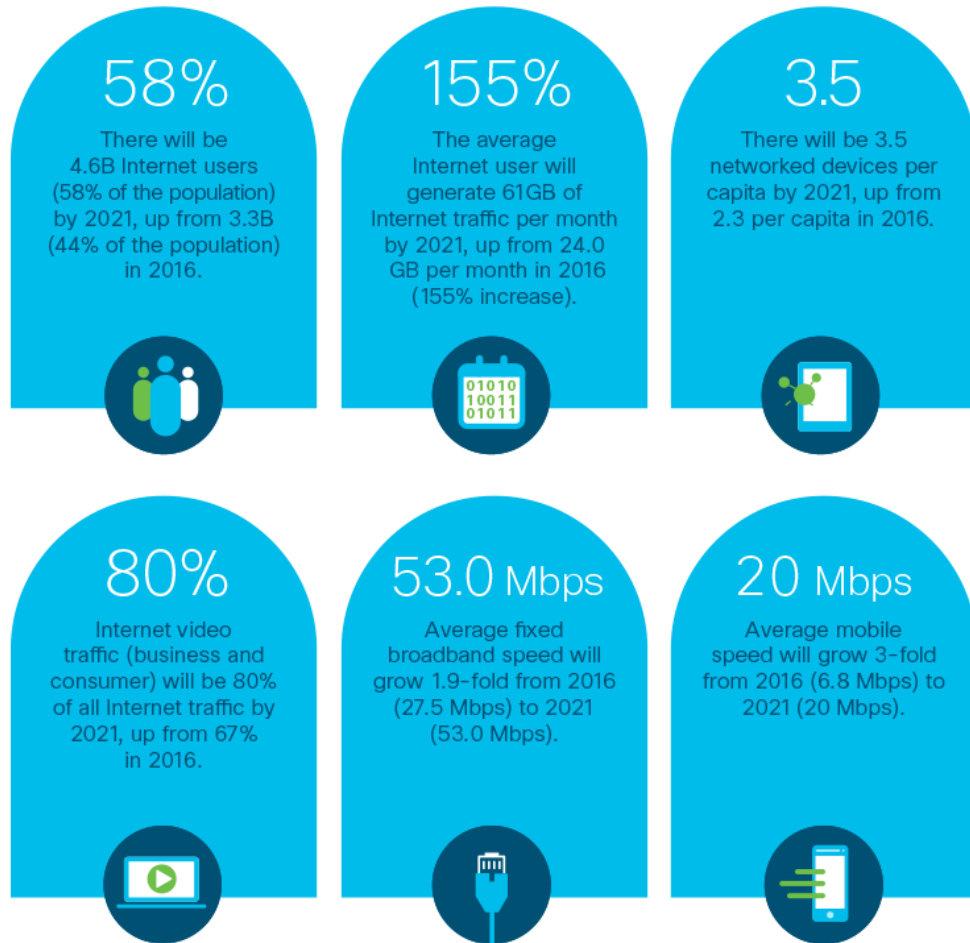




Browsing the internet through (in)security  
A short story of the average user

# Internet user growth is booming...



#CiscoVNI

Chan, S. (2018). New Internet trends reveal the next phase of digital transformation. [online] Newsroom.cisco.com.

Available at: <https://newsroom.cisco.com/feature-content?type=webcontent&articleId=1852624>

# *Once upon a time...*

Bob wants to secretly propose to Alice and he wants to look for the perfect ring online.



*Bob*

Alice wants to book a trip to Italy for her and Bob, as a present for their anniversary.



