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## **SMART CITIES EVENTS**

# Open Data Benchmarking for Higher Education: Management and Technology Perspectives

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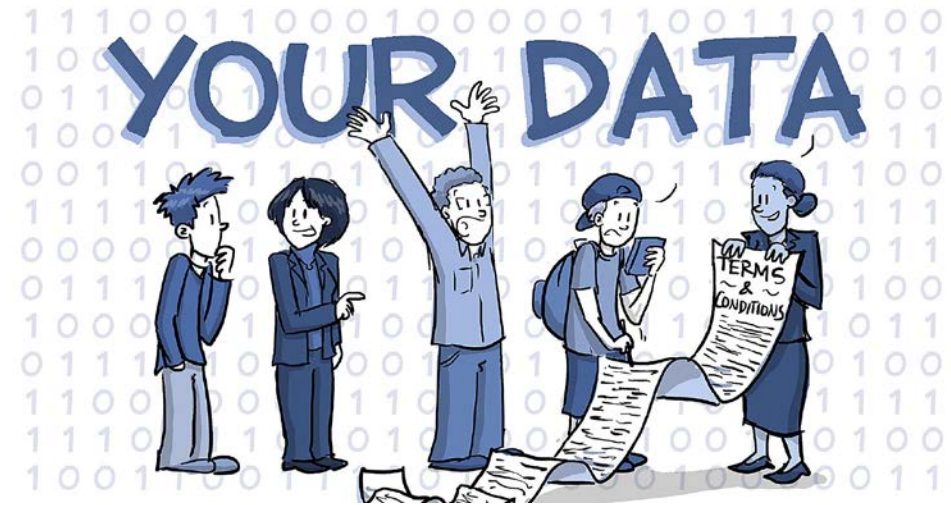
Assistant professor at the Technical University – Sofia

8-9 December 2016

# 20 Minutes

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- Benchmarking
- Open data
- How to?
- Open Data Benchmarking for Higher Education
- Management and Technology Perspectives





# Education excellence

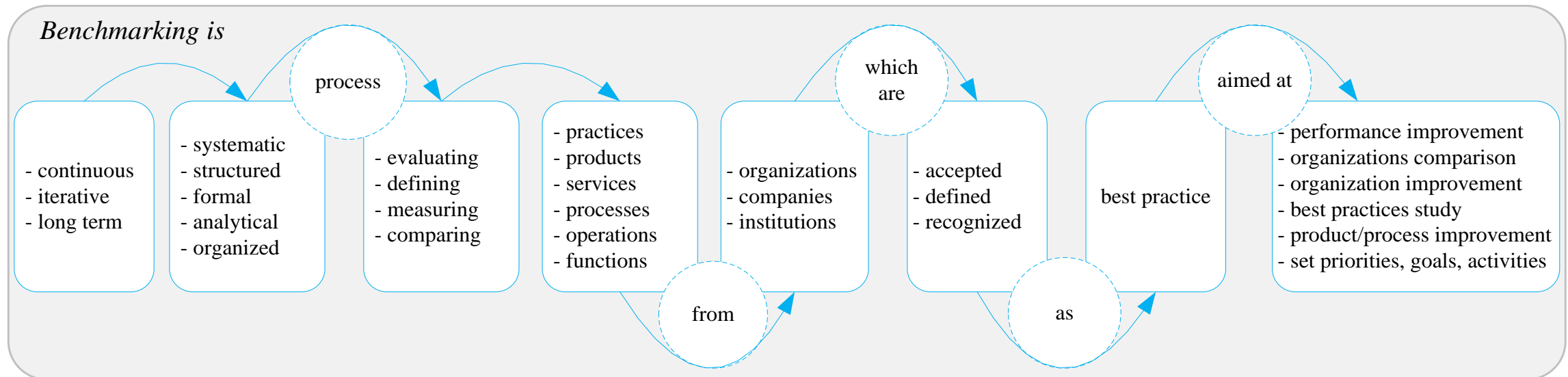
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Measuring HE performance against a recognized education excellence can deliver a *range of benefits for HE organizations*

Currently, the **university benchmarking practices** show the broad spectrum of measurements while the core question regarding benchmarking is gathering, the availability and update frequency of the data

# University benchmarking

According to APQC, .....



