資料２－２

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日立の国際論文数変化の分析結果からの科学技術政策の１提案

武田晴夫
株式会社 日立製作所 技師長
2021年4月23日

前回会議の武田発言より

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- ✓ 国際共著論文の全体が減っているのが問題、とするところからでなく、近未来の国力に直結する技術分野で、その分野先進国との共著論文が減ってしまっているのがまず問題だというところから出発すべき
- ✓ どうやってそのＫＰＩ値を上げていくべきかの１案をお話させて頂く
- ✓ 日本の国力を左右する分野で日本がリードしたい分野を決め、そこに産官学協同で集中して国際論文をどんどん作れば、被引用も国際共同論文も加速度的にふえる、かつての半導体分野の経験から
- ✓ 私来週、結構大きな経済の国際会合で基調的な講演をさせて頂く予定でして・・・

補足

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1. 2000年代初頭、弊社国際論文数・国際共著論文数の大きな変化、企業の科学技術力への懸念を文科省殿から頂いた

2. 事業ポートフォリオ変化（半導体）に起因、の定量分析結果をご報告

3. 国際論文数をKPIにするなら、半導体有力研究者による半導体論文執筆量産を復活することなれど・・・

21年4月6日 世界経済フォーラムにて

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世界ではデータを囲い込む保護主義がみられますが、その背景にあるのは信頼の欠如です。各国が等しくデジタル経済の恩恵を受けるために、**今こそ、日本が提唱したDFFT―データ・フリー・フロー・ウィズ・トラスト―を具体化するルールを作るときである**と考えております。

20年7月 経産省 国際標準化総会にて

経産省論点：重点化すべき個別分野は？
環境・エネルギー、デジタル・データ、・・・？
につき

【武田委員】「DFFT」。今回の総会資料にはDFFTの記載がなかったが、安倍首相が昨年のG20サミットや本年ダボス会議などで最重要メッセージとして世界に発信している国際標準化案件である。国際ルール形成推進の具体活動および総会資料での言及があるべき。

21年4月1日　武田DFFT講演

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ＴＰＰ１１電子商取引ウェビナーについて

令和３年４月

内閣官房ＴＰＰ等政府対策本部

１．日時・形式

令和３年４月１日（日本時間）

テレビ会議（主催：日本）

２．スピーカー・出席者

（１）スピーカー：西村経済再生担当大臣、ＴＰＰ１１の政府・企業関係者等（（株）日立製作所、（一社）電子情報技術産業協会（JEITA）、オーストラリア・サービス・ラウンドテーブル、オーストラリア外務貿易省、カナダ商工会議所、チリ外務省国際経済関係総局、ビジネスソフトウェア・アライアンス、ニュージーランド外務貿易省、シンガポール貿易産業省、アジア・ソサエティ）

（２）出席者：ＴＰＰ１１の政府・企業関係者及び有識者

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DFFT, AI, and Hitachi

Haruo Takeda
Corporate Chief Engineer
Hitachi, Ltd.
April 1, 2021

Dr. Haruo Takeda

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40-year-experience in AI since he wrote a machine learning program of a neural network *for the game of go* when he was an UG student in U Tokyo

Advisory Board Member
in Cabinet Office on AI strategies,
in Ministry of Economy on standardization strategies,
in Ministry of Science on int'l collaboration strategies,
in Cabinet Secretariat on Trusted Web (DFFT)

Hitachi

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has 500 subsidiary companies outside Japan in 40 countries.

One business unit “Automotive” has 137 factories in 27 countries. Another unit “Construction Machinery” monitors 300,000 machines working in 152 countries.

AI for those operations is shared with other global manufactures (car makers, Daikin,…)

Restriction in cross-border data flow is a serious concern for Hitachi and its partners & customers, and can result in a change of its strategy.

