

CASE STUDY: MULTI-CHANNEL TROUBLESHOOTING ASSISTANT

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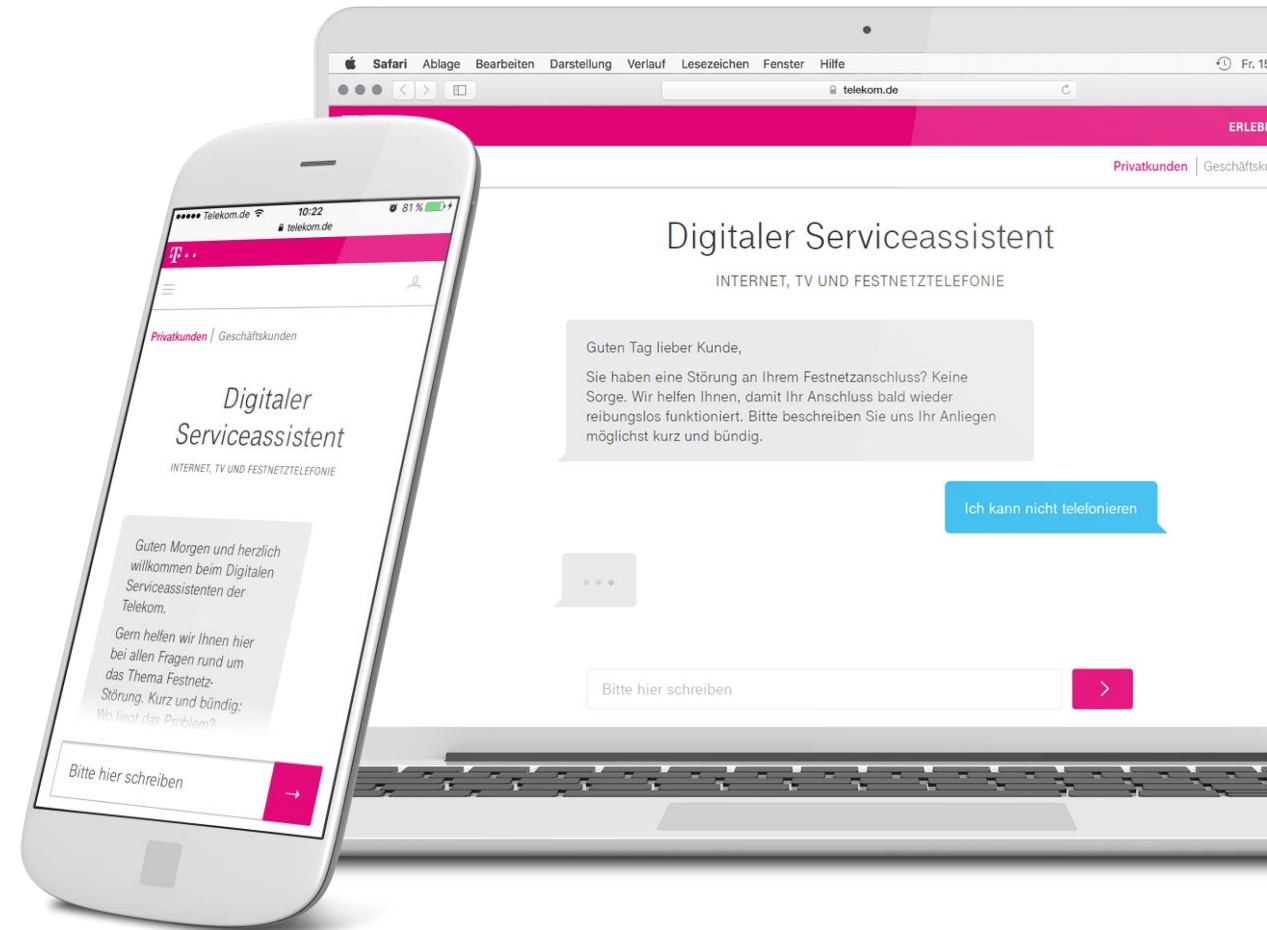


LIFE IS FOR SHARING.

