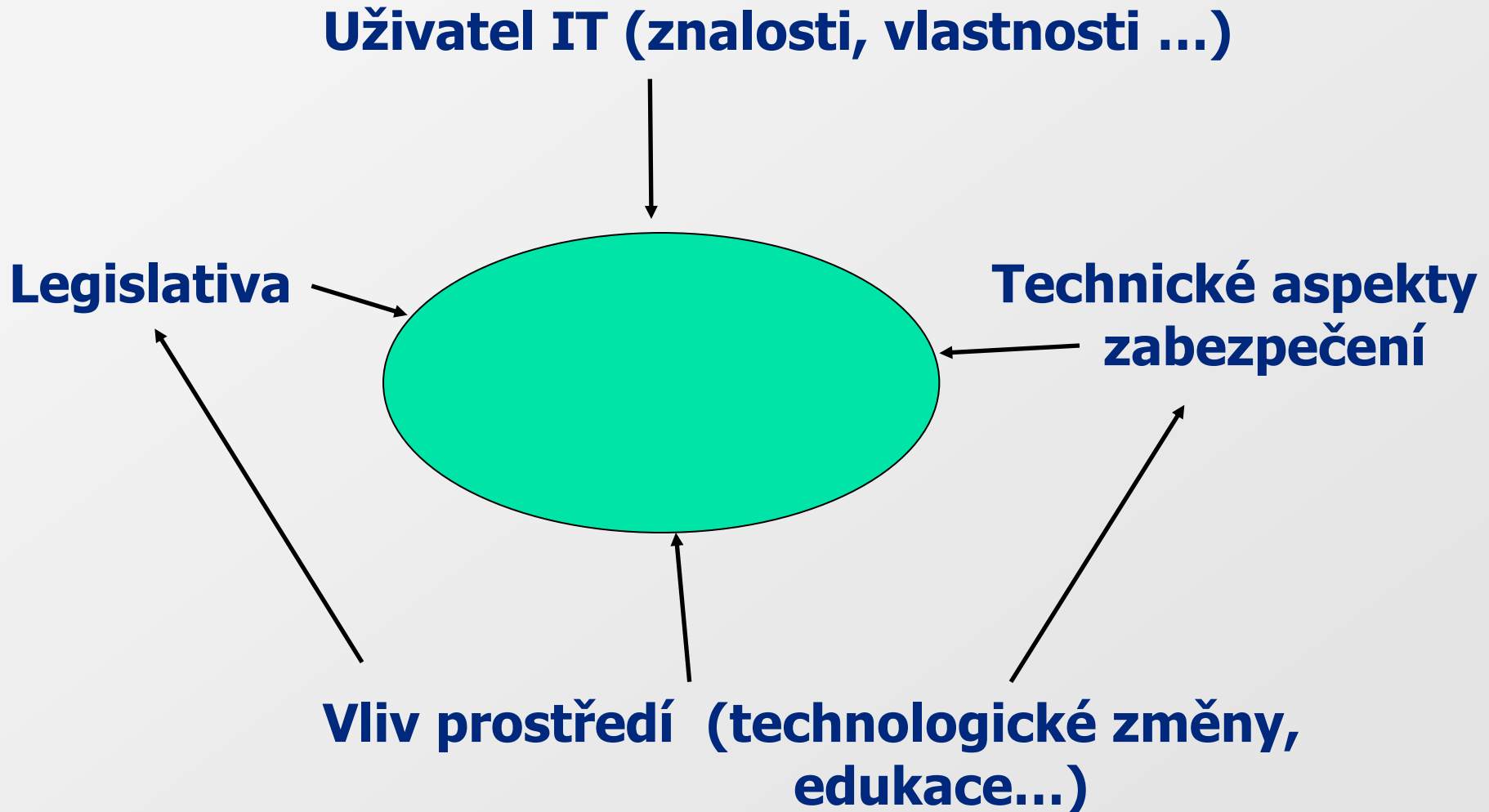


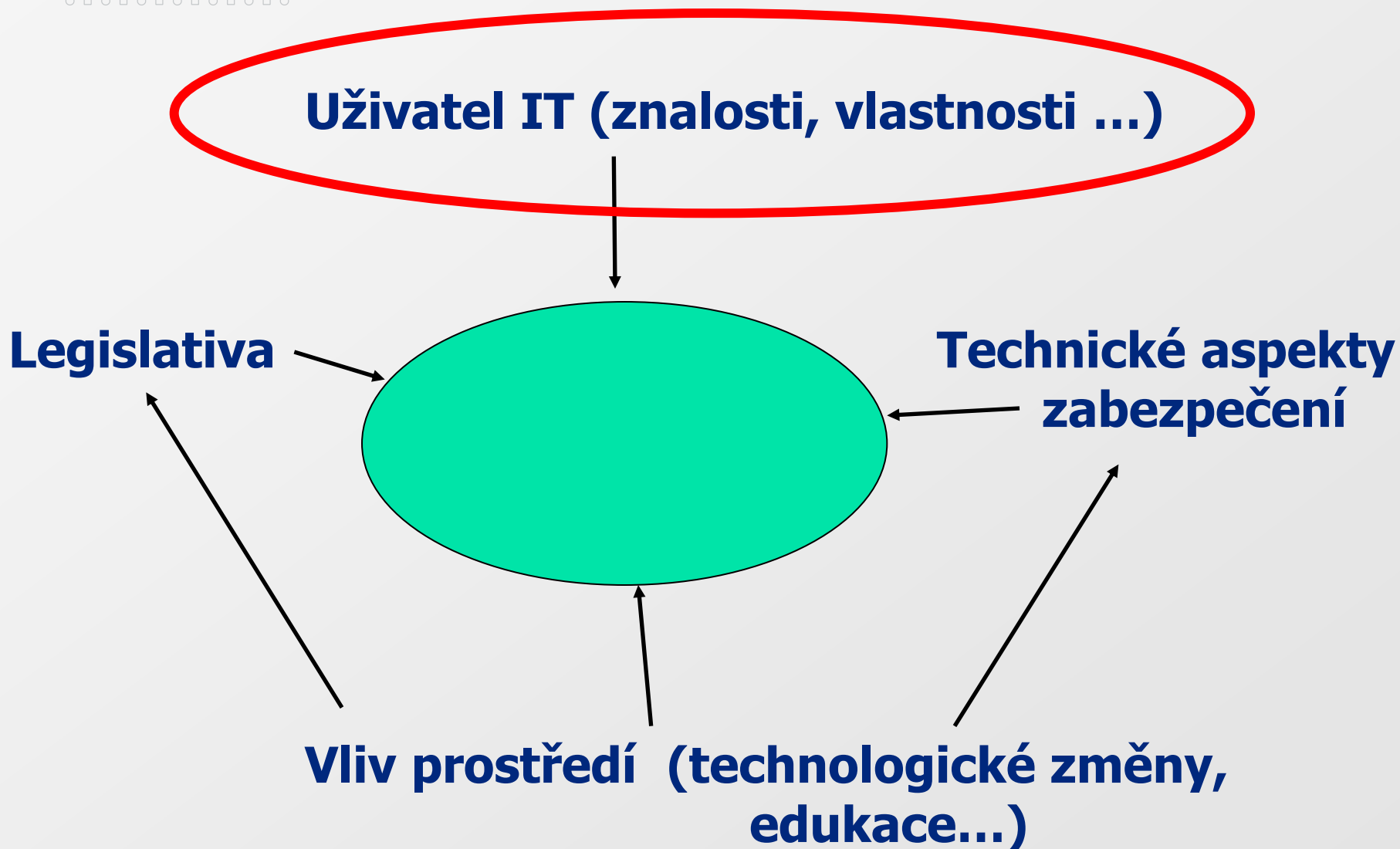


MASARYKOVA UNIVERZITA

Projekt ze sociální informatiky: (IT) bezpečnost očima psychologa

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Usable security: Experimental research of ICT user behavior in the domain of security



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What is usable security?

- Users and security trainings.
- Security policy design
- Warning and user dialog design.
- Authentication methods with respect to users.
- Passwords and users password habits.
- Users and privacy.
- Secure system design.

