


## Editor-in-Chief

*Kai Rannenber, Goethe University Frankfurt, Germany*

## Editorial Board Members

TC 1 – Foundations of Computer Science

*Luis Soares Barbosa , University of Minho, Braga, Portugal*

TC 2 – Software: Theory and Practice

*Michael Goedicke, University of Duisburg-Essen, Germany*

TC 3 – Education

*Arthur Tatnall , Victoria University, Melbourne, Australia*

TC 5 – Information Technology Applications

*Erich J. Neuhold, University of Vienna, Austria*

TC 6 – Communication Systems

*Burkhard Stiller, University of Zurich, Zürich, Switzerland*

TC 7 – System Modeling and Optimization

*Fredi Tröltzsch, TU Berlin, Germany*

TC 8 – Information Systems

*Jan Pries-Heje, Roskilde University, Denmark*


TC 9 – ICT and Society

*David Kreps , University of Galway, Ireland*

TC 10 – Computer Systems Technology

*Ricardo Reis , Federal University of Rio Grande do Sul, Porto Alegre, Brazil*


TC 11 – Security and Privacy Protection in Information Processing Systems

*Steven Furnell , Plymouth University, UK*

TC 12 – Artificial Intelligence

*Eunika Mercier-Laurent , University of Reims Champagne-Ardenne, Reims, France*

TC 13 – Human-Computer Interaction

*Marco Winckler , University of Nice Sophia Antipolis, France*

TC 14 – Entertainment Computing

*Rainer Malaka, University of Bremen, Germany*

## **IFIP – The International Federation for Information Processing**

IFIP was founded in 1960 under the auspices of UNESCO, following the first World Computer Congress held in Paris the previous year. A federation for societies working in information processing, IFIP's aim is two-fold: to support information processing in the countries of its members and to encourage technology transfer to developing nations. As its mission statement clearly states:

*IFIP is the global non-profit federation of societies of ICT professionals that aims at achieving a worldwide professional and socially responsible development and application of information and communication technologies.*

IFIP is a non-profit-making organization, run almost solely by 2500 volunteers. It operates through a number of technical committees and working groups, which organize events and publications. IFIP's events range from large international open conferences to working conferences and local seminars.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is generally smaller and occasionally by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

IFIP distinguishes three types of institutional membership: Country Representative Members, Members at Large, and Associate Members. The type of organization that can apply for membership is a wide variety and includes national or international societies of individual computer scientists/ICT professionals, associations or federations of such societies, government institutions/government related organizations, national or international research institutes or consortia, universities, academies of sciences, companies, national or international associations or federations of companies.

More information about this series at <https://link.springer.com/bookseries/6102>


David Kreps · Robert Davison ·  
Taro Komukai · Kaori Ishii (Eds.)

# Human Choice and Digital by Default: Autonomy vs Digital Determination

15th IFIP International Conference on Human  
Choice and Computers, HCC 2022, Tokyo,  
Japan, September 8–9, 2022, Proceedings

*Editors*

David Kreps   
University of Galway  
Galway, Ireland

Taro Komukai   
Chuo University  
Tokyo, Japan

Robert Davison   
City University of Hong Kong  
Hong Kong, Hong Kong

Kaori Ishii  
Chuo University  
Tokyo, Japan

ISSN 1868-4238                      ISSN 1868-422X (electronic)  
IFIP Advances in Information and Communication Technology  
ISBN 978-3-031-15687-8              ISBN 978-3-031-15688-5 (eBook)  
<https://doi.org/10.1007/978-3-031-15688-5>

© IFIP International Federation for Information Processing 2022

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Preface

This book contains the proceedings of the 15th International Conference on Human Choice and Computers (HCC 2022), which was held at the Faculty of Global Informatics (iTL), Chuo University, Japan, during September 8–9, 2022. The conference was organized by the International Federation for Information Processing (IFIP) Technical Committee 9 (TC9): Information and Communication Technology (ICT) and Society.

