



Professional Ethics for Statistical Practice

FENSTATS WEBINAR 11. APRIL 2024

WALTER J. RADERMACHER

Statistics, the science of collecting, analyzing, presenting, and interpreting [data](#). Governmental needs for [census](#) data as well as information about a variety of economic activities provided much of the early [impetus](#) for the field of statistics. Currently the need to turn the large amounts of data available in many applied fields into useful information has stimulated both theoretical and practical developments in statistics.

Williams, Thomas A. , Anderson, David R. and Sweeney, Dennis J.. "statistics". Encyclopedia Britannica, 15 Feb. 2024, <https://www.britannica.com/science/statistics>. Accessed 30 March 2024.

Ethical codes for data collection, manipulation, and use (David Hand)

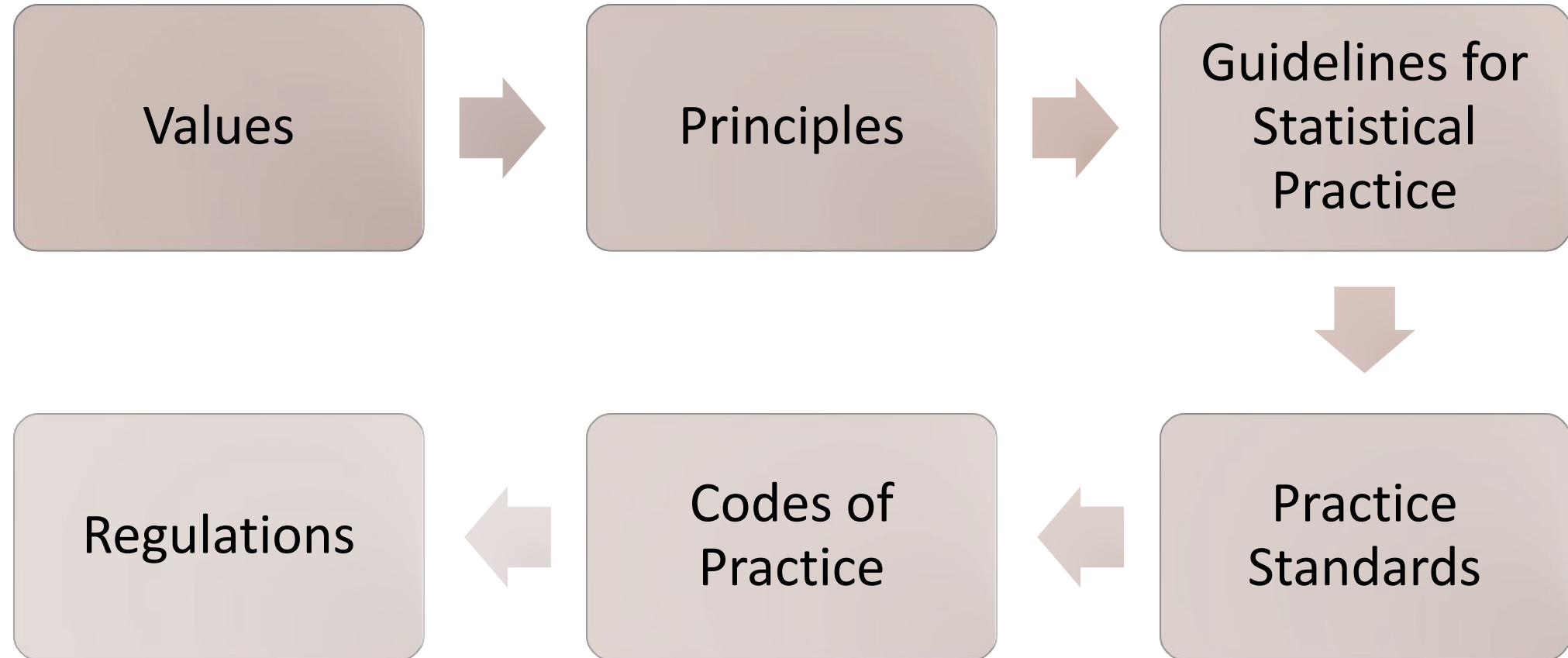
“have various functions, including things such as the following:

- providing guidance on how to behave in difficult circumstances;
- preserving privacy in a way that users and the public will find acceptable;
- ensuring that data are used in such a way as to benefit the public;
- reassuring customers, the public, and others about an organization’s integrity; and
- reassuring employees that they work for a trust-worthy organization.”

"However, the context of data science is so vast and diverse, and is changing so rapidly over time, that we cannot hope to put in place precise regulations. There cannot be a single and simple universal set of rules, and unexpected and unforeseen circumstances are certain to arise. The best we can hope for are some ethical principles that have to be interpreted or instantiated in particular applications. That is, the principles must be mapped to low-level guidance, and this is likely to be application specific.”

Hand, D. J. 2018. 'Aspects of Data Ethics in a Changing World: Where Are We Now?', Big Data, 6. <https://www.liebertpub.com/doi/pdfplus/10.1089/big.2018.0083>

A kind of hierarchy



Epistemological position

- Naïve realism
- Critical realism
- Relativism

Ethical schools and approaches

- Consequentialism
- Deontological Ethics
- Virtue Ethics
- Relativism, Social Contract Theory, ...