# HE benchmarking has been used for a diversity of purposes

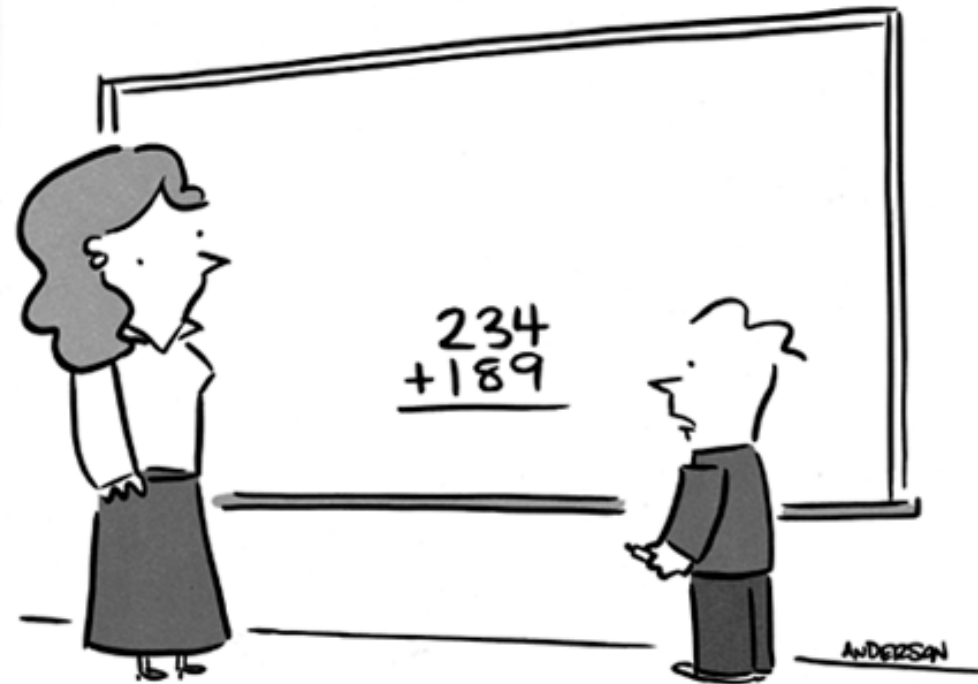
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But, what about the question?

Data for HE

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"Does this count as big data?"

# HE data can be related to (Guy, 2014)

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- Student data: attendance, grades, **skills**, exams, homework
- Course data: employability related to courses, curriculum, syllabus, **number of textbooks**, skills, digital literacy
- Institution data: location data, results, infrastructure, location, student enrolment, textbook budget, **teacher details**
- User-generated data: **learning analytics**, assessments, performance data, job placements, laptop data, time on tasks, use of different programmes/apps, web site data
- Policy/Government data: equity, budgets, **spending**, UNESCO literacy data, deprivation and marginalisation in education, participation data

# Relevant DATA sources might include:

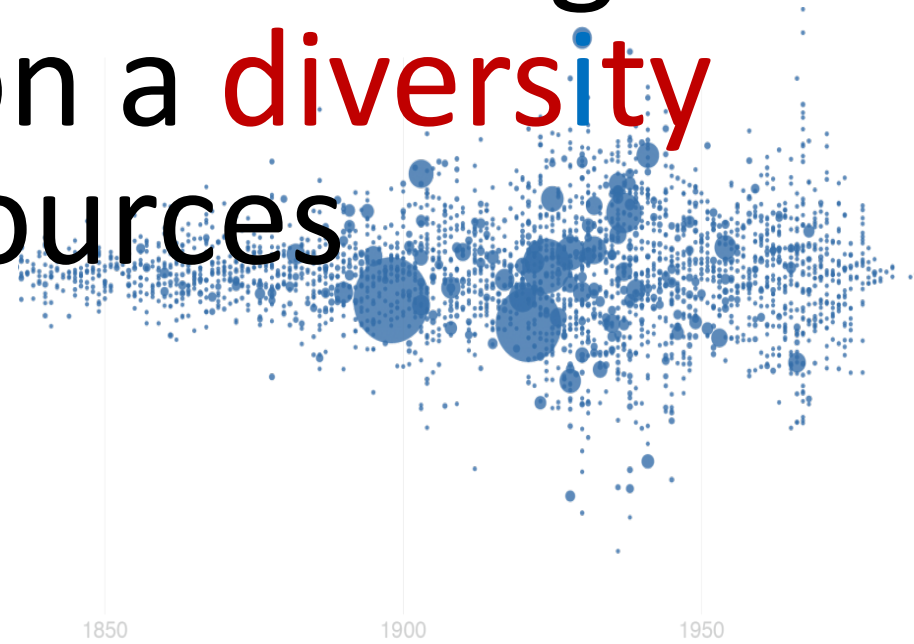
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- Publications & literature: ACM, DBLP (L3S), Open Library
- Domain-specific knowledge & resources: Bioportal for Life Sciences
- Historic artefacts in Europeana, Geonames
- Cross-domain knowledge: DBpedia, Freebase, etc.
- (Social) media resource metadata: BBC, Flickr, **FB**, etc.





