

**Digital transformation is making its way into businesses
– developing key performance
indicators to boost sector productivity**

Digitalna preobrazba si utira pot v podjetja
–Razvoj ključnih kazalnikov uspešnosti za povečanje
produktivnosti sektorja

DIG-IN-KPI

GZS ZGIGM: Msci. Valentina Kuzma, www.gzs.si/zgigm

18 APR 2024, GORNJA RADGONA, SLOVENIA



Co-funded by
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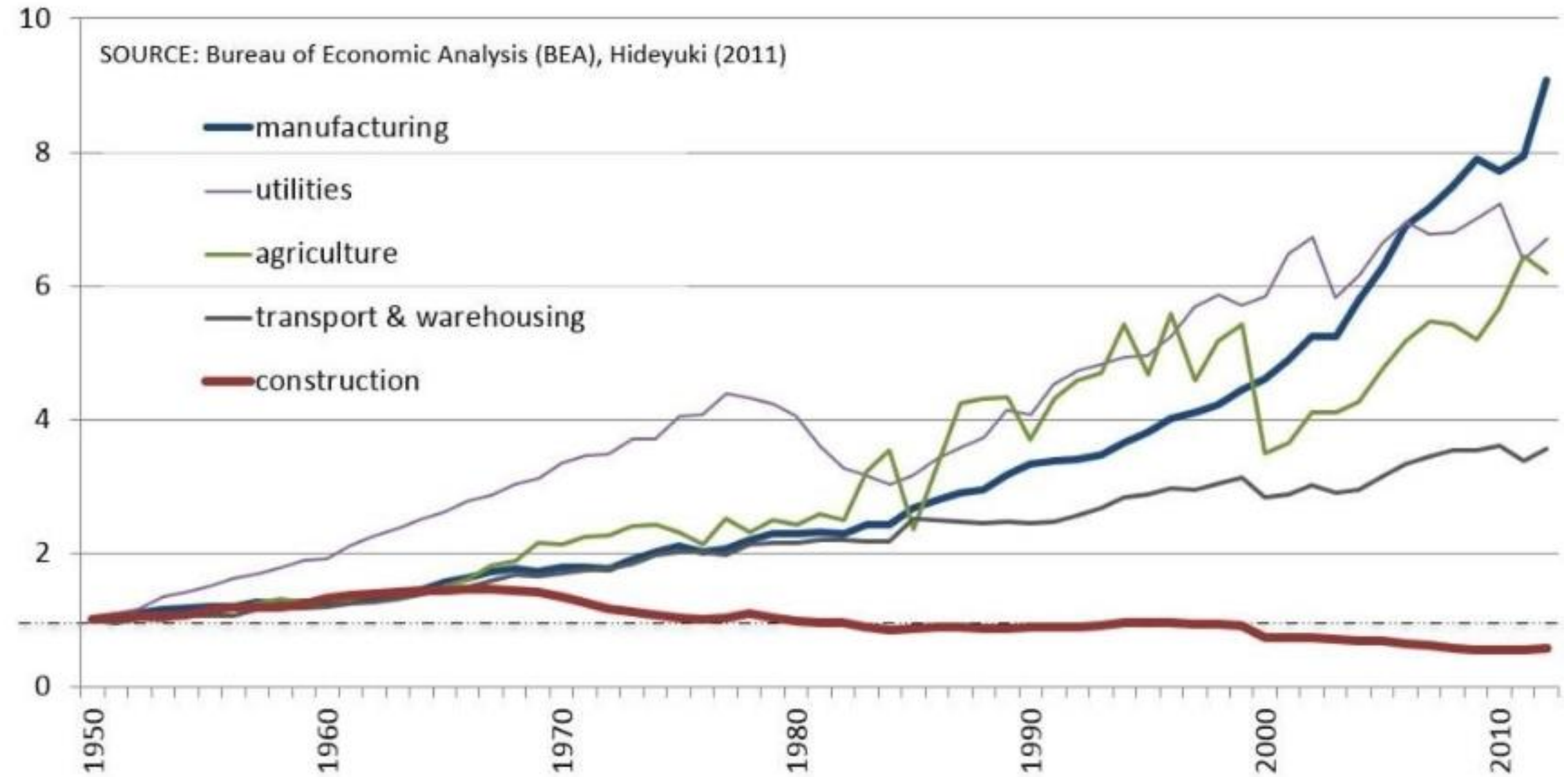
DIG-IN-KPI



