to be quite a trivial matter. In order to free an object of unnecessary complexity and potential for confusion, every sector makes use of simplified descriptions and names and as such encourages the building of trust in their products. In the automotive industry, this process is largely established. When the salesperson speaks of the motor, the trunk or the steering wheel, it is clear for all potential drivers which parts are being spoken about. Of course, the knowledge of terminology for certain components and parts of a car is different depending on the technical understanding of the user. This, however, changes nothing in the constant designation of parts. The Anti-lock Braking System on a car will always be called the Anti-lock Braking System, and as there is no other name for the system, there is no chance of confusion.

Time from Development to Launch

In order to ensure a seamless introduction of a new technical product to the market, it is important that this product is accepted by the customers. A prerequisite for this is the launch of a fault-free product. A sufficiently long development time-line should be guaranteed for a technical product, to reduce the likelihood of faults. The development of an ESP system can, as a result, take up to ten years, and the development of a display in the rearview mirror approximately one to two years. The challenge for development is to always bring a technically flawless product onto the market. Not only does this avoid the enormously high additional costs of, for example, recalls, but it also increases the acceptance and the trust in the automotive brand.
Independent Tests and Legal Regulations

Before a technical product finally reaches the market, it still needs to undergo a range of legally required steps. An example of this is the ECE certification. Such a certification occurs for all vehicle components which require approval, and will only be issued when all tests and permits have been successfully fulfilled. Another example is the Euro NCAP, which undertakes crash tests and provides car buyers with a realistic and independent assessment of the safety features of some of the most popular vehicles sold in Europe. Anyone who is interested in the results of the crash tests can view the quarterly publications on the Euro NCAP Internet site, with the videos and photos of the crash tests. Through such independent tests and legal requirements, faults are also avoided and the car buyer is objectively informed about aspects relevant to safety.

5.2.1.2 Evaluation of the Transferability to Cloud Computing

The “Friendly Cloud”

Looking at the advertising spots from Cloud providers shown on German television, they are still very explanatory in nature – of both the product and its use. Doubtless, a certain understanding of the product is a basic requirement for its acceptance. However, the psychological factors, which have been proved to play a prominent role, should not be neglected. In the service provision area of Cloud Computing, this could be covered by the term “the Friendly Cloud”. Using extensive marketing measures – for example with celebrities – the appeal for the brand and the product could be developed in the customer.

Comprehensive Service in the Commercial Area

Both in the commercial and in the private areas, a great deal of value is placed on product bundling in the sale of an automobile. For a business person, the point is even more important, as comprehensive service provides an enormous feeling of relief, and allows the business person to focus on their main business activity. For Cloud Computing providers, the expansion of the service for large and small customers is one possibility to achieve customer acceptance and to create long-term customer loyalty. For

26 cf. Euro NCAP (2011)
commercial customers, such a comprehensive service can be implemented with 24-hour telephone support and also a specific contact person who can look after the customer and give advice on location.

Irrational Decisions

In the Cloud Computing sector, it is not always easy to awaken emotions in the customer. For the potential user or customer, a Cloud is, in contrast to a car, not physically tangible. Therefore, it would be advantageous to introduce a free use-phase, so that the customer can get an initial overview of the functionalities of the Cloud service. Once the customer is convinced of the advantages of such a product, there is a greater probability of that customer developing loyalty for the given Cloud provider. If, on the other hand, there is no possibility for the customer to try the product, then it will be difficult to gain trust and acceptance.

Usefulness is Greater than the Risk

The alternative viewpoint “usefulness is greater than the risk” earns a prominent position in the Cloud Computing sector. Public discussion is particularly dominated by the aspect of risk – with the result that the security of Cloud solutions is often put into question. Even though – indisputably – the legal situation is not completely clear on several points, the customer communication should primarily highlight the usefulness of Cloud solutions for the customer. These would be, for example, the handing over of the system maintenance to a professional service provider, including the update service, automatic backing-up, the consideration of hardware requirements, and the offer of IT resources. The goal is to put the usefulness for the customer into the foreground, and not to unsettle the customer regarding possible risks.

Transfer of Liability onto Third Parties

This factor also plays an important role for the Cloud sector: What happens when problems occur, such as that confidential data is lost or made public? Who takes on the costs for the damage caused? Through the use of an investment fund that the providers pay into in order to communally cover the risk, the customer could be provided with additional security in the use of the Cloud. The liability would then be transferred to the service provider, which would simplify the customer’s decision.
Stable Vocabulary

The use of stable, “semi-constant” vocabulary cannot be found overall within the IT sector. Rather, a large number of terms and abbreviations from English are used, and these can lead to confusion and uncertainty for potential users. The result of this is to undermine the trust that users have in IT applications. Consequently, simple, understandable terms and existing, established designations which allow a clear understanding of the product should be used in Cloud Computing.

Time from Development to Launch

As can be seen, a large range of tests and simulations take place in the automotive industry, in order to bring a technically flawless product onto the market. Similarly, the approach to Cloud Computing would be to carry out comprehensive tests scenarios with the help of alpha and beta tests. This not only reduces the possibility of faults and the subsequent costs, but also increases the user-friendliness. Errors which occur can be checked and corrected in advance. Not only is the search for errors in an already implemented product more complex, but also frequently occurring error messages lead to damage to the acceptance of a system.

Independent Tests and Legal Regulations

Today there are laws and regulations such as the German Data Protection Law, and also rules for particular users which have an influence on use of the Cloud, but a comprehensive legal framework for “secure Cloud solutions” does not yet exist. However, as the market requires standards and demands measurable parameters for the quality of providers, several standardization and quality assurance guidelines have already been created, which are, however, all voluntary in nature. This includes, for example, the “EuroCloud Star Audit” and the Standard ISO 27001. These systems have in most cases a focus on individual aspects of Cloud use, such as security, availability or transparency. For the prospective user of Cloud solutions, however, the question arises as to how meaningful an audit or a certification actually is. An authority which would build trust in Cloud Computing would, for example, be the TÜV, which monitors the adherence to legal regulations as a neutral institution. This inspection, which would provide legal certainty, would then be obligatory for companies that offer Cloud services.

» Quality Assurance: “EuroCloud Star Audit” and the Standard ISO 27001
5.2.2 Commercial Data Processing in Cooperatives or Associations

In the area of commercial data processing, a successful model is provided by the self-organization of the service provision on the basis of closed user-groups in the form of cooperatives or associations. In the area of cooperatives, above all DATEV eG should be mentioned, which counts as one of the largest IT service providers in Europe. DATEV has been analyzed in detail in conjunction with this study; the fundamental reason for this is the long historical development of the cooperative over more than 40 years.

For further consideration, DE-CIX, the P2P Internet exchange owned by eco e.V. in Frankfurt am Main, is a rewarding case study. DE-CIX, the largest P2P hub in the world also forms a closed user-group with a high level of trust, through its organization as an association. As a result of its complexity, a corresponding analysis of DE-CIX has been put on hold on the part of the working group.

5.2.2.1 The Example of DATEV eG – Company Profile

DATEV eG is a software house and IT service provider based in Nuremberg. As DATEV customers, we see taxation advisors, financial auditors and lawyers, and their clients, such as small and medium-sized companies, local authorities, associations and numerous further institutions. DATEV was founded in 1966 by 65 tax agents from the district of Nuremberg. The objective was to build up a cooperatively organized self-help organization and to centrally manage the completion of accountancy tasks by means of computing software.\(^27\) The service spectrum of DATEV includes software for accounting, human resources management, business consulting, taxation assessments and the organization of companies and chambers. DATEV offers more than 200 PC programs, and the entire product palette ranges from Cloud services and data processing, to outsourcing, security services and business consulting.\(^28\)

Throughout Germany, the taxation agents from DATEV eG carry out the financial accounting for over 2.5 million small and medium-sized German companies, and more than 10 million salary statements are generated using the DATEV software every month.

\(^{27}\) cf. datev.de (2012)
\(^{28}\) cf. datev.de (2012)
5.2.2.2 Analysis of the Trust-Building Factors in the Case of DATEV eG

Market Leadership and History

DATEV is, in comparison to other Cloud Computing service providers, not a new-comer, but rather has been active for more than 40 years. Back in 1966, an early form of Cloud Computing or IT outsourcing was already possible for tax agents.

It is estimated that 90 percent of the approved tax agents in Germany use DATEV. This extremely high market share is not a result of technological superiority or extreme innovation, as competing products like Edison, Stotax, SAP, SAGE KHK or Lexware are technically and functionally at the same level as the DATEV products. The history associated with DATEV, in connection with the prevailing market dominance, radiates expertise and trustworthiness to tax agents and their clients.

Early Exposure to the Application

A further interesting factor is the early exposure to the DATEV products. Students are already confronted with and trained in the DATEV products during their training at universities and universities of applied sciences. The earlier a particular technique is introduced, the more likely it is that its future adoption is intrinsically motivated. A certain “advance payment” of trust or acceptance can therefore be presumed.

All-Round Service Offer

The cooperative also convinces through its comprehensive service catalog. In addition, an individual IT consultation is available to members of the cooperative. Alongside the software products, DATEV offers comprehensive business consulting for their tax agents. At the strategic level, all themes with regard to finances, human resource management, clients, services and marketing are discussed and managed with consultants from the cooperative who are experienced in the sector. In this way, DATEV helps members to generate a service provision portfolio aligned to the needs of their clients. In order to determine or improve the quality of the internal processes of a taxation accountancy chambers, the cooperative makes available experts who support and accompany the members through a certification according to
ISO 9001:2008 and an examination by the German Association of Tax Advisors (DStV).