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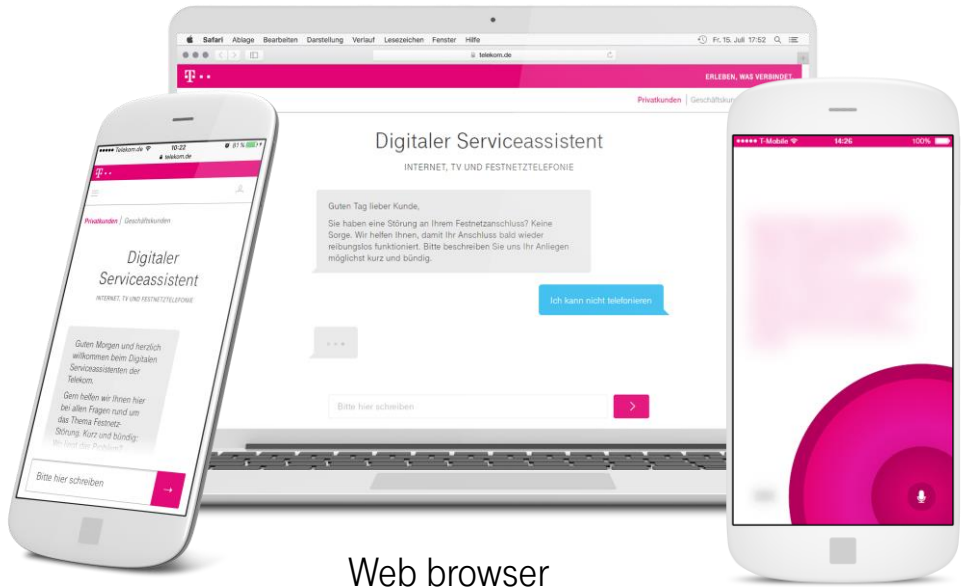
INTRODUCTION

- Insights of a proof-of-concept project 2016/2017
- Troubleshooting of internet connection, mobile handset or invoice issues for DT customers (“Digital Service Assistant”)
- Goal is to develop this towards a general digital assistant for Deutsche Telekom customers



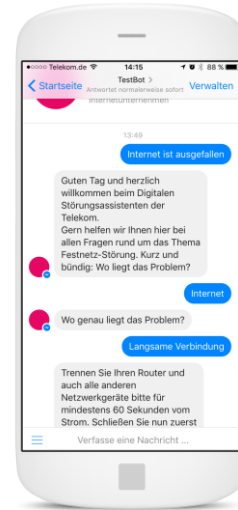
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MULTIPLE USER INTERFACES

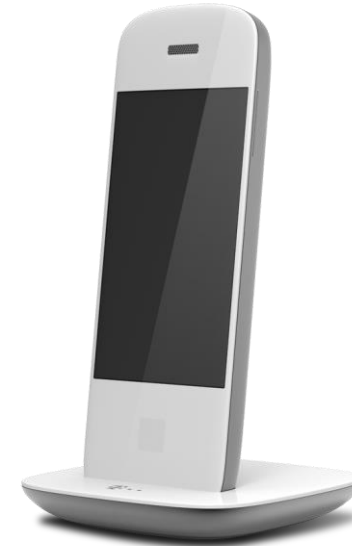


Web browser

Native mobile app



Facebook Messenger



Interactive Voice Response



Amazon Echo

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JSON DATA STRUCTURE + CORRESPONDING WEB UI

- De-coupling of components
- The dialogue generates abstract data structures (JSON). The individual frontend (e.g. web frontend) is responsible for the presentation

```
{
  "action": "askQuestion",
  "data": {
    "question": "Wo liegt ...?",
    "options": [
      {
        "content": "Telefon",
        "correspondingInput": "TELEFON"
      },
      {
        "content": "Internet",
        "correspondingInput": "INTERNET"
      },
      ...
    ]
  }
}
```

Willkommen beim Digitalen Störungsassistenten. Wir kümmern uns hier um Internet-, TV- und Telefonie-Störungen im Festnetz. Womit können wir Ihnen helfen?

störung

Wo liegt das Problem an Ihrem Festnetzanschluss?

