

**Institute of Big Data Governance (IBDG):
Inauguration-cum-Digital Economy and Big Data Governance Symposium
5 December 2018 | InnoCentre, Kowloon Tong**

Big Data & AI Governance: The Laws and Ethics

保障 - 尊重個人資料
Protect, Respect Personal Data

**Stephen Kai-yi Wong, Barrister
Privacy Commissioner for Personal Data**

Tim Cook: Our Own Information Is Being 'Weaponized' Against Us

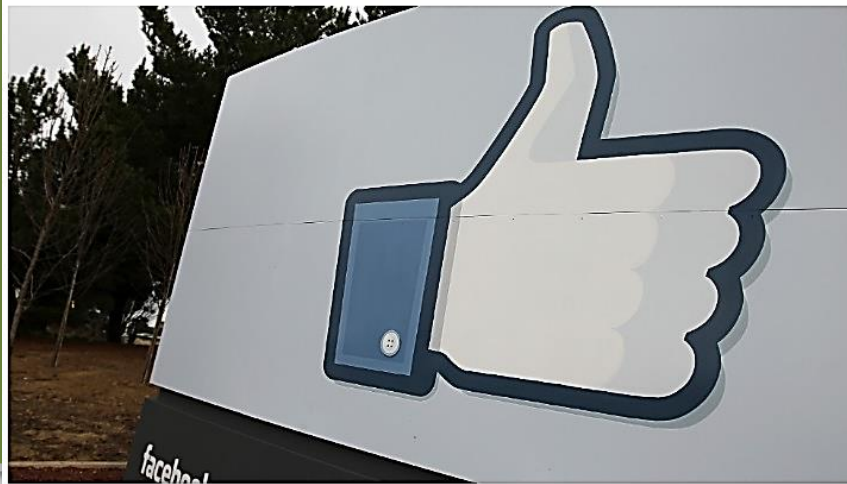


Source: [Fortune, 24 Oct 2018](#)

Facebook 'likes' can reveal your secrets, study finds

By Heather Kelly, CNN

Updated 1900 GMT (0300 HKT) March 11, 2013



Source: [CNN, 11 Mar 2013](#)

A computer program used for bail and sentencing decisions was labeled biased against blacks. It's actually not that clear.

By Sam Corbett-Davies, Emma Pierson, Avi Feller and Sharad Goel
October 17, 2016



Source: [The Washington Post, 17 Oct 2016](#)



Study finds gender and skin-type bias in commercial artificial-intelligence systems

Examination of facial-analysis software shows error rate of 0.8 percent for light-skinned men, 34.7 percent for dark-skinned women.

Source: [MIT News, 11 Feb 2018](#)

Amazon ditched AI recruiting tool that favored men for technical jobs

Specialists had been building computer programs since 2014 to review résumés in an effort to automate the search process



Source: [The Guardian, 11 Oct 2018](#)

Technology

Uber Starts Charging What It Thinks You're Willing to Pay

The ride-hailing giant is using data science to engineer a more sustainable business model, but it's cutting drivers out from some gains.

By [Eric Newcomer](#)

2017年5月19日 下午10:45 [GMT+8]

Updated on 2017年5月20日 上午3:19 [GMT+8]



Source: [Bloomberg, 19 May 2017](#)

瑞典無現金社會走得太前 屢接旅客投訴 遇上停電無法購物



- Overuse of e-payments in Sweden caused inconvenience to tourists and elderly
- Could not process payments during power outage

Source: [HK01, 29 May 2018](#)

人臉識別廣告頭像當真身

推介 0 分享



電子屏幕上顯示董明珠（右圖）的臉。〈互聯網圖片〉

- A facial recognition system for combating jay walking in Ningbo, Zhejiang Province, misidentified a bus advert as human
- Ningbo Police:
 - Will upgrade the system to reduce similar errors in future