The comprehensive range of services from the DATEV cooperative covers everything which ensues from the activities of tax advisors, and represents a kind of “all-round worry-free package”. As a result, the tax advisor does not need to be concerned with diverse service providers, but can when necessary enquire simply and centrally at the cooperative. A reduction in complexity in the choice of possible providers, in connection with the all-round service from DATEV, increases the trust between the members and the cooperative.

Implied Security

DATEV does not market itself using vocabulary relating to the areas security or trust. DATEV sees the security of the data entrusted to it as a prerequisite for its business – and not as a special customer service.

Information about security mechanisms is found on the DATEV website deep down in the content hierarchy. First in the context of technical documentation for developers are the type of encryption and the concepts of data security and data protection described.

DATEV maintains the information about the implemented security technology deliberately in the background, in order not to encourage this kind of doubt.

The same goes for use of the term “Cloud Computing”. DATEV avoids mentioning that the offered data center services have in actuality been Cloud Computing services for many years. In this way, DATEV actively distances itself from the current debate about the security of Cloud Computing. The functionality of the service offer is used for marketing, and not the technical implementation and its security mechanisms.

Workshops and Seminars

In the case of new legal regulations, DATEV runs seminars and workshops for its members, and thus ensures that their clients will be provided with the relevant information at an early stage.
Alongside the legal workshops, further education and training seminars are offered for taxation accountancy chambers. Here, staff can receive targeted training and development in a range of areas.

As a result of the open information policy and the rapid passing on of information internally, which are legal requirements for professional cooperatives, DATEV has the possibility to cater for possible customer desires and make them aware of political and legal events at an early stage. If the information is passed on in the form of seminars and lectures to the members of the cooperative, the culture of trust within the cooperative will be strengthened.

DATEV as a Registered Cooperative

DATEV is organized legally as a registered cooperative. This legal form means that the customer does not perceive DATEV as a risk, because the data remains in “tax advisory circles”. The fact that DATEV is a legal entity is not considered. Trust in the DATEV system is in turn transferred to the entire of DATEV over the access point, the tax advisor.

For most customers, the legal commitment of tax advisers to the Tax Consultants’ Act and the associated duty of confidentiality is well known. The customer thus places their trust in the closed user-group of tax advisers organized in the registered cooperative.

Further features of the cooperative are the individual member’s right to information and inspection. What is special in comparison to other similar legal forms is that every member has the same voting rights, regardless of the size of their invested capital. Also, the principle of self-administration is implemented in that the management, in contrast to other legal forms, must be appointed from the circle of members, and the Annual General Meeting has the right at any stage to rescind the appointment. This serves the purpose of ensuring that the cooperative serves the interests of the members, not profit maximization.

“Trusted Advisor”

Of central importance in the examined subject-matter of DATEV is the trust in the person of the tax advisor. In questions of trust in DATEV as a system, it becomes clear that the customer’s trust in the personal trustworthiness of
The regular personal contact is an essential component of the relationship of trust. Through this regular interaction over many years, and through the repeated validation of the “advance payment” in trust, a high level of trust is built.

The tax advisor is projected onto the system. The interviewees established that the majority of customers showed no real interest in which technical software solutions were used for the processing; rather they trusted the person. Often it was not consciously perceived that DATEV processes the customer data centrally in the data center, but rather it was assumed the data remained with the tax advisor.

Here, the responsibility for the implementation of the service provision is comprehensively passed into the hands of the tax advisor, to reduce the complexity of the decision and the business relationship. Customers of tax advisors seem too often sign documents and declarations on almost blind trust.

A further aspect is the frequency of the personal contact. The interviewees were sure that the regular personal contact is an essential component of the relationship of trust. Through this regular interaction over many years, and through the repeated validation of the “advance payment” in trust, a high level of trust is built.

Advantages for the Tax Advisor

The wide dissemination of the DATEV software seems, considering the existing competing products, astounding. In interview, the reason identified for the high market share was the comprehensive functionality of DATEV. The tax advisor can be sure that regulatory changes are immediately implemented in the software and new functions are continuously developed. DATEV achieves this nearness to the requirements of the user through the closed and homogeneous customer group of tax advisers. The product is to a large extent standardized, so that there is hardly any need to adapt when implementing the software for the customer.

The provider uses this advantage intensively in the product marketing. The unique selling propositions here are the market penetration and the scope of product functionalities. The interviewees admitted that although DATEV is the most expensive product on the market, this is more than compensated for by its great usefulness. This makes clear that the price of the service cannot be the sole criteria, as the customer’s purchase decision is largely dependent on the usefulness gained.
DATEV openly markets itself on its Internet site with the certification according to ISO/IEC 27001:2005, obtained in 2011. “It contains the catalog of specifications for the establishment, operation, maintenance and constant improvement of a documented Information Security Management System (ISMS) in data processing. This ISMS determines which tools and methods are to be used for the monitoring and control of the management of tasks and activities for information security. The ISO standard thus contains concrete specifications for the ISMS and provides at the same time the criteria for its inspection and monitoring, and therefore allows an audit and certification.29”

As has already been mentioned, DATEV does not otherwise market themselves expressly with the security mechanisms or the technical equipment of their data center. In contrast to this, the certification was used for publicity purposes, being presented at an official event in front of the press.

Through conversations with end-customers, it became clear that such certifications are becoming increasingly important. For customers, security concerns are often eliminated on presentation of an accepted certification.30 Specifically, the regular intervals between audit checks were seen to guarantee a long-term adherence to the norms. Such certificates used to be of a lower priority. The increasing obligations to provide proof of the proper management of IT systems continually expand the requirements in other areas as well, such as data protection and contractual elements.

What we can take from this is that certifications are becoming ever more important for the commercial decision-maker and in certain cases also for the end-customer, as long as the institution is recognized and the audit criteria are communicated transparently.

5.2.2.3 Evaluation of the Transferability to Cloud Computing

In this chapter, the above-described trust-encouraging and acceptance-building factors for the DATEV cooperative will be prioritized and adapted for Cloud Computing.

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29 cf. datev.de (2014)
30 https://resilience.enisa.europa.eu/cloud-computing-certification
Market Leadership and History

As was explained in the previous chapter, the cooperative radiates expertise and trustworthiness to potential customers, as a result of its long-standing existence and far-reaching market dominance.

A direct adaptation to the Cloud Computing area is difficult to execute. Above all, the Cloud Computing industry is a very young sector, and only a few providers so far, such as Salesforce.com or Amazon.com, can provide an adequate history.

In the end, the wide dissemination of the software can be indirectly attributed to the long existence of the cooperative, and the factors market leadership and history should not be separately considered or assessed. This must be understood as a feed-back loop, in which a long positive history additionally increases the spread in the market.

Early Exposure to the Application

Through the process of acquainting students with the DATEV products early, the trust relationship to the system in question grows with time. Depending on the service provision model, this can also be transferred without problem to the Cloud sector. Workshops for SaaS models, in which targeted training in the application is made possible, can be organized and run by experienced users.

For the other service models, it must be determined whether it is possible to offer training, and whether the end-customer shows any interest.

All-Round Service Offer

The culture of trust between the cooperative and the members is further strengthened and anchored through extensive care from the provider. However, it is debatable to what extent services can be offered by the respective company in the Cloud sector. Especially in the IT area, additional services like the provision or leasing of IT or sales of the necessary IT structures are interesting for end-customers and reduce the complexity involved in the implementation of Cloud Computing services.

For SMEs in the Cloud industry, these factors become the entry-barriers for new service areas. For established Cloud service providers, extended ranges
of products and services seem to be a legitimate variant for the marketing to new customers, and they additionally strengthen existing business relationships.

Implied Security

If the findings about implied security are transferred to other Cloud service providers, the question arises as to whether it is sensible to market with the diverse technical security mechanisms. Assuming that the average customer of Cloud services is not competent to verify whether the promised features are actually sufficient and will be adhered to, it is doubtful whether this promise is a trust-building feature. This is because, as has already been explained, it is only through a comparison of whether the promise is adhered to or not that a higher level of trust can be achieved. If the customer is unable to make this comparison, then trust is not encouraged, the complexity is not reduced, and there remain misgivings that the topic security has been inadvertently introduced explicitly into the decision-making process.

A finding from the examination of the implied security at DATEV shows that trust in the security cannot be generated through the marketing of the technical security mechanisms unless the customer is able to verify the truth of the promise. The provider themselves must symbolize trust, and allow no concerns to be generated through their external communication.

Workshops and Seminars

As was described in the previous chapter, a transparent information policy is fundamental for the building of trust, and as a result also for every business relationship. Particularly for technical innovations and legal reforms, it is advantageous to lay your cards open for your customers. The holding back of information can trigger a strong negative impact on the relationship of trust. For a long time, there have been calls for a reform of the insolvency law for Cloud providers, in order to achieve legal certainty. If, in the end, such a change occurs, then it would be advisable to organize a unified workshop to inform providers and customers about the reform and to make available recommendations for future action.

