Smart Home Ambient Intelligence: voice assistants

a new limit for our freedom

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Presentation Outline

Smart Home Ambient Intelligence: voice assistants a new limit for our freedom

1. Introduction
   - Technological Mediation
   - Definitions
2. Case Study: Google Home - Google Assistant Actions
   - Applied concepts of Technological Mediation limiting our freedom
   - Ethical concerns arising from loss of freedom
3. Possible Remedies

Introduction

Technological Mediation

> *While fulfilling their function, technologies do much more: they **give shape to what we do** and how we experience the world. And in doing so they **contribute actively** to the ways we live our lives (Verbeek 2011, 12)*

- Technologies are not **neutral intermediaries**
- Technologies play an **actively mediating role**

- Artifacts are **bearers of morality** (Latour 1992)
- Morality is a matter of **human-technology associations** (Verbeek 2011)

- Two perspectives of **technological mediation**:
  - Perception
  - **Action**: I will focus on **human freedom**

Definitions I

Ambient Intelligence

Ambient Intelligence *is an approach that combines two major technologies:* ***Ubiquitous Computing*** *and* ***Intelligent User Interfaces (IUIs)*** *(Brey 2005, 158)*

Voice Assistant

A ***voice assistant*** *is a digital assistant that uses* ***voice recognition***, ***natural language processing*** *and speech synthesis to provide aid to users through phones and voice recognition applications (WhatIs 2017)*

Definitions II

Freedom

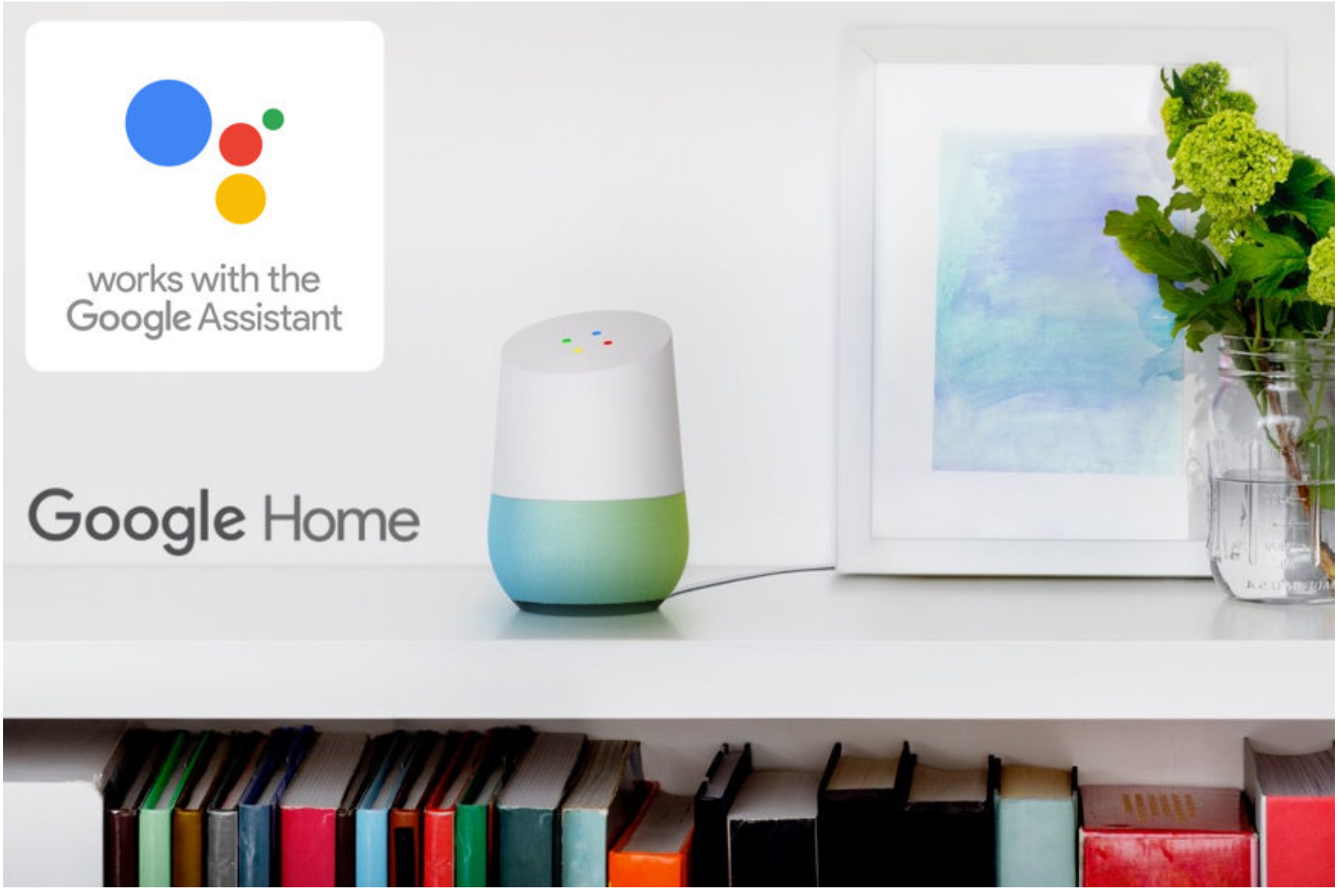
Two forms (Brey 2005, 2006):