Data for university benchmarking  
can be gathered based on a **diversity**  
of methods and sources



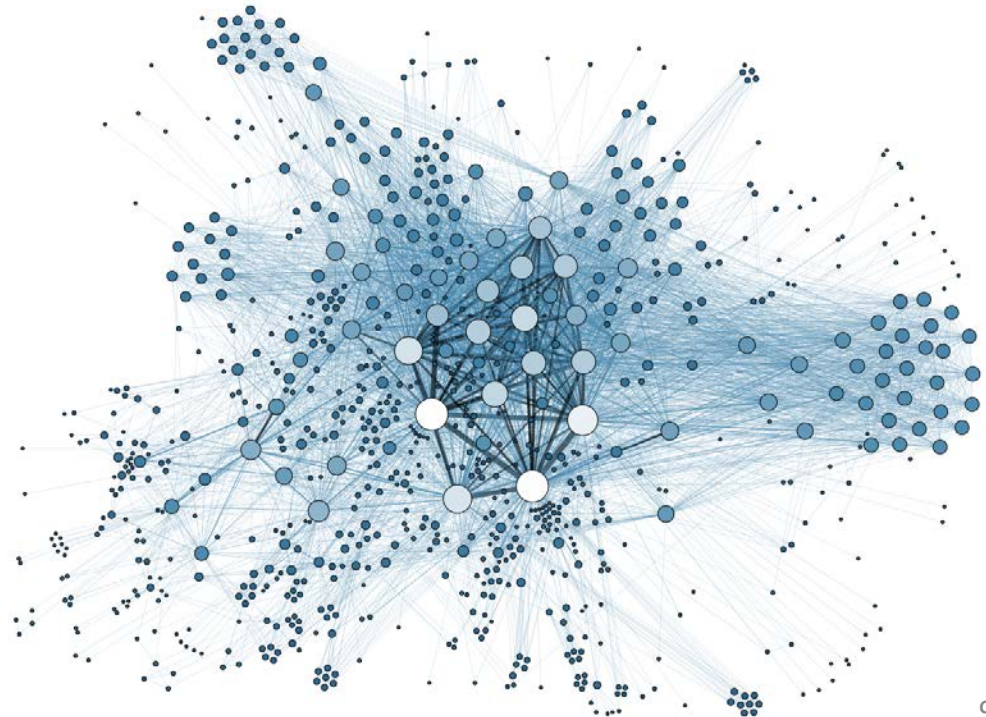


# Problems (McKinnon, et. al)

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- Data may not be comparable
- Instruments that will produce comparable data are lacking
- Quality of statistical data

.....?



# Data and University benchmarking

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- Internal - Library data bases, Internal reviews, International publications
- External - Professional associations, Industry publications, Special industry reports, Functional trade publications, General management, Seminars, Industry data firms, Software hardware firms, Advertisement, Newsletter
- Original Research - Customer feedback, Telephone survey, Inquiry service, Networks, Consulting firms

# KPI Category

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Category	Indicator Group
Financial Indicators	Endowment & Expenses Data; Advancement; Financial Aid Figures; Fees/Tuition Data
Admissions	Admissions Scores; General Admissions Data; Graduate Admissions
Enrolment	Enrolment Figures; Enrolment Figures (Special Population)
Faculty	Faculty – General; Faculty Composition - Special Population
Student	Outcomes Graduation Rates; Retention Rate; Measures of Success; Enrolment Awards; Graduation Rates - Special Population
Student Engagement	Student Body – Engagement
Academic Information	Student/Faculty contact; Academic Information
Physical	Plant Physical Plant
Satisfaction	Student Satisfaction; Employer/Staff, Other Satisfaction; Faculty Satisfaction
Research	Research
External Ratings	Peer Assessment Data