Context Kontekst

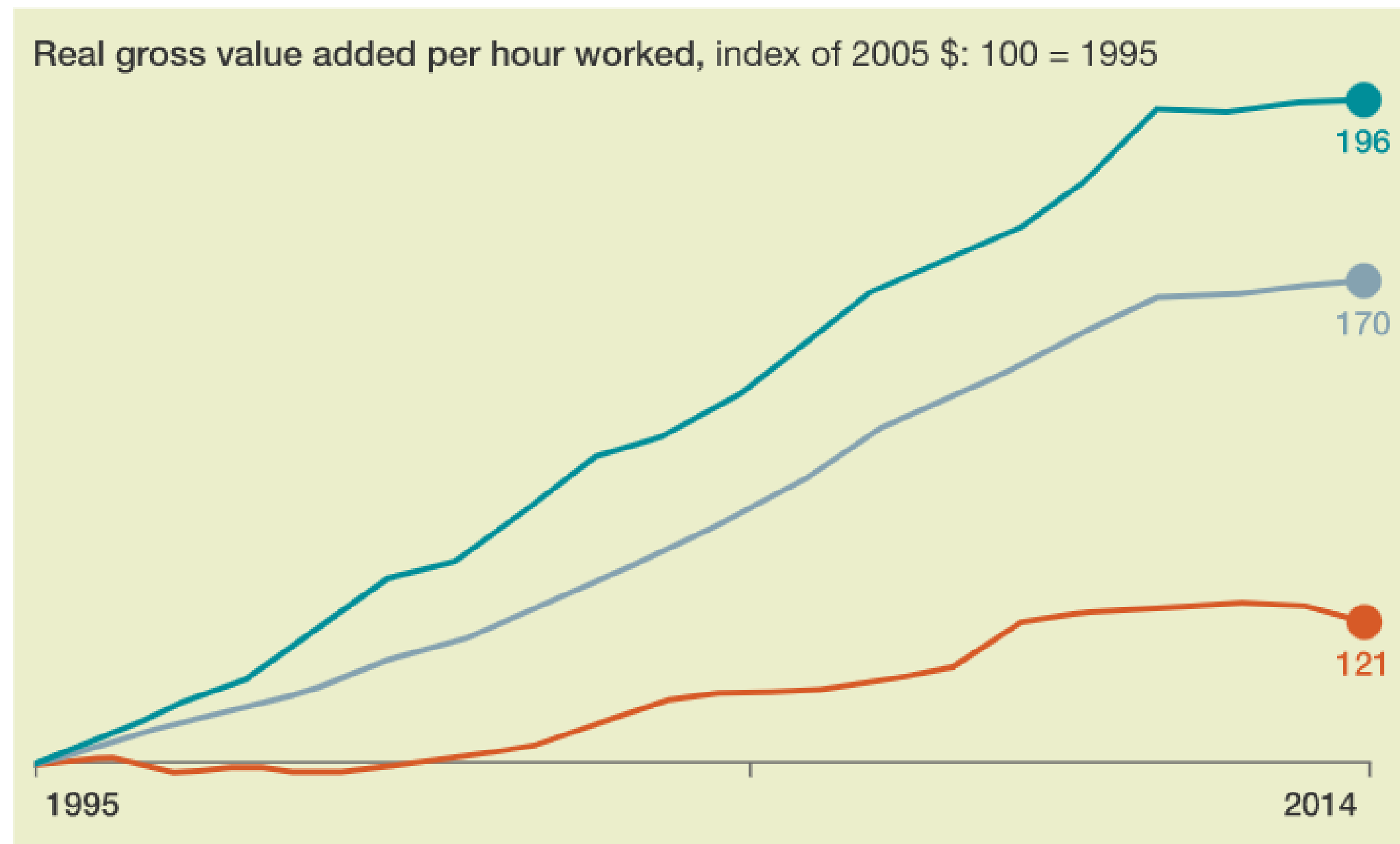
Construction productivity 1950-2012

Real productivity (GDP value-add per employee) by industry in the US
Indexed; 1950 = 1.0