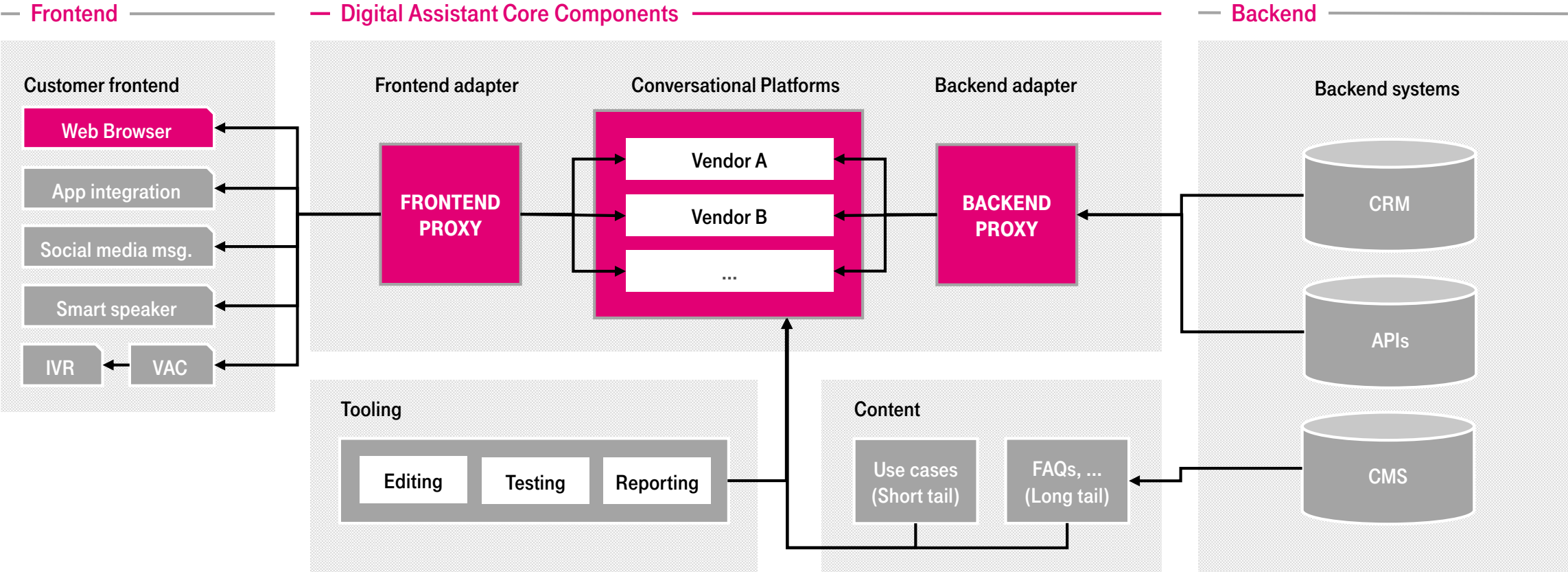
- Telefon
- Internet
- Fernsehen
- Totalausfall