# KPI **MEGA** Library – 8000 database indicators

The screenshot displays the KPI MEGA Library website. The top navigation bar includes links for Organisation KPI, Government KPI, International KPI, Buy Book, See Book, Files, APP, Contacts, and Home. A sidebar on the left highlights '8,000 KPIs' and 'On-Line Database' with a 'Free' badge. The main content area features a large banner for the 'MEGA LIBRARY OF KEY PERFORMANCE INDICATORS' with the tagline 'Now Under Your Finger Tips' and 'THE MOST COMPREHENSIVE KPI LIST'. To the right of the banner, there are two smaller images: one showing a book cover for 'KPI MEGA LIBRARY' and another showing a mobile app interface. Below the banner, a table lists various KPI categories and their corresponding indicators.

Category	Sub-category	Indicator
Government KPI	Agriculture & Food	
	Civil Rights	
	Culture & Heritage	
	Customs	
	Economic Development	
	Education	
	Energy	
	Environment	
	Governance	
	Government Workforce	Appraisal & Performance
Healthcare	Compensation & Rewards	# of occupational injury and illness rates
	Organization Excellence	# of performance meetings
	Policies & Standards	# of services provided
	Skills & Qualifications	% of completed appraisals out of the total # of the staff
	Staffing & Recruiting	% of individual assessments done
	Training & Development	% of job competencies evaluated
	Workforce Distribution	% of tasks completed successfully and on time
		% satisfaction of employee with the performance appraisal
		Average % of individual performance assessment results
	Human Services	
Information Technology		
Internal Process		
Justice		
Labor		
Military & Defense		
Municipalities		
Pension Management		
Population		

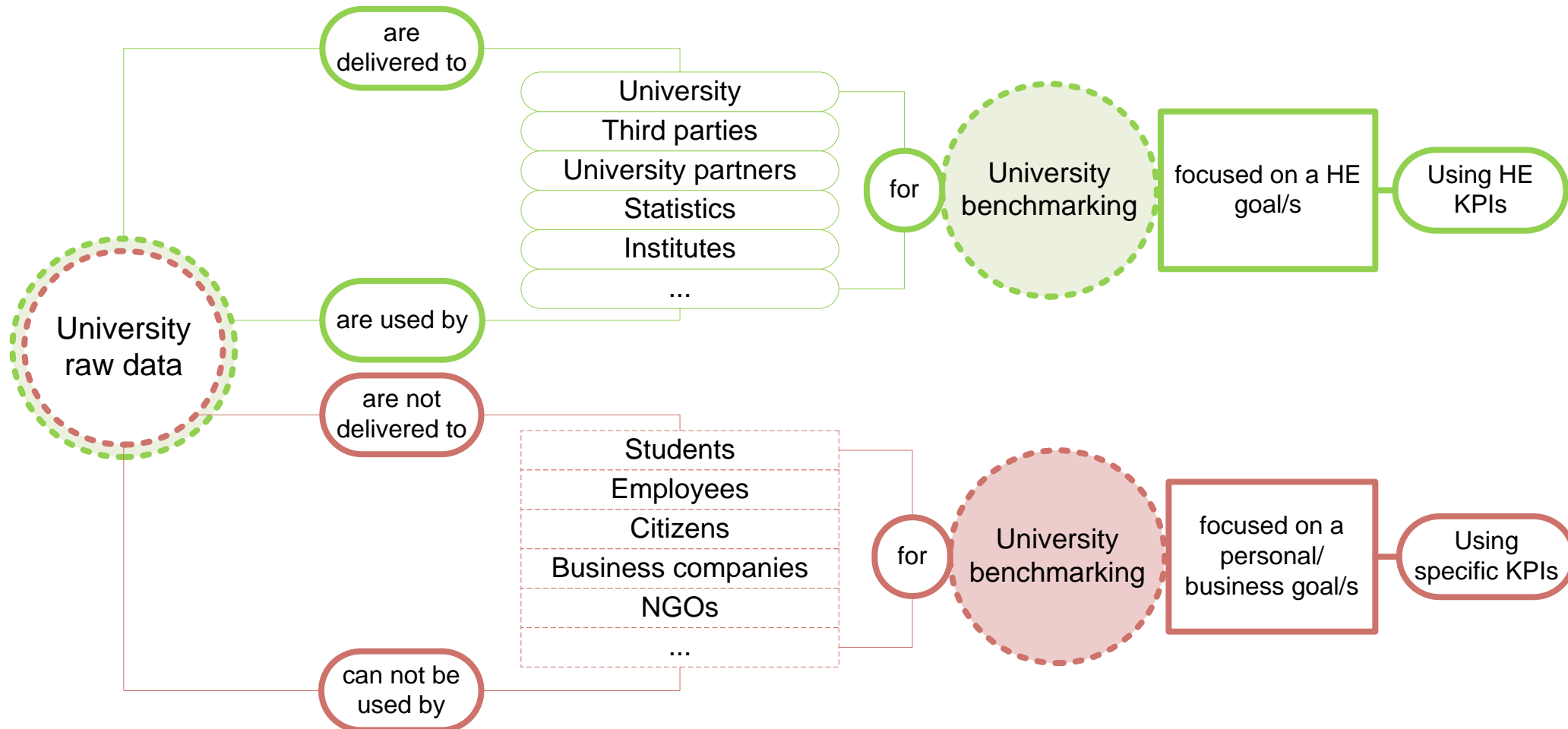
**Online Database:**  
This FREE online 8000+ KPI database is available at your finger tips. It is easy to use in seconds by using the search function and password. NO long search time. The database is divided into three main categories:  
1. Organization: 32 Industries  
2. Government: 33 Sectors  
3. International: 24 Topics  
The purpose of this free database is to help user a quick and effective way to find KPI. Today, 150,000+ users are getting their KPIs from this database.