Globally, labor productivity growth **in construction** lags far behind that of manufacturing or the total economy

Na svetovni ravni rast produktivnosti dela **v gradbeništvu** močno zaostaja za rastjo produktivnosti v predelovalnih dejavnostih ali celotnem gospodarstvu.



Source: GGCD-10; national statistical agencies of Turkey, Malaysia, and Singapore; OECD, Rosstat; US Bureau of Economic Affairs; US Bureau of Labor Statistics; WIOD; World Bank; McKinsey Global Institute analysis

McKinsey&Company

<https://www.mckinsey.com/capabilities/operations/our-insights/improving-construction-productivity>

KPI

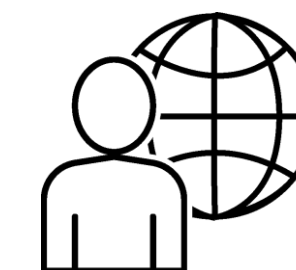
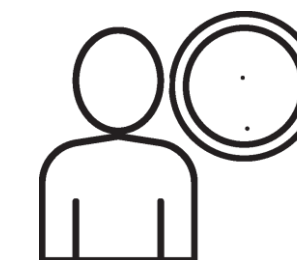
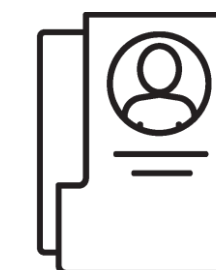
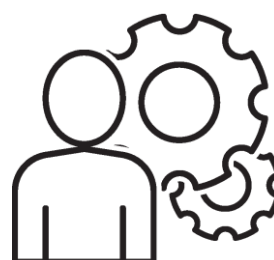
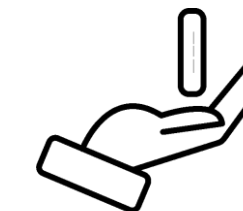
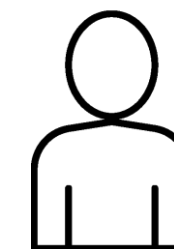
...stands for key performance indicator, a quantifiable measure of performance over time for a specific objective. KPIs provide targets for teams to shoot for, milestones to gauge progress, and insights that help people across the organization make better decisions.

...je kratica za ključni kazalnik uspešnosti, merljivo merilo uspešnosti v določenem časovnem obdobju za določen cilj. Ključni kazalniki uspešnosti so cilji, ki jih lahko dosežejo ekipe, mejniki za merjenje napredka in vpogledi, ki pomagajo ljudem v organizaciji pri sprejemanju boljših odločitev.