“An R&D Strategy for DFFT”

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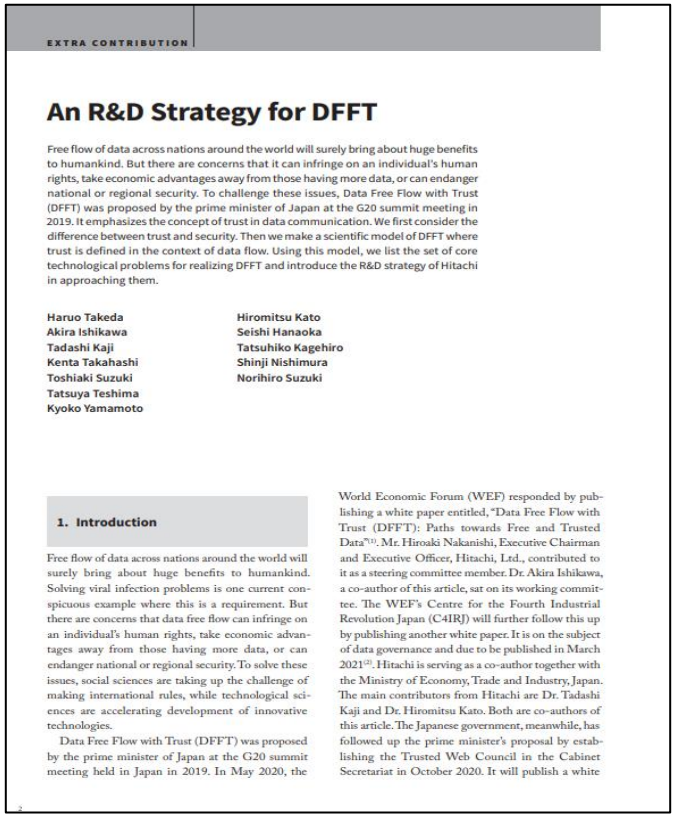
by H. Takeda, et al., March 2021.

（含、半導体有力研究者）



EXTRA CONTRIBUTION

An R&D Strategy for DFFT

Free flow of data across nations around the world will surely bring about huge benefits to humankind. But there are concerns that it can infringe on an individual's human rights, take economic advantages away from those having more data, or can endanger national or regional security. To challenge these issues, Data Free Flow with Trust (DFFT) was proposed by the prime minister of Japan at the G20 summit meeting in 2019. It emphasizes the concept of trust in data communication. We first consider the difference between trust and security. Then we make a scientific model of DFFT where trust is defined in the context of data flow. Using this model, we list the set of core technological problems for realizing DFFT and introduce the R&D strategy of Hitachi in approaching them.

Haruo Takeda
Akira Ishikawa
Tadashi Kaji
Kenta Takahashi
Toshiaki Suzuki
Tatsuya Teshima
Kyoko Yamamoto
Hiromitsu Kato
Seishi Hanaoka
Tatsuhiko Kagehiro
Shinji Nishimura
Norihiro Suzuki

1. Introduction

Free flow of data across nations around the world will surely bring about huge benefits to humankind. Solving viral infection problems is one current conspicuous example where this is a requirement. But there are concerns that data free flow can infringe on an individual's human rights, take economic advantages away from those having more data, or can endanger national or regional security. To solve these issues, social sciences are taking up the challenge of making international rules, while technological sciences are accelerating development of innovative technologies.

Data Free Flow with Trust (DFFT) was proposed by the prime minister of Japan at the G20 summit meeting held in Japan in 2019. In May 2020, the World Economic Forum (WEF) responded by publishing a white paper entitled, "Data Free Flow with Trust (DFFT): Paths towards Free and Trusted Data"[1]. Mr. Hiroaki Nakanishi, Executive Chairman and Executive Officer, Hitachi, Ltd., contributed to it as a steering committee member. Dr. Akira Ishikawa, a co-author of this article, sat on its working committee. The WEF's Centre for the Fourth Industrial Revolution Japan (C4IRJ) will further follow this up by publishing another white paper. It is on the subject of data governance and due to be published in March 2021[2]. Hitachi is serving as a co-author together with the Ministry of Economy, Trade and Industry, Japan. The main contributors from Hitachi are Dr. Tadashi Kaji and Dr. Hiromitsu Kato. Both are co-authors of this article. The Japanese government, meanwhile, has followed up the prime minister's proposal by establishing the Trusted Web Council in the Cabinet Secretariat in October 2020. It will publish a white

