Who can afford artificial intelligence today?

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Intelligence

– the capacity to do right thing
  at the right time
– to transform perception into action

Overestimating the progress of artificial intelligence

- 1960 – AI researchers believed that within 25 years we will have computers with human-level intelligence

People believed that even with relatively underpowered computers and by combining relatively simple approaches they could solve complex problems.

Introducing Mária Bieliková: Topics are more stable than approaches to solve challenges

Journey with artificial intelligence

- 1988 – **Rule-based** diagnostic expert systems
- 1995 – **Knowledge-based** software development support
- 1998 – **Data mining**, association rules, patterns for adaptive hypermedia and the Web
- 2001 – **Semantic Web, Ontologies** (Linked Open Data, Resource Description Framework)
- 2005 – **Supervised learning** for user modelling, recommender systems, predictions
- 2010 – **Feature Engineering**
- 2014 – **Word embeddings** - Word2vec
- 2017 – **Deep learning**
- 2019 – **Transfer learning**
- 2020 – **Meta-learning, active learning**
- 2021 – **Learning with limited labelled data**

Change from executing instructions to training models

Artificial intelligence is reinventing what computers are

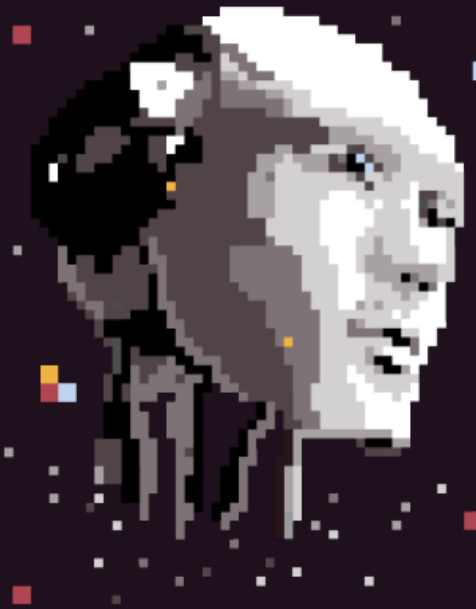
Computers as boxes with processors that run instructions defined by humans

AI applications need vast numbers of less precise calculations to be carried out all at the same time

- new type of chip is required: one that can move data around as quickly as possible, making sure it is available when and where it is needed

Big challenge and significant competitive opportunity –

not how we train and scale algorithms but what data to feed into those algorithms



SlovakBERT

TRAINED BY gerulata

CONSULTED AND EVALUATED BY KInIT

THE FIRST LARGE-SCALE SLOVAK MASKED LANGUAGE MODEL

Try it yourself!