Productivity

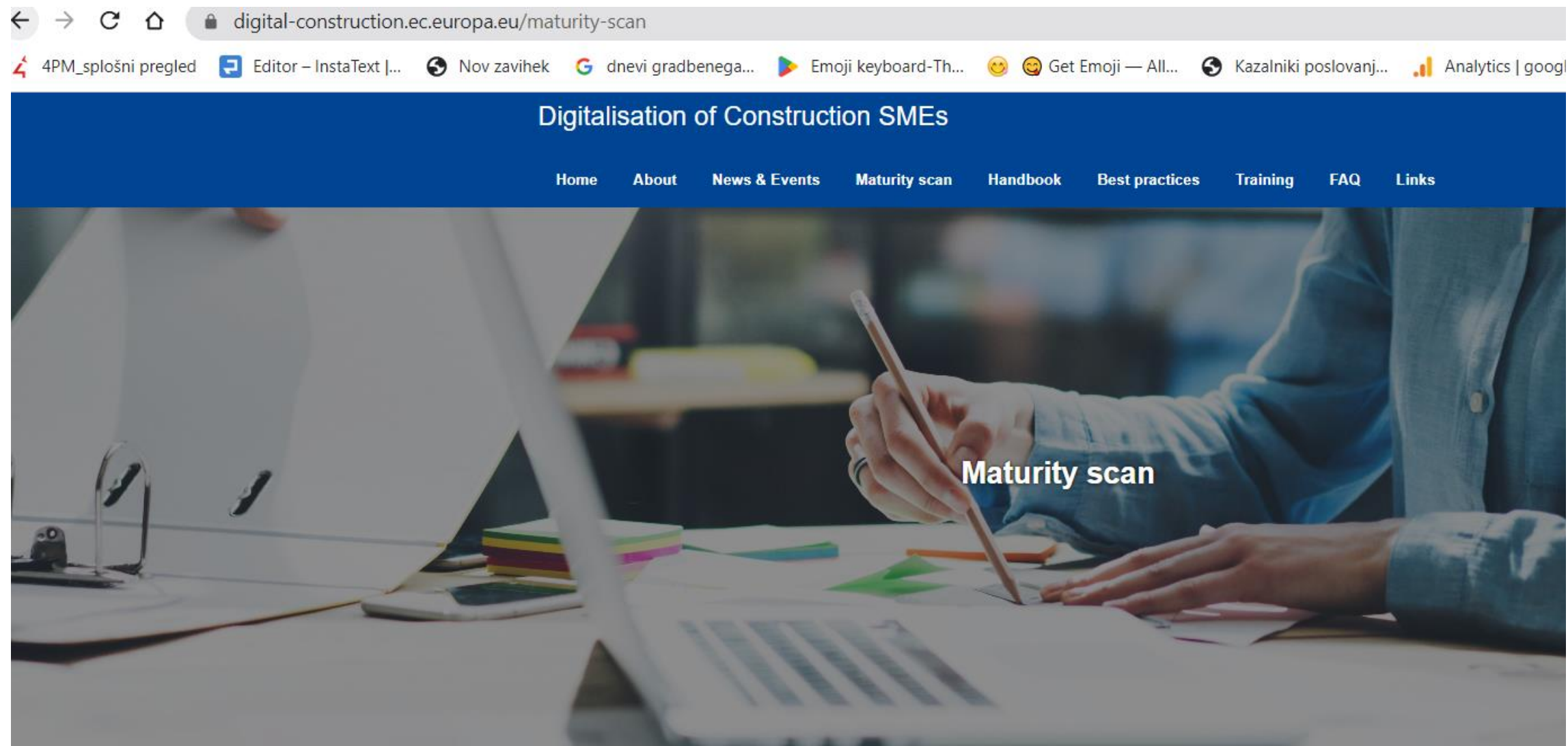
...in economics, measures output per unit of input, such as labor, capital, or any other resource. It is often calculated for the economy as a ratio of gross domestic product (GDP) to hours worked.

...v ekonomiji meri proizvodnjo na enoto vložka, kot je delo, kapital ali kateri koli drug vir. Za gospodarstvo se pogosto izračuna kot razmerje med bruto domačim proizvodom (BDP) in številom opravljenih delovnih ur.



Similar EU initiatives - EC

digital-construction.ec.europa.eu
[REPORT>>](#)



Europe's construction sector consists of numerous SMEs, which can be divided into the following groups when it comes to their digitalization: late adopters, early adopters and front runners.

In order to provide you with tailored services (handbook and training courses) it is important to know your digital maturity level. We developed two digital maturity scans: a scan asking some basic questions (the quick scan) and a scan asking more advanced questions (the in-depth scan).

These scans were built based on lessons learned from existing national and European maturity scans in construction and in other domains. The most important difference with other existing scans are the coverage of both specific technologies (e.g. BIM as well as other technologies) and non-technological topics. Another difference is that this scan is strongly related to our handbook and is developed with an EU wide focus.