All papers were double-blind reviewed by at least two members of the Program Committee, during a six week review period. In total, 16 full papers were accepted, calculated by review score. Papers submitted by a Program Committee member were managed by the program chairs independently.

The conference co-chairs, Taro Komukai (Japan representative to TC9), David Kreps, (chair of TC9), Robert M. Davison (chair of WG94), and Kaori Ishii (guest program chair), chose the theme for this year’s conference: “Human Choice and Digital by Default: Autonomy vs Digital Determination.” Tracks were advertised in the call for papers addressing a range of concerns across the working groups of TC9, and the accepted papers coalesced into two groups: ethics and law.



The papers selected for this book are based on both academic research and the professional experience of information systems practitioners working in the field. It is the continued intention of TC9 that academics, practitioners, governments, and international organizations alike will benefit from the contributions of these proceedings.

Details of the activities of IFIP TC9’s activities are posted at <http://www.ifiptc9.org/>

July 2022

David Kreps  
Robert M. Davison

# Human Choice and Digital by Default: Autonomy vs Digital Determination

Robert Davison <sup>1</sup> and David Kreps <sup>2</sup>

<sup>1</sup> City University of Hong Kong  
isrobert@cityu.edu.hk

<sup>2</sup> University of Galway, Ireland  
david.kreps@nuigalway.ie

## 1 Choice

Choice is a wonderful thing to have, and in a booming market of Internet-connected devices, not to mention the millions of apps and programmes that service them, there might appear to be a cornucopia of choices. But if it was that simple, why the need for a conference about Human Choice and Computers? Perhaps the choices are not as widespread as they seem, or perhaps darker forces mean that what goes for choice is actually an illusion.

The first choice is whether to use a computer or not. That seems simple enough, but it is increasingly the case that if you don't have a computer, and an internet connected one at that, it is very hard to survive in the developed economies of the world. Here 'computer' is interpreted quite liberally to mean any device with computer-like processing power, memory, and storage, and thus includes phones, tablets, notebooks and laptops, desktops, mainframes, and even super computers, if you have one at home, as well as everything in between. A recent study from New Zealand [1] documented how difficult it is for rural residents to live without the Internet because so many service providers have moved all their services online, whether it be banking, retail sales, or grocery shopping. Even though many of the people interviewed for this study stated loudly and clearly that they really don't want to be connected to the Internet, nor to use a computer, actually they have very little choice. Even if they grow all their own food, they still have to pay bills and e-banking is the only way. Meanwhile, in Hong Kong under COVID-19 restrictions, access to many buildings, shops, offices, etc. is only possible by scanning a QR code using an app on your phone. If you don't have a phone, clearly you can't scan anything. Perhaps mobile phone ownership is so ubiquitous that this seems strange. Who would NOT want to have a phone? But that's not the point. The point is, do we have a choice? Are we allowed NOT to have (and pay for) a phone if we don't want one? If we don't have a phone, can we still receive the same quality of services as everyone else who does have a phone? The answer is clearly 'no', and thus phone ownership is essentially mandatory.

Meanwhile, there is considerable pressure to upgrade our devices every few years, whether because software is no longer supported or new versions of apps require better hardware and the old versions don't work anymore. Thus, we really don't have either the choice or the non-choice: use is compulsory.

Moving to other realms, those of us who like to read books increasingly find that we have to buy books online as many physical bookshops have closed. Kindle Books is an option, if you are happy with Amazon. For new paper books, Amazon will readily sell them to you, as will Book Depository (owned by Amazon), and for second handbooks, Abebooks (also owned by Amazon) is a good place to look. There are non-Amazon choices (Wordery, Barnes and Noble), but it's not always obvious who is the parent company.

Of course, these examples are selective, and others could be picked. But what about choice? Is choice a right or an illusion? It's been 14 years since *The Economist* declared that privacy is dead, but perhaps choice is going the same way. Although there are some choices left, they are dwindling in number. The most fundamental choice – to use or not to use a computer – seems to be a relic of the past.