# Data purpose

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- The universities conduct benchmarking using data, which is not accessible to other groups of interests
- The university data is not delivered and used by user groups such as citizens, employees, business, NGOs because they are not accessible
- Many universities have started open data initiatives and open data mainly for education purpose, such as MOOCs and research databases

# University data user groups - Model

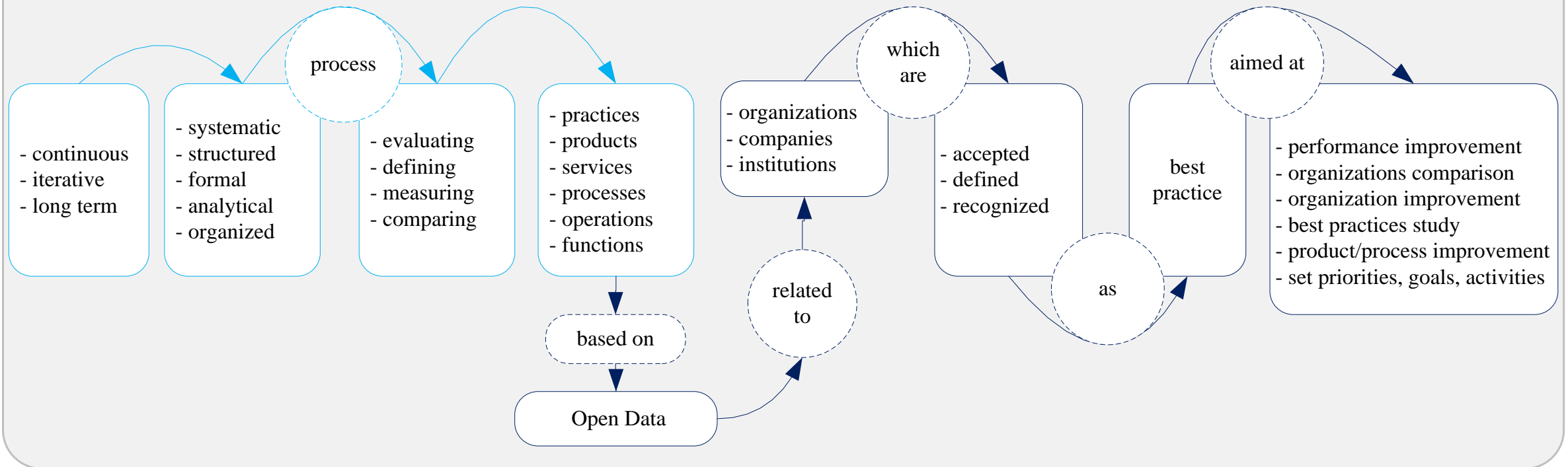


Open data benchmarking is used by educational institutions, research centers, government bodies, IT experts and developers, citizens and business to assess HE performance in different perspectives