This handbook aims to enable the digitalisation of European construction SMEs. The handbook covers 4 dimensions:

1. **The digital innovation strategy:** this concerns the digital transformation roadmap of an SME.
2. **The digital processes:** this dimension focus on the digitalisation of the internal company processes such as financing, consumer contact etc.
3. **The digital ecosystem and culture:** this concerns the employees within the organization and their role in the digital transformation.
4. **The digital technology enablers:** these are the technologies earmarked as relevant for construction SMEs based on a former study for the European Commission. These technologies are 1. Building information modelling (BIM), 2. 3D printing, 3. automated robots (incl. exoskeletons), 4. drones, 5. 3D scanning, 6. sensors, and 7. Internet of Things (IoT) and mobile devices.

Disclaimer: Please note that this handbook contains external links to multiple information sources, which have been included solely for informational purposes to provide examples of technologies and products as well as sources for further reading. Therefore the information contained herein regarding specific use case, commercial product, process, or service, or the use of any trade, firm or corporation name does not constitute or imply its endorsement, recommendation, or favouring by the European Commission nor by the authors of this handbook. In addition, the European Commission and authors are not liable for the nature, content, reliability and availability of external links.

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Digital innovation strategy

Complete

Digital processes

Complete

Digital ecosystem and culture

Complete

BIM

Complete

Other technologies

Complete

PAGE CONTENT

[A digital transformation strategy](#)

[Benefits for SMEs](#)

[Implementation](#)

[Investment costs](#)

[Topics for further reading](#)

[Towards digital processes](#)

[Benefits for SMEs](#)

[Implementation](#)

[Investment costs](#)

[Topics for further reading](#)

A digital transformation strategy [Discussion >](#)

A digital transformation strategy can be seen as a roadmap for introducing digital technologies to improve your business aspects such as reducing operational costs, improving quality, increasing efficiency etc.1 In the rest of this chapter, it is called the roadmap. The roadmap is often composed of short-term, medium-term and long-term goals to go from the current often 'manual' state towards the desired 'digitalised' state. Such a roadmap can be seen as the steps that need to be taken toward the desired state. These steps are explained in more detail in the section about implementation and execution stages.

Benefits for SMEs

Development stages



1 Identification for scope for change and costs



2 Creation of a vision



3 Engaging the workforce

Execution stages



4 Implementation of changes



5 Monitoring and adjustment

Project Identification

- Programme and type: Erasmus +, Small-scale partnership project
- Horizontal priority: Addressing digital transformation through development of digital readiness, resilience and capacity
- Other priorities: VET: Adapting vocational education and training to labour market needs
VET: Contributing to innovation in vocational education and training
- Project Acronym: DIG-IN-KPI
- Duration: 19 months (01/11/2022 - 31/05/2024)
- Project Number: 2022-1-SI01-KA210-VET-000083218
- Approved by Slovenian national authority – CMEPIUS
- LINK ON EC [E+ RESULTS PORTAL](#)

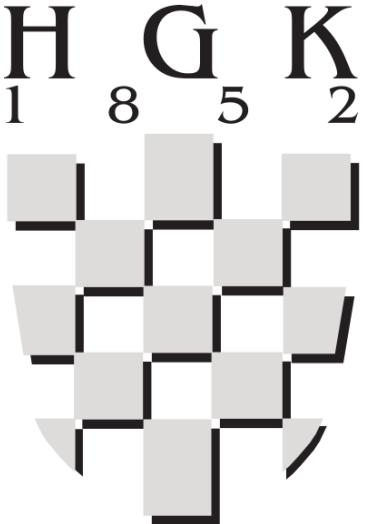


Project Consortium

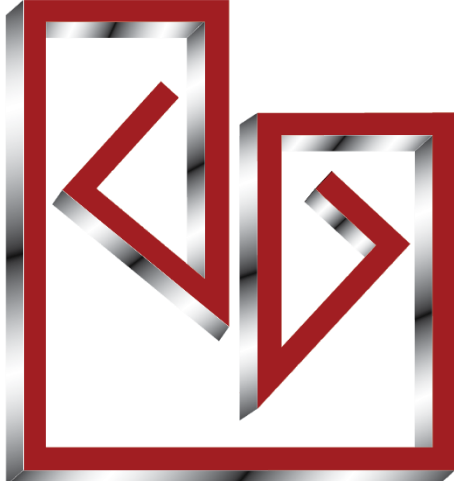


Chamber of Commerce and Industry of Slovenia

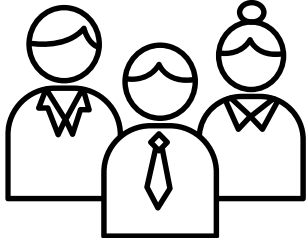
Chamber of Construction and Building Materials Industry of Slovenia