*Alice*

# What is private browsing?



# Private browsing by popular belief

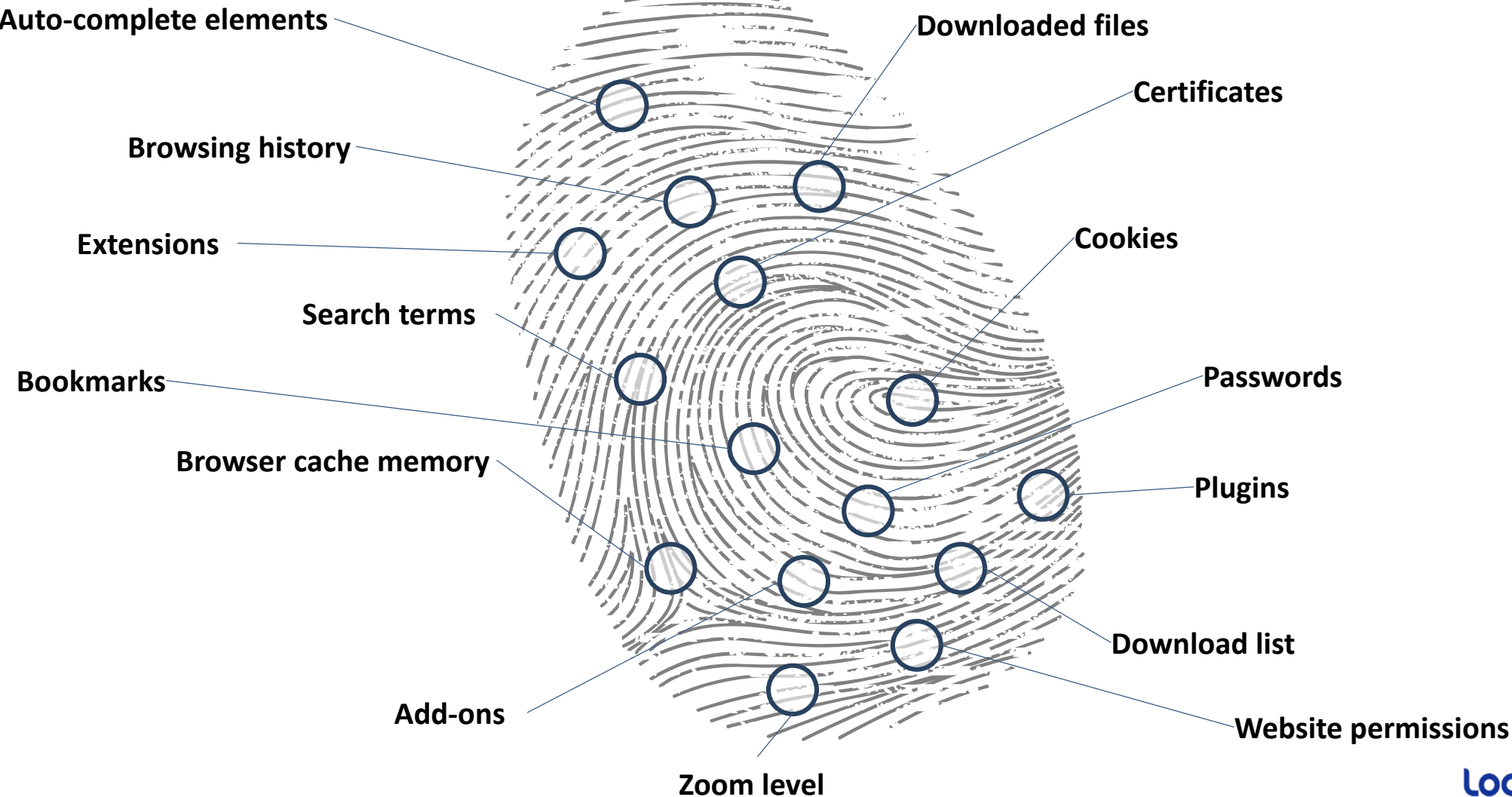
*“Private browsing is a privacy feature present in some Web browsers that disables Web cache, cookies, browsing history or any other tracking feature that the browser may have.”*

*“Private browsing allows the user to browse the Web without leaving traces such as local data that can later be retrieved.”*

*“If you use your browser’s private mode, all the information disappears as soon as you close your browser.”*