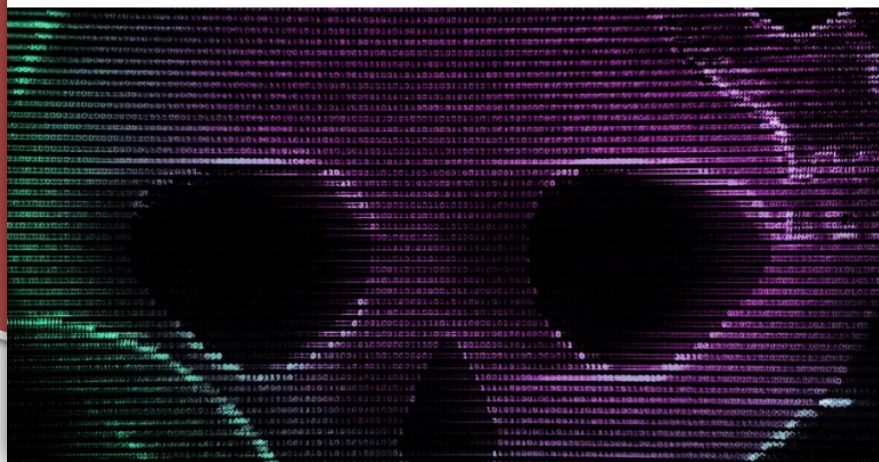
Source: [Oriental Daily, 23 Nov 2018](https://www.orientaldaily.com.hk/news/2018/11/23/face-recognition-bus-advert)

US lawmakers say AI deepfakes 'have the potential to disrupt every facet of our society'

They're asking the intelligence community to assess the threat from AI video manipulation

By James Vincent | @jvincent | Sep 14, 2018, 1:17pm EDT

f t ↗ SHARE



Source: [The Verge](#), 14 Sep 2018

20

N NEWSWEEK MAGAZINE

How Big Data Mines Personal Info to Craft Fake News and Manipulate Voters

BY NINA BURLEIGH ON 6/8/17 AT 1:01 PM



Source: [Newsweek](#), 8 Jun 2017

8

- Hospital Authority explores using AI to identify X-ray images that warrant urgent attention
- Doctor:
 - Use of AI in analysing images is still at infant stage
 - Inappropriate to “apotheosise” AI at this stage

醫局研AI 學辨緊急胸肺X光片



【明報專訊】據了解，醫管局積極研究人工智能（AI）輔助診斷，有關計劃在瑪麗醫院已開展數月，AI正學習分辨急需撰寫報告的胸肺X光片，暫未知系統準確性，形容「暫時不宜神化AI」。

醫生：暫時不宜神化AI

據悉，醫管局正積極研究引入AI輔助診斷，首階段針對肺部X光片，目前正測試系統，瑪麗有參與。消息稱，接連面對事故，醫管局盼加快研究。日後的大數據平台將研究適合使用AI技術的病症。

據香港放射科醫學院委員會委員潘偉麟了解，有關計劃在瑪麗開展了數月，系統正學習分辨哪些胸肺X光片需盡快撰寫報告，哪些可遲一步寫報告，並不懂得分辨哪些影像是腫瘤、感染還是骨折，稱AI仍在蒐集資料，尚未檢視有關係統準確性。潘偉麟形容「暫時不宜神化AI」，稱全世界利用AI做影像分析都處於很初步的發展。

Source: [Ming Pao, 23 Nov 2018](#)