- **Negative Freedom**:
  - act without obstruction or interference by others
  - absence of limits and **external constraints**

  example: artifact refusing to perform an action

- **Positive Freedom (Human Autonomy)**: I will focus on this
  - mastery over your own life
  - **think freely**, **make your own decisions** to act

Case Study: Google Home - Google Assistant Actions



Case Study: Google Home - Google Assistant Actions

Examples

- Order a pizza
- Fix appointment with a plumber
- Many others . . .

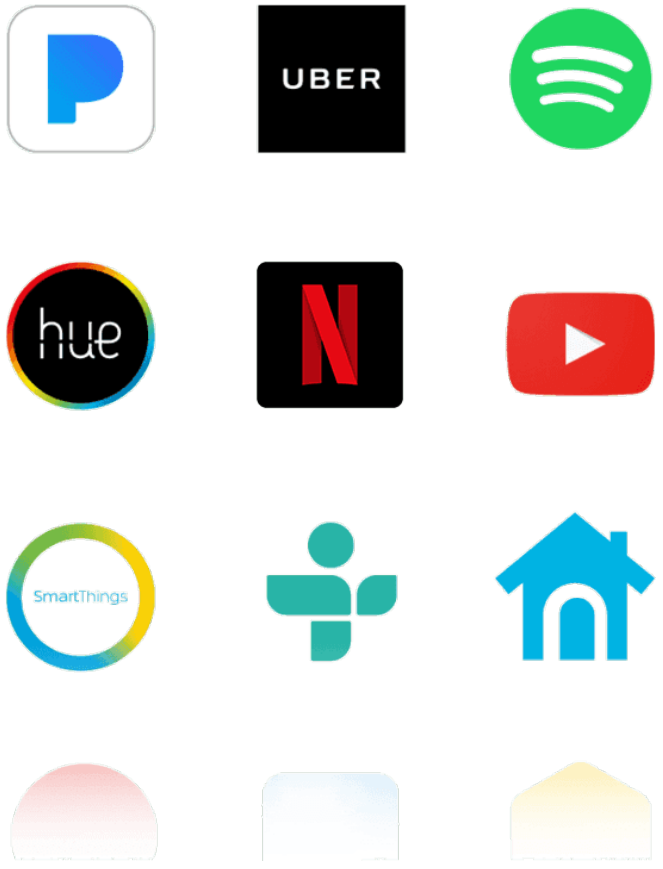
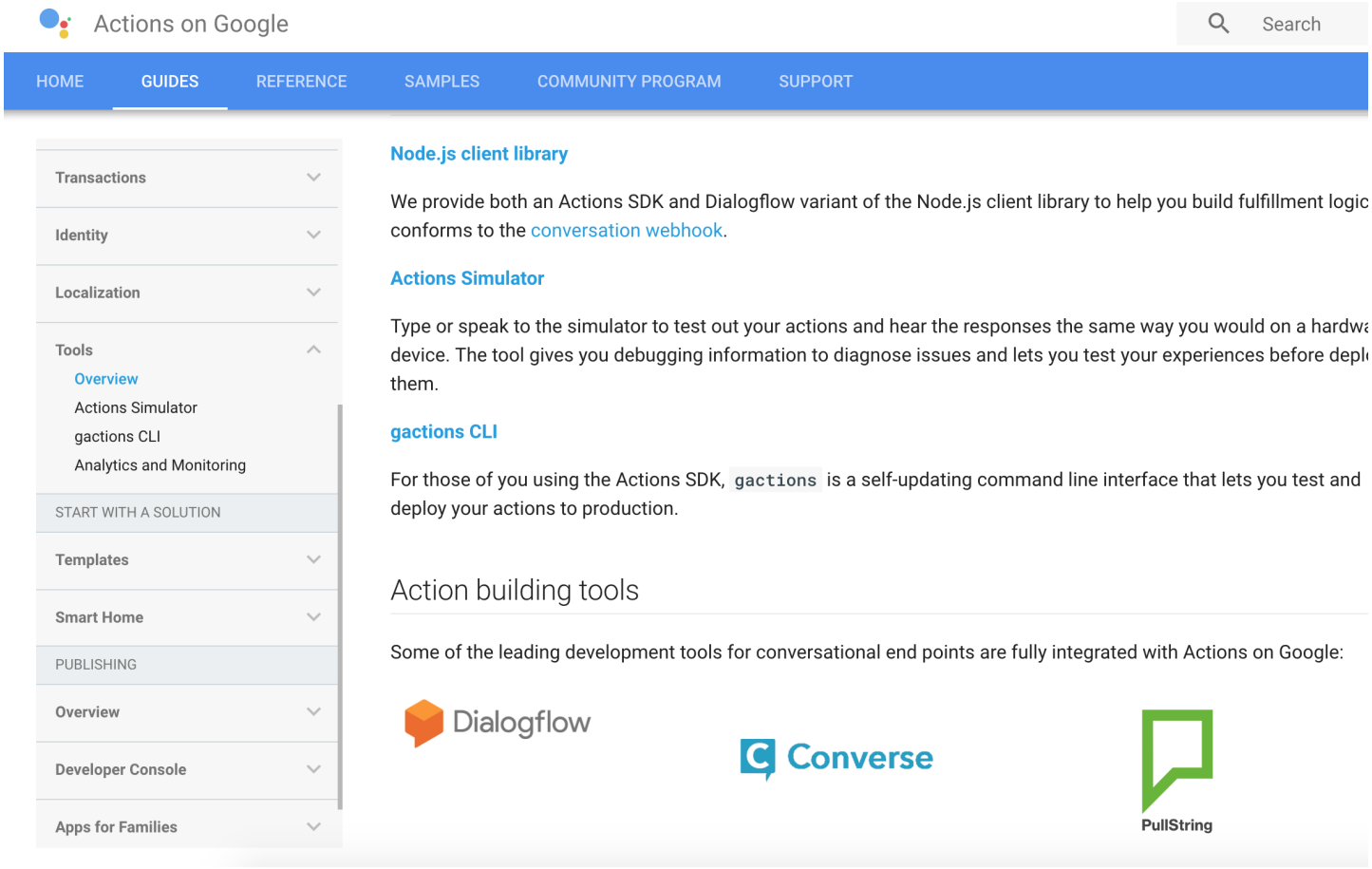


Figure: Google Assistant Actions

Google Assistant Actions



Starting from the **Actions on Google documentation** I will show:

1. **Applied concepts** of Technological Mediation limiting our freedom
2. **Ethical concerns** arising from loss of freedom

Applied concepts of Technological Mediation limiting our freedom

Script: make your own decisions

Script

> *A **script** is a prescription of how to act when using the artifact (Verbeek 2011)*

Assistant Actions can be built in two ways (Google 2017):

1. **With templates**
   - build apps **without writing a single line of code**
   - build apps quickly **without worrying about designing conversations**
   - **Google decides** which interactions are good and what aren't
2. **Without templates**
   - **Dialogflow**
     - machine learning
     - natural language understanding
     - extract parameters (data) from the user vocal input
   - **developers can decide** the whole conversational interaction