## 2 Papers

As one of us stated in a recent paper elsewhere, “Ethics is a matter of professionalism, generally understood as being outside the purview of law and regulation. Though law often embodies ethical principles, law and ethics are not co-extensive; laws are created based on a society's ethics, to enforce behaviours we are expected to follow, but ethics suggest what we ought to follow, and help us explore options to improve our decision-making.” [2] The papers accepted for this conference fell broadly into two categories: those which dealt with the more ethical side of the dilemma of choice in contemporary society, and those which dealt more with the legal side.

In the first section, Salla Ponkala, Jani Koskinen, Camilla Lähteenmäki, and Antti Tuomisto begin the proceedings with research into worker well-being in the era of the data economy: if we have no choice but to adapt to digital transformation, the least our employers can do is help us upskill and pay attention to our well-being needs in the face of increasing technostress. Mikko Vermanen, Minna Rantanen, and Jani Koskinen then present a study of employee privacy in Internet of Things ecosystems, trying to establish what the prerequisites must be for ethical data collection and use in such increasingly ubiquitous circumstances: surely, we ought to have some choice in what data such systems can ethically gather about us?

Sticking with contentious issues for the ethics of modern digital technologies, Aimi Ozaki then presents a study of live facial recognition technology use by private companies in public places: here, certainly, there seems little if any choice, for city-dwellers at least, whether or not they are thus surveilled (unless they cover up completely with dark glasses/goggles, hat, balaclava, and more).

Johanna Sefyrin and Mariana Gustafsson then take us into the world of sociomaterial relations, with a study on librarians' and social workers' roles and practices in addressing the needs of vulnerable groups, which is followed by Barbara Nino Carreras

and Sisse Finken's research into autonomy alliances and data care practices in the context of the digitalisation of welfare. In the care professions, matters of choice and consent are paramount, and navigating the impact of digital technologies increasingly difficult.

Staying with sociological analysis, Shigenori Ohashi, Noritaka Maeda, Shigeru Fujimura, and Atsushi Nakadaira explore social capital types in Japan through the lens of social networking sites: can bonding and bridging behaviour affect how we tweet?

Moving into eHealth, Mayu Terada presents a study of personal data use in Japanese medical care, and Ryuta Yamashita, Tadaaki Shimizu, Natsuki Yoshinaka, Rintaro Kataoka, and Naoki Sawada explore the impact digital advertising may be having upon our eyes. As with the care professions and our social status, so in the health sector our choices and consent are fundamental, and the impact of digital transformation a source of many questions and anxieties.

Lastly, in this section, Markus Philipp Zimmer and Jonna Järveläinen introduce the sustainability angle of an ethical approach to digital transformation, suggesting the notion of the triple-bottom-line may help bring a more sustainable digital transformation.

In the second section of the proceedings, Joey Jansen van Vuuren, Louise Leenen, and Anna-Marie Jansen van Vuuren start things off with an increasingly common example of digital law-breaking, presenting a study of ransomware in Africa.

Ayuki Saito, Michele Baccelli, Kazuto Kobayashi, and Mitsuyoshi Hiratsuka then explore issues of patent law and AI, Toru Maruhashi presents a study of how Japanese Law affects automated content moderation, and Mika Nakashima compares the EU, US, and Japanese legal systems' approaches to data portability.

Sticking with international comparisons, Casper Chigwedere, Sam Takavarasha, and Bonface Chisaka present a literature review on regulatory frameworks in developing countries, and Tetsunosuke Jinnai presents a study of international law and cyber-conflicts from a Japanese eye-view.

To conclude the proceedings, Taro Komukai presents a study focusing on privacy issues concerning personal data held by third parties during criminal investigations.