Privacy and Ethical Implications of Big Data and AI



(1) Covert Data Collection

Massive and **ubiquitous** data collection from multiple sources

Tracking online and offline

Individuals **unaware** of data collection and use

No meaningful notice & consent

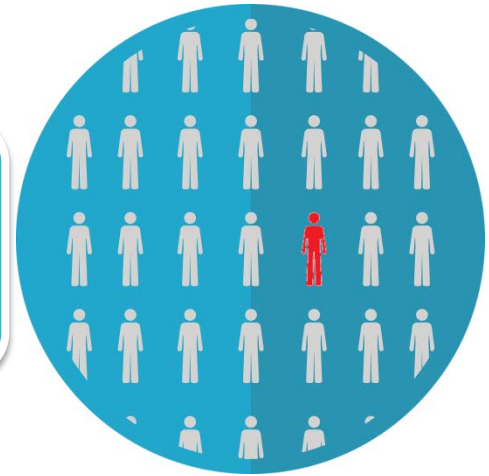


(2) Re-identification

Aggregate de-identified data from various sources

Analyse and link up seemingly unrelated data

Re-identify individuals & destroy anonymity



(3) Profiling & Unexpected Data Use

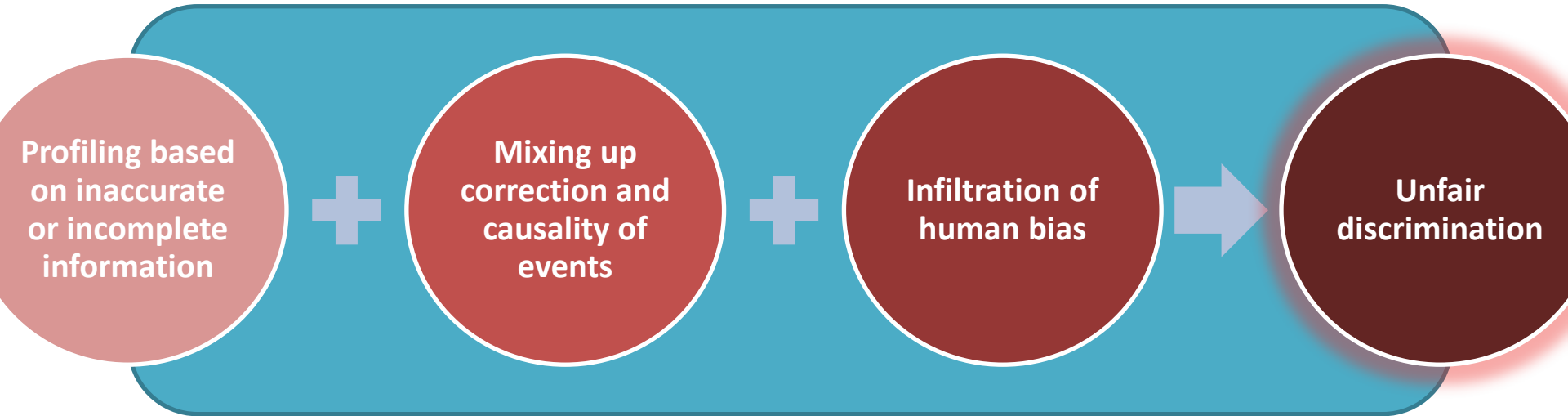
Analyse innocuous data to predict **intimate** and **sensitive** data

Correlations (not causality)