Script: make your own decisions

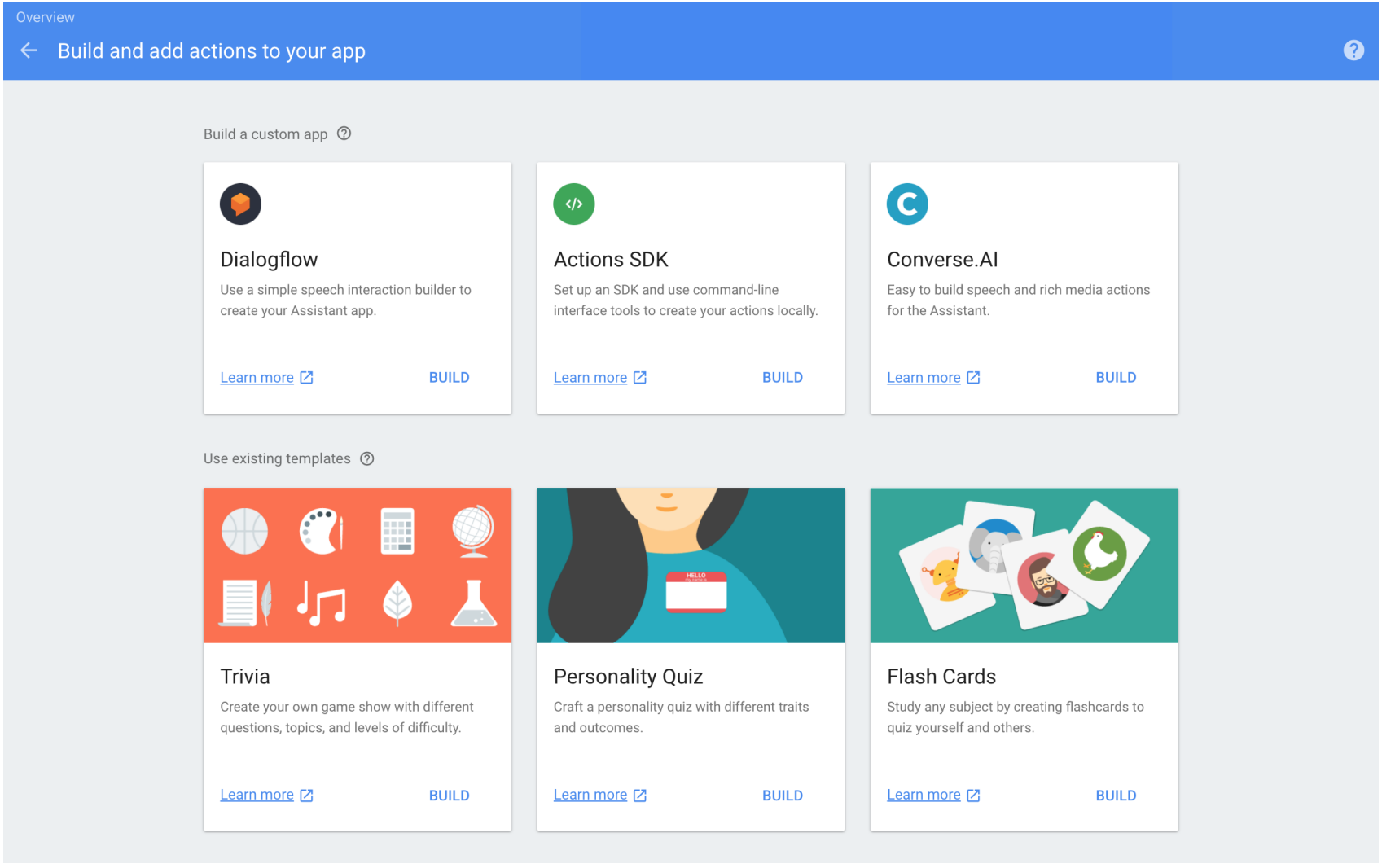


Figure: Actions On Google Console

Invitation/Inhibition: make your own decisions

Invitation/Inhibition

> *The scripts of artifacts **suggest specific actions** and **discourage others** (Verbeek 2011, 21)*

For the **Google Assistant Actions**:

- Developers while creating the application logic **enable some actions** and **disable some others**
- The **conversational interaction doesn't go on** if the user hasn't answered with **all the required parameters**