Involved parties



- **Netsuite Inc.** - company producing business management software
- **ICS (ÚVT)** - service provider for Masaryk University
- **ESET s.r.o.** - security software developer
- **SODATSW s.r.o.** - manufacturer of robust security encryption solutions
- **Masaryk University:** Faculty of Informatics, Faculty of Social Studies, Faculty of Law



Aims of the research:

- **Netsuite Inc.** - measurement of user adherence to the security policy depending on a type of the security policy tutorial.
- **ICS (ÚVT)** - measurement of user knowledge and understanding of the security policy.
- **ESET, spol. s.r.o.** - 2 user dialogs redesigned for their antivirus system.
- **SODATSW s.r.o.** - password soft recovery for their security system.



ESET PROJECT 1 Aims

- ❏ Antivirus premium license contains many security benefits over the basic one.
- ❏ Increase user's security by increasing a number of people who upgrade the basic version to the premium license.
- ❏ Android platform.
- ❏ Only small changes in already existing user dialog.

ESET Challenge 1 – Activities

1. Experiment 1 (14 000 participants) tested:
 - ❏ Control variant (no change).
 - ❏ Variant with a **text change**.
 - ❏ Variant with added „Ask later“ button.
2. Experiment 2 (60 000 participants) tested:
 - ❏ More complex combinations of **persuasive principle** (decoy option) and **text change** from first experiment.
 - ❏ A **user survey** for English, Czech, Slovak and German speaking participants was included to reveal **user security habits**.

ESET Challenge 1 – Experiment 1 – Results

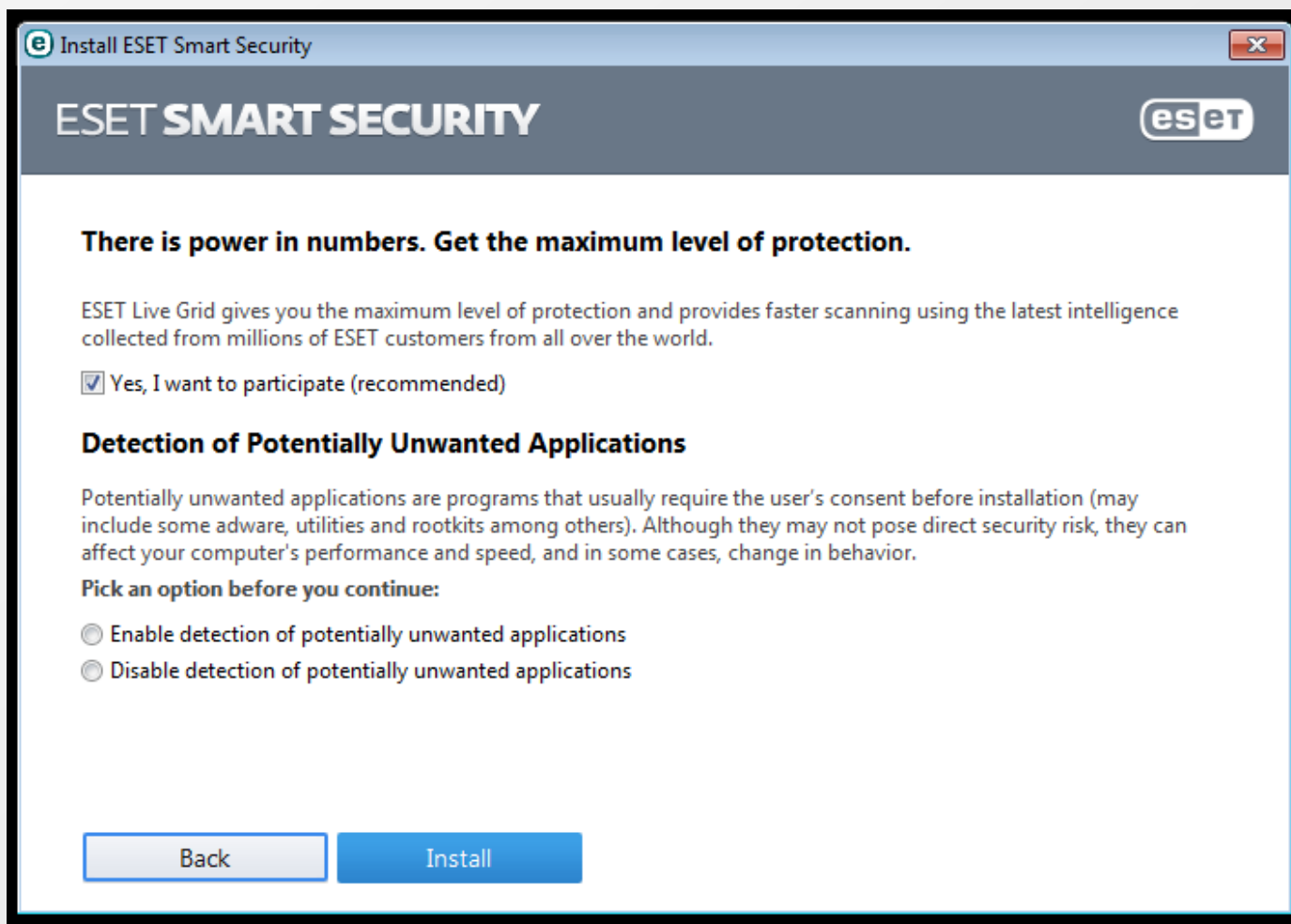
- Both new variants caused **increase** in number of purchases.
 - about **51%** in variant with text change
 - about **21%** in variant with „Ask later“ button.