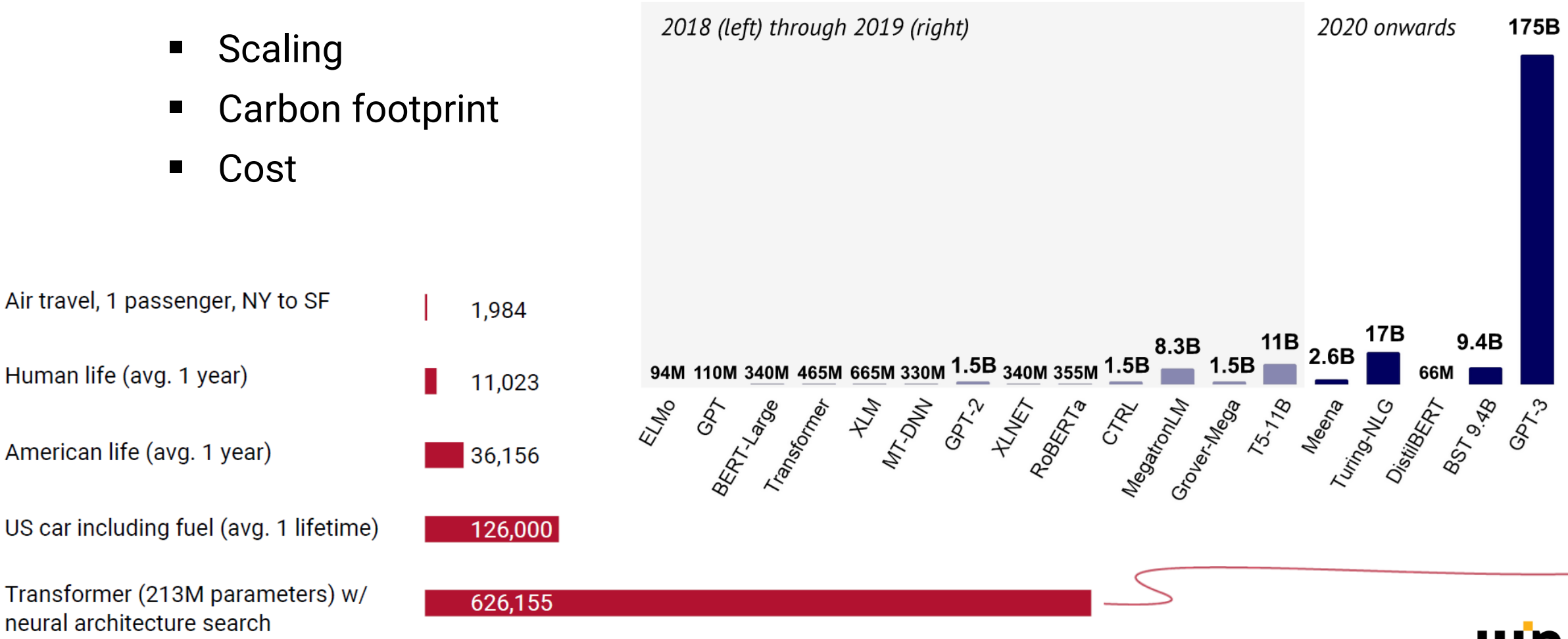
Type a few words followed by <mask> in placeof the word that you want SlovakBERT to fill in

KInIT je <mask>

SEND

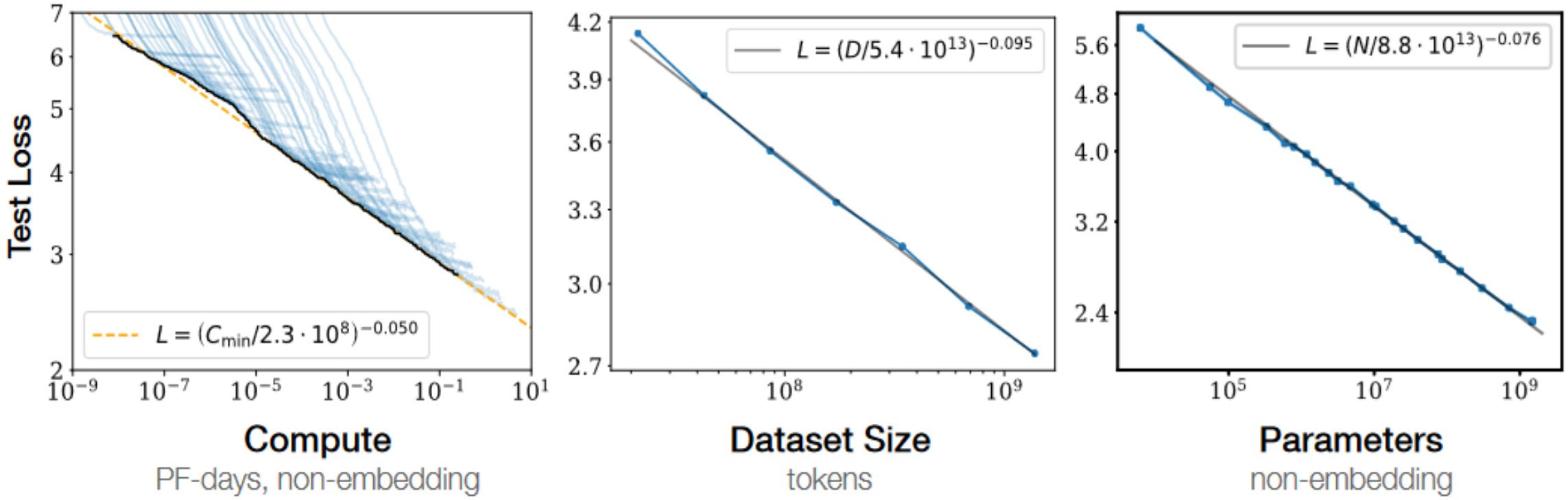
Huge models, large companies and massive training costs