Invitation/Inhibition: make your own decisions

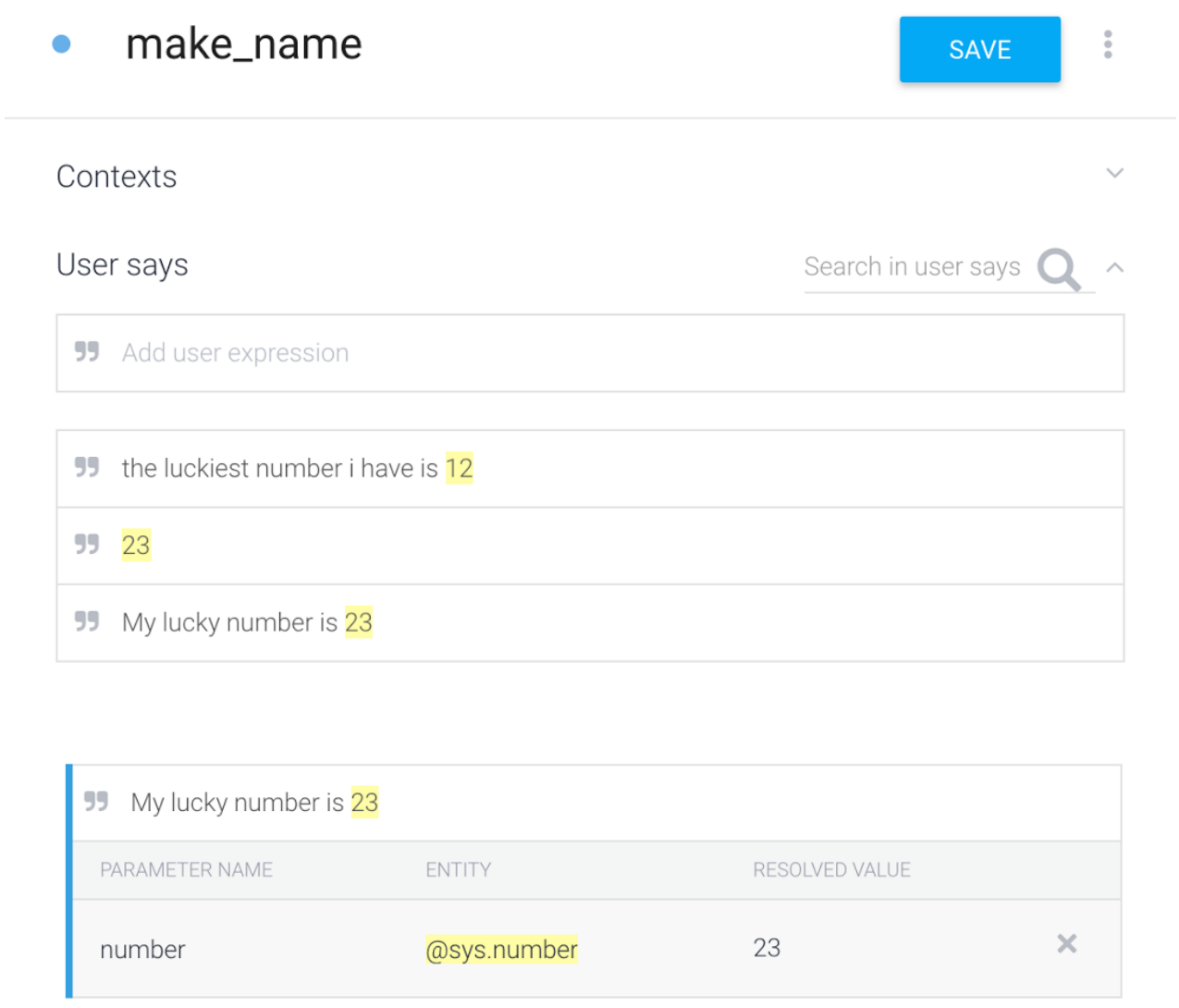


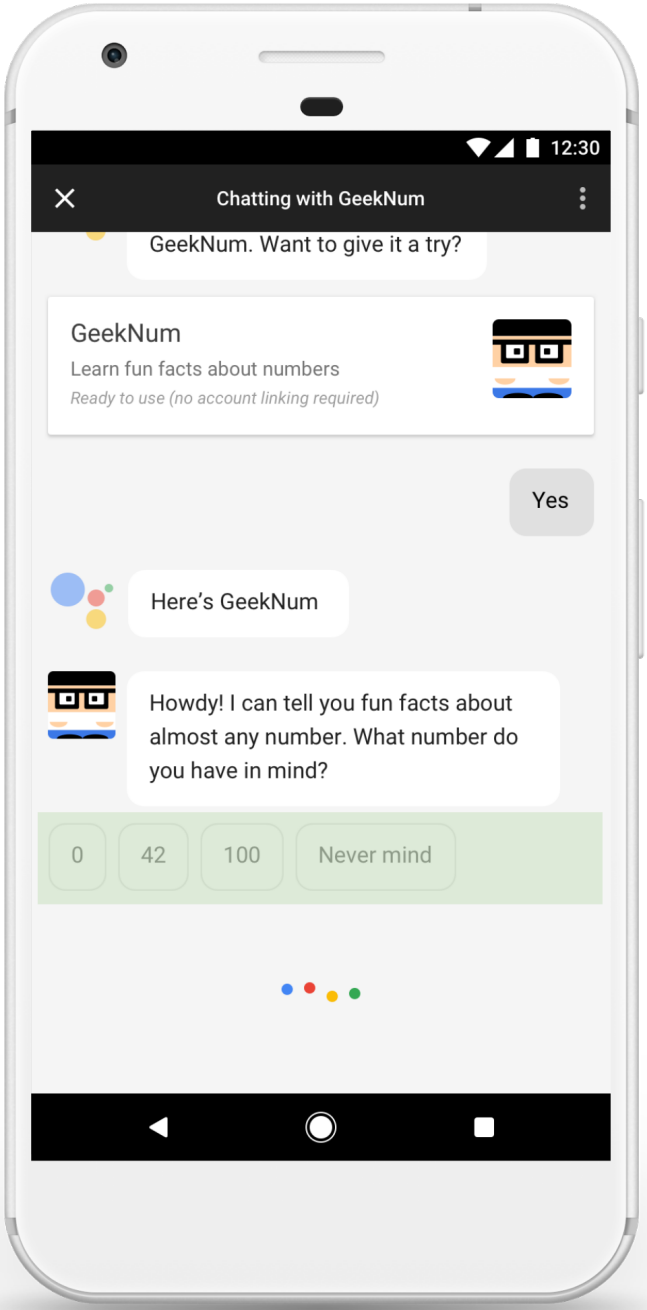
Figure: DialogFlow interactions

Behaviour Steering: think freely I

Suggestion Chips

*Use suggestion chips to **hint at responses** to continue or **pivot the conversation***
(Google 2017)

- This happens in vocal interactions
- **Can be more easily visualized on mobile phones**



Behaviour Steering: think freely II

> *Smart objects could become* ***intermediaries between businesses and consumers****, using their intelligence to* ***persuade customers to buy products*** *. . . Such influence could already be* ***exerted at the design stage*** *. . .*
> *(Brey 2005, 163)*

Advertisements

- Google Assistant **advertised "*Beauty and the Beast*"** film, but Google claimed it was not an ad (AndroidPolice 2017)
- In future **Google Assistant will include ads**
  - make money by **promoting e-commerce from partners** (Recode 2017)
  - forecasted ad-spend of **19 billions globally by 2022** (Juniper 2017)
  - what if developers shape mediations based on **ads analytics**?