Bitte hier schreiben >



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TECHNICAL OVERVIEW

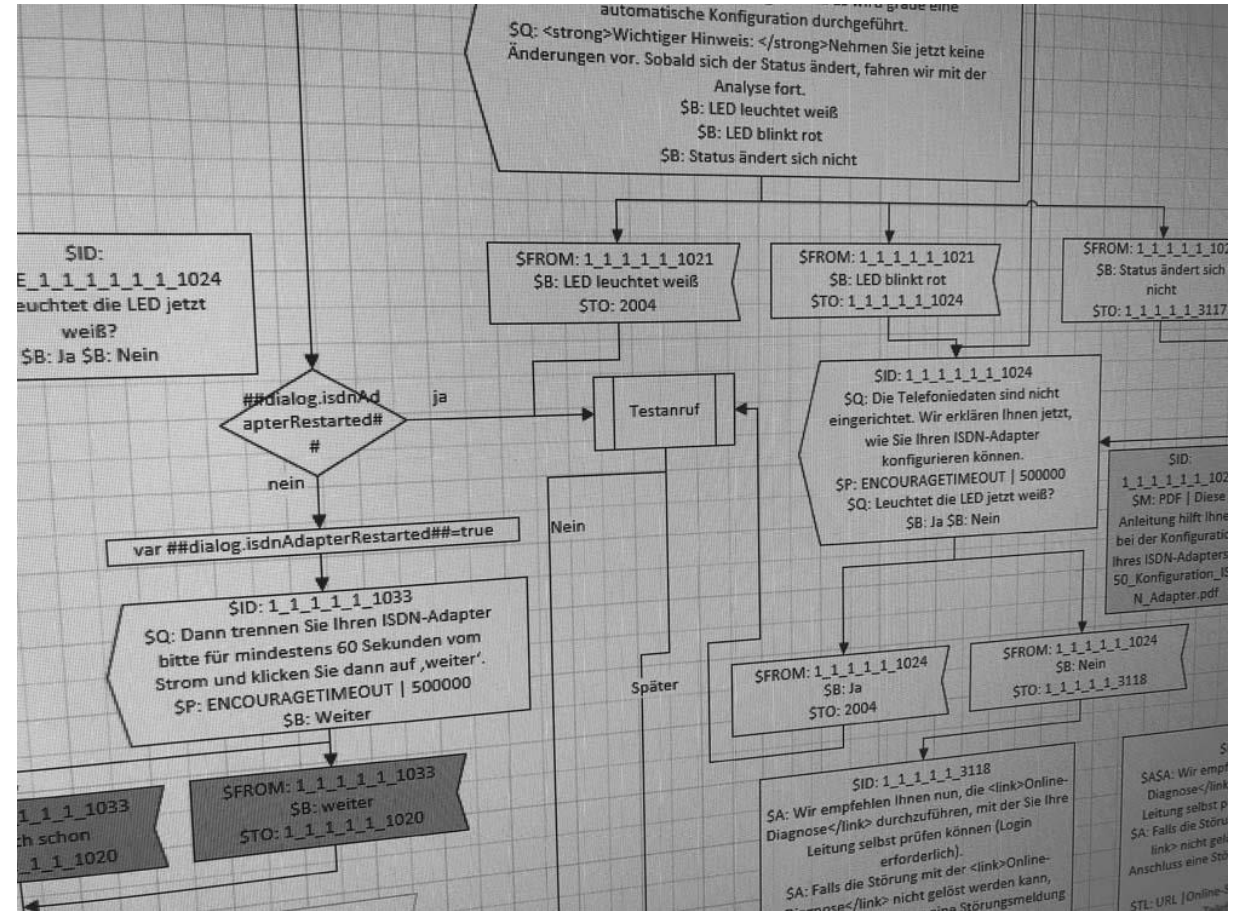


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- Pre-defined (configurable) dialogue modules or individual dialogues?

Solution:

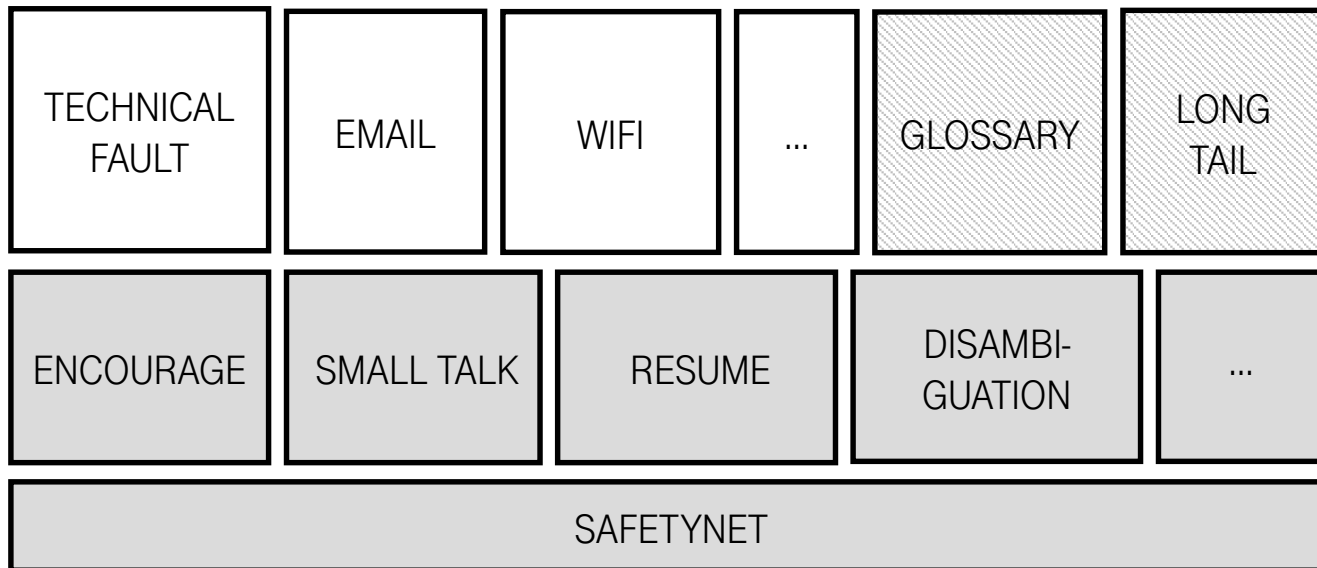
- Important and complex use cases are deeply modeled to gain high solution rate
- Vendor independent content definition
- Implementation using vendor specific tools



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GENERAL BEHAVIOR

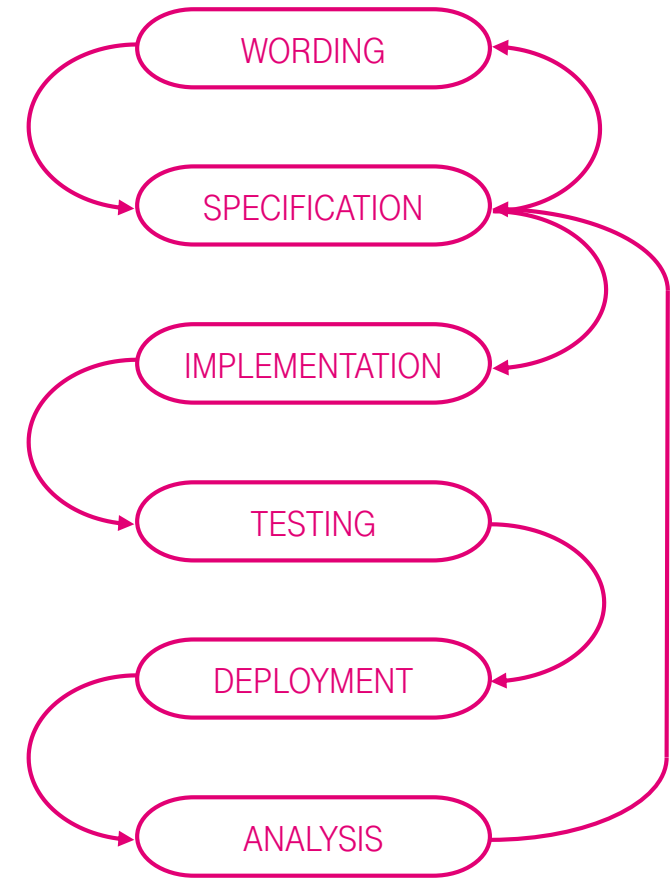
- Overall dialogue content is divided into 3 types:
 - general behavior
 - short tail
 - long tail
- General behavior (such as small talk or safety net) is implemented centrally (i.e. the content author does not need to take care).
- The use case specific dialogue knowledge (referred to as short tail) is separated into buckets. This allows different knowledge workers / departments to work on specific content.
- Long tail content, such as glossary of FAQ, is maintained externally and integrated by the dialog management.