Individuals may be **surprised** by predictions



(4) Bias and Discrimination



(5) Unpredictability & Low Transparency of AI

Machine learning, deep learning and neural network

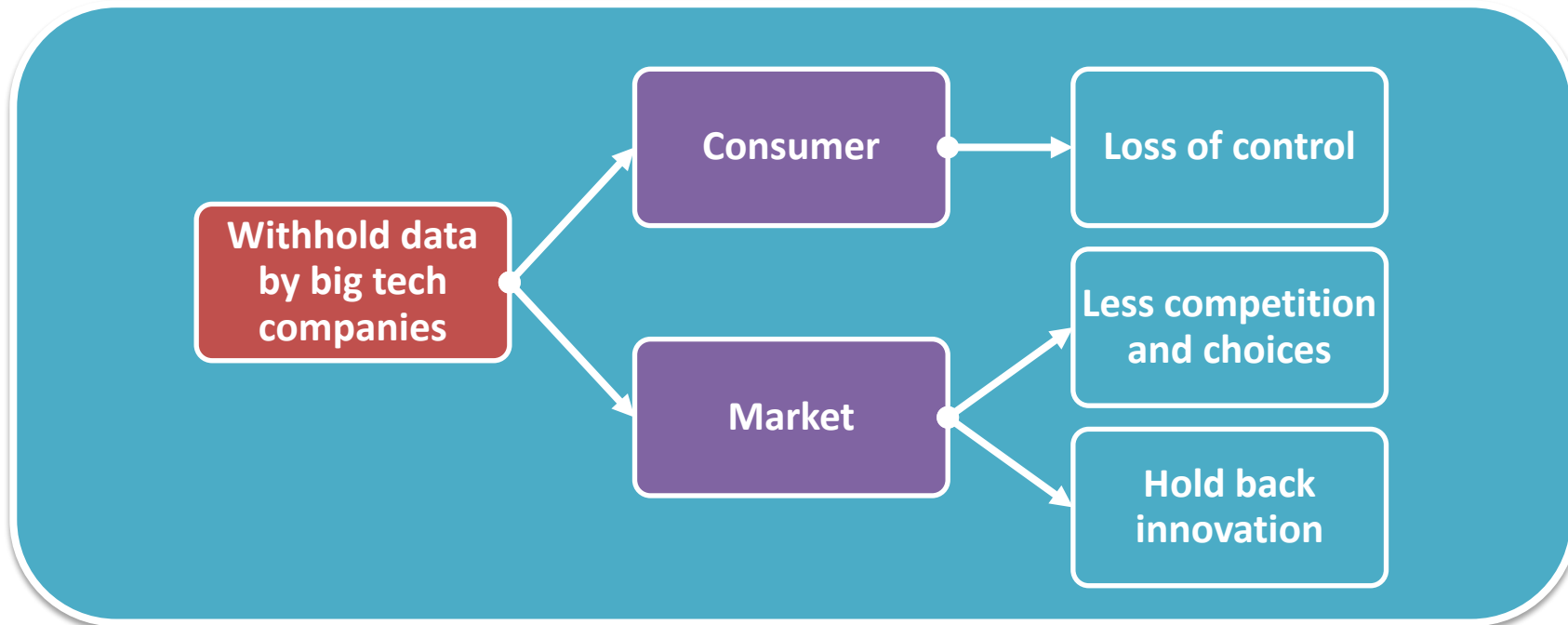
Self-evolving algorithms

Out of human comprehension

Black box



(6) Data Monopoly



6 保障資料原則

Data Protection Principles

PCPD.org.hk

Legal Requirements in HK

1

收集目的及方式 Collection Purpose & Means



資料使用者須以合法和公平的方式，收集他人的個人資料，其目的應直接與其職能或活動有關。
須以切實可行的方法告知資料當事人收集其個人資料的目的，以及資料可能會被轉移給哪類人士。
收集的資料是有實際需要的，而不超乎適度。

Personal data must be collected in a lawful and fair way, for a purpose directly related to a function/activity of the data user.
All practicable steps shall be taken to notify the data subjects of the purpose of data collection, and the classes of persons to whom the data may be transferred.
Data collected should be necessary but not excessive.

2

準確性、儲存及保留 Accuracy & Retention



資料使用者須採取切實可行的步驟以確保持有的個人資料準確無誤，而資料的保留時間不應超過達致原來目的的實際所需。

Practicable steps shall be taken to ensure personal data is accurate and not kept longer than is necessary to fulfil the purpose for which it is used.

3

使用 Use



個人資料只限用於收集時述明的目的或直接相關的目的，除非得到資料當事人自願和明確的同意。

Personal data is used for the purpose for which the data is collected or for a directly related purpose, unless voluntary and explicit consent is obtained from the data subject.

4

保安措施 Security



資料使用者須採取切實可行的步驟，保障個人資料不會未經授權或意外地被查閱、處理、刪除、喪失或使用。

A data user needs to take practical steps to safeguard personal data from unauthorised or accidental access, processing, erasure, loss or use.

5

透明度 Openness



資料使用者須採取切實可行的步驟來公開其處理個人資料的政策和行事方式，並交代其持有的個人資料類別和用途。

A data user must take practicable steps to make personal data policies and practices known to the public regarding the types of personal data it holds and how the data is used.

6

查閱及更正 Data Access & Correction



資料當事人有權要求查閱其個人資料；若發現有關個人資料不準確，有權要求更正。

A data subject must be given access to his personal data and to make corrections where the data is inaccurate.

17

International responses to big data and AI



- The House of Lords published “**AI in the UK report**” in April 2018, recommending an ethical guidance in the form of an AI code of conduct
- The **Centre for Data Ethics and Innovation** was established in November 2018 to advise the Gov’t on how to maximise the benefits of data-enabled technologies, including AI

International responses to big data and AI



The data protection authority, CNIL, published the report ***“HOW CAN HUMANS KEEP THE UPPER HAND? The ethical matters raised by algorithms and artificial intelligence”*** in December 2017

- Recommended solutions ranging from setting up national platform to audit AI algorithms to strengthening ethics

International responses to big data and AI



Executive Office of the President published the “*Preparing for the Future of Artificial Intelligence*” report in October 2016

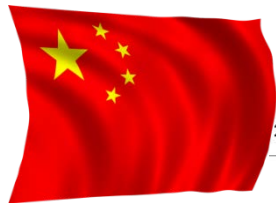
- Recommended governance to ensure efficacy and fairness of the systems