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Modeling DFFT

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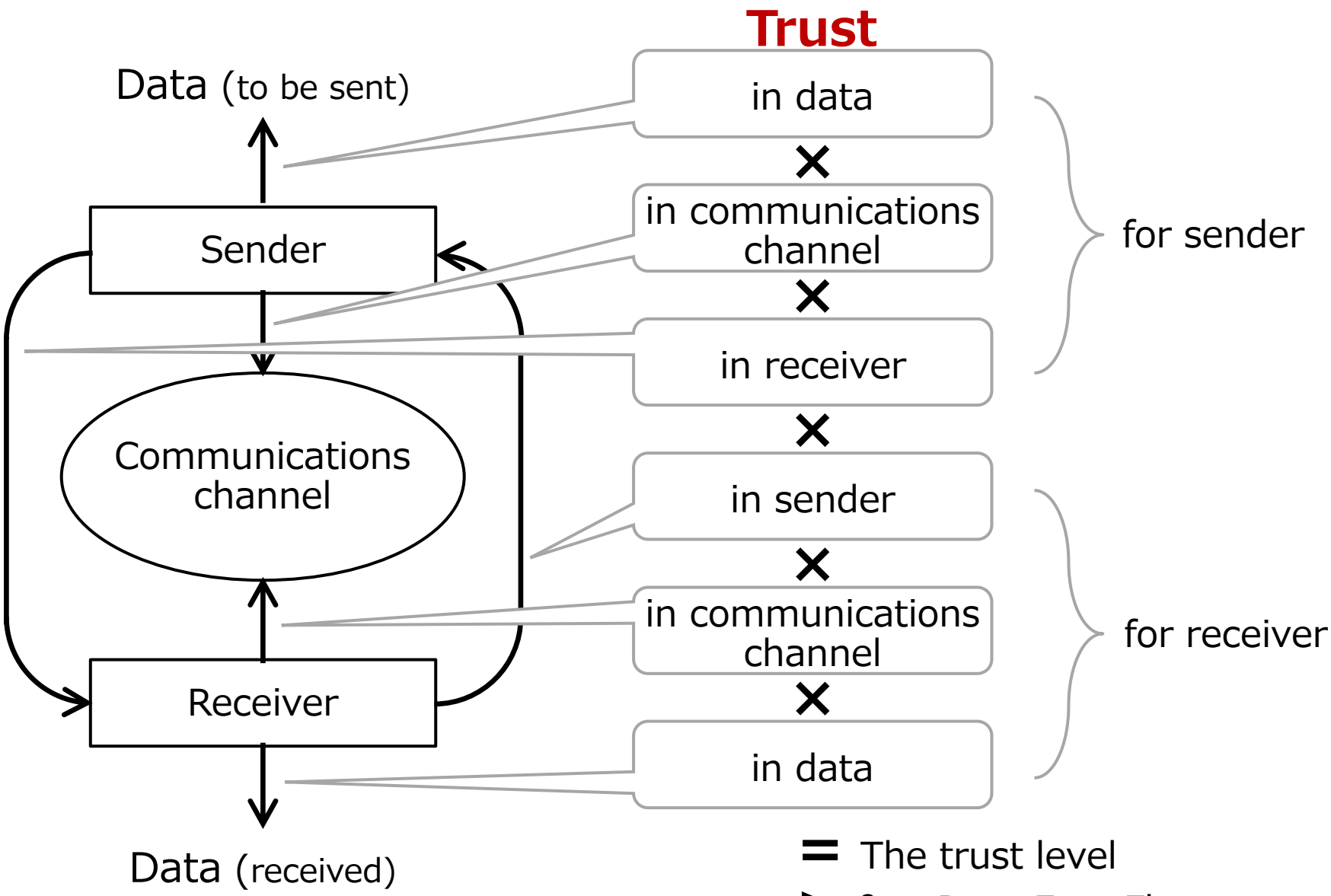

Trust Representation

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The first challenge is to design how trust is represented. The trust representation needs to be expanded beyond the unidimensional binary parameters for whether the data is classified or not to encompass multi-dimensional continuous variables. The dimensions will refer to who, where, when, why, and how the data is used in addition to what the data is.