» The provider themselves must symbolize trust, and allow no concerns to be generated through their external communication
Registered Cooperatives

Following is an examination of which trust-building factors of cooperatives can be adapted to an organization for Cloud providers and Cloud customers. One approach is the creation of an umbrella organization made up of Cloud providers and Cloud customers who are prepared to cooperate, in the sense of a group of experts for experts. Through the cooperation of peers, it is conceivable that the extensive individual member’s rights to information and inspection would achieve sufficient acceptance. The factor of a closed user-group would also be advantageous for the trust in the security and the confidentiality of the data. Alongside the legal form of the cooperative, other forms are also possible, as the rules for inspection and transparency are also compatible with a partnership agreement.

Trusted Advisor

It can now be considered what a concept for the Trusted Advisor could look like in conjunction with the marketing of Cloud products.

Here, the focus is on the person who is in contact with the responsible party or with the contact person in the customer company. Often, in the environment of the IT-related business areas, one can see a certain culture of creative chaos, which may do justice to the creativity of those involved, but does not contribute to the building of trust. This is because, as was described in the general section on building trust, assumptions about the trustworthiness of the active person are made on the basis of symbolic implications. An unstructured work-process and obvious disorganization suggest a kind of unreliability which is not conducive to the building of trust.

Measures for this could be intensive training of the “contact person” on the topic trust-building behavior according to the concept of the “trusted Advisor”. Only those who are explicitly aware of the impact of their behavior and presentation in the context of trust-building processes can actively make use of this effect and at the same time avoid making mistakes. Such training seminars could be organized and offered by the associations.
What is in principle necessary to be accepted as a trustworthy consultant by the customer is demonstrated by David Maister with the reference model of the five steps of trust-building:\(^{31}\)

![Figure 4: The Development of Trust in Five Steps\(^{32}\)](image)

The pre-requisite for obtaining the consultation request from the prospective customer (Engage) consists of being able to demonstrate oneself to be the right person for this problem. For this, the consultant must be capable of adopting the perspective of the customer.

In the second step, it is a question of intensively listening to and understanding the customer’s concerns (Listen).

In the third step, the consultant presents the reference framework (Frame) and offers orientation. This occurs on the one hand at the rational level, by being able to reduce the complex issues described by the customer to the core issue and show the interrelationships. This can, for example, be illustrated with a diagram. A further, no less important factor is the emotional reference framework. The consultant depicts the emotional and political aspects with relation to the customer’s problem.

The next step after the definition of the problem is not – as may possibly be assumed – the solution to the problem, but rather the development of a detailed vision of what the result should look like (Envision).

The fifth step, “Commit”, means on the one hand the agreement between the consultant and the customer to do certain things in the future. With regard to the term “trust”, however, above all the long-term and sustainable obligation of the consultant to the customer should be understood.

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\(^{31}\) cf. Maister (2001)  
\(^{32}\) cf. Maister (2001)
Advantages for the Professional Customer

This emphasis on the customer benefits in contrast to focusing on the cost of the service can be easily transferred to Cloud products.

If the customer of a Cloud application can trust that it will fulfill their requirements, then the price of the service will move into the background. Measures that lead to increased trust here could be the provider ensuring that the ideas and requirements of the customer are systematically recorded and processed. Good idea and requirement management could be the core of this orientation to the customer benefits.

In the implementation of this strategy it is also important that the actual customer benefits of the product are marketed, and not the technical implementation. This reduction in complexity influences the purchase decision positively, in the case of existing trust in the provider. The customer turns to the service provider because they do not want to deal with the complexity of the technical realization themselves. As a result, this customer decision should be recognized, and the customer should not be unsettled by being given such information. Such behavior would not reduce the complexity, but would rather build on it or at least maintain it.

Seal of Approval and Certification

The statements from end customers demonstrate clearly that the building of trust can be safeguarded through recognized certifications and appropriate seals of approval. Certifications according to ISO 27001:2005 can easily overcome the special security concerns of customers. However, the certification process is judged as being high-cost and time-consuming. Especially for SMEs in the Cloud industry, these disadvantages are decisive and often result in a certification being unfeasible. Here it would be interesting to look at to what extent associations and co-operatives of Cloud Computing providers could support this, in order to ensure a simpler certification. Through the development of the certification “EuroCloud Star Audit” by EuroCloud Deutschland_eco e. V., the foundations of a transparent and affordable audit for Cloud providers has been laid.

5.2.3 The Banking Sector

The banking sector was chosen for the analysis of factors that build trust and acceptance, as trust plays a decisive role in this sector. If customers no longer trust their bank, they no longer deposit their money there. If no more money
is deposited, the then bank has no means at its disposal to give loans and thus to pursue their business – lending capital to earn interest.

How important safeguarding this trust is was demonstrated in the financial crisis of 2008. German Chancellor Angela Merkels’s statement, unique in the history of the Federal Republic of Germany, that “we say to the savers that their deposits are safe”, was intended to prevent a rush of customers at the bank tellers.\textsuperscript{33} However, as has been shown in the automotive industry, irrational decisions are also made in the banking sector, and some aspects are perceived irrationally.

The graph from the Banking Association clearly shows that trust in banks suffered considerably during the financial crisis in 2009. The following two graphs demonstrate the irrational perception of customers particularly clearly for the year 2009.

**Confidence in banks generally**

*In view of the financial market crisis my confidence in German banks has...*

<table>
<thead>
<tr>
<th></th>
<th>Nov 2008</th>
<th>Mar 2009</th>
<th>Sep 2009</th>
<th>Apr 2010</th>
</tr>
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<tbody>
<tr>
<td>Suffered greatly</td>
<td>36</td>
<td>54</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>Not so much</td>
<td>37</td>
<td>28</td>
<td>37</td>
<td>40</td>
</tr>
<tr>
<td>Not at all</td>
<td>26</td>
<td>14</td>
<td>21</td>
<td>20</td>
</tr>
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</table>

**Figure 5: Trust in Banks in General**\textsuperscript{34}

The following graph illustrates how strongly the trust in one’s own bank suffered.

**Confidence in my bank**

*In view of the financial market crisis my confidence in my bank has...*

<table>
<thead>
<tr>
<th></th>
<th>Nov 2008</th>
<th>Mar 2009</th>
<th>Sep 2009</th>
<th>Apr 2010</th>
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<tbody>
<tr>
<td>Suffered greatly</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>11</td>
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<tr>
<td>Not so much</td>
<td>27</td>
<td>53</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Not at all</td>
<td>64</td>
<td>36</td>
<td>59</td>
<td>55</td>
</tr>
</tbody>
</table>

**Figure 6: Trust in One’s Own Bank**\textsuperscript{35}

\textsuperscript{33} cf. spiegel.de (2012)
\textsuperscript{34} Bankenverband (2012)
\textsuperscript{35} Bankenverband (2012)
Curiously, while trust in the entire banking sector suffered heavily during the crisis, trust in one’s own bank did not. The customers continued to perceive their own bank as serious. What is the reason for this? Why does the standing of one’s own bank not suffer, when this also counts as part of the banking sector? The negative perception of the entire sector relates to the fact that a scapegoat for the negative effects needed to be found. In public perception, the banks and their representatives lent themselves to this task. The search for a scapegoat is perhaps understandable, but the trust placed in one’s own bank is, on the other hand, even less justifiable. In times when consultants are only measured according to their yield, when they must achieve their goals and preferably bring every second conversation to a deal\(^{36}\), a positive perception of one’s own bank is completely irrational.

### 5.2.3.1 Analysis of Trust-Building Factors in the Banking Sector

For the transfer of factors for building trust and acceptance from the banking sector to Cloud Computing, personal interviews were undertaken.

With regard to the banking sector, two questions in particular arise:
- How is trust signaled and gained?
- How do the re-insurance of banks and the deposit protection for cooperatives function?

It is assumed that, with regard to the building of trust, the personal contact of the consultant to the customer (“social credit”) and the trust-building symbols such as the safe or the bank building must play an important role. In addition, the – apparent – seriousness of the sector, the political influence and legal regulations contribute to this. Furthermore, diverse supervisory bodies, such as the German Federal Financial Supervisory Authority (BaFin) and seals of approval convey a high level of security.

The interview results confirm the first assumption. From the discussion with experts from regional banks, the following points can be kept in mind:

- Trust is still seen as a very important topic in the finance sector.

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\(^{36}\) cf. zeit.de (2012)
• For the building of trust, the business structure in particular – in this case the cooperative bank, which was founded as “help for self-help” – and the open information policy, meaning transparency, play an important role. In addition, deposit protection funds are emphasized as a protection mechanism. The same is the case for the regionalism of the product (encouragement of regional investments such as solar parks) and the long-term nature of the consultation.

• In order the build or maintain trust, a range of measures are undertaken. Thus, ever more marketing ambassadors, like Ulrich Wickert or Jürgen Klopp recently, are presented in the media as famous customers of regional banks. However, the marketing does not always contain slogans that expressly use the term “trust”. The campaigns also paraphrase this in comprehensive prospects and circulars.

• The security aspect is alluded to in lectures and seminars. There are also security notifications on the respective credit institute websites. These, however, relate merely to recommendations that the bank makes for their customers. For example, the online customer is warned not to reveal TAN numbers multiple times, and not to click on links on the bank homepage. However, there is no mention of security leaks, for which the bank itself could be responsible.

• With regard to the personal contact, this serves an important function in the differentiation between the regional banks and the direct banks, as people would rather trust other people than an anonymous organization. Therefore, preference is given to either a telephone call or personal conversation, depending on the complexity of the business. For routine business, such as the renewal of an investment or an application for a credit card, many customers opt for a simple telephone call or handle the process over the Internet. If it involves a special situation, such as the conclusion of a property loan agreement, most customers prefer to deal with a consultant who will provide care throughout the complete phase.