International responses to big data and AI



- **GDPR** grants individuals the right to object to fully automated decision-making (Article 22)
- **“*Statement on Artificial Intelligence, Robotics and ‘Autonomous’ Systems*”** issued by the European Commission in March 2018 and proposed a set of ethical principles
 - e.g., Human dignity, Responsibility, Equity and Accountability

International responses to big data and AI



《国家信息化发展战略纲要》绘十年产业蓝图

2016年09月12日 17:43:37

来源：《网络传播》7月刊



【打印】 【纠错】

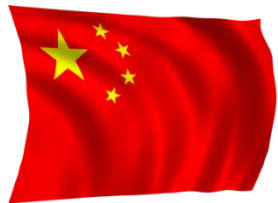


Schema on The National Strategy of Informatisation 2016:

- Reinforce internet governance
- Protect legal rights of citizens

Source: [Cyber Space Administration of China](#), 12 Sep 2016

International responses to big data and AI



科技部長：AI發展臨倫理挑戰 稱加強
法規研究 推項目指南細則



圖1之1 - 科技部長黨綱

Source: [Ming Pao](#), 11 Mar 2018

Minister of Science & Technology:

- AI development meets ethical challenges
- Guidelines for AI will be issued

Responses from the business community

Gartner picks digital ethics and privacy as a strategic trend for 2019

Natasha Lomas @riptari / 1 month ago



Source: TechCrunch, 15 Oct 2018

DeepMind has launched a new 'ethics and society' research team

Sam Shead
Oct. 4, 2017, 10:01 AM 712

FACEBOOK LINKEDIN TWITTER

Follow Business Insider: Like 2.8M people like this. Sign Up to see what your friends like.

Google DeepMind has launched a new research unit to in a bid to help it understand the real world impacts of artificial intelligence (AI).



DeepMind's Verity Harding will co-lead the Ethics & Society unit. Twitter/Verity Harding

The London-based research lab announced its "Ethics

Source: Business Insider, 4 Oct 2017

IBM launches tool aimed at detecting AI bias

By Zoe Kleinman
Technology reporter, BBC News

19 September 2018

f Share



Source: BBC News, 19 Sep 2018



40th ICDPPC (22-26 Oct 2018) Declaration on Ethics and Data Protection in Artificial Intelligence

Six guiding principles for AI development:

1. Fairness principle
2. Continued attention and vigilance
3. Systems transparency and intelligibility
4. Ethics by design
5. Empowerment of every individual
6. Reducing biases or discriminations



Accountability & Ethics as the Answer



Risk-based approach of
accountability

*“Arguably the biggest change [brought by the GDPR] is around **accountability**.”*

Elizabeth Denham, Information Commissioner of the UK

*“[The GDPR] aims to **restore a sense of trust and control** over what happens to our online lives.”*

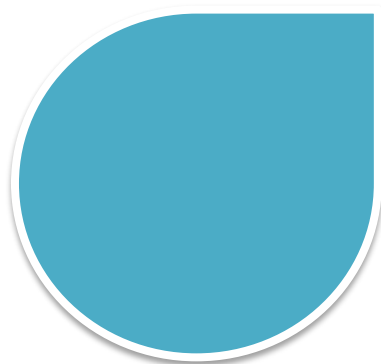
Giovanni Buttarelli, European Data Protection Supervisor

GDPR, Technology & Free Flow of Data

Recital 6 of GDPR:

*“Rapid technological developments and globalisation have brought **new challenges** for the protection of personal data. ... Technology... should further **facilitate the free flow of personal data** ... while **ensuring a high level of the protection of personal data.**”*

GDPR - Return of control back to individuals



Enhanced rights:

- Right to be forgotten
- Right to data portability
- Right to object to processing, etc.



Enhanced consent:

- Informed
- Unambiguous
- Freely given
- Specific

Accountability:

Privacy Management Programme (PMP)



Effective management of personal data



Minimisation of privacy risks



Effective handling of data breach incidents



Demonstrate compliance and accountability



Download >>



PMP – Main Components



1. Organisational Commitment

1.1 Buy-in from the Top

...

1.2 Appointment of Data Protection Officer/
Establishment of Data Protection Office

...

1.3 Establishment of Reporting Mechanisms

PMP – Main Components



PMP – Main Components



3. Ongoing Assessment and Revision

3.1 Development of an Oversight and Review Plan

...