First, however, to begin the proceedings, our two keynote speakers kindly provided summaries of their presentations for us to reproduce in this book. Jiro Kokuryo spoke to us about "Designing Socio-Technical Systems for a Cyber Civilization", and the key element of traceability - advances in which "are so fundamental that they may change the shape of our civilization." Hiromi Yokoyama introduced us to her "Octagon Measurements" and "ELSI score" for AI ethics - two key methodologies for advanced science and technology if it is to "be checked for ethical issues from the development stage."

We hope and trust you will enjoy reading the texts within these pages.



## References

1. Díaz Andrade, A. and Techatassanasoontorn, A.A. (2021) Digital enforcement: Rethinking the pursuit of a digitally-enabled society, *Information Systems Journal* 31, 1, 184–197.
2. Gotterbarn, D., and Kreps, D. (2020) Being a Data Professional: Give Voice to Value in a Data Driven Society. *AI and Ethics*. <https://doi.org/10.1007/s43681-020-00027-y>

# Organization

## Conference Chair

Taro Komukai Chuo University

## Conference Co-chair

David Kreps University of Galway, Ireland

## Conference Co-chair

Kaori Ishii Chuo University, Japan

## Program Chairs

Robert M Davison City University of Hong Kong, Hong Kong

David Kreps University of Galway, Ireland


## Program Committee

Askar Aituov	Kazakh-British Technical University, Kazakhstan
Jawad Hussain Awan	National University of Management and Languages, Pakistan
Kathrin Bednar	Vienna University of Economics and Business, Austria
Petros Chamakiotis	ESCP Business School, Spain
Anna Croon	Umeå University, Sweden
Daniel Curto-Millet	University of Gothenburg
Robert M Davison	City University of Hong Kong, Hong Kong
Richard Dron	Salford Business School
Sisse Finken	IT University of Copenhagen, Denmark
Per Fors	Uppsala University, Sweden
Marthie Grobler	CSIRO's Data61, Australia
Olli Heimo	University of Turku, Finland
Magda Hercheui	University College London, UK
Mitsuyoshi Hiratsuka	Tokyo University of Science, Japan
Jun Iio	Chuo University, Japan
Kai Kimppa	University of Turku, Finland
Jay Kishigami	Keio University, Japan
Jani Koskinen	University of Turku
Mikael Laaksoharju	Uppsala University, Sweden
Chris Leslie	South China University of Technology, China
Takayuki Matsuo	Harvard Law School, USA

Brad McKenna	University of East Anglia, UK
Yosuke Murakami	KDDI Research, Inc., Japan
Kiyoshi Murata	Meiji University
Mika Nakashima	Chuo University, Japan
Trishana Ramluckan	UKZN, South Africa
Minna Rantanen	University of Turku
Deepak Saxena	Indian Institute of Technology Jodhpur, India
Johanna Sefyrin	Linköping University, Sweden
Riana Steyn	University of Pretoria, South Africa
Gopal Tadepalli	Anna University, India
Sam Takavarasha	Women's University in Africa, Zimbabwe
Richard Taylor	International Baccalaureate Organization, UK
Jean-Paul Van Belle	University of Cape Town, South Africa
Will Venters	London School of Economics, UK
Ruth Wario	University of the Free State, South Africa
Martin Warnke	Leuphana University Lüneburg, Germany
Chris Zielinski	University of Winchester, UK
Brett van Niekerk	Durban University of Technology, South Africa

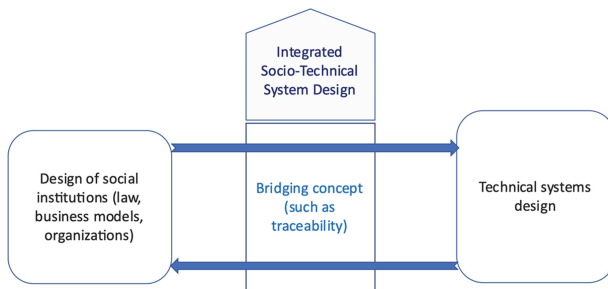
# **Keynote Talks**

# Designing Socio-Technical Systems for a Cyber Civilization

Jiro Kokuryo 

Keio University, 5322 Endo, Fujisawa-City, Kanagawa 252-0882, Japan  
jkokuryo@sfc.keio.ac.jp

As a business scholar, I have long been interested in the interactive evolution of social institutions and technological systems. Recognizing that these are integral parts of larger socio-technical systems [1], I propose that they should be developed concurrently to mutually reinforce each other (Fig. 1). Such an integral approach seems more important than ever, as the social impact of information technology is becoming more profound. In order to realize such an integral design, we need to have bridging concepts that are *meaningful* to the *design* of both technical and social systems.