Behaviour Steering: think freely III

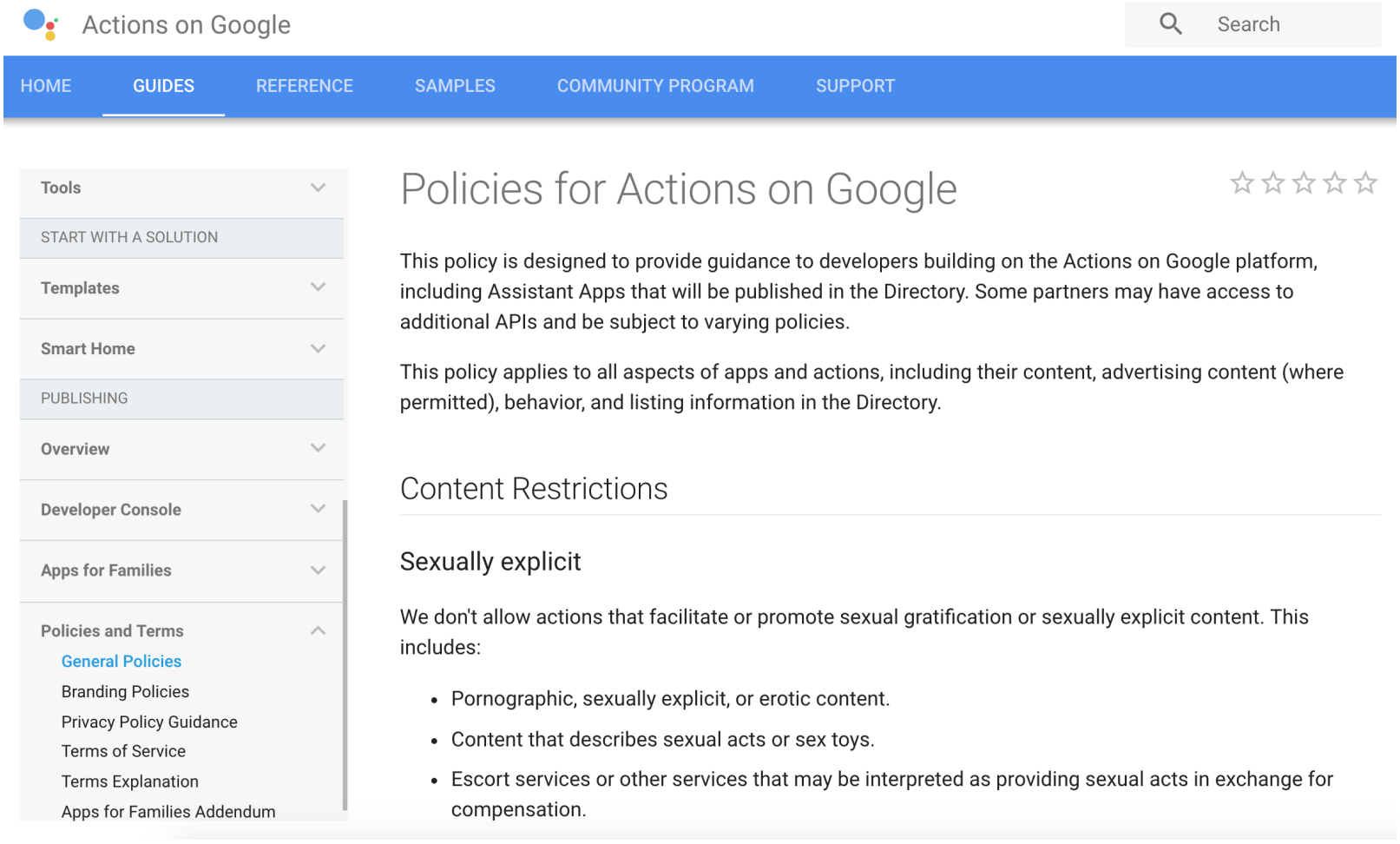
> ***Agent-based dialogue systems*** *can be included in IUI's to monitor users and* ***make assumptions about their intentions and the task they are trying to perform*** *(Brey 2005, 159)*

Implicit Invocation

> *The Assistant opts to invoke an app because it can fulfill the user's intent,* ***without users calling it by name*** *(Google 2017)*

example: "Hey Google, book an appointment to fix my bike"

What about Technological Mediation?



Google Actions Policies are designed towards: privacy, content, branding . . .

- following the **Guidance For Conversation Design** is enough?

Ethical concerns arising from loss of freedom

Fear of Technocracy

- **Experts** will shape our mediations
  - **Antidemocratic**
    - How to make it more democratic?
  - **Unforeseen mediations**
    - Not humans but **technologies are in control** (Verbeek 2011, 102)

- **Opposite problem**: people without enough technical background may design **Google Assistant Actions** and publish them
  - today are very limited mediations
  - **what about the future?**

Moral Laziness

- Immorality or **amorality**
- People may **delegate all moral decisions to machines** (Verbeek 2011, 134)
- **Commodification of morality** (Borgmann 1984)
  - Things that used to **require effort** to acquire have become available with the push of a button
  - today we don't even need buttons ...
  - **voice assistants** are a new step in this process of commodification?

Moral Responsibility

- Designing is **"materializing morality"** (Verbeek 2011, 101)
- To what extent **can designers be held morally responsible for undesirable forms of mediation**?
  - The responsibility should not be left to designers alone (Verbeek 2011)
  - For the Google Actions Policies **developers are legally responsible** for the Actions they create
    - What about their **moral responsibility**?

Possible Remedies

Possible Remedies

- Make the **design process more democratic** (Verbeek 2011)
  - Anticipate Mediation
  - Assess Mediation
  - Design Mediation
- Teach voice assistants' developers to **think about Technological Mediation**
- Re-think the **moral responsibility of designers**

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