HRVATSKA
GOSPODARSKA
KOMORA



СТОПАНСКА КОМОРА
НА МАКЕДОНИЈА
ECONOMIC CHAMBER
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Faze projekta

- Faza 1: Razvoj in usklajevanje KPI tabel za gradbene izvajalce in izobraževalne ustanove
- Faza 2: Razvoj in implementacija večjezičnega orodja DIG-IN-KPI za zbiranje podatkov
- Faza 3: Analiza zbranih podatkov, priprava in diseminacija končnih rezultatov

Project phases

- Phase 1: Development and harmonisation of KPI tables for building contractors and educational institutions
- Phase 2: Development and implementation of the multilingual DIG-IN-KPI data collection tool
- Phase 3: Analysis of the collected data, preparation and dissemination of the final results

REPORTS of 1st phase – POROČILA iz 1. faze



2.0 Project management

2.1 Project information system - CERP **KPI weight**
2,35%

Project management application - Construction enterprise resource planning. It enables the creation of Bill of quantities, monthly project billing, connection to special applications for scheduling and project performance analytics.

	LEVEL 0	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Choose appropriate level that corresponds to your company.	No purpose application is used for project monitoring processes	A purpose application for making BoQs and project accounting is used, which is installed on the local computer. Data is exchanged by sending files between computers.	One purpose application is used for projects on which several users can work simultaneously. The application stores data in the cloud (terminal access with data on the server) and has an administrator who regulates user access to application modules with different levels of data access (calculators, technologists, commercialists, construction site managers, project managers, directors,...). The application does not have a possibility to analyze project resources at the level of the total of all projects (project portfolio).		One purpose application is used for projects on which several users can work simultaneously. The application stores data in the cloud (terminal access with data on the server) and has an administrator who regulates user access to application modules with different levels of data access (calculators, technologists, commercialists, construction site managers, project managers, directors,...). The same application also enables time-dependent analysis of project resources (materials, work, machines, vehicles, money) - strategic planning at the company level, as a project of projects.
	0 %	30 %	80 %		100 %

Back Forward

Which application do you use as a project information system?
Xpert

You defined 20 indicators 33 indicators remained to be defined

Main results - Glavni rezultat dig-in-kpi.aat4.eu

Web-based multilingual (EN, HR, SI, MK) specific application for the digital maturity assessment of a construction company or an educational institution - the new tool DIG-IN-KPI-AAT.

The DIG-IN-KPI AAT digital self-assessment tool is designed to automate the process of creating digital maturity assessments for construction companies, and of course it is also a great compass for educational institutions and a way of working facilitator. The advanced decision model will automatically convert the answers that users/company representatives can easily enter via an online questionnaire into a report with an assessment of the digital maturity level of the company. The report will contain a visualisation and in-depth interpretation of the results, as well as personalised recommendations that can provide companies with key information towards identifying the objective state of digitalisation and identifying areas for progress and optimisation of business/production processes.

Spletna večjezična (EN, HR, SI, MK) specialna aplikacija za izdelavo oceno digitalne zrelosti gradbenega podjetja oziroma izobraževalne ustanove – novo orodje DIG-IN-KPI-AAT.