• During the personal conversation, the consultant can create trust in a targeted manner. There are certificates which certify the consultant and which are openly presented to the customer. Many products are also TÜV certified and provide the customer with a well-known and recognized standard. In addition, value is placed on a structured
negotiation, for which there are specific guidelines, and the representative presentation of the staff member and the branch itself.

- There is less communication about the audits, which are undertaken by tax authorities and other institutions on approximately 150 days in the year. Meanwhile, the regional banks which were surveyed market themselves using the seals of approval already mentioned, such as the TÜV.

- The internal security measures, such as the dual control principle, the internal audit, and quality assurance through the IT and compliance staff, are not communicated to the outside or used for marketing.

- The liability for neither technical outages nor financial shortfalls is in question. Naturally, there is insurance which, for example, protects against the misuse of a credit card, and there is specific security software. Nevertheless, we speak in this case of “applied suppression of problems,” as the credit institute wants to portray a sense of absolute security, and as such it is simpler not to broach this explosive issue. With regard to financial shortfalls, the credit institute names the deposit protection fund as security.

Additionally, an expert from a direct bank was interviewed by telephone. He offered the following aspects which contribute to trust for direct banks:

- Trust is seen as an important good, which is, however, seen as a matter of course. For this reason, the term is not explicitly used in marketing measures. However, it is felt to be exceptionally important to keep promises, as this leads to and maintains trust.

- As channels for communication, online banking and telephone conversations were mentioned, however the telephone is rather secondary.

- As a result of the preferably low complexity of the topics, the contact to the direct bank is more rarely personal. If, on the other hand, a more complex concern is to be dealt with, such as a property loan, the customer will be assigned a personal consultant, who always telephones with and supports the customer.

- As with the regional banks, the security aspects for the interviewee from the direct bank are also taken to be a matter of course, and are therefore
not communicated. On this topic, there are only notices on the homepage for the customer to consider.

- The trust-building measures show no variation from before the financial crisis and after it. Merely the homepage of the direct bank was revised. The business model of the direct bank showed itself to be successful after the crisis.

- To communicate security, there are numerous seals of approval and awards on the homepage of the direct bank. One example is the seal of the business magazine €uro, which awards “Germany’s Favorite Bank” each year. Nevertheless, the question arises as to what value this seal can have, as this magazine alone in a single study awards the titles “Germany’s Favorite Bank”, “Best Bank”, “Best Affiliated Bank”, “Most Popular Regional Bank” and “Best Direct Bank”.37

- The representatives of the direct bank can and may also not comment on technical and financial liability. Thus, in this interview as well, the term “applied suppression of problems” can be used.

5.2.3.2 Evaluation of the Transferability to Cloud Computing

Of all the factors identified, the following factors are transferrable to Cloud Computing. The results can be applied to commercial and private customers.

Personal Contact for the Entire Term of Contract

One of the secrets of success in the banking sector is the personal contact which the customer has to the bank for important issues. In the Cloud Computing industry, this can also be applied.

Marketing Using the Advantages of the Legal Structure

The cooperative sector markets itself to the customers heavily with the advantages of the legal structure “Registered Cooperative” (eG). If the Cloud Computing sector united into such a cooperative or founded something similar; the advantages of the legal structure would be open to them. The advantages of the creation of a legal structure were clarified in the previous chapter (DATEV).

37 cf. €uro (2012), p. 140-147
Transparency

If the customer is sure that the provider is not keeping anything quiet, this contributes enormously to the creation of trust. If this concept is now transferred to Cloud Computing, documentation, for example, could be made available to the customer, naming the data center where the customer’s data is hosted. In addition, something equivalent to an “open day” could be organized at the data center, in order to give the customer the possibility to develop an impression for themselves.

Establishment of a Protection Fund

The Deposit Protection Fund, which every German bank is affiliated with, also contributes enormously to the building of trust between the customer and the bank. The Deposit Protection Fund is actively used for marketing purposes. Through this, the customer is provided with the security that – regardless of what happens – their deposit at their “own bank” is safe. This is actually completely irrational, as the deposit protection fund can only be guaranteed up to a given amount. If all affiliated banks in Germany were to register for insolvency, then the guarantee would no longer function. And yet its importance for the building of trust cannot be dismissed. If this system were applied to Cloud Computing, there could enormous benefits. If a protection fund were to be established, then this could also be actively used for marketing to customers. There would be the possibility to guarantee a security sum for such cases as loss of data or technological outage for a given time-length.

Annual Check-Up and Accessible Service Center

This aspect is closely connected to that of the personal contact. If this aspect is adapted to Cloud Computing, the process could look as follows: The key account manager carries out an annual check-up conversation with the customer. If any wishes or dates, etc. are mentioned, the key account manager should note these down, and on the appropriate date contact the customer again, in order to be responsive to the wish. The trust between the
two parties is enormously strengthened by this and the customer feels as if they are taken seriously.

Alongside the annual check-up, a permanently accessible service center should be made available. The first contact person for problems or questions should be, as before, the personal contact person. If this person is not directly available, the customer has the possibility of calling the service center to solve the problem or to get an answer to the question.

Seal of Approval

The EuroCloud Deutschland_eco e. V. has already introduced a seal of approval. The profile of this seal should be raised and the audited aspects further clarified.

Location for Customer Meetings

From the interviews, it emerged that it is not only the personal contact, but also the representative appearance that is of great importance. As has already been said, the appearance of the bank and the rooms for the customer appointments contribute enormously to the trust the customer has in the bank. If this aspect is transferred, the Cloud Computing industry could also establish locations for customer appointments. With the use of rooms in the provider’s own premises, this eliminates the customer’s concern that the Cloud Computing provider is based in an area which is inaccessible for the customer.

Internal Audits

The creation of a department “Internal Auditing” would be another possibility to generate customer trust and acceptance. Banks do not actively market with this, but customers assume that in principle a mechanism exists which supervises the daily business of the bank. If such an internal position was created in the Cloud Computing industry, then it could be actively used – in contrast to the banks – for the purposes of marketing. Customer fears and concerns could be minimized by an internal control system. The internal audit could also contribute to quality assurance.

» The creation of a department “Internal Auditing” would be another possibility to generate customer trust and acceptance. Banks do not actively market with this, but customers assume that in principle a mechanism exists which supervises the daily business of the bank
Study on Acceptance of Cloud Computing

Offer of Insurance

In addition, the customer could be offered insurance with respect to the different risks, or the Cloud Computing provider could already have taken such insurance themselves. The Cloud Computing industry could provide an equivalent to the insurance for credit card sales in the banking sector. This aspect is closely related to that of the establishment of a protection fund. The promise of covering losses in the event of a risk becoming reality increases the sense of security. This sense of security contributes enormously to the trust between the two parties.

Systematic Signaling of Trust-Building Symbols and Behaviors

The picture of the safe, the appearance of the bank, the outer appearance of the bank consultant and the location of the bank also provide a contribution to the building of trust. In addition, the behavior of the bank employees in the bank also contributes to the creation of trust. Everything is bright and neat, the noise level is low. If this aspect is transferred and if trust-building symbols and behaviors are created, then the Cloud Computing industry would achieve a growth in seriousness, trust and acceptance.

In addition, two further aspects, which are especially appropriate for private customers, emerged.

Marketing Ambassadors Inspiring Trust

A marketing ambassador, such as Ulrich Wickert for the cooperative banks, also contributes to the creation of trust. Similar to the attitude that one’s own banking consultant is serious and has integrity, the perception of the seriousness of the marketing ambassador is completely subjective and irrational. The customer associates a serious marketing ambassador with a serious product or a serious industry. If a respected person advertised for the Cloud industry, the celebrity’s seriousness would be transferred – as in the banking sector – to Cloud Computing.

Lectures and Seminars on the Topic Cloud Computing

This aspect is closely related to that of transparency. Lectures and seminars on the topic Cloud Computing contribute to clarification for the customer. Enlightened customers who know what Cloud Computing is all about can develop confidence in the product and are prepared to test Cloud Computing.
Half-knowledge, possibly based on rumors and negative experiences, is thus prevented. If the customer understands the concept, and understands what chances are created with Cloud Computing and how possible risks can be avoided, then this encourages trust in the industry.

5.2.4 Counter Example Super E10 Motor Fuel

Using Super E10 as an example, it can be clearly observed that a lack of acceptance and trust on the side of the customer can result in market failure. In Germany, the introduction of E10 fuel obviously failed. But why was it not possible to generate trust in E10 fuel here, in contrast to other countries? The investigation here will be of the facts already communicated extensively in the media. Moreover, the investigation is supported by interviews with experts in related areas.

Following the identification and analysis of the factors, the insights will be evaluated and possibilities for their adaptation to the topic Cloud Computing will be assessed. The objective of the investigation is to develop appropriate models which should serve to gain customer trust and acceptance with regard to Cloud Computing.

5.2.4.1 Reasons for the Introduction of Super E10

In a decree from 2009, the European Union obligated itself to reduce the emission of greenhouse gases by 2020 by at least 20 percent in comparison to the level in 1990. Before this, there was already an EU Biofuel Directive, which had been insufficiently implemented. The background for these attempts at reduction in the emission of greenhouse gases was a resolution of the United Nations Climate Change Convention on 15 December 1993. 38

Because of this, it was necessary to increase the share of renewable energy in the transport sector. The result was the provision to increase the proportion of biofuel by ten percent by 2020. The decision was taken to increase the biofuel share from the previous five percent to ten percent for unleaded petrol. 39 This meant that biofuel from renewable raw materials was added to the fuel produced from crude oil.