Ethical Dimensions of Scientific Research

- Procedural Ethics, the process of conducting scientific research
- Extrinsic Ethics, external to the production of scientific research
- Intrinsic Ethics, internal to the production of scientific research and analysis

Challenges - Axes of Research

- Ethics of Data
- Ethics of Algorithms
- Ethics of Practices

Professional Ethics for Statistical Practices

- Professional Ethics
- Codes of Conduct
- Integrity / Good Governance

Auxiliary Concepts / Theories

- Quality Management Approaches
- Data Literacy, Statistical Training
- Sociology of Quantification / Convention Theorie

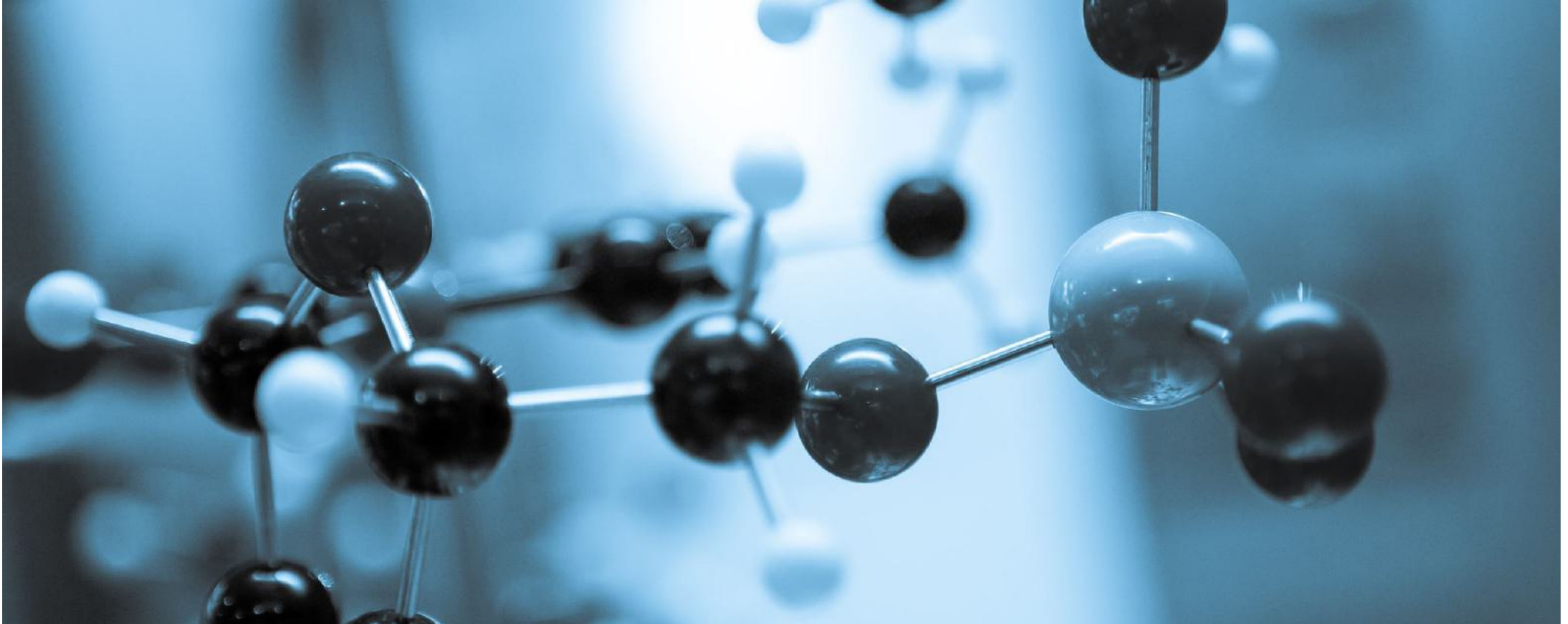
Verification

- Accreditation
- Certification, Review
- Compliance, Reporting, Auditing

Tools of Implementation / Promotion

- Enforcement
- Empowerment
- Evidence

Ethical Dimensions of Scientific Research and Statistical Practices



Ethical Dimensions of Scientific Research

Procedural Ethics, the process of conducting scientific research

Falsification, fabrication, plagiarism, ...

Care for subjects (human and non-human animal)

Responsible authorship, care for data and conflicts of interests

Extrinsic Ethics, external to the production of scientific research

Impact of scientific research on society

Impact of society upon science, e.g. the impact of funding

Lnks between the domains of extrinsic and intrinsic ethics

Intrinsic Ethics, internal to the production of scientific research and analysis

The choice of certain equations, constants, and variables

Analysis of data , handling of error, degree of confidence in projections, ...

Tuana, Nancy (2010). Leading with ethics, aiming for policy: new opportunities for philosophy of science. Synthese 177 (3):471 - 492. <https://philpapers.org/rec/TUALWE>

Ethics in Statistical Practices



Statistics are products

Desrosières, Alain. 2010. 'A Politics of Knowledge-tools - The Case of Statistics.' in Linda Sangolt (ed.), *Between Enlightenment and Disaster* (P.I.E. Peter Lang: Brussels)

‘to quantify’ ≠ ‘to measure’

“quantify implies a translation, i.e. a transformative action, resulting from a series of inscriptions, codifications and calculations, leading to the making of numbers”