- Scaling
- Carbon footprint
- Cost

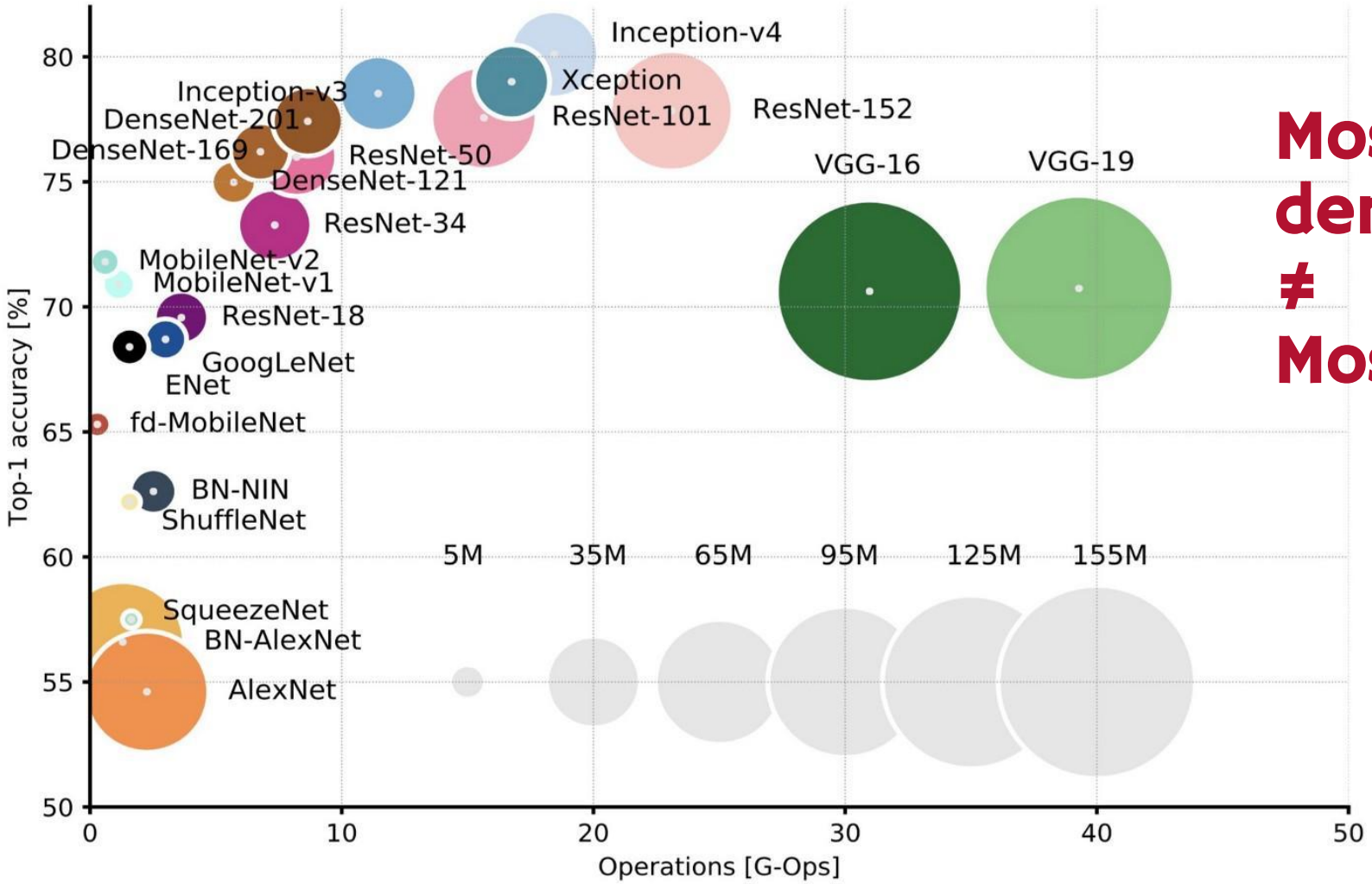


The new trend is to lower the size of machine learning models