ESET Challenge 1 – Experiment 2 – Results

- ❏ No variant was significantly better in nudging user to obtain a premium license.
- ❏ Interesting results found out of [questionnaire](#), e.g.:
 - ❏ Tablet users consider their device as less secure and purchase a license more often than smartphone users.
 - ❏ Participants who bought the premium license have more private data in their devices.
 - ❏ No statistically significant correlation with license purchase is, surprisingly, use of the device for storing passwords.
 - ❏ The older user is, the more he buys a license.

ESET PROJECT 2 Aims

- How to encourage users to enable PUA (potentially unwanted application) detection?
- Increase user's security by increasing number of users who pick a PUA (spyware, adware, etc.) detection during antivirus installation process.
- Both options must be equal due to legal reasons.
- PC platform.
- Small changes in already existing user dialog.



ESET PROJECT 2 Activities

1. **Experiment 1:** Designed 15 new variants (including control variant) introduced to test on PC antivirus **beta users**.
 - ❖ 100 000 participants
 - ❖ We experimented with text content, colors, pictorials, bold type, bullet lists....
2. **Experiment 2:** Repeated with same settings, but **real users**.
 - ❖ 350 000 participants
 - ❖ Difference in behavior of beta x real users

Proposed variants

- We designed 14 variants + control one

Detection of Potentially Unwanted Applications

ESET can detect potentially unwanted applications and ask for confirmation before they install. Potentially unwanted applications might not pose security risk but they **can affect your computer's**:

- performance,
- speed,
- reliability,
- behavior.

They usually require user's consent before installation.

Pick an option before you continue:

- Disable detection of potentially unwanted applications.
- Enable detection of potentially unwanted applications.