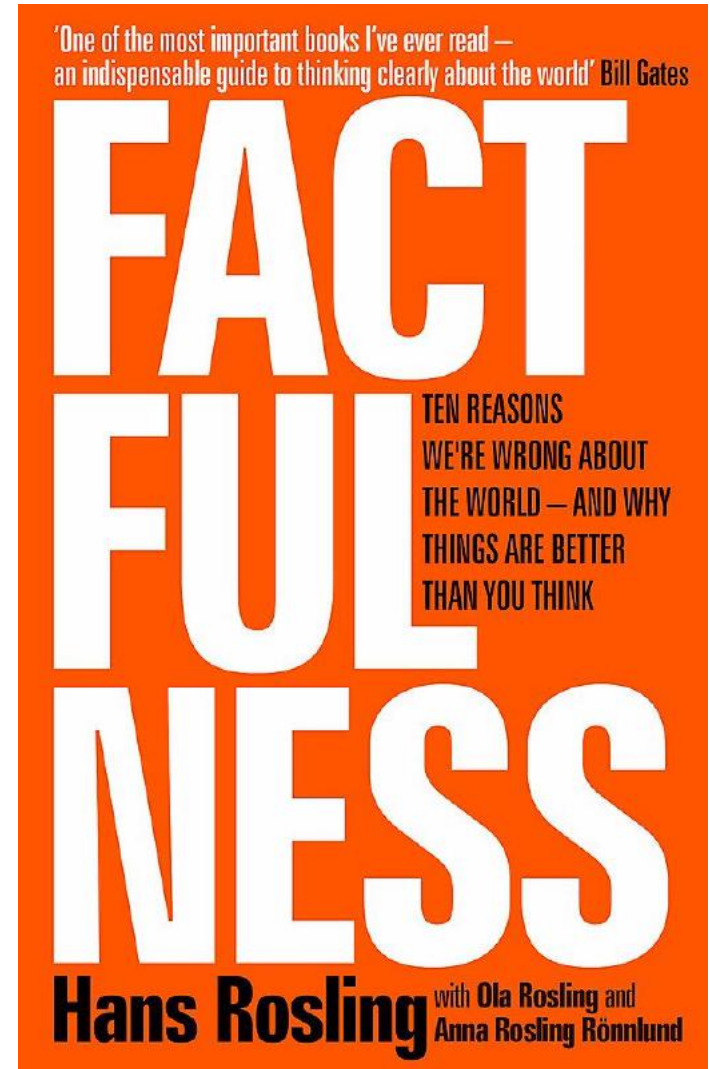
Aspects of statistics

- “(1) that of quantification properly speaking, the making of numbers,
- (2) that of the uses of numbers as variables, and finally,
- (3) the prospective inscription of variables in more complex constructions, models”