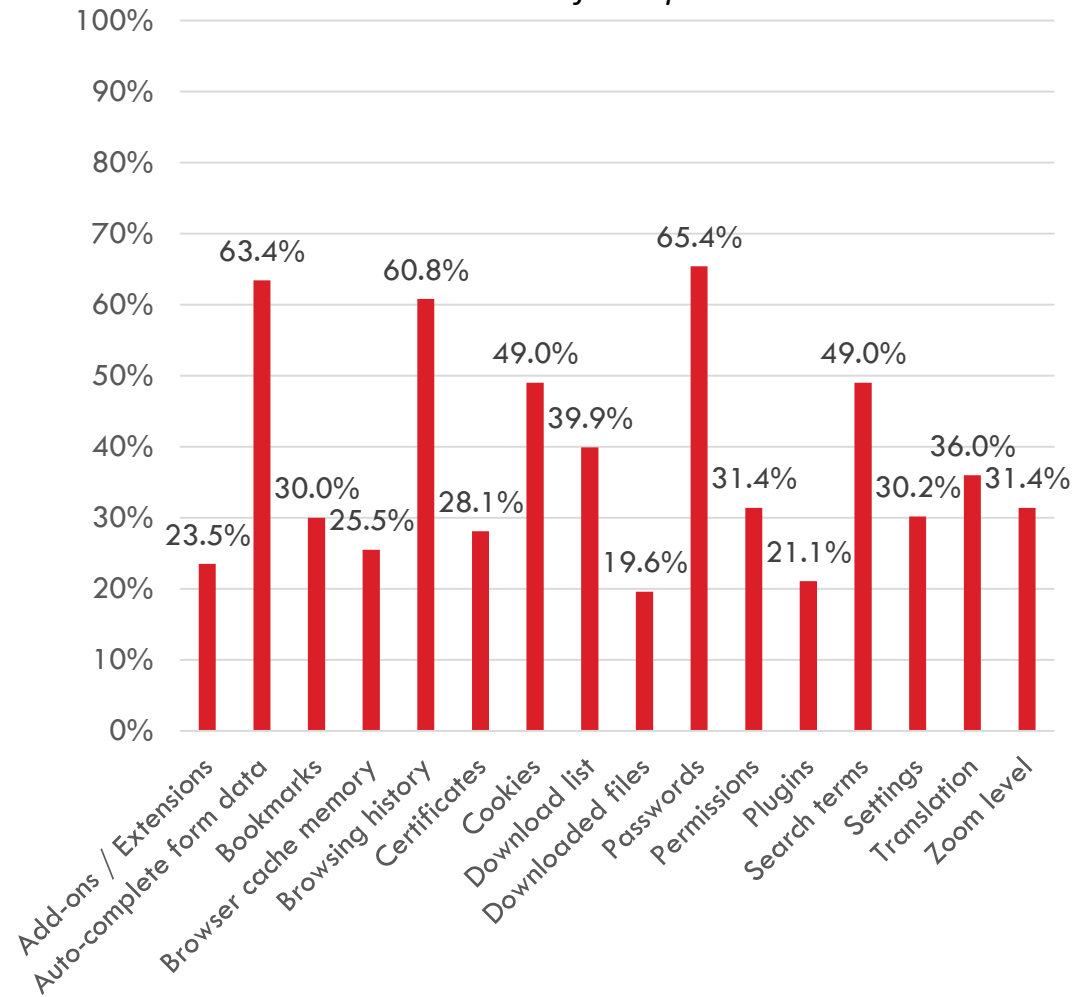


# User's digital footprint

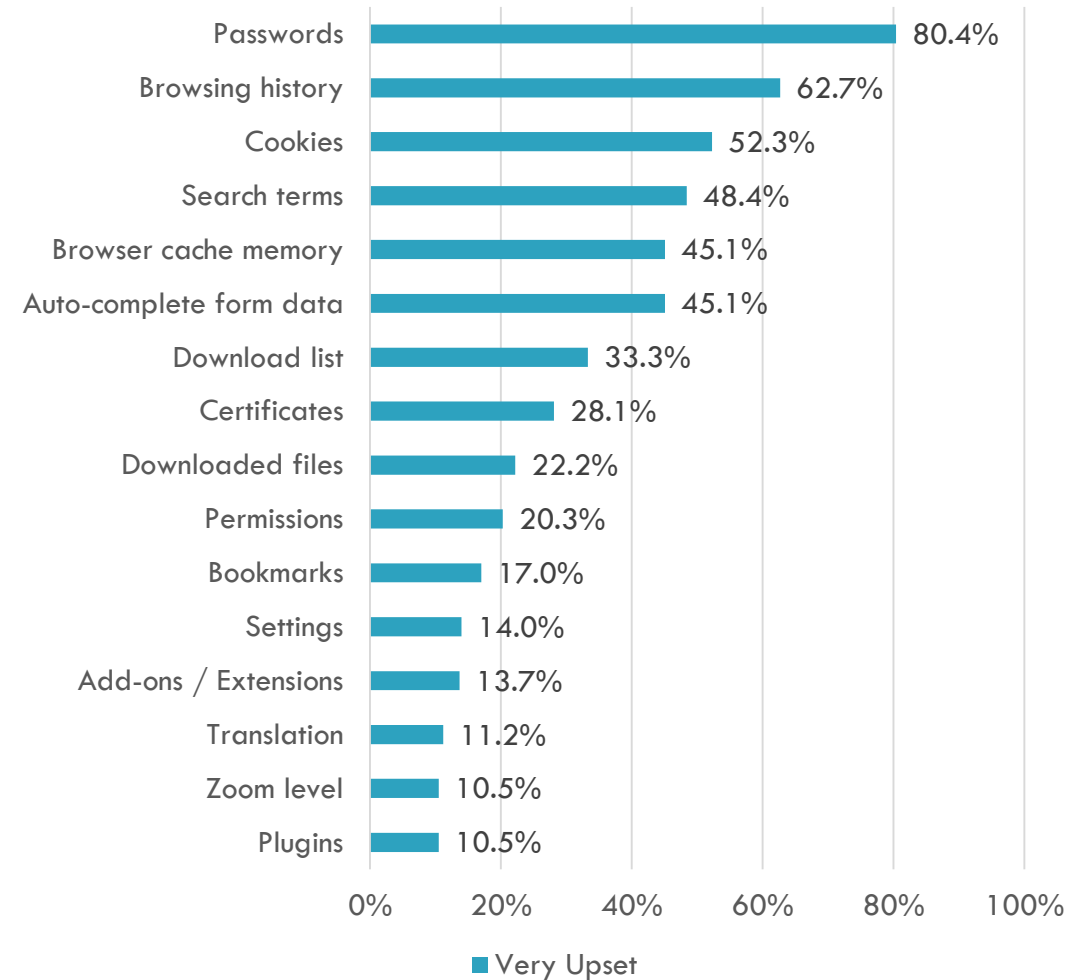


# User survey

*User opinion about which artefacts are not available after a private session*

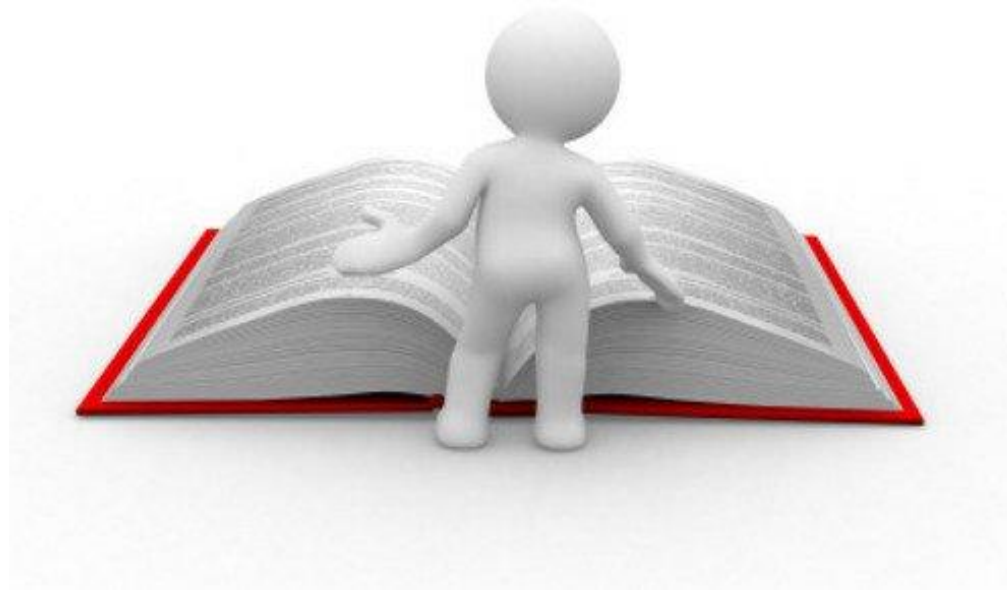


*User annoyance if the artefact is available after a private browsing session*



# Information available by vendors






- ✓ Official website
- ✓ Documentation











# A summary read-through

- Nothing is mentioned in the documentation
- Vendor states that the artefact is not available after the private session
- Vendor states that the artefact is available after the private session