Bigger models, datasets and compute budgets clearly drive performance

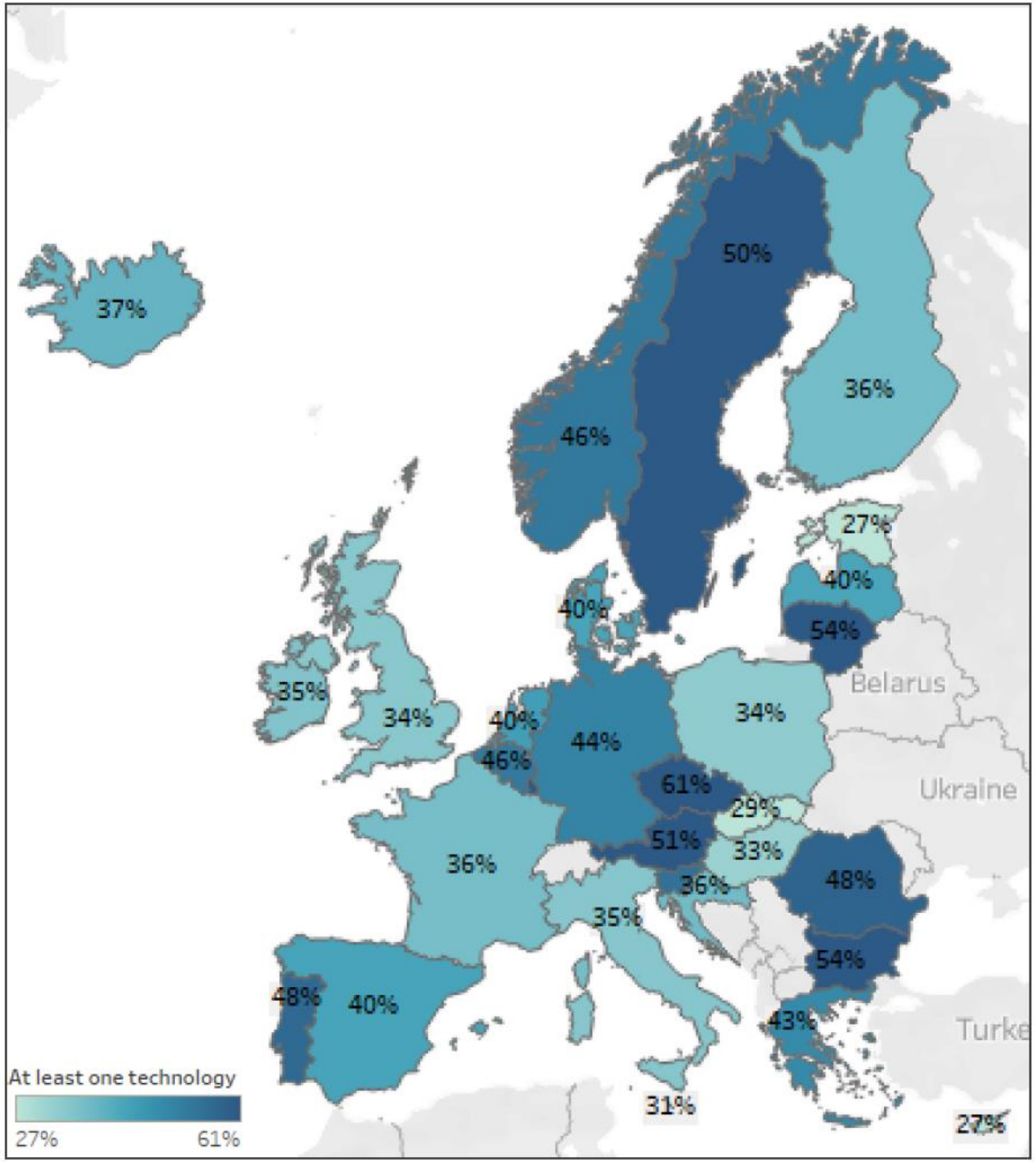


Source: Nathan Benaich, Ian Hogarth: State of AI report 2020.