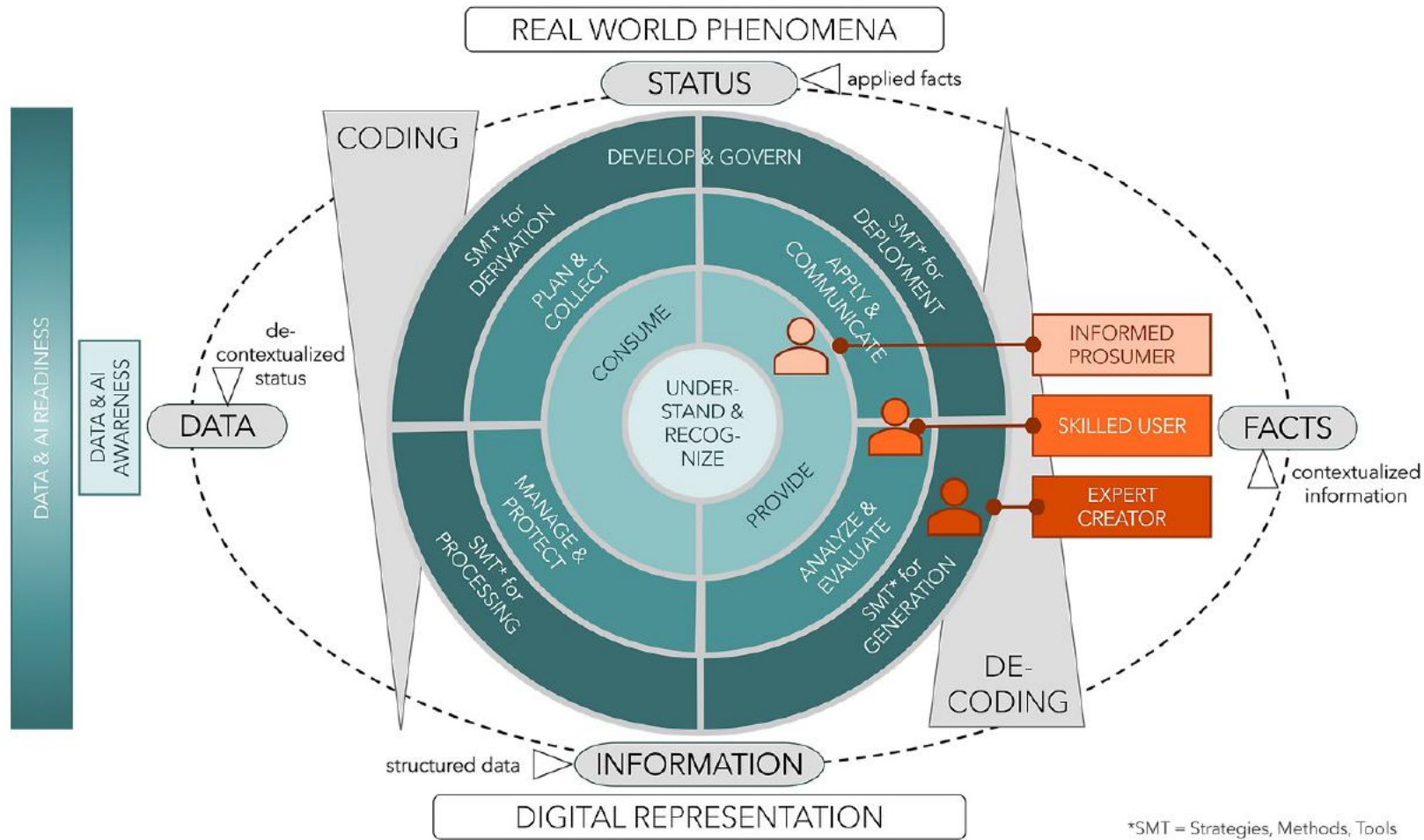
Artefacts

DESIGN OF STATISTICAL PRODUCTS

Walter J. Radermacher



Data and AI Literacy as an enabler for informed decision making in the data age



<https://www.stat-up.com/post/better-ready-than-just-aware-1>

Data & AI Literacy: Awareness-Readiness-Model. Quelle: Schueller et al., 2023

What we don't understand about trust

Onora O'Neill June 2013



https://www.ted.com/talks/onora_o_neill_what_we_don_t_understand_about_trust

Professional Ethics for Statistical Practices

Professional Ethics

Values & Principles for Statistical Practitioners

Education, Capacity Building

Codes of Conduct

Guidelines, Principles of Good Practice for Statistical Institutions / Organisations

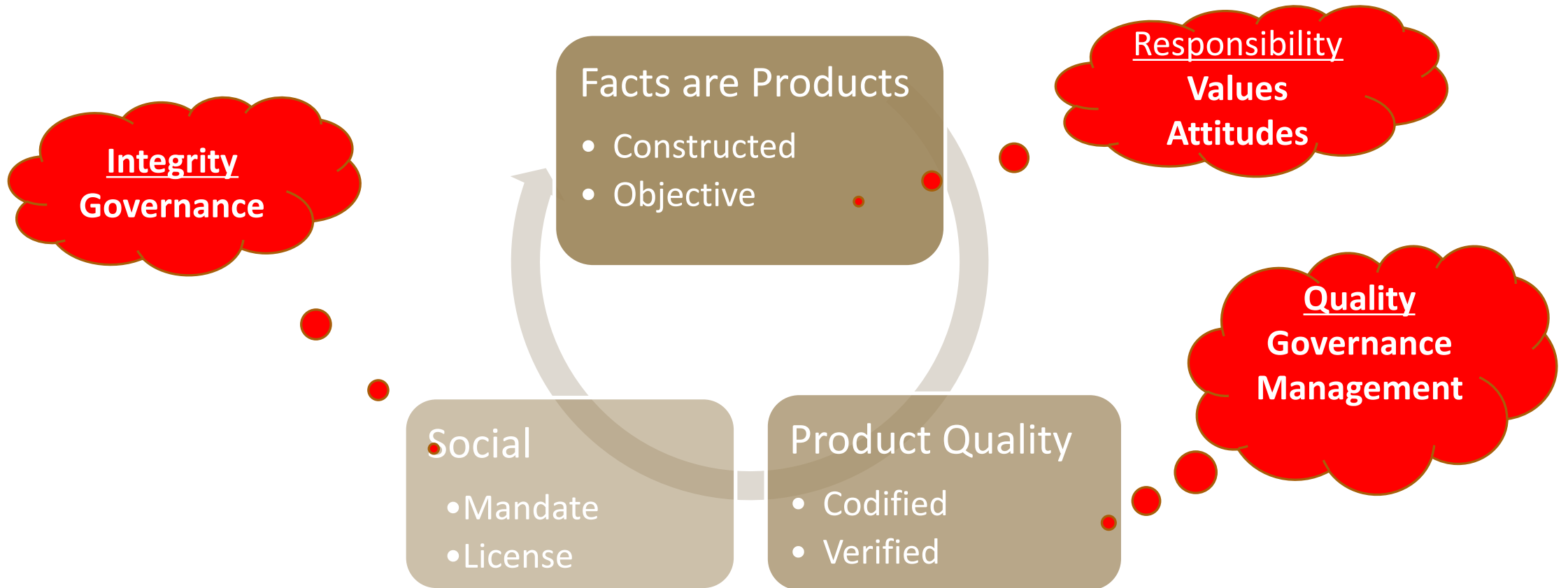
Reporting, Verification, Certification

Integrity / Good Governance


Conditions for Good Statistical Practice in the Professional / Political Environment

Data Culture, Protection of Independence, Mandate / License, Stakeholder Participation

Ethics and Governance in Statistics



Ethics, Good Governance Principles, e.g.



isi International
Statistical
Institute

DECLARATION ON PROFESSIONAL ETHICS


ADOPTED BY THE ISI COUNCIL
22 & 23 JULY 2010
REYKJAVIK, ICELAND

UPDATED VERSION
ENDORSED BY ISI EXECUTIVE COMMITTEE
17 JULY 2023
OTTAWA, CANADA


**Ethical Guidelines
for Statistical Practice**

Prepared by the Committee
on Professional Ethics of the
American Statistical Association

Approved by the ASA Board in February 2022



ASA AMERICAN STATISTICAL ASSOCIATION
Promoting the Practice and Profession of Statistics



Economic and Social Council

Distr.: General
28 October 2013

Substantive session of 2013
Agenda item 13 (c)