**Fig. 1** Socio-technical system design

One such bridging concept that I have been focusing on is traceability, i.e., the ability of shippers to track goods after shipment and of receivers to know the origins of the goods they have at hand. This concept is often discussed in the context of supply chain transparency. Technologies to improve traceability are rapidly developing due to advances in sensors (e.g., QR codes) and network technologies (e.g., wireless). Technologies such as NFT (non-fungible tokens) are expanding the scope of traceability beyond traditional physical goods to people, money, and digital content.

I believe that advances in traceability are so fundamental that they may change the shape of our civilization. To fully understand this, we should start by recognizing that the industrial civilization we live in has been designed assuming a lack of traceability. Factories that emerged following the industrial revolution produced more products than local markets could consume. As a result, the goods had to be sent to distant markets and strangers who could not be trusted. And in the absence of today's sophisticated

technologies, the goods were not traceable. In such an environment, the only alternative for businesses was to sell “exclusive rights of disposal (property ownership)” for money as goods were shipped. In other words, a market mechanism needed to be established. One might notice that this mechanism was also about enabling anonymous transactions. In the absence of traceability, businesses had to sell to the anonymous masses. The supermarket, where customers could purchase anonymously without any conversation, was a symbolic manifestation of the system.

One should note that social institutions were developed to support this market mechanism. Constitutional, civil, and commercial laws were established to guarantee ownership as an inviolable human right of individuals. Such institutions were backed by nation-states with the enforcement powers of governments under democracy. Such a combination of basic philosophy, economic institutions, and legal/political systems vastly expanded industrial production.

Once we understand the background of the ownership/exchange model, it becomes easier for us to understand why alternative models such as sharing, as-a-service, and subscription models are emerging as traceability technologies advance. It is no longer necessary to “complete the transaction” each time in the form of an ownership transfer. When both the product and the customer are traceable, it becomes much easier to “license” the accessing of assets.

An additional force driving this shared use of assets is the increasing concern around the sustainability of our planet. The ownership/exchange business model is focused on increasing the sale of goods and the number of transactions. While this system gives strong incentives for businesses, it also burdens the environment by attempting to sell ever more products, often only to be wasted. The world now needs an economy where resources are shared and reused, where the level of utility gained from each good is maximized once it is produced.

Figure 2 is an attempt to depict how enhanced traceability may be incorporated into a “potluck economy” to promote the shared use of various kinds of assets for a