3.2 Assessment and Revision of Programme Controls

Data Ethics & Trust



Promoting Ethics: “Legitimacy of Data Processing Project”



Objectives

What does
“ethical data
processing”
mean?

“Fair data
processing” –
what would the
standards be to
describe what
being “fair”
means?

What is the direct or
indirect linkage
between fair/ethical
data processing and
legal requirements,
and what aspects of
ethical data
stewardship go
beyond the law?

What are the
motivators for
business to
adopt the
principles and
standards and
utilise ethical
data impact
assessments?

Deliverables by the Consultancy

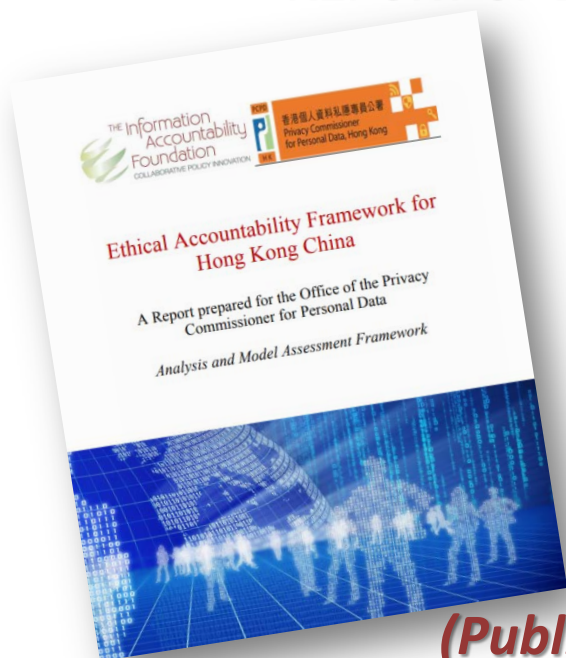
Find out the meaning and core values of data ethics

Provide tools to bring the core values of data ethics into practice

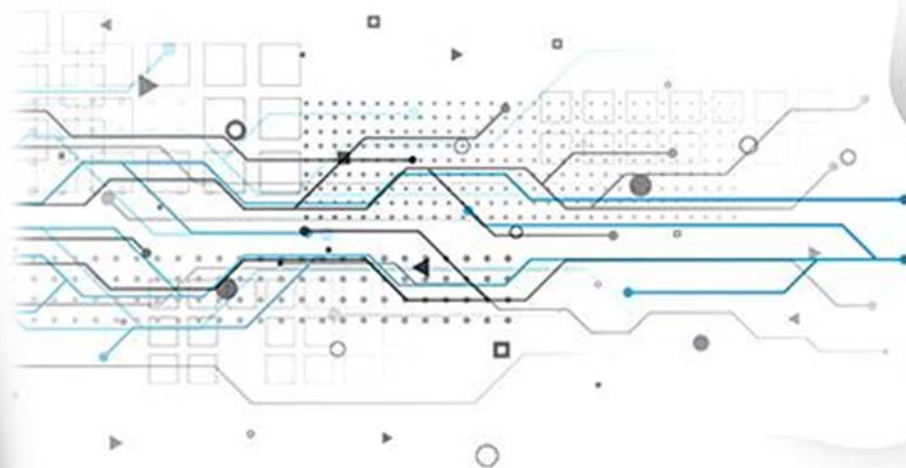
Encourage businesses to embrace data ethics in daily operation

“Ethical Accountability Framework for Hong Kong China”