Resolution adopted by the Economic and Social Council on 24 July 2013

[on the recommendation of the Statistical Commission (E/2013/24)]

2013/21. Fundamental Principles of Official Statistics

**EUROPEAN STATISTICS
CODE OF PRACTICE**

*For the National Statistical Authorities
and Eurostat (EU statistical authority)*



**Recommendation of the OECD Council on Good Statistical
Practice**

As approved by the Council on 23 November 2015
[C(2015)128 - C(2015)128/CORR1 - C/M(2015)21]

Recent challenges

Needs for updated guidance on transparency, uncertainty quantification, reproducibility, quality characteristics, privacy of data, with special focus on:

Indigenous data governance

Ethical issues related to AI/ML:

- the use of AI for statistics
- or statistics for AI
- or statistics about AI

Problems with the integrity/independence of statistics in various regions and states

Changes in the task and role of public statistics

- statistics for the public good
- defence of the quality brand in a competitive environment
- new services (e.g. data steward) in the digital society

Knowledge, dissemination and application of ethical principles and standards in the increasingly diverse landscape of data communities and the developing world

ISI Declaration on Professional Ethics



<https://isi-web.org/declaration-professional-ethics>

ISI Responsibility

<https://isi-web.org/declaration-professional-ethics>

Ethical principles inherently reflect the obligations and responsibilities of – as well as the resulting conflicts faced by – statisticians to forces and pressures outside of their own performance, namely to and from:

- Society
- Employers, Clients, and Funders
- Colleagues
- Subjects

In carrying out his/her responsibilities, each statistician must be sensitive to the need to ensure that his/her actions are, first, consistent with the best interests of each group and, second, do not favor any group at the expense of any other, or conflict with any of the Principles.

ISI Values

<https://isi-web.org/declaration-professional-ethics>

1. Respect

- We respect the privacy of others and the promises of confidentiality given to them.
- ...

2. Professionalism

- The value Professionalism implies Responsibility, Competence and Expert Knowledge, and Informed Judgement.
- We work to understand our users' needs and develop relevant solutions.
- We use our statistical knowledge, data, and analyses for the Common Good to serve the society.
- ...

3. Truthfulness and Integrity

- The values of Truthfulness and Integrity are reflected in our work processes, that rely on Independence, Objectivity and Transparency.
- We produce statistical results using our science and are not influenced by pressure from politicians or funders
- ...

ISI Principles

<https://isi-web.org/declaration-professional-ethics>

Pursuing
Objectivity

Clarifying
Obligations and
Roles

Assessing
Alternatives
Impartially

Conflicting
Interests

Avoiding
Preempted
Outcomes

Guarding Privileged
Information

Exhibiting
Professional
Competence

Maintaining
Confidence in
Statistics

Exposing and
Reviewing Methods
and Findings

Communicating
Ethical Principles

Bearing
Responsibility for
the Integrity of the
Discipline

Protecting the
Interests of
Subjects

ISI Advisory Board on Ethics

The ISI Advisory Board on Ethics (ABE) was established in 2010.

Board Objectives

The ABE advises the Executive Committee and Council on relevant ethical issues, and recommends or undertakes activities for promoting observance of ethical principles in statistics. The work of the Board is based on the *ISI Declaration on Professional Ethics*

<https://www.isi-web.org/isi-community/committees/advisory-board-on-ethics>

Last Name	First Name	Association	Country
Radermacher	Walter	ISI , IAOS , IASE , TIES	FENStatS
Arrow	Jairo	ISI , IASS	South Africa
Belkindas	Misha	ISI , IAOS	USA/Lithuania
Bilgin	Ayse	ISI , IASE	Australia
Chuwa	Albina	ISI , IAOS	Tanzania
Fung	Hing Wang	ISI , IASS , IAOS	Hong Kong
Habibullah	Saleha	ISI , IASE , IASS	Pakistan
v.Oppeln-Bronikowski	Sibylle	ISI , IAOS	Germany
Rancourt	Eric	ISI , IASS , IAOS	Canada
Stapel-Weber	Silke	ISI , IAOS , IFC	Germany
Suesser	Jan Robert	ISI , IAOS	France
Terán	Teresita Evelina	IASE	Argentina
Tractenberg	Rochelle E.	ISI	USA
Trewin	Dennis	ISI , IASS , IAOS	Australia
Tzavidis	Nikos	ISI , IASS	United Kingdom
Vukovich	Gabriella	ISI , IAOS	Hungary
van Dijk-Timbol	Olivia	ISI (Liaison Officer)	ISI

Activities ISI Ethics Advisory Board

Advise on ethical or integrity issues

Programme of work

- Big data, data sciences, artificial intelligence
- Co-design of statistics and society; Indigenous data governance
- Education, online training courses, promotion of the principles,
- Reflexive components in statistics education, research, conferences etc.
- Improving evidence, global monitoring of integrity

Liaison with other associations (IAOS, IASE, ASA, RSS, [IRC](#), [FENStatS](#), ...) and ISI branches (Capacity Building Committee, ...)

Activities for the ISI World Statistics Congresses, IAOS Conferences, IASE webinars etc.