	Auto-complete form data	Bookmarks	Browser Cache memory	Browsing history	Cookies	Download list	Downloaded files	Passwords	Search terms	Add-ons /Extensions	Certificates	Plugins	Settings	Permissions	Translation	Zoom level
	-	-	-	○	○	-	●	-	-	-	-	-	-	-	-	-
	-	-	-	○	○	-	-	-	-	-	-	-	-	-	-	-
	○	●	○	○	○	○	●	○	○	-	-	-	-	-	-	-
	○	-	○	○	○	-	-	○	○	○	-	-	-	-	-	-
	-	●	○	○	○	-	●	●	-	-	-	-	-	-	-	-

# A thorough analysis

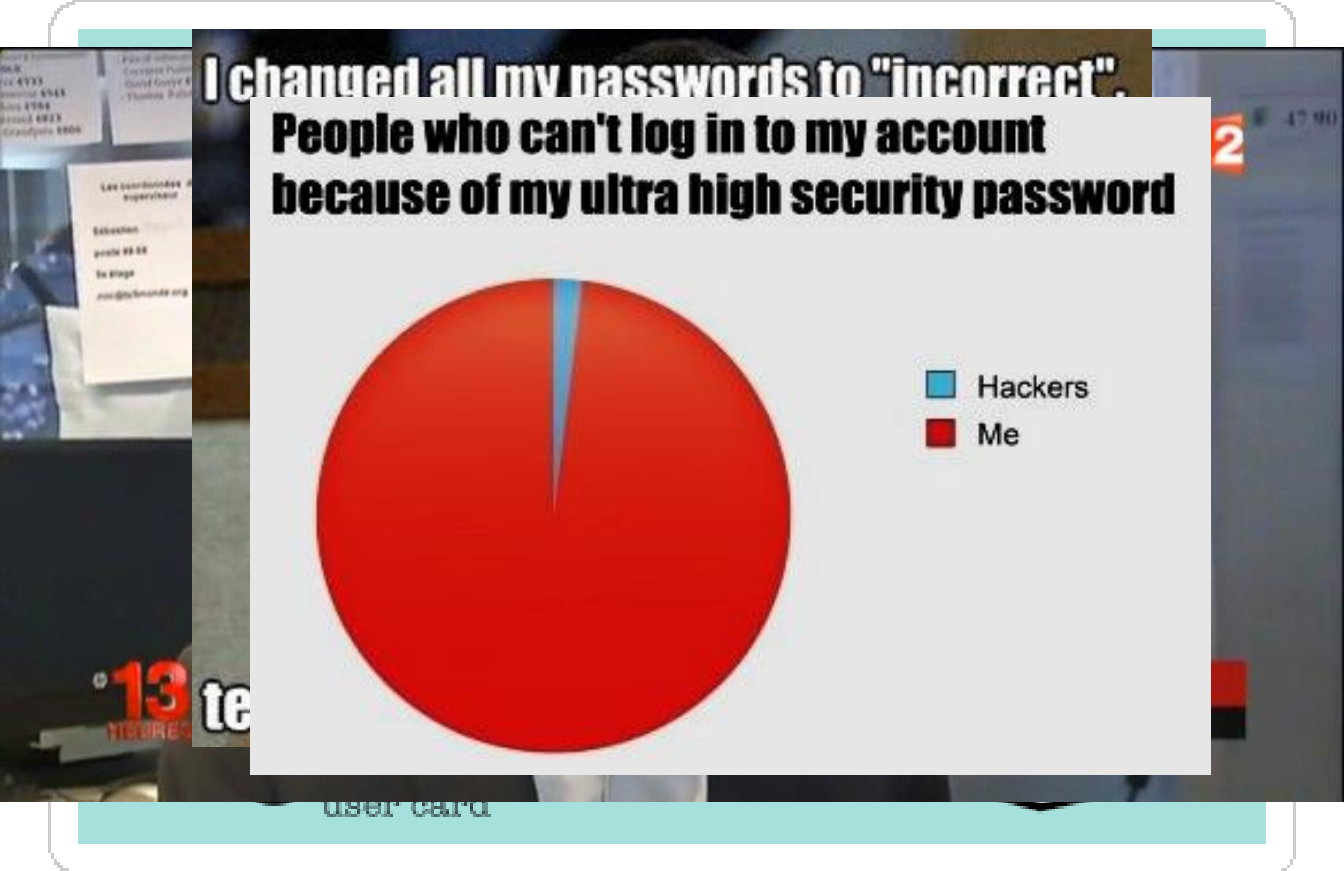
- The artefact was not available after the private session
- ☒ The artefact is not available during the private session
- ▣ The artefact could be indirectly retrieved
- The artefact was available after the private session

