

# EMERGING TECHNOLOGY: SMART SPEAKERS

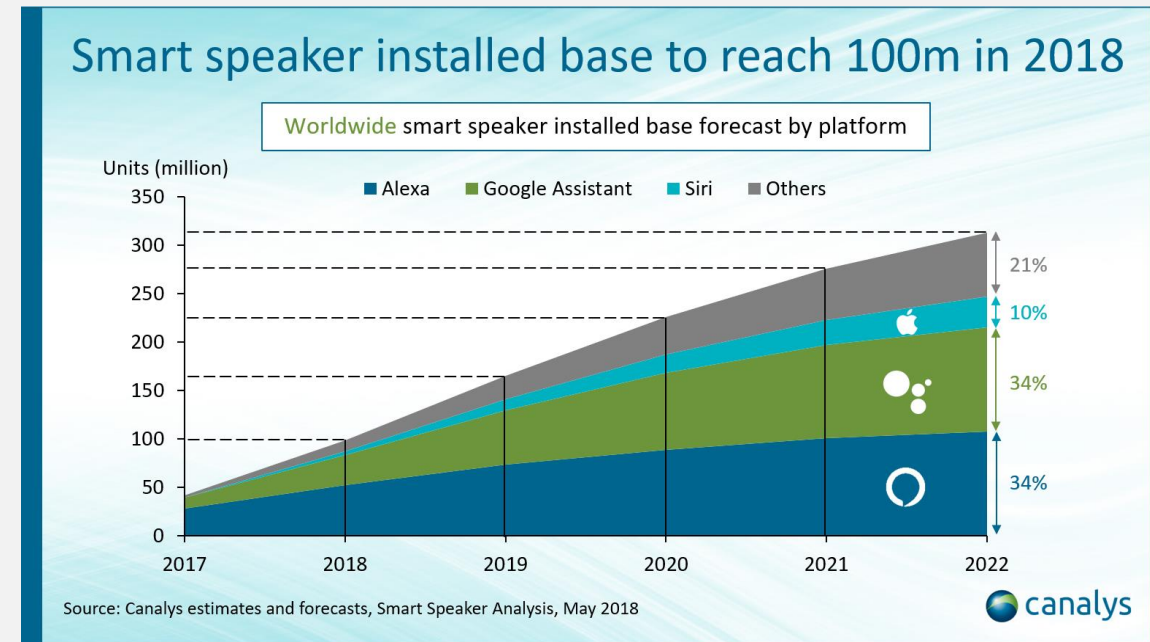
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# OVERVIEW

- Conclusions
- Intellectual Property
- Privacy
- Errors, Failures, and Risks
- Work and Wealth
- Freedom of Speech
- Computer and Network Security
- Examples in Media

# CONCLUSIONS

- This technology is already widely adopted but will continue to develop in the near future to become more integral to our daily lives.
- This technology will not have any significant impact on society because it doesn't offer new functionality but rather improves the way people interact with existing computing devices.
- Although there are no new groundbreaking implications for smart home systems, they do provide benefits in convenience for users and will continue to improve.



# INTELLECTUAL PROPERTY

- Concerns with Google's answer blocks or "featured snippets" [10]
  - Google Nest Hub presents answers to many questions in this format
  - Presents user only with content relevant to search
  - Prevents users from needing to visit the site providing the answer

How long does melted chocolate last?

## Chocolate Expiration Date

(Opened or Unopened)	Pantry	Refrigerator
<b>Chocolate</b> lasts for	2-4 Months	4-6 Months
<b>Chocolate Bars</b> last for	2-4 Months	4-6 Months
<b>Chocolate Truffles</b> last for	1-2 Weeks	--
Belgian <b>Chocolate</b> lasts for	1-2 Weeks	2-4 Weeks