# Open data benchmarking definition

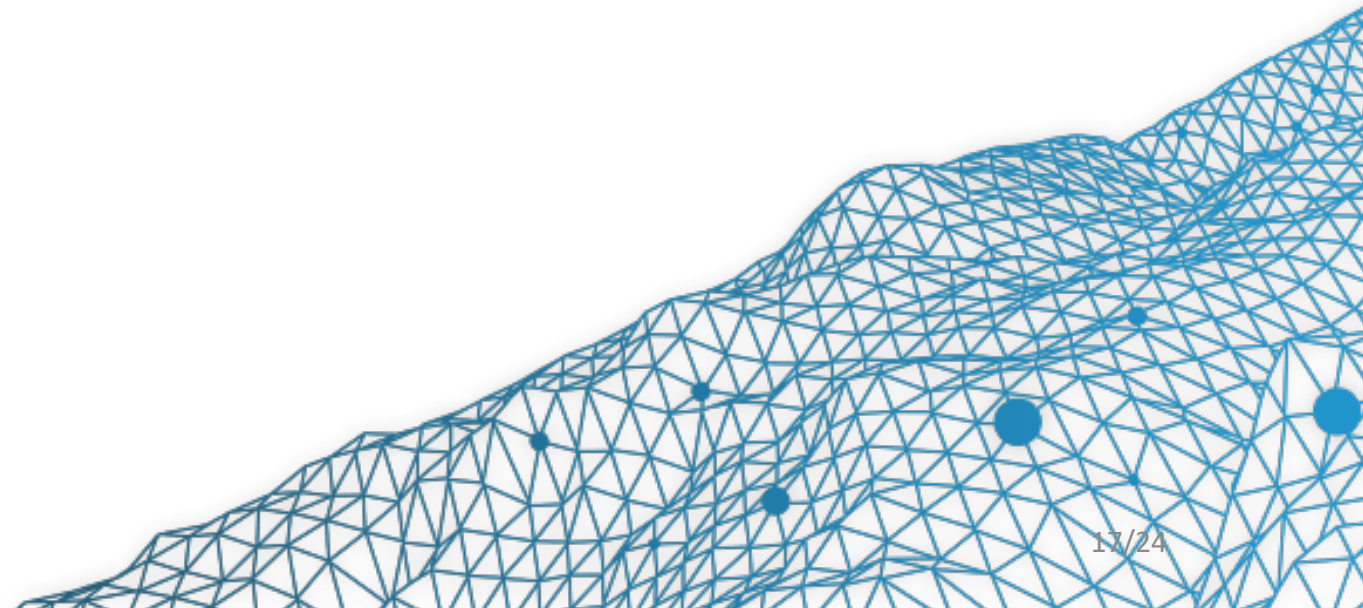
*Open Data Benchmarking is*



# University Open data and Open Data Portals

Many public organizations **produce and collect** a broad range of different types of data in order to perform their tasks

## Open data in HE



# Open Data Portals

A data portal provides access to open datasets, hosting meta-data that describes them, and allowing visitors to search for relevant datasets.

The screenshot displays the DATA.GOV.UK website interface. At the top, the header includes the logo, navigation links (Home, Data, Apps, Interact), and a search bar. Below the header, a green navigation bar lists various categories like Datasets, Map Search, and Data Requests. The main content area shows search results for 'Road Safety Data' from the Department for Transport, with 40,283 results. A sidebar on the left provides filters for Published Status, Collection, and API. On the right, there are filters for Transport and Mapping, along with download options for different file formats.

**DATA.GOV.UK** Beta  
Opening up Government

Home Data Apps Interact Search for data... Register Log in

Datasets Map Search Data Requests Publishers Data API Organograms Site Analytics Reports Contracts

Home / Datasets

Search for data... Search Tips Conduct Map Based Search

**PUBLISHED STATUS**  
Published datasets (36619)  
Unpublished datasets (3664)

**COLLECTION**  
National Information Infrastructure (310)  
Organogram (247)

**API**

**40,283 results** Sort by: Popularity

**Road Safety Data**  
Department for Transport  
These files provide detailed road safety data about the circumstances of personal injury road accidents in GB from 1979, the types (including Make and Model) of vehicles involved and the...