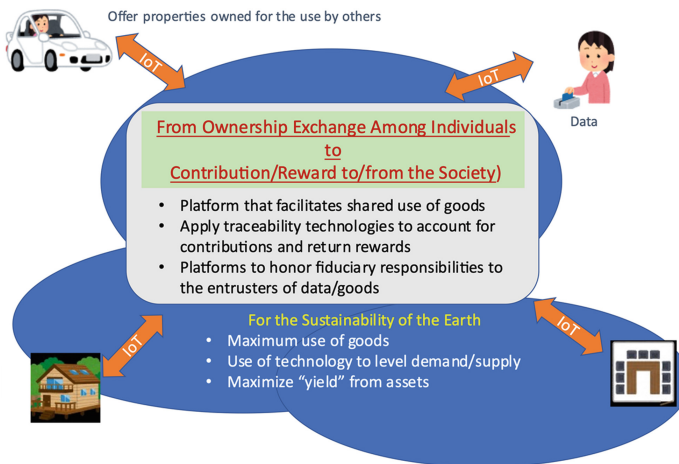


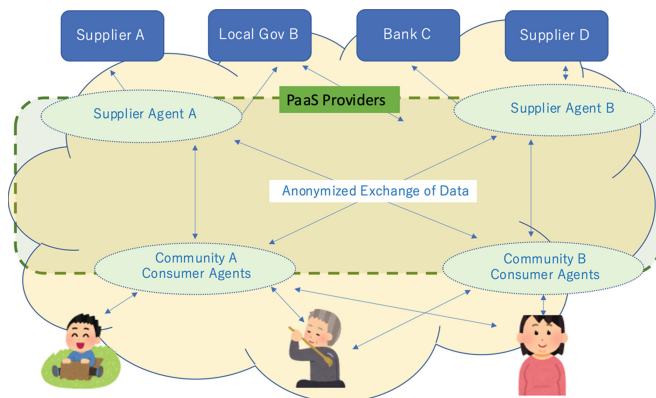
Fig. 2 From exchange economy to Potluck economy

sustainable future [2]. Technologies are developed to allow people to share their assets for use by others while a platform monitors contributions and rewards the contributors for their participation. One might note that the notion of ownership is still alive in this design. The owner of an asset only has to license access to it when they are not using it themselves.

A natural concern when envisioning such a system of sharing is the breach of privacy. Any socio-technical system that promotes the social sharing of goods and data should also incorporate mechanisms to protect the privacy of the people who participate in the system. We already face issues surrounding the governance of the data that is in the hands of major platform providers. We need to address these issues if we want this kind of “potluck economy” to flourish.

While I recognize the presence of technical and legal solutions to this issue, I would like to allude to the benefit of focusing on incentive structures. I say this because I see the current issues surrounding privacy primarily as issues of major platform providers having the incentive to use personal data in the interest of sponsors rather than the individuals who have contributed their data. Figure 3 is a proposal to separate “consumer agents” that have no conflict-of-interest issue from the “supplier agents” that work on behalf of the suppliers of goods.

One might note that this arrangement is a departure from the thinking that individuals should have complete control of their data. Instead, the arrangement assumes that consumer agents remain loyal to consumers while consumers are encouraged to contribute to society by allowing others to access and utilize their assets, including data. Consumer agents should be penalized heavily for any breach of the trust placed upon them.



**Fig. 3** Resolving the structural conflict of interest

Such design, based on trust and altruism, suggests that perhaps traditional Asian ethics, which are based on trust and loyalty, may be helpful in developing the future ethics of a cyber civilization. The Buddhist tradition of Asia, for example, asks people to free themselves from an obsession with ownership and be altruistic while seeking a

society that is mutually protective of others. The Confucian tradition asks people to be loyal to their superiors while giving justification for overturning the rules of those superiors when they lack benevolence to people. These traditions have the potential to provide a philosophical foundation for a “potluck economy” with its strong emphasis on sharing and living in harmony within an ecosystem.

I should add that the notions of trust and loyalty are also present in Western ethics in the form of fiduciary responsibility. There is no conflict with individualistic traditions here, either. The financial industry, for example, has adopted and institutionalized ethics in a practical and sophisticated manner. Perhaps the design of socio-technical systems in a cyber civilization should learn from such examples.

Any new technology is a double-edged sword. We must develop the capability to design socio-technical systems wisely so that powerful technologies may be used to contribute to the greater social good.

## References

1. Bostrom, R.P., Heinen, J.S.: MIS Problems and failures: a socio-technical perspective PART I: THE CAUSES. *MIS Quarterly* **1**(3), 17–32 (1977)
2. Timothy, N.: Blog. [https://www.sustainableeconomist.com/the\\_potluck\\_economy](https://www.sustainableeconomist.com/the_potluck_economy). Accessed on May 28 2022



# “Octagon Measurements” and “ELSI score” for AI ethics

Hiromi Yokoyama

University of Tokyo, Japan  
jkokuryo@sfc.keio.ac.jp

Advanced research in science and technology must be checked for ethical issues beginning in the development stage. So far, we have developed two ethics measurements, Octagon Measurements and ELSI. Both may be applied easily by researchers in the field of AI. In this talk, I would like to explain how we developed these two ethics scores and how they can be applied.

