

tech2biz

White Paper: Virtual Assistant – Definition and History

Definition, Advantages, Historical Developments and how it works

Virtual Agent: Definition, Advantages, Historical Developments and how it works

What is a virtual Agent?

A virtual agent answers in real time questions asked on a website, at click speed, without pauses, 24 hours a day, completely automatically. A virtual agent can more than answering questions, it can run a dialogue and help customers taking a decision.

Virtual agents are active, open, understand automatically thousands of freely formulated customer questions and they run dialogues. The website visitor receives an individual answer to his question and/or will be directly brought to the correct subpage. Each question that is covered by the pre-defined scope of the virtual agent will be answered correctly to at least 85%.

What are the advantages of a virtual agent?

Cost reduction:

The virtual agent answering plenty questions on the website, the contact centre will receive in average 20% less calls and 60% less emails.

More sales:

A virtual agent answers questions at click speed. The more questions are answered at the customer's rhythm, the more he buys. More buying is happening on the web, therefore less in the costly contact centre.

Up and cross sales potential:

A virtual agent is not only limited to the answering of questions. Based on any kind of business rules e.g. click analysis or question, it can propose new products.

Customer Satisfaction / Acceptance:

Analyses have demonstrated a higher customer satisfaction after the introduction of a virtual agent. Customers are more willing to buy.

Business Intelligence:

A virtual agent documents black and white all questions from website visitors. You can extract from this data, needs, concerns as well as reactions to marketing campaigns from your customers.

Direct first contact:

A virtual agent can be part of a customer's address book. With all contact details: a link for immediate answers to simple questions (virtual agent), a phone number for advice, an email address for longer and more complex questions.

How did the technology of virtual agents developed over the last decade?

The essence of a virtual agent is to help website visitors quickly find the desired accurate information or to receive a situation dependent advice.

Two questions arise:

- a) How is the accurate knowledge/information organised?
- b) How to help customers rapidly gain access to this knowledge/information?

a) The organisation of the knowledge (or information)

A first form of knowledge organisation is the one given by the content management system of your website itself. In the case this knowledge is indexed, you can make use of a Google like search. The best search engines allow for a full text search, that crawls the complete website for the given phrase. They will allow for typos and will take care of flexions of any kind like plural forms.

The downside: such a knowledge organisation does not allow for a precise search. The answer cannot be precise. It is the known problem of general search engines that produces a plethora of possible hits.

A study of the Baden-Württembergischen University shows that less than 24% of customer who used a full text search on a website, assessed the delivered hits as relevant. 76% of customers where not satisfied with the result of the full text search.

The reason for this: Customers on a website have very precise questions, expecting precise answers.

A first way to solve the problem is to build a separate knowledge base organised by questions. These are the so called **FAQs (frequently asked questions)**.

The search effort for an answer is left to the customer: he has to crawl himself through the knowledge base to look for the nearest question to his own question.

The idea of organising the knowledge based on meaning (a question) instead of based on a keyword (or a text containing this keyword) was born.

With this principle, the quality of an answer has dramatically increased, but the search act can be cumbersome. The more precise the questions, the more questions to crawl through. A way to handle this problem is to generalise the questions and to give a long answer with plenty sub-answers. So it's all about structuring the knowledge. It is building a new website within a website.

b) Accessing the knowledge base / the information

In order to simplify the search act, automatic answering systems have been built. The first providers in the 2000 have proposed keyword crawlers on knowledge base. This drove to misunderstanding and low answer rates. The best systems achieved not more than 50% correctness.

Such automatic answering systems are named **avatars** (in the case a picture is associated with the search field) or **intelligent FAQ** (no picture associated with search field)

Today it is clear: in order to immediately deliver the correct answer, the basis technology behind a search engine has to understand questions and to propose dialogue forms. Solutions based on this technology are **Virtual Agents**.

Virtual Agents: are active, understand automatically thousands of free formulated questions and drive dialogues. The website visitor receives a specific answer to his question and/or will be brought directly to the correct subpage.

How does a virtual agent works?

A virtual agent is essentially based on 2 structuring elements, 2 analysis methods and 1 dialogue component.

- Structuring elements are the vocabulary and so called ontologies.
- The intelligence of a virtual agent lies in the syntactic and semantic analysis.
- The dialog component reduces ambiguity and helps customers formulate their request.

Term explanation:

Vocabulary:

List of words within a language used to build sentences. The bigger the vocabulary, the more knowledge it has. They are 2 types of vocabulary: the one type contains all flections (plural forms, conjugation ... this is the exhaustive form), the other form contains word stems associated with rules that build flections (it is more generic and general).

Ontology:

An ontology is defined as a network of information and specific logical relations between these information items. A node within an information network is a word or item. A relation between 2 nodes has different properties, e.g. "is part of" or "is bigger than", "is an attribute from". An ontology is always dedicated to a specific topic like telephony, bank ... Ontologies are the basis of the semantic web.

Syntactic Analysis:

Called also grammatical analysis of a sentence, a question. A word has a meaning only when we know to which syntactical category the word belongs to. For example, "cash" as verb or as noun in "Cash my check" versus "check my cash".

Semantic Analysis:

A semantic meaning is calculated in relation to the Ontology and to the grammatical properties of all words in a sentence/question. The semantic analysis allows linking a question to an answer.

Dialog:

a) Dialogue to clarify a question:

When several interpretations of a question are possible, the virtual agent asks for precision („did you mean x or y?“)

b) To give advice on more complex circumstances:

To the question "how can I change my plan?" a virtual agent can come back with a question "with which purpose do you want to change your plan? Do you want to reduce costs? To add international calls? ..."