	Auto-complete form data	Bookmarks	Browser Cache memory	Browsing history	Cookies	Download list	Downloaded files	Passwords	Search terms	Add-ons /Extensions	Certificates	Plugins	Settings	Permissions	Translation	Zoom level
	☒	●	○	▣	○	▣	●	☒	○	●	●	●	●	●	●	○
	☒	☒	○	▣	○	▣	●	☒	○	●	●	●	●	○	●	○
	☒	●	●	▣	○	▣	●	☒	○	●	●	●	●	●	☒	○
	☒	●	○	▣	○	▣	●	☒	○	●	●	●	●	●	▣	○
	☒	●	○	▣	○	▣	●	●	○	●	●	●	●	●	☒	○

# Lessons learned

- ❑ Official documentation is
  - ❖ **Inadequate and**
  - ❖ **inconsistent**
  
- ❑ User survey
  - ❖ **indirect impact** of artefacts with low/medium impact (e.g. translation revealing history)
  - ❖ users' perception was **consistent** with documentation
  - ❖ more than half of the participants **did not read** the documentation at all
  - ❖ only 1.3% of the users read the documentation at a **great extent**

# Does the average user need protection?



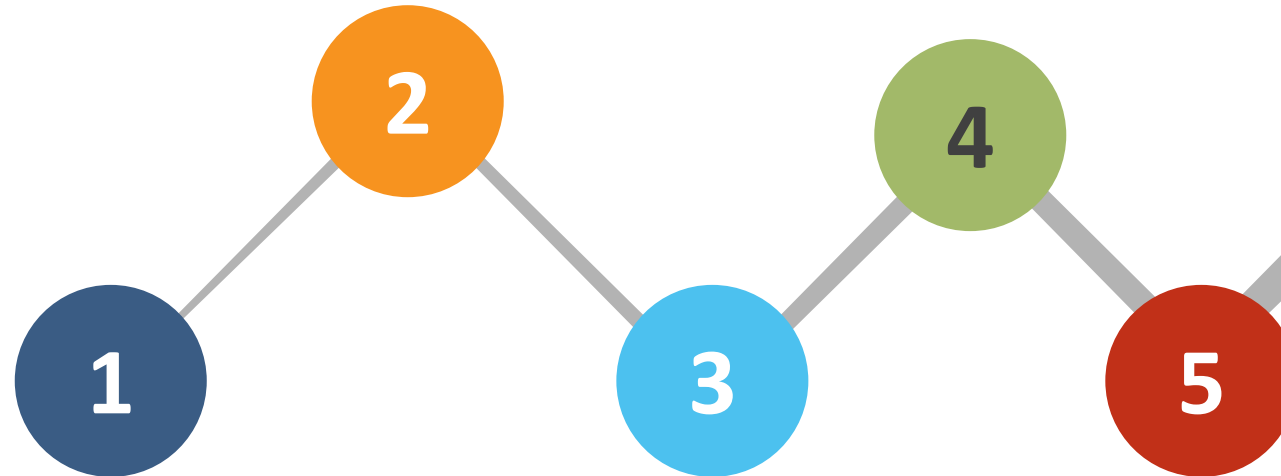
# Best practices for organizations

## RISK TREATMENT

All risks will be mitigated according to the organization's priorities and risk appetite. The implementation of the respective controls will ensure that an adequate level of security is maintained.

## PENETRATION TESTING

This process includes the evaluation of the existing security controls, and the identification additional vulnerabilities that need to be taken into consideration.



## RISK ASSESSMENT

This process will ensure that all assets will be identified, analyzed and evaluated from the risk perspective.

## SECURITY POLICY

The backbone of the organization is managed, governed and led by the respective Information Security Policy that is adequately developed and maintained.

## INFORMATION SYSTEMS AUDITS

An audit can ensure that the organization's policies and procedures are aligned with its objectives and priorities, while maintaining an operation-wise effectiveness.

# Quote time 😊



*Security is a chain which is as strong as its weakest link.*



*Security must pay, not cost*



*A poorly implemented security control is as if it does not exist*

Thank  
you!

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