The reduction in greenhouse gases could also have been achieved through better motor management from the automotive manufacturers. This would have made the increase in the share of biofuel in fuel superfluous. This was hamstrung through clever and intensive lobbying by the automobile manufacturers. As a result of this, other measures needed to be taken for the reduction of greenhouse gases.

5.2.4.2 Results of the Research and Expert Interviews

Poor Preparation of the Introduction

One of the fundamental factors identified was the poor preparation of the introduction of the E10 fuel. This is the finding from a study of extensive literature in newspapers and magazines. In particular the club magazine “Motorwelt” from the ADAC reported regularly on the introduction of E10. The introduction of E10 was initially planned for 2009. As a result of massive protests from the ADAC and the unexplained intolerance of Japanese car models to the fuel, the introduction to the German market was halted. After this halt in 2009, by the Federal Minister for the Environment, there followed a sweeping lack of action by those involved. In the spring of 2011, a further attempt was made to bring Super E10 onto the market as a replacement for the traditional super. This was, however, a widespread failure.40

Poor Information Policy

The cause of the poor information policy was, alongside the already mentioned lack of marketing measures, also the lack of an active policy of education on the part of the German Federal Environmental Agency, the car manufacturers and the petroleum industry. This was also confirmed through a survey undertaken by Infratest, in which the respondents placed the main blame for the poor information on politics, at more than 50 percent, followed by the petroleum industry, at 30 percent.41 At the beginning of the introduction, users were only able to inform themselves over telephone hotlines from the car manufacturers. Many car drivers indicated that they were poorly informed over the introduction of E10. This is also the reason why in 2011 more than two thirds of people surveyed by ADAC indicated that they knew nothing about the tolerance of their own car to E10.42 The

41 cf. Infratest dimap (2011)
42 cf. ADAC (2011)
users should have informed themselves using the lists available at filling stations or over the Internet site of the Deutsche Automobil Treuhand (DAT – The Information Center for the European Automobile Industry) about the E10-tolerance of their car. However, this “assistance” remained ineffective and was partially even torpedoed: on the one hand by warnings on the filling pumps only to use E10 if there was no doubt about the tolerance, and on the other hand through massive, destructive reporting through the boulevard press with titles like “Eco-Dishwater”, or through the ADAC, which warned members not to use E10. Car sellers also warned their customers about the risks of E10, and thus also contributed to the feeling of uncertainty. These warnings were above all effective because they came from people and institutions that customers place a large amount of trust in.

Rather than the lists in filling stations and the telephone hotlines, it would have been better if the car manufacturers had addressed the customers. They could have, for example, placed ads in the print media for car owners, attesting to the E10-tolerance of the models. The manufacturers had no interest in doing this, as a result of a lack of necessity.

Lack of Assurance and Guarantees

Through the question of the E10-tolerance of individual automobiles, which remained unresolved for a long time, customers were extremely uncertain. The later release of lists at filling stations and on the Internet was insufficient to solve the problem. As a result, customers avoided E10, even when it became possible to inform themselves. One main reason which has been established for this was the lack of assurances and guarantees. In personal discussions, many people commented that they would use E10 if someone would accept liability for possible damage.

This legal commitment desired by the customers was then provided by the car manufacturers in a joint declaration through the industry association VDA. One problem with the declaration was the need for the customer to provide proof. The customer had namely to prove explicitly that the possible E10 damage was in fact to be attributed to E10 usage, and not the result of the customer’s own mistake or normal wear and tear. For this reason, car users remained skeptical.

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43 cf. Deutsche Automobil Treuhand (2011)
44 cf. Bild.de (2011)
45 cf. Focus Online (2011)
Massive Uncertainty for Customers

As a result of the poor preparation of the introduction, together with a poor launch policy, massive uncertainty was generated amongst customers. Such uncertain customers, given the existing information asymmetries, are only prepared to purchase such a product at large discounts. As a result of concern for their car, and the high status of cars in Germany, the customers were not prepared to use E10. Instead, they turned to the considerably more expensive Super Plus, because, with the introduction of E10, the traditional Super had been removed from the product range. Ultimately, even today the saving - currently between 3 and 5 cents per liter - cannot contribute to increasing the acceptance of E10.

Ethical Problems

Another important point raised in the public discussion of E10 was the issue of the ethical problems. The raw materials out of which bio-ethanol is produced are plant materials such as beets, sugar cane and grain. Here, a conflict arose between food production for the global population and the production of bio-ethanol. In the media, this topic was often entitled “Food or Fuel”. Through the increased demand for bio-ethanol, competition has been generated for the cultivable acreage. Subsidies for farmers have made the growing of raw materials for bio-fuels more lucrative than the growing of foodstuffs. The German food industry forecasted higher food prices for consumers.

Negative Environmental Impact

A factor closely associated with the ethical problems is the environmental impact. Large areas of land are needed for the growing of raw materials. For this, multiple rainforests in Brazil and Indonesia were cleared. These negative environmental factors also ultimately contributed to the purchase boycott by customers. This opinion was expressed by nearly half of those surveyed in a study by the MWV.

The basis of this is the theory of the Adverse Selection according to the “Lemons Problem” as coined by George A. Akerlof. Akerlof illustrates his theory with the example of selling used cars (so-called “lemons” in American Slang). As a result of lack of information about the offered product, the customers are only willing to purchase the “somewhat unsecure” offer at a massive and considerable discount of the price.

cf. Welt Online (2011)
cf. Mineralölwirtschaftsverband (2011)
5.2.4.3 Evaluation of the Transferability to Cloud Computing

Information and Communication

One of the success factors for acceptance and trust is comprehensive, and above all, positive information. Uncertain customers will avoid a product, despite possible advantages. For this reason it is necessary to introduce the customers successively to the new and technical material. This is only successful if there are no negative and cautionary half-truths about the topic Cloud Computing circulating in the media and in the public perception.

The presentation of the Big Brother Award for Cloud Computing by the FoeBud e. V. society is a grave example of negative publicity which in no way contributes to trust and acceptance. Equally, the study into the security of Cloud storage services carried out by the Fraunhofer Institute for Secure Information Technology (SIT), also communicated through the ZDF show WISO, was not conducive to positive public perception. Although it only dealt with Cloud storage services, other Cloud services were also brought into connection with this negative information.49

Moreover, the example of E10 has shown that the coordinated informing of the customer is urgently needed. This is because a large and diverse array of information reaching the customer only encourages confusion, rather than ensuring clarity. Therefore it can be sensible to jointly coordinate information and marketing campaigns, particularly for new products. A good example for a successful information campaign is the initiative “Klardigital 2012”, in which all participants announced the change from analog to digital satellite television.50

For the design of the information and communication, care should be taken to avoid the use of too many technical details. It is better to only communicate relevant and understandable content. In this way, the customer is not overwhelmed by jargon and potentially frightened off. Much more important than technical background are the psychological and emotional components. Particularly in oligopolitical markets with almost identical products, such as the petrol market, marketing often makes use of irrational and emotional components.

49 cf. Fraunhofer SIT (2012)
This serves to create a pleasant atmosphere to place one’s own product as something special. This generates a positive interest in the customer. If Cloud Computing can be successfully marketed as something special for the customer and as providing added value, then the acceptance will rise.

Part of a successful information and communication strategy includes the personal and competent consultation, particularly for business customers, where a long-term business relationship is desired by the customer. This is because, as the E10 example demonstrated, information from personal contacts is afforded a great deal of trust and the customer feels themselves to be well looked after.

Equally, as the so-called “petrol summit” showed, potential superfluous crisis summits should be avoided. These signal a lack of market maturity and insufficient preparation to the public. It is better to ensure a comprehensive preparation in advance of the launch. In this way, the customer has the impression right from the start that they are purchasing a mature product, and are not functioning as a test object.

Guarantees and Acceptance of Liability

Alongside the appropriate information and communication, it is also necessary to cushion the risks and the concerns for the customer. Customers avoid products if it is unclear who is liable for potential damage, as was the case with the E10 example. The offer of guarantees and acceptance of liability can be an important component in raising the trust and acceptance of Cloud Computing. As a result of the complete dependence of the customer on the operation of the data center, in the case of an outage of the Cloud Computing data center or the insolvency of the provider, the customer will be extremely limited in their operating processes. For these cases, there need to be mechanisms which cover the costs of unproductive time and claims for damages on the customer side. Through this, a sales argument is generated, namely that the customer is relieved of a risk which had until then ensued from the operation of the company internal data center.

References

A further relevant point for the raising of acceptance and trust can be seen in references. In particular, if marketing can make use of renowned references, this is highly beneficial for trust. If, for example, one or more DAX
corporations are in the customer portfolio of the Cloud provider, the potential new customer is given the feeling of making a good decision.

Price

The example of E10 demonstrates that the price of a good is not always in the foreground for decisions. This shows that people do not always act as “homo economicus”, but that other aspects are entailed in the making of decisions. With reference to the topic Cloud Computing, it can be established that particularly for business customers the price does not represent a central selection criteria. For the customer, the data security, availability and reliability of the Cloud services are much more important. This can in general be explained because the decision-maker wants to avoid accusations and consequences under the labor law in the event of a possible failure of the Cloud service.