**UK Postcodes**  
Department for Communities and Local Government  
All UK postcodes, with locations and links to local authority districts and LSOAs. This dataset contains information from the Ordnance Survey, consisting of a list of all UK postcodes,...

**Transport**  
CSV csv / zip ZIP  
zip / csv zip / xlsx  
zip/csv

**Mapping**  
SPARQL

# CKAN data management platform

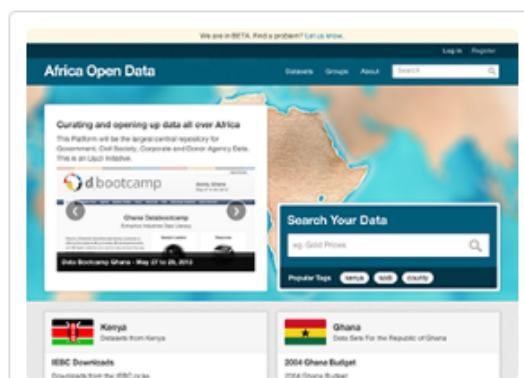


## CKAN instances around the world

The CKAN data management platform is in use by numerous governments, organisations and communities around the world. Being [open source](#), we don't know of all the instances, but here is a showcase of the ones we are aware of. We are proud and excited to see all the different uses being made of CKAN – if you would like to see your CKAN instance here [add it to the CKAN Census!](#)

To view instances by region or type, just choose the correct facet below.

Show: **All** ▾ **Region** ▾ **Type** ▾ 146 instances



### Africa Open Data

The Open Africa Platform initiative aims



### Alagoas em Dados e Informações



### Alberta Open Government Portal



# University of Southampton open data portal

- The open data service brought together datasets on many aspects of university life such as locations, course details, people and travel information

The screenshot displays the 'Open Data Service' page of the University of Southampton. On the left is a vertical navigation menu with links: Home, 5★ Data, Frequently Asked Questions, Apps & Tools (sub-links: Open Data Map, What Week Is It?, iSolutions Workstations, Room Finder), Data Catalogue, Events Calendar, Catering, Bus Information, University Map, Places, Phonebook, Academic Programmes, Organisation, Research Facilities, and Jargon. The main content area on the right is titled 'Open Data Service' and features a 'Data Catalogue' section. This section explains that the page lists all datasets, which are available in Turtle, RDF/XML, HTML, and KML formats, and provides a SPARQL endpoint for queries. Below this, there are three data entries: 'Academic Courses' with a URL and description for 2014 onwards; 'Academic Sessions' with a URL and description of semester dates; and 'Apps using our data' with a URL and description of tools using the datasets. A fourth entry, 'Building Entrances and Exits', is partially visible at the bottom with its URL.

Category	URL	Description
Academic Courses	<a href="http://id.southampton.ac.uk/dataset/courses">http://id.southampton.ac.uk/dataset/courses</a>	Academic courses and programs for 2014 onwards
Academic Sessions	<a href="http://id.southampton.ac.uk/dataset/university-timetable">http://id.southampton.ac.uk/dataset/university-timetable</a>	Key dates within the University of Southampton's timetable, specifically semester start and end dates.
Apps using our data	<a href="http://id.southampton.ac.uk/dataset/apps">http://id.southampton.ac.uk/dataset/apps</a>	A catalog of known websites, web widgets, phone apps and other tools using our datasets.
Building Entrances and Exits	<a href="http://id.southampton.ac.uk/dataset/building-portals">http://id.southampton.ac.uk/dataset/building-portals</a>	

# Conclusion and Research contribution

## *Management and Technology Perspectives*

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- strategic vision about open data practice, open data usage at the HE
- readiness for open agenda of the institution
- qualification and expertise of people engaged in open data practices
- Analyze of the values that open data benchmarking can generate

Key issues are related to the prioritization of opening data, data formats and if the HE institution would invest in open data portal and technology.

What data management system to be used - open sourced or web based?



# Acknowledgements

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- This research has been conducted during [Go8 European Fellowship](#), hosted at the *University of Queensland, Australia*
- I would like to thank to Associate Professor Paul Henman for the supervision during the research
- I would like to thank to the Technical University - Sofia, Project 16000 at the Scientific and Research Sector



# Thank you

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