Promotion of Ethics, e.g. in Education

The Sleep of Reason Produces Monsters

GOYA Y LUCIENTES, FRANCISCO
DE Museo Prado



Epistemological position

Naïve realism

Reality is an objective phenomenon that exists and can be measured independently of social and cultural processes

Perceptions of reality may be distorted or biased through social and cultural frameworks of interpretation

Critical realism

Reality is an objective phenomenon, the measurement of which is inevitably mediated through social and cultural processes

can never be known in isolation from these processes

Relativism

Nothing is a reality in itself

what we understand to be a 'reality' is the product of historically, socially and culturally contingent 'ways of seeing'

Tools of Implementation / Promotion

Enforcement

Rules Based, Checking Lists, Surveillance, Audit-Like

Institutional Power

Empowerment

(Online) Training Courses, Vignettes, Virtue Oriented Practices, Capacity Building

Teaching / Convincing Power

Evidence

Case Related, Global Monitoring, Public Statements and Reporting

Civil Society Political Power

Stakeholder Analysis

Potential result:	HARM ⁵	BENEFIT ⁵	UNKNOWN ⁴	UNKNOWABLE ³
Stakeholder ¹ :				
YOU ^{2,3}				
Your boss/client				
Unknown individuals ²				
Employer				
Colleagues				
Profession				
Public/public trust				

Tractenberg, Rochelle E. 2019. 'Teaching and Learning about ethical practice: The case analysis', SocArXiv, April 23. <https://osf.io/preprints/socarxiv/58umw/>



DIALOGUES ON AI AND ETHICS

Case Study PDFs

Below are a set of fictional case studies that are designed to prompt reflection and discussion about issues at the intersection of AI and Ethics. These case studies were developed out of an interdisciplinary workshop series at Princeton University that began in 2017-18. They are the product of a research collaboration between the University Center for Human Values (UCHV) and the Center for Information Technology Policy (CITP) at Princeton. Click the title of each case study to download the full document.

Case Study 1: Automated Healthcare App

Issues:

Foundations of legitimacy, Paternalism, Transparency, Censorship, Inequality

Case Study 2: Dynamic Sound Identification

Issues:

Rights, Representational harms, Neutrality, Downstream responsibility

Case Study 3: Optimizing Schools

Issues:

Privacy, Autonomy, Consequentialism, Rhetoric

Case Study 4: Law Enforcement Chatbots

Issues:

Automation, Research ethics, Sovereignty

Case Study 5: Hiring By Machine

Issues:

Fairness, Irreconcilability, Diversity, Capabilities, Contextual integrity

Case Study 6: Public Sector Data Analytics

Issues:

Democracy, Secrecy, Inequality, Fallibility, Determinism

<https://aiethics.princeton.edu/case-studies/case-study-pdfs/>



Markkula Center for Applied Ethics *at Santa Clara University*

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[ETHICS SPOTLIGHTS](#) ▾

Ethics Cases

[Home](#) › [Markkula Center for Applied Ethics](#) › [Ethics Resources](#) › Ethics Cases

Find case studies and scenarios on a variety of fields in applied ethics.

Cases can also be viewed by the following categories:

[Bioethics](#)

[Ethical Issues for Students](#)

[Journalism Ethics](#)

[Business Ethics](#)

[Government Ethics](#)

[Leadership Ethics](#)

[Engineering Ethics](#)

[Immigration Ethics](#)

[Social Sector Ethics](#)

[ESG Topics](#)

[Internet Ethics](#)

[Technology Ethics](#)

Verification

Accreditation

Certification, Review

Compliance, Reporting, Auditing



European Statistical Accreditation



FENStatS executive committee has finalized the system for accreditation of statisticians, according to the proposal of the accreditation committee. The next step is for the national associations to adopt the system, name at least three auditors, and start receiving the applications.

Once your national statistical association has adopted the system, you can start submitting your applications using the [Application portal](#). The list of European Accredited Statisticians is [here](#).

Standards, e.g. Alliance for Data Science Professionals

Advanced Data Science Professional



Certification Guidance and Process

🕒 June 2022

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Standards



Standards (Latest)

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Level Definitions



Level Definitions (Latest)

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<https://alliancefordatascienceprofessionals.co.uk//standards>