Factors for a Future Time

In the future, it may become necessary to differentiate one’s service from the competitors’ in an oligopolistic market environment which is shaped by an intensive price war. This can, for example, be through offering comfort packages or special services. Through this, standard products are differentiated in the customer awareness. Equally, customer loyalty programs can encourage a positive reputation and customer perception. These contribute to giving the customer the motivation to decide for one particular provider in the purchasing decision. Furthermore, it can also be sensible to make available, alongside the traditional standard products, supposed premium products for demanding customers. These can be positioned on the market with a higher profit margin.
6. Aspects of Customer Communication

The assumptions taken from the analogies were to be examined in a second phase of the study in summer 2013, and finally, concrete success factors were to be worked out for customer communication.

First, with the help of expert interviews, the attempt was made to argue to what extent the measures which have proven themselves in other sectors could be used in the Cloud Computing market environment, and which aspects of customer communication should be considered by Cloud providers. The hypotheses for successful customer communication resulting from the interviews were ultimately provided to the members of EuroCloud from Germany, Austria and Switzerland for their assessment.

6.1 Methodological Approach of the Expert Interviews

Rather than a large, “representative” survey, a comparatively (very) small group were surveyed in a qualified and structured manner. The choice of respondents was made on the basis of the "expert assumption" and attempted to cover expertise as comprehensively as possible. The expert interviews were undertaken using two contrasting methods: Firstly, in the form of detailed qualitative telephone interviews, which as a rule produced important findings over a period of 30 to 40 minutes. Added to this, surveys were undertaken at the consumer fair “Cloudzone” in May 2013 in Karlsruhe, which served to gather additional relevant information, over smaller periods of 10 to 20 minutes. Expert interviews are less about the representative approach as about the “illumination” of an object of investigation through “orthogonal perspectives”.

Figure 7: The Expert Interview is used when only a few people are available who have the necessary expertise (“specialist knowledge”).

51 cf. Bredl et al. (2002)
Twelve hypotheses were generated, which serve as the foundation for the following study and were evaluated with regard to their transferability to Cloud Computing and prioritized according to their importance and potential. Following from these, recommendations for action for Cloud providers’ customer communication were developed.

6.2 Interview Guidelines

In order to ensure a structured procedure for the interviews and to make the responses comparable, interview guidelines were compiled. The following issues were topicalized in the expert interviews:

- **Contact phase**: Initiation of contact; who takes the initiative?
- **Sales phase**: Examination of the processes in the sales phase and the hierarchical positioning of the participants in the company.
- **Need for information**: Background knowledge of the potential customer with regard to Cloud Computing at the time of first contact.
- **Constraints / risks**: Skepticism about or rejection of Cloud services; reasons for rejection.
- **Advantages of Cloud solutions**: Advantages for the user, questions of cost, possible flexibility.
- **Marketing**: Implementation of diverse marketing tools; picture of the “friendly Cloud”.
- **Service**: Additional services, customer demands, standard and full service.
- **Integration in companies**: Integration of the service in the existing processes and infrastructure.
- **Role in competition**: Achieving advantages in competition; compensation for disadvantages.
- **Seal of approval / certificates**: Estimation of importance of such seals of approval for the Cloud Computing market.
• Market places / closed user groups: Sets of many customer who are in contact with one another.

Through the inclusion of these multilayered aspects and topics, guidelines were developed which served as the foundation for detailed interviews, in order to depict the sales process from a range of perspectives.

6.3 Results from the Interviews

In the interviews undertaken, there was no general, unified sales process discernible amongst the Cloud providers. Some providers place their trust in their advertising presence or their names and rely on their customers themselves to search for the online platform or the telephone hotline and book the desired service. The customer is allocated to their personal contact person only after the contract has been concluded. The majority of providers envision a sales process which is “individual, specific to the product or solution”. This results from one or more conversations, with reviews and a common alignment of goals, followed by the creation of an offer.

The degree to which the customer is already informed varies considerably. Some have only a basic idea of what the “Cloud” is, others are “experts”. Customers with moderate background knowledge are very rare. Some of them associate themselves with a high level of knowledge, and yet it quickly becomes clear that there are many misunderstandings. Generally, they do not have a clear and transparent definition of “Cloud”. Therefore, there is generally a strong need for information on the customer side. From the provider side, it is important to provide the customer with sufficient information, and to round this off in special cases in an individual consultation.

In general, according to the interview partners, customers demand the full-service approach. The interfaces with the IT must function, and problems should be solved as quickly as possible, which is why customers require a 24/7 contact person.

In the implementation phase of a Cloud solution, it is important to communicate with the customer in understandable language. There must also be a clearer structure to the offer, and the calculability of the offer and the traceability of the costs must be more transparent. For this, illustration using a reference customer can be of great importance, for example.
There is a general opinion that Cloud Computing serves to achieve advantages. The customer, through the high scalability, can achieve an advantage in direct competition for a comparatively small investment, in contrast to a competitor without a Cloud solution. An IaaS solution may not be a cost saving for a small company, but it does provide an enormous enrichment in service.

A decisive reason for the rejection of Cloud services is the location of the data. Many customers reject a Cloud solution without hesitation if it is offered abroad. The importance of the location of the data storage, however, reduces in inverse proportion to the internationality of the customer. The fear of losing control of the data and the lack of reference customers also cause customers to initially react negatively to a Cloud solution.

Furthermore, doubts about the implementability of the process in the customer-internal IT department lead to uncertainty – often, technical problems regarding the compatibility between the customer’s system and the Cloud service are relevant.

Marketing in the Cloud area plays such a large role because of the wide-spread lack of knowledge. This lack of knowledge leads inevitably to the fear of loss of control. A unified vocabulary which the customer understands is very important in marketing. The creation of transparency with regard to the term “Cloud” should be in the focus of the marketing. The term Cloud is used in an inflationary manner, and should as a result be limited, in order to create a clear definition.

6.4 Deductions from the 12 Hypotheses from the Expert Interviews

From the results of the interviews, 12 hypotheses were developed, which were related to the topic areas:

1. Potential (!) transparency of information
2. The establishment of closed user groups
3. Overcoming organizational constraints
4. Loss of control – customer “fear” – education
5. The gaining of reference customers
6. The establishment or use of well-known brands
7. Communication of general seriousness
8. Pricing – customer savings
10. Ensuring the technical feasibility
11. Transfer of liability
12. Security concerns – “data storage”
These hypotheses will be introduced in the following section.

6.4.1 Potential (!) transparency of information

The customer should have easy access to all (for them) important information, at any time – in particular, through rapid findability: for example, through personal contacts, reachable by telephone, or informative documents on the website. However, the customer need not be actively informed about everything there is to know about topics like data protection, certification, etc. – there should be no “information overload” for the customer!

6.4.2 Closed user groups – Community Clouds

In examples like DE-CIX and DATEV, it is clear to see how Cloud services have been provided to closed user groups for many years. Crucial here is the exclusive access to this community through, for example, profession or the kind of organization – such as “Universities in Bavaria” or “Master Chimney Sweepers”, etc. A Cloud provider can certainly serve numerous groups of this nature simultaneously.

The importance of Community Clouds will presumably increase in the next few years, and in particular in the public sector, (may) lead to the use of Cloud-based services.

6.4.3 Overcoming organizational constraints

The implementation of a Cloud solution in a company is an organizational challenge for the customer. Existing companies have deeply anchored processes. Therefore, it is important to adapt these during the implementation of the Cloud solution. The decision-making pathways in the customer company need to be properly approached, and the right arguments need to be emphasized for the right person, or the contact person in the customer company needs to pass these arguments on to the decision-maker. The concerns and objections of the staff affected need to be de-fused through a policy of direct communication. The right way of approaching the decision makers in the company plays an exceptionally important role in this.

6.4.4 Loss of control – customer “fear” – education

It is not unusual for the customer to have concerns about entrusting their data to a Cloud provider, as the customer could lose control of their data and has a lack of trust in the provider’s data protection and data security mechanisms.
Therefore it is important to advise the customer with a kind of layered model – according to the sensitivity of the data (degree of necessary confidentiality) and quality of the data (“value” of the data, or damage to the company which would be created by a loss of the data).

In order to allay the customer’s fears concerning the loss of control of the data in the case of the cancellation of the service at the end of the contract, this scenario – and the complete “client life cycle” – should already be topicalized at the beginning of the contract. The customer’s fear of a “Vendor lock-in” must be confronted.

6.4.5 The gaining of reference customers

A tried and tested method to engender trust and credibility for interested parties is reference marketing. Compared with other marketing tools, the great value of references is the objectivity of the information. This is strongly valued by potential customers, because for them the experiences of other customers appear more credible than the marketing promises of the provider. Here, it has to do with verifiable and not theoretical statements. These positive experiences can engender in a potential customer the “I want to be successful too” effect.

With the help of the interviews undertaken, it became clear that for customers the “brand” of the provider is an important selection criteria for a Cloud solution. For this reason, one should take account of the old rule “quality not quantity” in the gaining of reference customers.

6.4.6 The establishment or use of well-known brands

In the search for the selection criteria of Cloud customers, the brand image was specified as a key element. The customer decides according to the performance of the company, but also takes into account what market position the provider has in the benchmark. Customers do not want a “one-hit wonder” as provider, but rather they want to cooperate with a successful, mature company. The trust in the brand position of a company has at least as high a value as the assurance of the technical reliability. A Cloud seal of approval can also not compensate for economic disadvantages or a lack of reputation.