REPORT OF LEGITIMACY OF DATA PROCESSING PROJECT



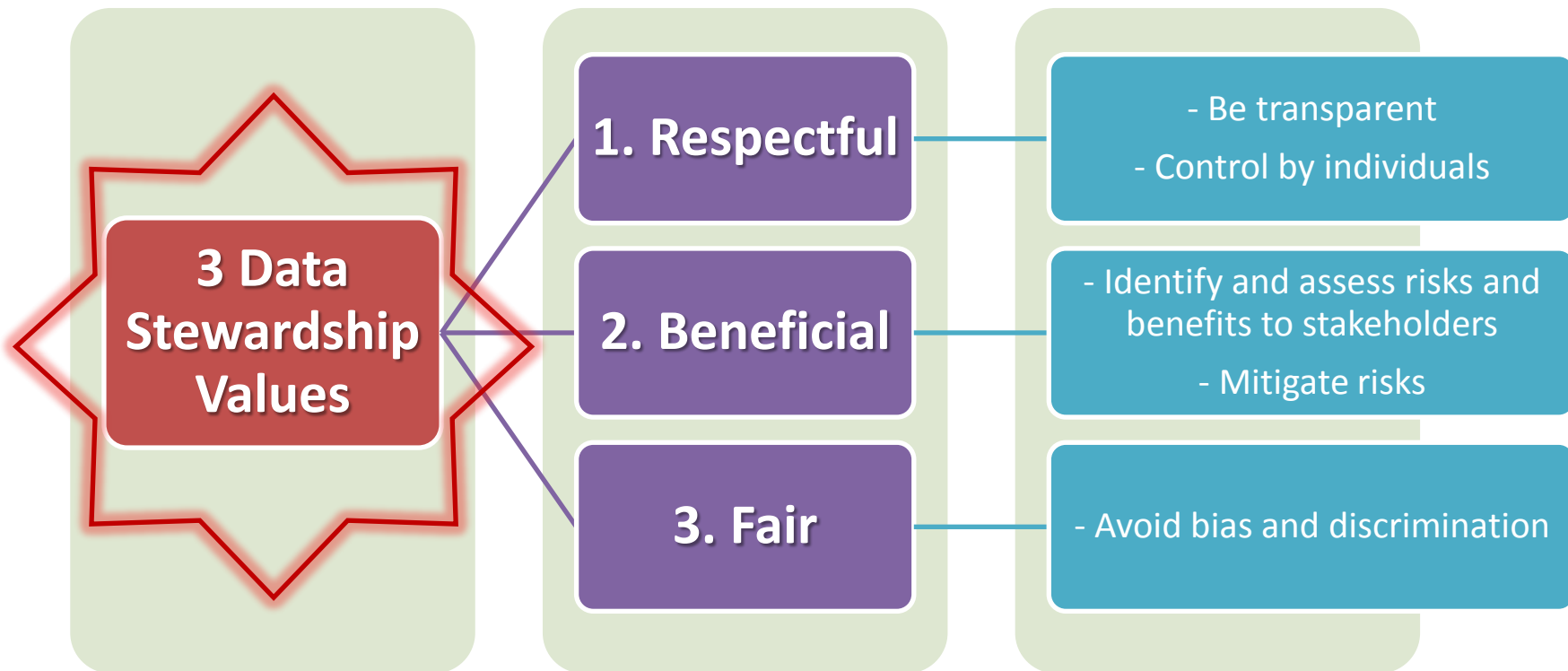
(Published on 24 October 2018)



Download >>

36

Core Values of Data Ethics



Practical Tools

2 Assessment Models

1. Model Ethical Data Impact Assessment

2. Process Oversight Model

Assess the impact of data processing activities on all stakeholders

Evaluating organisations' data stewardship

Ethical Data Impact Assessment – Questions to Consider

What are the **business objective** and **purpose** of the data processing activity?

What are the **nature, source, accuracy** and **governance** of the data?

What is the **impact (risks and benefits)** on the individuals, the society and the organisation itself?

Is there a proper **balance** between expected benefits and the mitigated risks?

Process Oversight – Questions to Consider

Are the **accountability and responsibility** of data stewardship clearly defined?

Are the core values translated into **principles, policies and processes**?

Does the organisation adopt “**ethics by design**”?

Are **Ethical Data Impact Assessments** properly conducted?

Are **internal reviews** conducted periodically?

Are there any **feedback and appeal mechanisms** for the individuals impacted ?

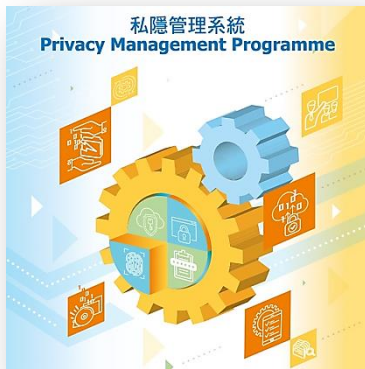
Is there any mechanism to ensure the **transparency** of the data processing activities?

“Trust is the new gold.”

**Andrea Jelinek,
Chair of European Data Protection Board**

PCPD's Strategic Focus





Download >>



Thank You!