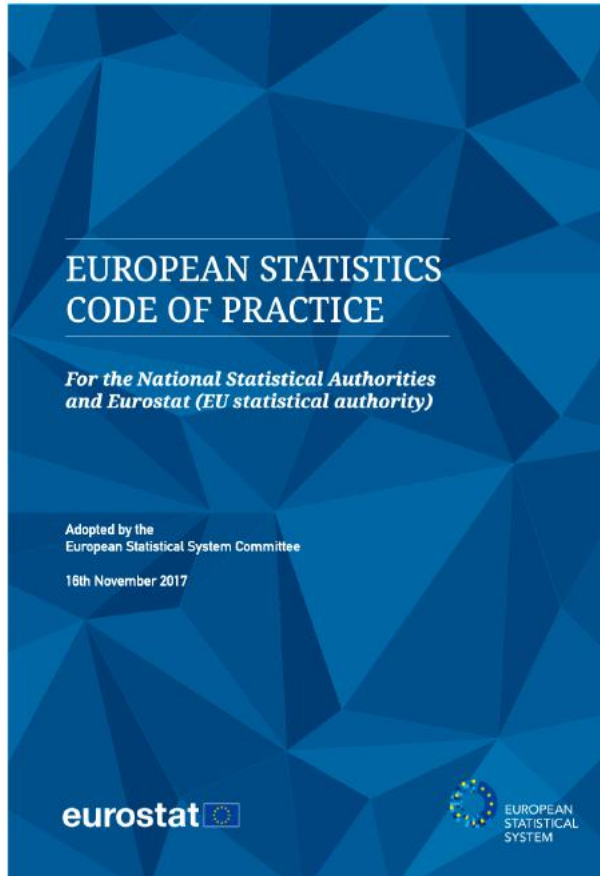
Skill Area	Evidential Requirements	Types of evidence
<p>A. Data Privacy and Stewardship</p> <p>This skill relates to the security and protection of data, including design, creation, storage, distribution and associated risk.</p>	1. Ensuring the protection of personal and sensitive data.	<ul style="list-style-type: none"> i. Assess risks and enact data protection policies and procedures. ii. Ensure safe and secure management of sensitive data, models and infrastructures. iii. Apply appropriate data controls, such as encryption, (pseudo)anonymisation, and synthetic data. iv. Risk management around environment and infrastructure.
	2. Managing sensitive data.	<ul style="list-style-type: none"> i. Act with integrity, giving due regard to legal and regulatory requirements. ii. Be aware of the actions that should be taken to respond to potential data loss in line with organisational, legal and regulatory procedures.
	3. Data stewardship and standards.	<ul style="list-style-type: none"> i. Incorporates the FAIR Guiding Principles for scientific data management and stewardship into practices, where appropriate and practicable. ii. Identify opportunities for efficient and creative reuse of data. iii. Understand the relationship between technical standards and regulation/governance, and their benefits for interoperability and knowledge sharing.
<p>B. Definition, acquisition, engineering, architecture, storage and curation.</p> <p>This skill relates to the collection, manipulation and secure storage of data,</p>	1. Data collection and management.	<ul style="list-style-type: none"> i. Source and access data appropriate for the problem. ii. Critically analyse the availability of appropriate data and resources to meet project requirements. iii. Critically evaluate and synthesise data. iv. Ensure data provenance processes are followed. v. Identify data characteristics (volume, velocity and variety). vi. Identify infrastructure requirements for data storage and analysis.

Good Governance

QUALITY

Walter J. Radermacher

Codification: EU Statistics



Institutional environment	Statistical processes	Statistical output
<ol style="list-style-type: none"> 1. Professional independence 1bis. Coordination and cooperation 1. Mandate for data collection 2. Adequacy of resources 3. Commitment to quality 4. Statistical confidentiality 5. Impartiality and objectivity 	<ol style="list-style-type: none"> 7. Sound methodology 8. Appropriate statistical procedures 9. Non-excessive burden on respondents 10. Cost-effectiveness 	<ol style="list-style-type: none"> 11. Relevance 12. Accuracy and reliability 13. Timeliness and punctuality 14. Coherence and comparability 15. Accessibility and clarity

<https://ec.europa.eu/eurostat/web/products-catalogues/-/KS-02-18-142>

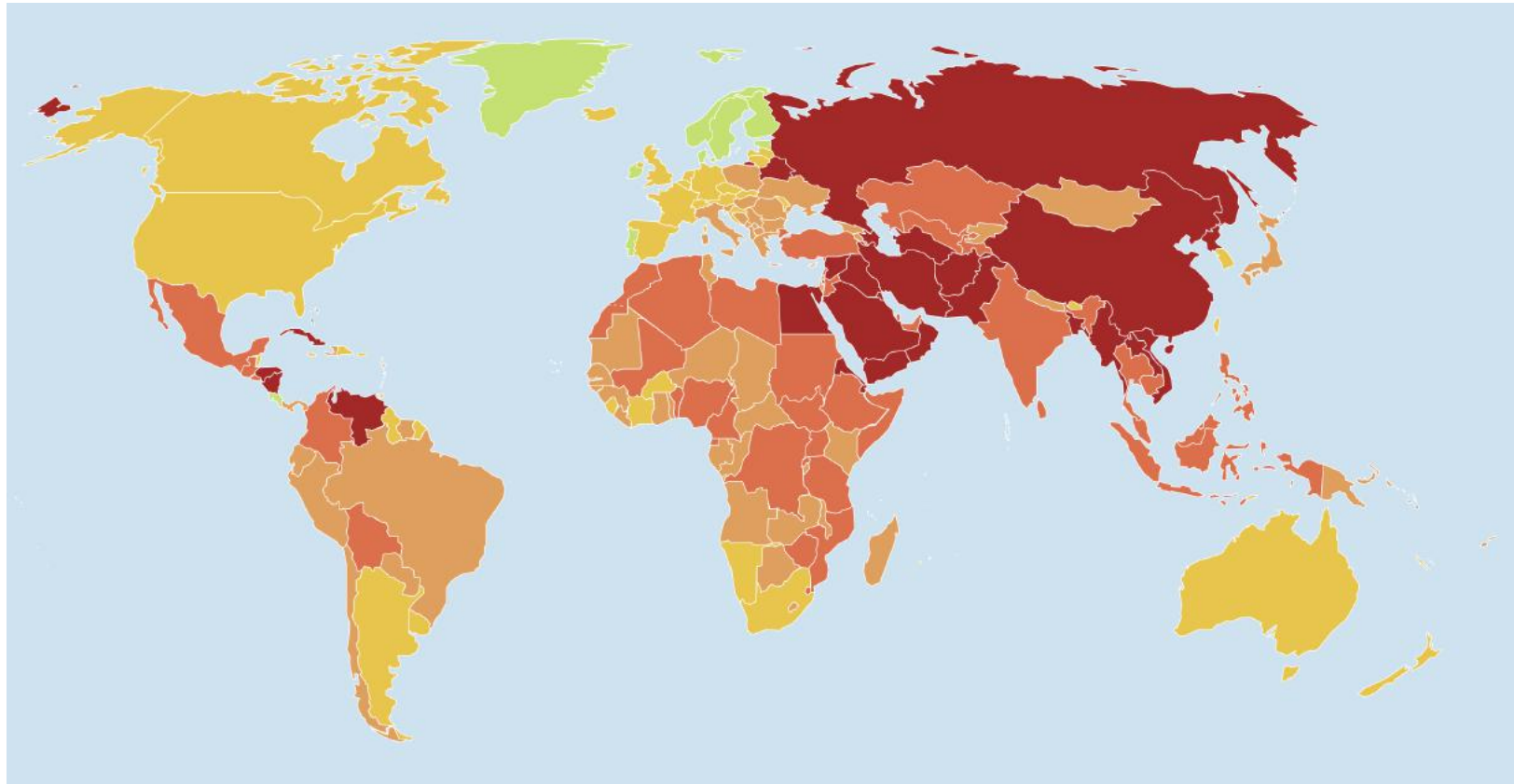
UN Fundamental Principles of Official Statistics (UNFPOS) <https://unstats.un.org/unsd/dnss/gp/FP-New-E.pdf>