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General workflow which covers:

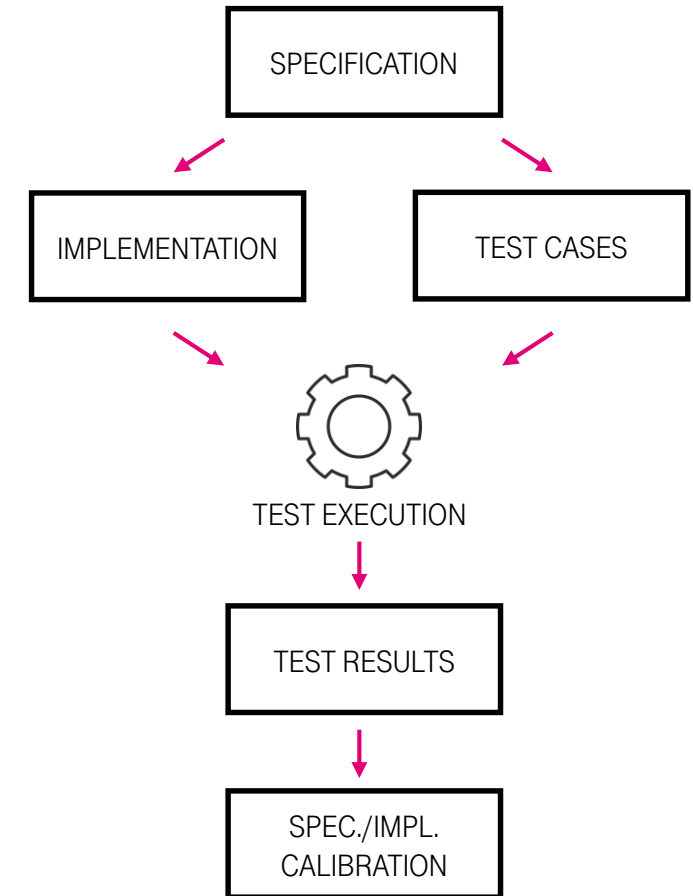
- Changes / versioning
- Content/process view (business view) and technical view (implementation)
- Wording / user interaction
- Specification is developed as a formal description of the processes



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AUTOMATED TESTING

- Auto-generate test cases from specification document
- Automated testing of dialogues to test NLU and application logic