## Octagon Measures

We focused on eight themes that are common in AI guidelines: privacy, accountability, safety and security, transparency and explainability, fairness and non-discrimination, human control of technology, professional responsibility, and promotion of human values. We also proposed Octagon Measurements, which directly scales these eight

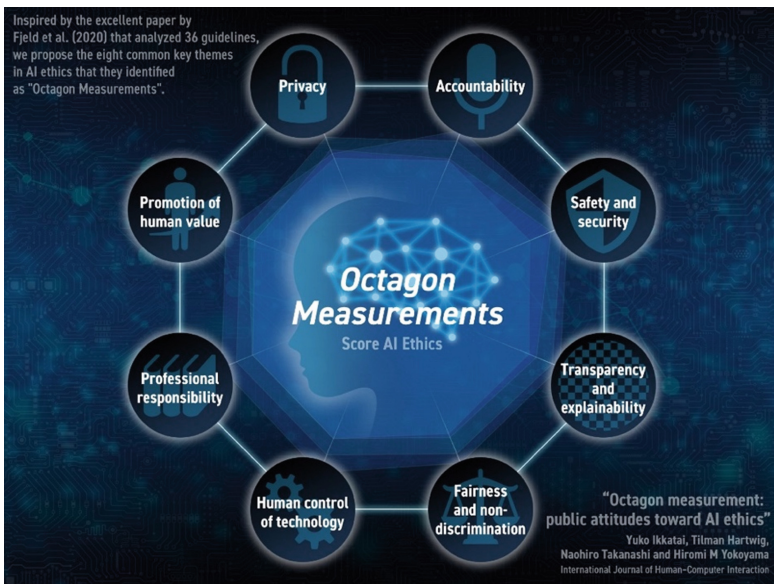


Fig. 1 Octagon score for AI ethics

themes. We prepared four dilemma scenarios (i.e., AI singer, AI shopping, AI drone weapon, and AI criminal tracking) that addressed both positive and negative aspects of new AI technologies, and we checked these to allow for the comparison of overall ethics levels. Our findings showed that older people, women, and those with higher levels of education were more concerned about the social implementation of AI. Figure 1 shows the eight categories, ethics issues, and international differences in the Octagon scores.

### ELSI Score for AI

ELSI scores for R&D are emphasized in the social theory of science and technology. We developed the ELSI score using data collected in Japan and the U.S. based on four scenarios. The ELSI score is so simple that it can be used for AI as well as other technologies. It is currently being tested for application to genome editing technologies.