[2 more rows](#) • Apr 21, 2015

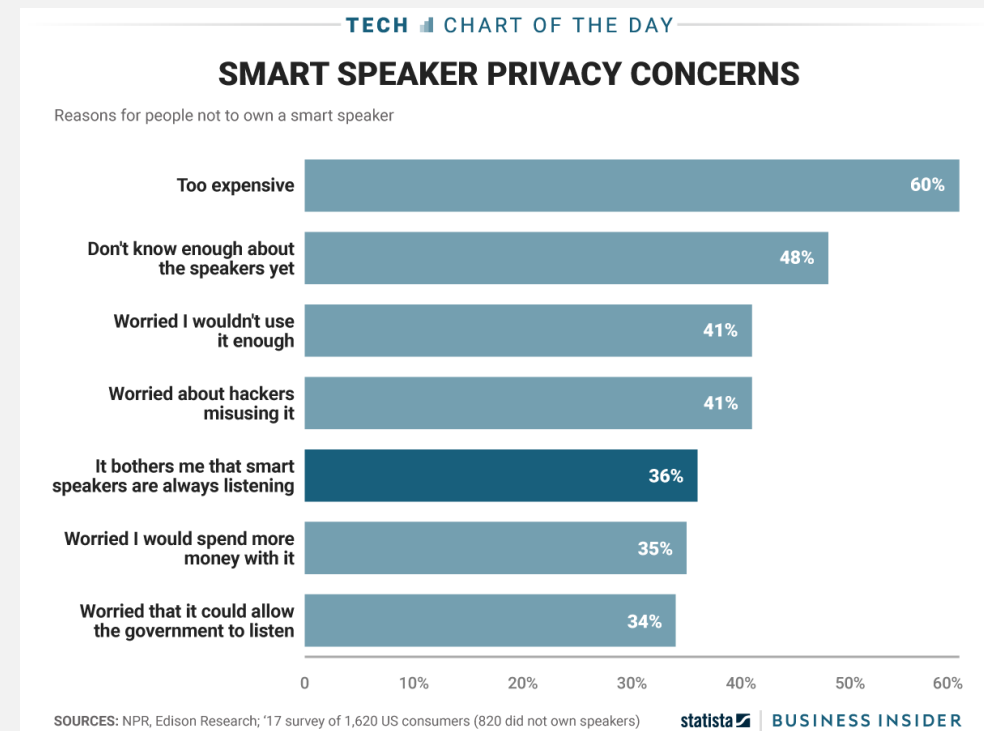


www.eatbydate.com › other › sweets

[How Long Does Chocolate Last? Shelf Life](#)

# PRIVACY

- Public perception
  - Over 60% of a surveyed group of smart speaker owners believed they were sacrificing privacy for convenience [2]
- Smart speakers are listening devices by nature
  - Failures and security issues can create privacy concerns
  - In order to function these speakers must send recordings of your commands to the company be processed [3]



# ERRORS, FAILURES, AND RISKS

- Major point of failure come from the smart speaker executing commands that you did not intend it to
  - Alexa sent a recording of a conversation to a random person in the contacts [1]
- Failures can result in privacy breaches and dangers are hard to mitigate
  - By design the speaker is always listening
  - Placed centrally to maximize where it can hear



## WORK AND WEALTH

- Home automation does not have any real impact on manufacturing or production jobs
  - However, it does make household tasks easier for people, which can increase productivity and quality of life
- CIRDO system can help elderly people remain in their homes for longer without moving to assisted living [4]
  - This reduces the burden on family members and government assistance

# FREEDOM OF SPEECH

- Amazon Alexa recordings were potential evidence in a 2015 murder trial
  - 2 days' worth of recordings from murder suspect's Alexa were requested by police in Arkansas [9]
  - Amazon lawyers argued the recordings were an infringement on First Amendment rights [8]
  - Limits the ability of users to obtain information in the privacy of their home [9]
- Do smart speakers have freedom of speech rights?
  - Smart speakers do create their own speech [10]
  - Should creators of the speakers have rights to the created speech? [11]



# COMPUTER AND NETWORK SECURITY

- Amazon Alexa Skills open up attack vectors
  - Open to all developers using Alexa Skills Kit [12]
  - “Anyone can leverage Amazon’s knowledge in voice design” [12]
  - It’s possible for skills to impersonate other skills, causing users to provide information they otherwise wouldn’t through voice squatting [11]
- Fewer avenues for attack than traditional computing systems [5]
  - Less utility than cell phones or computers so there may be less acceptable risk



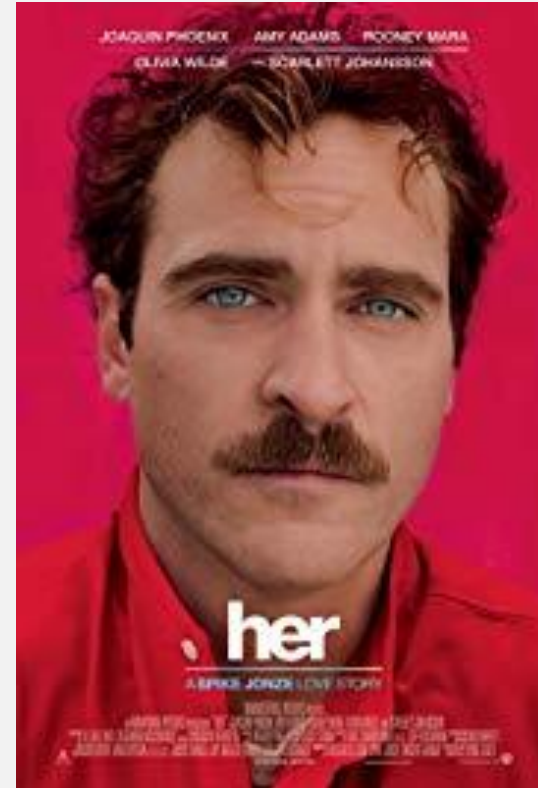
# STAR TREK

- Computer has many features that resemble more advanced versions of current smart assistant technology
- The purpose of the computer was to provide an easy to access interface that could operate all the ship's systems through voice commands



# HER

- A man has a relationship with his personal assistant AI, allows them both to learn and evolve over time
- The AI leaves and the man ends up pursuing a human relationship
- Shows potential future of more natural human interaction



# 1999 DISNEY'S SMART HOUSE

- A family wins a computerized home in a competition
- The home turns on them and traps them inside
- The movie was a Disney Channel Original so the primary audience is children
- As an early exposure to the concept of home automation and smart assistants, this this portrayal could have a negative effect on people's perception of this technology



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