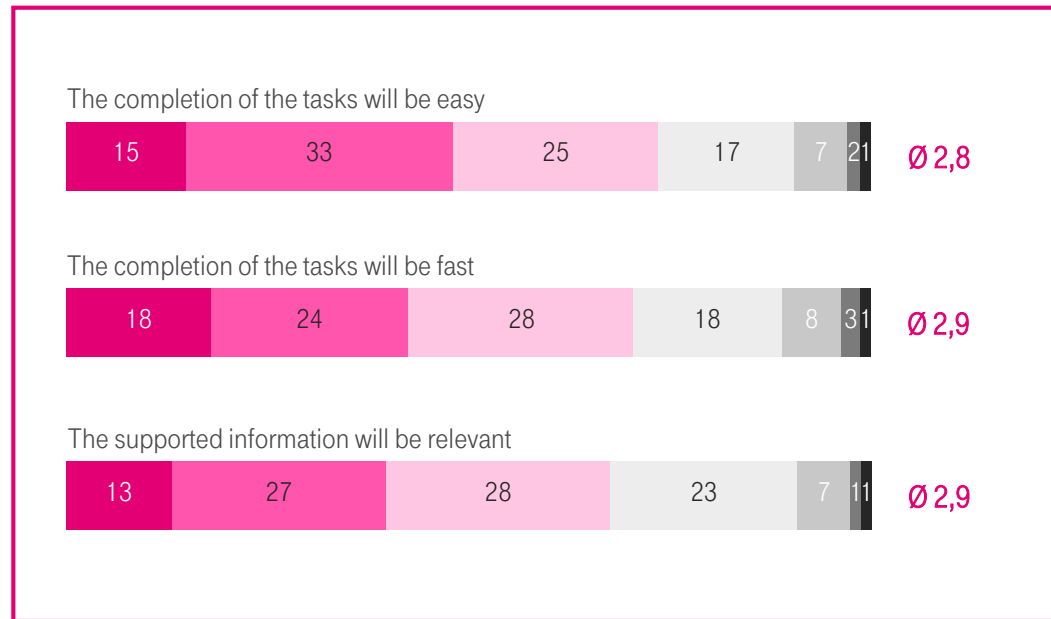


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USER RESEARCH

EXPECTATION RATING

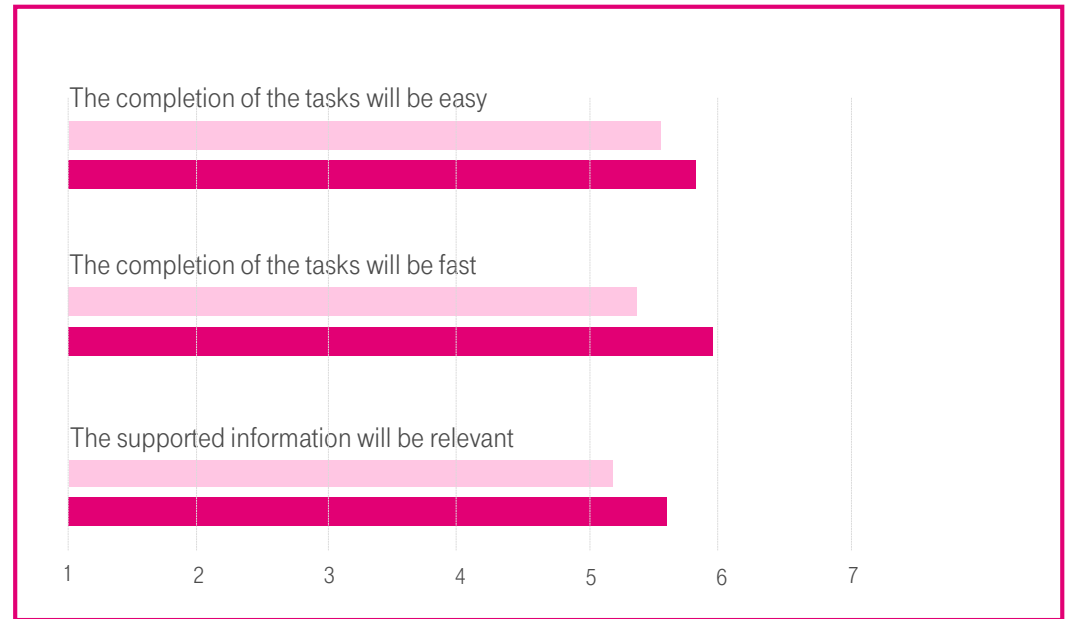
Before usage, participants were asked to share their expectations of the digital assistant they were going to test in order to match those with the actual experience after usage.



■ fully agree ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ fully disagree

EXPERIENCE MEASURE

The expectation was exceeded by the experience for every category. The participants mostly agreed on completion of the tasks being fast.



■ Expectation ■ Experience



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CONCLUSIONS AND NEXT STEPS

- Vendor-independent application development workflows
- Automated testing necessary to guarantee high quality dialogue flows
- Integration into more all major points



THANK YOU!



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