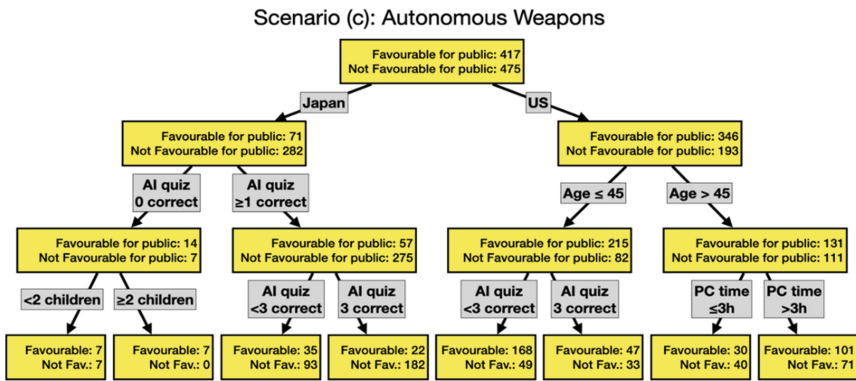


Fig. 2 Decision tree analysis for AI drone weapon using ELSI score

### References

1. Ikkatai, Y., Hartwig, T., Takanashi, N., Yokoyama, H.: Segmentation of AI's ELSI concerns in Japan, the US and Germany (submitted)
2. Hartwig, T., Ikkatai, Y., Takanashi, N., Yokoyama, H.M.: Artificial intelligence ELSI score for science and technology: a comparison between Japan and the U. AI Soc. (2022) <https://doi.org/10.1007/s00146-021-01323-9>
3. Ikkatai, Y., Hartwig, T., Takanashi, N., Yokoyama, H.M.: Octagon measurement: public attitudes toward AI Ethics. International Journal of Human-Computer Interaction (2022)

# Contents

## Ethics

Promoting Worker Wellbeing in the Era of Data Economy. . . . .	3
<i>Salla Ponkala, Jani Koskinen, Camilla Lähteenmäki, and Antti Tuomisto</i>	
Privacy in Internet of Things Ecosystems – Prerequisite for the Ethical Data Collection and Use by Companies. . . . .	18
<i>Mikko Vermanen, Minna M. Rantanen, and Jani Koskinen</i>	
The Use of Live Facial Recognition Technology by Private Entities in Public Places: A Study of Recent Case in Japan . . . . .	27
<i>Aimi Ozaki</i>	
Repair of Unstable Sociomaterial Relations: A Study on Librarians’ and Social Workers’ Practices in Addressing the Needs of Their Clients . . . .	36
<i>Johanna Sefyrin and Mariana S. Gustafsson</i>	
Autonomy Alliances and Data Care Practices . . . . .	47
<i>Barbara Nino Carreras and Sisse Finken</i>	
An Analysis Between SNS and Social Capital Types in Japan . . . . .	58
<i>Jay Kishigami, Shigenori Ohashi, Noritaka Maeda, Shigeru Fujimura, and Atsushi Nakadaira</i>	
Possible Utilization of Personal Data and Medical Care in Japan, Focusing on Japan’s Act on Anonymously Processed Medical Information to Contribute to Medical Research and Development. . . . .	67
<i>Mayu Terada</i>	
Examining the Effectiveness of Web Advertising on Pupil Size . . . . .	86
<i>Ryuta Yamashita, Tadaaki Shimizu, Natsuki Yoshinaka, Rintaro Kataoka, and Naoki Sawada</i>	
Digital–Sustainable Co-transformation: Introducing the Triple Bottom Line of Sustainability to Digital Transformation Research . . . . .	100
<i>Markus Philipp Zimmer and Jonna Järveläinen</i>	

**Law**

**Don't be Caught Unaware: A Ransomware Primer with a Specific Focus on Africa** . . . . . 115  
*Joey Jansen van Vuuren, Louise Leenen, and Anna-Marie Jansen van Vuuren*

**A Study on AI Creations and Patent Law Protection** . . . . . 132  
*Ayuki Saito, Michele Baccelli, Kazuto Kobayashi, and Mitsuyoshi Hiratsuka*

**General Monitoring and Constructive Knowledge? Issues of Automated Content Moderation by Hosting Service Providers Under Japanese Law.** . . . . 144  
*Toru Maruhashi*

**Comparison of Legal Systems for Data Portability in the EU, the US and Japan and the Direction of Legislation in Japan** . . . . . 159  
*Mika Nakashima*

**Regulatory Frameworks in Developing Countries: An Integrative Literature Review** . . . . . 170  
*Casper Chigwedere, Sam Takavarasha Jr., and Bonface Chisaka*

**Application of International Law to Cyber Conflicts Outline of Japan's Legal Response Against Low-Intensity Cyber Conflicts Through Countermeasures.** . . . . . 186  
*Tetsunosuke Jinnai*

**Privacy Protection During Criminal Investigations of Personal Data Held by Third Parties.** . . . . . 200  
*Taro Komukai*

**Author Index** . . . . . 213