Proposed variants

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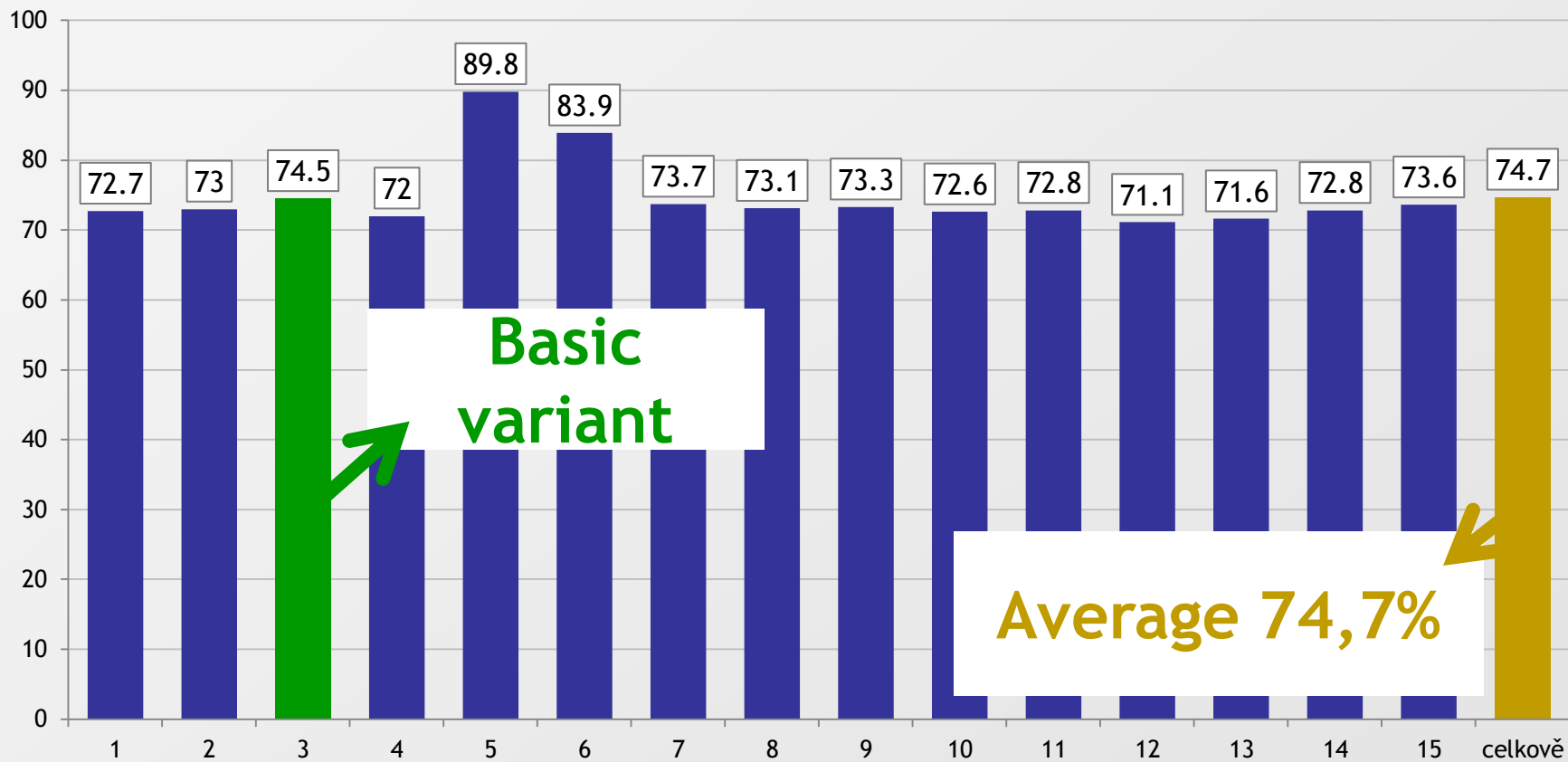
- Disable detection of potentially unwanted applications.
- Enable detection of potentially unwanted applications.

Detection of Potentially Unwanted Applications What is a potentially unwanted application?

Pick an option before you continue:

- Disable detection of potentially unwanted applications.
- Enable detection of potentially unwanted applications.

How many people allows detections across variants



Výsledky: co se liší

Základní verze

„Nová“ verze

Změna pořadí možností: **dejte pozitivní možnost na první místo**

Pick an option before you continue:

- Disable detection of potentially unwanted applications.
- Enable detection of potentially unwanted applications.

Pick an option before you continue:

- Detect potentially unwanted applications.
- Don't detect potentially unwanted applications.

sloveso **ENABLE** funguje lépe než **DETECT**
89% na této obrazovce detekuje

Pick an option before you continue:

- Enable detection of potentially unwanted applications.
- Disable detection of potentially unwanted applications.



Přidání červené **NOTICE** detekci PUA
snižuje

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Výsledky osvětlení

Základní verze

„Nová“ verze

výběhání textu a hrazení odkazem

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přidání příkladu PUA

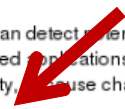
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For example, they may change your web browser's webpage and search settings.



výstražné symboly

Detection of Potentially Unwanted Applications

Detection of Potentially Unwanted Applications 

Detection of Potentially Unwanted Applications 

ESET (preliminary) conclusions:

- What works:
 - positive answer as first option
 - “enable” is better than “detect”

- Additional texts -> no effect
- Warning symbols -> no effect

Final remark: users are not reading longer texts in the installation process...