Strong brands have already recognized this potential, such as Telekom, which operates a Cloud-oriented “Business Market Place” with 40 applications from more than 20 partner companies. In this way, small providers can benefit
from the infrastructure and the fame of large providers and in addition to that they can design the customer communication in a more targeted way – for example, differentiated according to sector.

6.4.7 Communication of general seriousness

The general seriousness of the Cloud provider must be communicated to the customer through their appearance, because the lack of trust and “intersubjective reputation” is often a criteria for choosing against Cloud services. A “correct appearance” and “correct behavior” of the provider towards their customers and in the public arena creates trust and communicates seriousness. Trusting a provider from the first meeting is difficult for a customer. Just as in the private sphere, we do not commit to people from the very first conversation. This is no different in the business environment. For this reason, providers and customers need to become closer and build trust over a series of discussions, before they can think of being able to cooperate. One point that also functions to encourage trust is the appearance of the provider when dealing with customers. If the provider behaves in a serious manner, the customer’s trust will increase.

6.4.8 Pricing – customer savings

The pricing – customer savings – plays a somewhat secondary role in the decision for or against Cloud Computing. However, customers desire clear, unambiguous information on costs for the Cloud products in order to undertake a reliable TCO assessment.

In addition, customers demand value for money and a clearly defined costing structure. The customer hopes to achieve savings on the services that are rarely or never needed. The customer wishes to have the capacity to individually book Cloud products, rather than booking complete packages in which not everything is required.

6.4.9 Approaching customers – “trade fairs”, “dialog”

Trade fairs are a tried and tested marketing tool to present oneself to customers and interested parties. It is known that the first impression given at these events is often decisive for the development of a certain level of trust – and as such, particularly in industries like Cloud Computing which rely heavily on customer trust, it is extremely important to take great care in the presentation for such trade fairs.
In personal dialog with interested parties, doubts about Cloud Computing can possibly be overcome, thus creating trust in the Cloud product. As a result, attending a range of different types of trade fairs is an important method for approaching customers. Important types of trade fair for presenting Cloud services at include:

- Special Cloud Computing trade fairs
- IT fairs (for example in-house fairs at provider companies, CeBIT, IT congresses with exhibitions)
- Trade fairs in general (for example, industry-specific fairs)

6.4.10 Ensuring the technical feasibility

Out-of-date software, antiquated hardware, or processes which cannot be integrated – the concerns of the customer about why the integration of Cloud services could fail as a result of technical deficits have various origins. Possibly, such statements function more like a protective shield, an excuse so that the customer does not need to deal with the Cloud more closely.

The Cloud sales process often does not begin with the implementation of the Cloud service, but rather much earlier. Antiquated technology and outdated processes should not be seen as a barrier. Rather, this is a chance to help the customer to bring their infrastructure up-to-date, and in this way to gain their trust for further projects.

The prospective customer, however, must have the opportunity to assess the possible risks of the future “computer operation in the Cloud” realistically (!). Blanket assurances of “one hundred percent security” for a service are more of a hindrance for the development of a level of trust with the customer.

6.4.11 Transfer of liability

The implementation of Cloud services also causes a change with regard to the possible liability consequences. The question arises about to what extent the provider is responsible for outages and system errors.

Questions of guarantees and liability can be answered with legal regulations. Therefore it is important that the contract between the Cloud provider and the customer does not simply describe the type and extent of the services owing, but also contains provisions for services which fall below the expectations.
For services provided that have not been contractually agreed upon, there are only legal regulations for certain types of legally pre-determined contracts. Which regulation applies in the case of inadequate service provision depends of the type of contract. However, these legal regulations often do not lead to satisfactory results for Cloud contracts. As a result, it is important to define the service levels in keeping with actual practice in the contracted services, and to define clearly the consequences of a possible shortfall in the service requirements. In general, the service elements, service indicators, outage rates and the possible consequences for inadequate service provision need to be defined clearly and in detail.

6.4.12 Security concerns – “data storage”

An often-mentioned deal breaker for customers is the wrong or inappropriate location for data storage. For each customer, it must be ascertained how relevant the factor “location of the data storage” is. For most customers, storage within the EU appears to suffice, whereas a certain proportion of customers prefer data storage within Germany, and for a further share, the location of the data storage is not a matter of concern.

The customer needs – according to the value of their data – a range of classifications of storage security, such as “internal data”, “data to be stored under lock and key”, or “data to be protected by additional means against theft or corruption”. The costs resulting from the expenses for storage security need to be made transparent and clarified for the customer.

6.5 Evaluation and Verification of the 12 Hypotheses

6.5.1 Ad-hoc Survey at Deutsche Telekom AG – Business Marketplace Partner Ecosystem

A first assessment of the hypotheses was undertaken in conjunction with the event “Business Marketplace Partner Ecosystem” held by the Deutsche Telekom on 12 June 2013 in Darmstadt. The participants were given the questionnaire depicted below, with the 12 aforementioned hypotheses:
As can be seen in Figure 8, each hypothesis – which had already been clarified orally – were to be assessed by the survey participants according to their importance and potential. The importance was assessed according to the following scale:

++  +  +  -

The scale ranges from “-” not important to “++” very important. The potential declares how large the increase in revenues and sales would be if this hypothesized topic were to improve. The potential is given in %, and can also be in excess of 100 %.

<table>
<thead>
<tr>
<th>Questionnaire (June 2013 to Sept 2013)</th>
<th>Importance of Issue</th>
<th>Growth Potential</th>
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<tbody>
<tr>
<td>1. Potential Information Transparency</td>
<td>++</td>
<td>___ %</td>
</tr>
<tr>
<td>2. Closed (Qualified) User Groups</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>3. Overcoming organizational constraints</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>4. “Fear” of loss of control – Education of Clients</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>5. Reference customers</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>6. Establishment or use of well-known brands</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>7. General Seriosity</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>8. Prices – customer savings</td>
<td>++</td>
<td>___ %</td>
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<tr>
<td>9. Communication with Clients – “Dialogue”</td>
<td>++</td>
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<tr>
<td>10. Ensuring Technical Feasibility</td>
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<tr>
<td>11. Transfer of Liability</td>
<td>++</td>
<td>___ %</td>
</tr>
<tr>
<td>12. Security concerns – “Data Storage”</td>
<td>++</td>
<td>___ %</td>
</tr>
</tbody>
</table>

Figure 8: Survey Questionnaire for the Ad-hoc Survey at Telekom
The 35 completed questionnaires were analyzed by the project group. Example, Hypothesis 1: Importance “++” (very high!) and potential 150%. This means that if the transparency of information were improved, the revenues would grow by 150%.

The 35 completed questionnaires were analyzed by the project group. In order to assess the importance, the answers were scaled numerically. The value “--” received a weighting of 1, increasing up to “++”, with a weighting of 4. Following this, the number of occurrences of each rating for each hypothesis (number of “++”, “++”, “-” and “--”) were counted and then multiplied according to their weighting. For example, for Hypothesis 5, there were four “-”, and this number 4 was then multiplied by 2, giving a value of 8. If more than one rating was selected by a participant, then the lower value was always taken. For example, for Hypothesis 2, “Closed user groups”, in data set 1 both “-” and “+” were selected. Here, the “-” provided a weighting of 2, which was then used. The results of the weightings for each hypothesis were then added together, and then divided by the number of data sets, and this yielded the average importance of each hypothesis.

After the importance had been analyzed, the potential of each hypothesis was determined in a separate table. For the potential, percentages ranging from 0 % to 500 % were given by the participants. The result produced an average for each hypothesis. Thus, for Hypothesis 7, “Communication of general seriousness”, the sum of the potential was 8.5. This was divided by the 30 data sets, and resulted in an average potential of 0.28 – or 28 %. The results of the average values produced coordinates which were used for creating a graph.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>3.24</td>
<td>2.11</td>
<td>3.09</td>
<td>3.54</td>
<td>3.46</td>
<td>3.18</td>
<td>3.53</td>
<td>2.47</td>
<td>2.73</td>
<td>2.79</td>
<td>3.00</td>
<td>3.49</td>
</tr>
<tr>
<td>Potential</td>
<td>0.23</td>
<td>0.15</td>
<td>0.26</td>
<td>0.37</td>
<td>0.26</td>
<td>0.28</td>
<td>0.28</td>
<td>0.28</td>
<td>0.21</td>
<td>0.18</td>
<td>0.18</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Figure 9: Coordinates of the Hypotheses for the Telekom Survey

6.5.2 EuroCloud Member Survey (Germany, Austria, Switzerland)

The same 12 hypotheses were provided to members of EuroCloud in Germany, Austria and Switzerland via an online survey in autumn 2013, to be assessed according to the above-mentioned scheme. The only change was in Hypothesis 2 – the establishment of closed user groups – where the label “Community Clouds” was added, as the survey at the Telekom event had given the impression that this hypothesis was misunderstood by the
participants. This hypothesis was not meant to mean restricted access to the Cloud service through the organization of the provider – like a society or partnership – but rather the creation of targeted services for particular user groups.