Most computationally demanding architectures
≠
Most accurate results

Source: Alfredo Canziani, Adam Paszke, Eugenio Culurciello:
An Analysis of Deep Neural Network Models for Practical Applications, arXiv, 2017



Level of adoption of AI by country

(at least two technologies)

Source: European enterprise survey on the use of technologies based on AI, 2020, IPSOS

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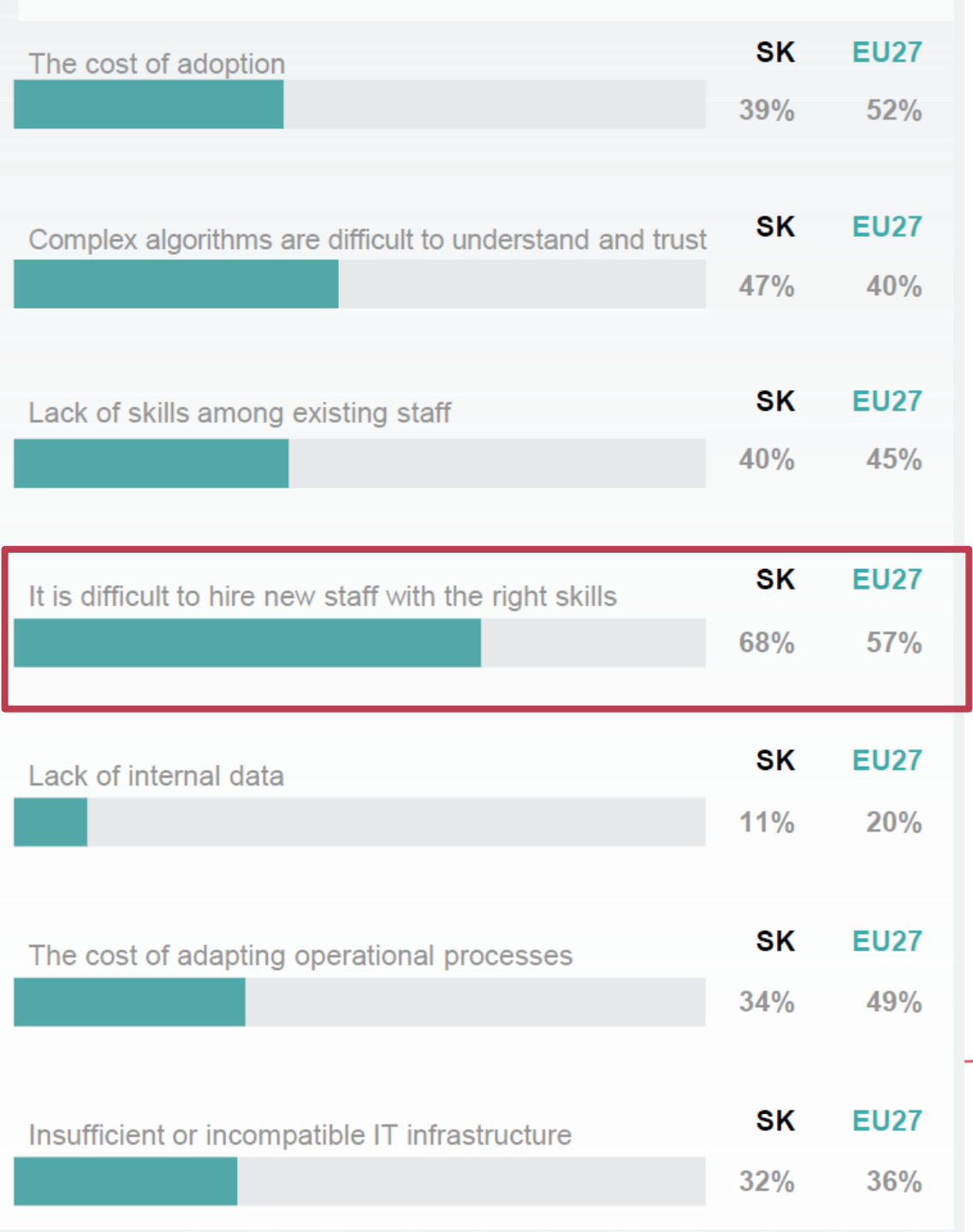

The biggest barrier to AI adoption in Slovakia is difficulty to hire new staff with right skills

Source: European enterprise survey on the use of technologies based on artificial intelligence, Ipsos, 2020.

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KInIT vision is to ensure talent circulation aimed at responsible world quality research and innovations in Central Europe

- Web & User Data Processing
- Data Analytics for Green Energy
- Natural Language Processing
- Information Security
- Ethics & Human Values in Technology

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