1. Official statistics provide an indispensable element in the information system of a democratic society
2. To retain trust ..., the statistical agencies need to decide according to strictly professional considerations ...
3. ... the statistical agencies are to present information according to scientific standards ...
4. The statistical agencies are entitled to comment on erroneous interpretation and misuse of statistics.
5. Data for statistical purposes may be drawn from all types of sources ...
6. Individual data collected ... are to be strictly confidential and used exclusively for statistical purposes.
7. The laws, regulations and measures under which the statistical systems operate are to be made public.
8. Coordination among statistical agencies within countries ...
9. The use by statistical agencies in each country of international concepts, classifications and methods ...
10. Bilateral and multilateral cooperation ...

Integrity

SOCIAL MANDATE AND LICENCE

World Press Freedom Index <https://rsf.org/en/index>



FREE UNIVERSITIES

**Putting the Academic Freedom Index
Into Action**

https://www.gppi.net/media/KinzelbachEtAl_2021_Free_Universities_AFi-2020.pdf

OECD Public Integrity Maturity Models

What are the maturity models?

The maturity models allow a government (national or subnational) or a public sector organisation to assess the elements of their integrity systems, and identify where they are situated in relation to good practice across four categories: nascent, emerging, established and leading. The maturity models can be used by political and executive leadership, government officials, public sector integrity practitioners, business and civil society.

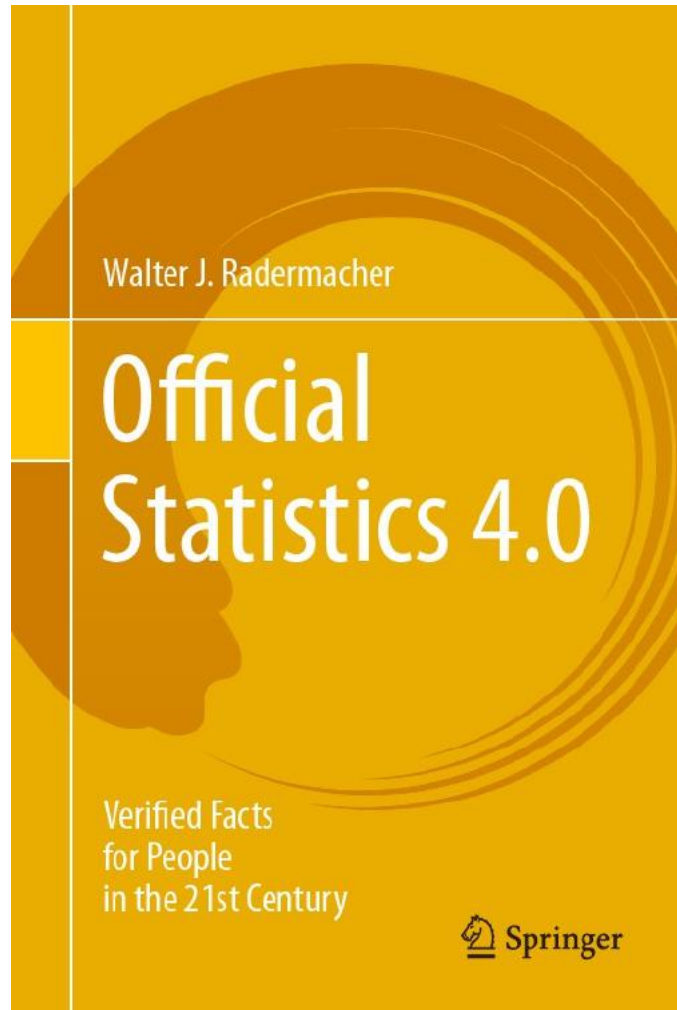
The public integrity maturity models are a complement to the [OECD Recommendation of the Council on Public Integrity](#) and the [OECD Public Integrity Handbook](#). They can also be used in conjunction with the forthcoming Public Integrity Indicators, to provide a qualitative, subjective assessment of public integrity.




<https://youtu.be/ByHFIRm5h5o>

<https://www.oecd.org/gov/ethics/public-integrity-maturity-models.htm>

MUCHAS GRACIAS
MUITO OBRIGADO
VIELEN DANK
THANK YOU
MERCİ BIEN



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<https://www.springer.com/gp/book/9783030314910>