In total, the EuroCloud members were more optimistic in their forecast of potential than the Business Marketplace Telekom partners. For this reason, the y-axis in the graph of the results in Figure 12 was increased to the value of 0.7.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>3.90</td>
<td>3.0</td>
<td>3.58</td>
<td>3.39</td>
<td>3.33</td>
<td>2.55</td>
<td>3.17</td>
<td>3.55</td>
<td>2.55</td>
<td>3.11</td>
<td>3.06</td>
<td>3.56</td>
</tr>
<tr>
<td>Potential</td>
<td>0.53</td>
<td>0.47</td>
<td>0.58</td>
<td>0.45</td>
<td>0.51</td>
<td>0.38</td>
<td>0.41</td>
<td>0.58</td>
<td>0.39</td>
<td>0.5</td>
<td>0.44</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Figure 10: Coordinates of the Hypotheses for the EuroCloud Survey

6.5.3 Analysis of the Results

At first sight, it can be seen that the topics identified through the expert interviews were consistently judged by those surveyed as being of high
However, it is noticeable that the results of the two surveys vary greatly in a few points. Equally, the individual topic areas were given a high potential – in the sense of an increase in revenues, provided that the topics are taken into account in the customer communication to the satisfaction of the customers.

However, it is noticeable that the results of the two surveys vary greatly in a few points. It can be supposed that this is the result of the structure of the two survey groups. The first survey group consists exclusively of companies that have joined a Business Marketplace, and offer their services under the brand “Telekom”. The second survey group offers their Cloud services independently.

Figure 12: Graph of Results from the EuroCloud Survey

Against this backdrop, the differences in individual topics can be – in the sense of a supposition – explained: The transparency of information is assessed by the EuroCloud members as having the highest importance. In the Telekom group, this factor is placed in the lower mid-range. This can be explained in that the Business Marketplace partners have only indirect customer communication, and that they benefit from the trust customers place in the brand “Telekom”.

» However, it is noticeable that the results of the two surveys vary greatly in a few points
A similar effect could also be occurring in the topic “Overcoming organizational constraints”. Possibly it is easier for small providers to overcome organizational constraints with a well-known brand name.

The producing of reference customers and the necessity to clarify the technical feasibility also play a considerably lesser role for the Business Marketplace partners than the EuroCloud member companies. Trust in the well-known brand could apply here as well – as the brand results in a reduced need to reassure customers about the “functioning operation”. In keeping with this, the Marketplace partners ascribe a higher importance to a renowned brand name than the EuroCloud members, who are more neutral on this topic.
7. Recommendations for Action for Cloud Computing Providers

From the results of the interviews and the surveys, several practical recommendations for action can be formulated for approaching customers. These can be bundled according to the 12 hypotheses dealt with in the previous section:

**Topic area “Technology”**

This includes the ensuring of the technical feasibility of the offered Cloud solution, and also the dispelling of security concerns, especially with regard to data storage. The recommendation for the provider here is to demonstrate the technical feasibility through, for example, appropriate verifiable (!) functional models: to show that the system functions in practice and is resilient, including test operation with the customer – analogous to the “test drive” in the automobile industry. The examination of the technical feasibility can additionally be supported by gaining neutral reports giving expert opinions. Such expert opinions can be offered on the part of associations or universities; also useful are positive statements by reference customers.

**Topic area “Reputation”**

Measures for the communication of the general seriousness are directly evident – these include the reduction of “processorial chaos”, the use of conservative language, and the general professional and social orientation towards the customer. The building of a serious reputation can be simplified by the use of a renowned brand name. Especially small providers are well advised to look for established “Marketplaces” and to become affiliated with a well-known brand. The portfolio of existing or previous reference customers is an equally strong reputation signal, and this is easier to gain in the shelter of an established brand.

**Topic area “Organization”**

The overcoming of organizational constraints requires that the Cloud provider knows and is prepared to analyze the customer and the customer’s business. A potential (not general!) transparency of information is to be implemented in that the Cloud provider offers to make available to the customer information regarding the technology and organization of the Cloud services. Any form of information hiding should be avoided. For these two aspects, the establishment of closed user groups is necessary, meaning a
service offered only to certain customers who qualify according to known criteria.

**Topic area “Risk”**

The partially irrational customer “fear” of loss of control in conjunction with the use of Cloud technology can be dealt with by the provider through appropriate clarification and education of the customer. Here, the recommendation is to establish suitable offers for training and professional development. These can also be positioned in the pre-competitive environment, for example, coordinated by associations. The transfer of liability demanded by the customer could be dealt with through company third party liability insurance on the part of the Cloud provider.

**Topic area “Other”**

We see the pricing of the products and the associated possible customer savings as of secondary importance in the context of our results. Rather, the technically excellent and renowned product can be positioned in the higher price segment. The manner of addressing the customer through classical marketing measures such as trade fair participation or advertising in print and non-print media appear to have a lesser impact.

» Here, the recommendation is to establish suitable offers for training and professional development. These can also be positioned in the pre-competitive environment, for example, coordinated by associations.

» The pricing of the products and the associated possible customer savings is of secondary importance.
8. Open Questions and Future Perspectives

In conclusion to this examination, three open questions should be raised. These issues could certainly function as guidelines for a continuation of the work on the “Acceptance of Cloud Computing”.

Is “Cloud Computing” only a trend – and soon to be out of fashion?

One could think that the currently visible phenomenon and bundling of technology which operates under the term “Cloud Computing” is to be seen and understood as a logical step on the road of a longer-term technological development.

<table>
<thead>
<tr>
<th>1960</th>
<th>Stand-alone Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 1980</td>
<td><strong>Mainframe</strong> vs. VT100-Terminal</td>
</tr>
<tr>
<td>since 1980</td>
<td><strong>Server</strong> vs. Client</td>
</tr>
<tr>
<td>up to 1990</td>
<td><strong>Server</strong> vs. <strong>Graphics Workstation</strong></td>
</tr>
<tr>
<td>since 2000</td>
<td><strong>Server</strong> vs. Thin Client</td>
</tr>
<tr>
<td>since 2010</td>
<td><strong>“The Net”</strong> vs. <strong>Hand-held Computer</strong></td>
</tr>
<tr>
<td>since 2010</td>
<td><strong>“The Cloud”</strong> vs. BYOD, etc.</td>
</tr>
<tr>
<td>upcoming</td>
<td><strong>“The Cloud”</strong> vs. <strong>Big data Device</strong></td>
</tr>
</tbody>
</table>

Figure 13: The core of the processing power of the IT infrastructure has oscillated between central (left) and de-central (right) for many years.

If the processing power and network capacity build a cycle, then the question can be raised as to whether the phenomenon Cloud Computing is explainable through and a logical consequence of the long-term technological development: In fact, it appears that the main processing power in IT infrastructure undergoes a periodical shift between the central facility and a “terminal”. Currently, it is (again) the turn of the central facility, known as “the Cloud”. But – is the next step already emerging in the form of the “Big Data Devices”?

Thus, the question needs to be whether, in the long-term superordinate technological development, Cloud Computing is an inevitable part.
What does a Full-Service Approach in Cloud Computing look like?

Providers of IT infrastructure strive to determine and understand the “business” and the “interests” of their customers as precisely as possible, in order to equip with technology as central an area as possible within the customer company – providing the highest possible added value. This, in turn, promises “preparedness” on the part of the customer to pay a high price for the IT products, for these essential contributions to the business and the customer’s added value. With the help of the Case-Based Evidence given above, mechanisms for the “Customer-Business Understanding” can be derived, as is the case with

- Commercially driven automobiles and commercial vehicles (fleet management services from the car manufacturer) or
- An understanding of the sectors and business models of borrowers in the banking sector.

On the part of the service provider, an often very deep and pronounced understanding of the businesses and business processes of the customers can be observed.

The question of when and by what means the “normal” Cloud Computing provider can know to offer such sector and customer-specific full-service offers must remain open.

How can the customer knowledge of Cloud Computing be ensured?

A range of complex features of Cloud Computing products and services have been identified. This situation means that the customer of the Cloud products needs to attain at least a minimum level of knowledge (“informed buyer role”), in order to be able to sensibly – and securely – use the Cloud services that come into question.

How can the desired or required level of customer knowledge be ensured? From the above Case-Based Evidence, three models can be ascertained:

1. Driving cars: A qualification in the sense of “Permission to Drive” is obtained, with compulsory training and examination on the part of an authorized party.
2. Obtaining bank bonds: The customers are informed by the provider, and confirm with their signature that they understood the explanation or already possess the required specialist knowledge through their profession.

3. Customers of DATEV: Only customers belonging to a certain profession (Tax agents and equivalents) are admitted, in which case they are, by definition, qualified.

How the issue of training – a problem of knowledge transfer – can be resolved in the Cloud Computing profession appears to remain a rather open question.

**Conclusion**

In the next few years – 2014-2016 – of interest will be not so much the “whether” of Cloud Computing as the “how” and the “who”: How will the Cloud Computing market change itself and represent itself in the future? And who will be the players?

This study has shown that there remains a great need for action, design and optimization in the approaching of customers and customer communication. Anyone who wants to play a role in the future Cloud Computing market will need to confront the topics dealt with in this study.

The future will show which providers best succeed in this balancing act of technological, economic and socio-psychological aspects, and how they can position themselves with this in the Cloud Computing market.
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9.1 Further Reading


Vehlow, Markus (2012), Cloud-Anbieter müssen Fakten liefern, available at:

EuroCloud Deutschland_eco e.V.
Lichtstraße 43h
D-50825 Cologne
Germany

Phone: +49 (0)221 / 70 00 48 – 0
Fax: +49 (0)221 / 70 00 48 – 111
E-Mail: info@eurocloud.de
Web: www.eurocloud.de