Digitalno orodje za samo-oceno DIG-IN-KPI AAT je namenjeno avtomatizaciji procesa izdelave ocen stopnje digitalne zrelosti gradbenih podjetij seveda pa je tudi odličen kompas za izobraževalne ustanove in spodbujevalec načina dela. Napredni odločitveni model bo odgovore, ki jih uporabniki/predstavniki podjetij lahko enostavno vnesete skozi spletni vprašalnik, avtomatsko pretvoril v poročilo z oceno stopnje digitalne zrelosti podjetja. Poročilo bo vsebovalo vizualizacijo in temeljito razlago rezultatov ter personalizirana priporočila, s pomočjo katerih lahko podjetja pridobite ključne informacije v smeri prepoznavanja objektivnega stanja digitaliziranosti in prepoznavanja področij za napredovanje ter optimizacijo poslovnih/proizvodnih procesov.

dig-in-kpi.aat4.eu



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DIG-IN-KPI 2022-1-SI01-KA210-VET-000083218, Founded by the European Union.

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Next steps / Naslednji koraki

Collection and self-assessment: we are currently continuing to collect responses through our digital self-assessment tool. We are inviting all companies and educational institutions to complete the questionnaire, which will not only allow them to self-assess, but also to use the data to improve our understanding of the current digital maturity of the sector.

Foresight and need for further projects: Our current foresight is based on the data collected, which shows the potential benefits of digitisation. However, we need a larger project and further analysis to confirm these predictions and to analyse more precisely the return on investment (ROI) of the use of digital tools.

Search for good practices: We are actively looking for good practices of digital transformation within Europe that could be used as a model. In the future, we are considering a broader international project, including practices outside the European Union, to broaden our knowledge and experience base and further our understanding of global trends.

Enriched education needs: The discussion on the role of educational institutions highlighted the need for more tailored (specific) education programmes to support the specific needs of the construction sector in the digital transformation process.

Building professional networks: We want to strengthen cooperation with experts and institutions across Europe and through FIEC to share knowledge and experiences that will contribute to a better understanding and implementation of digital solutions in the construction sector.

Dissemination of knowledge and results: We will intensify focused activities to disseminate the knowledge and results of the project among the target groups and the wider public - participants, in order to raise awareness of the importance and benefits of digital transformation.

1.Zbiranje in samoocenjevanje: Trenutno nadaljujemo z zbiranjem odgovorov preko našega digitalnega orodja za samooceno. Vabimo vsa podjetja in izobraževalne ustanove, da izpolnijo vprašalnik, kar bo omogočilo ne samo njihovo samoocenitev, temveč bo pridobljene podatke možno uporabiti tudi za izboljšanje našega razumevanja trenutne digitalne zrelosti v sektorju.

2.Predvidevanje in potreba po nadaljnjih projektih: Naše trenutno predvidevanje temelji na zbranih podatkih, ki kažejo na potencialne koristi digitalizacije. Vendar za potrditev teh predvidevanj in za natančnejšo analizo donosnosti naložbe (ROI) glede uporabe digitalnih orodij potrebujemo obsežnejši projekt in dodatne analize.

3.Iskanje dobrih praks: Aktivno iščemo dobre prakse digitalne transformacije znotraj Evrope, ki bi jih lahko uporabili kot zgled. V prihodnosti razmišljamo o širšem mednarodnem projektu, ki bi vključeval tudi prakse izven Evropske unije, s čimer bi razširili našo bazo znanja in izkušenj ter še bolj poglobili razumevanje globalnih trendov.

4.Potrebe po obogatenem izobraževanju: Diskusija o vlogi izobraževalnih ustanov je izpostavila potrebo po bolj prilagojenih (določenih) programih izobraževanja, ki bodo podpirali specifične potrebe gradbenega sektorja v procesu digitalne transformacije.

5.Vzpostavitev strokovnih mrež: Okrepiti želimo sodelovanje s strokovnjaki in institucijami po vsej Evropi in preko združenja FIEC, da bi izmenjali znanje in izkušnje, kar bo prispevalo k boljšemu razumevanju in implementaciji digitalnih rešitev v gradbeništvu.

6.Diseminacija znanja in rezultatov: Intenzivirali bomo ciljne aktivnosti na področju širjenja znanja in rezultatov projekta med ciljnim skupinami in širšo javnostjo -deležniki, z namenom povečanja zavedanja o pomenu in koristih digitalne transformacije.

Contact Us

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Questions?