It is surely not possible for humans to govern such complication. But thanks to the age of Artificial Intelligence, we can do it in collaboration with computers.

Academic Contribution to TPP?

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- ✓ To establish an academic task force in TPP
- ✓ To try to make a scientific model of DFF that can be unanimously agreed by nations
- ✓ To use the best practice for WTO

East Asia Joint Research Program

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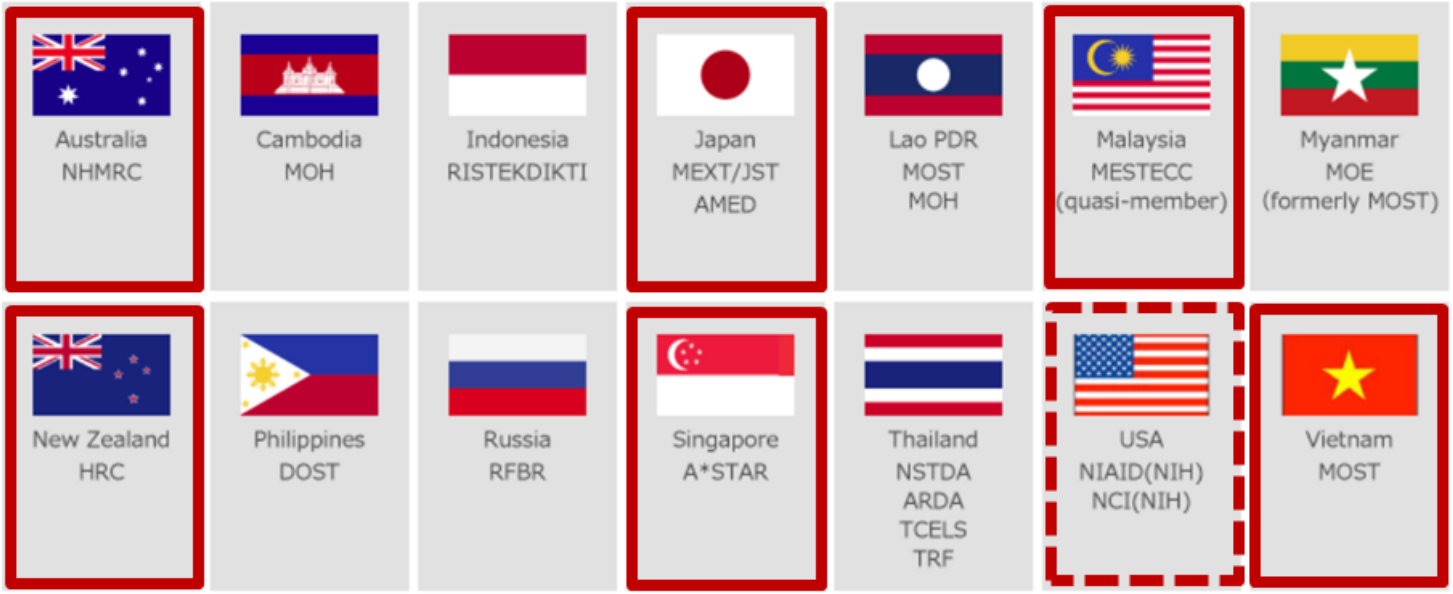
can be a starting point of this discussion



- e-ASIA/JRP was established after a proposal at an ASEAN summit meeting in 2011 by PM of Japan
- Program Director: Prof. Teruo Kishi, Chief Science Advisor to the Foreign Minister of Japan
- One of the 7 Program Officers is H. Takeda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前回会議の武田発言より（再掲）

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- ✓私来週、結構大きな経済の国際会合で基調的な講演をさせて頂く予定でして・・・