

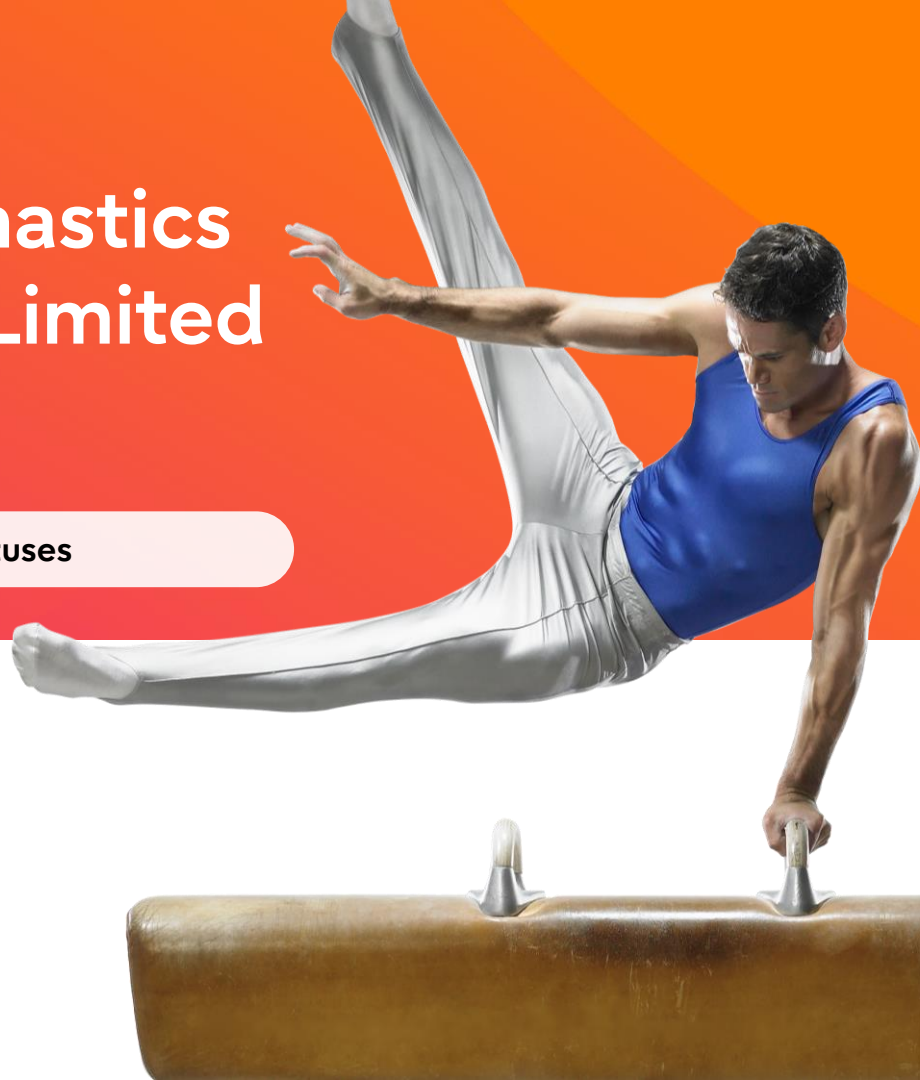
October 5th ,2023

The International Gymnastics Federation and Fujitsu Limited Joint Press Conference

Judging Support System for all 10 apparatuses



FUJITSU



Agenda

1 Judging Support System for use in competition for all 10 apparatuses Use of Judging Support System

**Morinari
Watanabe**

President

International
Gymnastics
Federation

**Donatella
Sacchi**

President

Women's Artistic
Gymnastics
Technical Committee

**Arturs
Mickevics**

President

Men's Artistic
Gymnastics
Technical Committee

2 Future Evolution of JSS & Human Motion Analytics Offering

Yoshinami Takahashi

President

SEVP, Head of Global Business Solutions
Fujitsu Ltd.



A Big Step Towards the Future with Judging Support System

Morinari Watanabe

President

International Gymnastics Federation (FIG)

Bruno Project

UNIT Hendrika - NED
Melchor - SUI

2 LOS ANGELES

Raymond - USA
Dallais - USA
ZZO Dreale - ITA
ELMETTI Savino - ITA
CK George - USA
BRA Mario - ITA
Roméo - ITA
István - HUN
George - USA
INI Franco - ITA
E Rowland - USA

6 BERLIN

IRTH Anita - GER
ERT Franz - GER
ER Erna - GER
Konrad - GER
AN Isoldé - GER
C Alois - TCH
ledi - GER
R Gertrud - GER
Georges - SUI
SEN Paula - GER
VALA Aleksanteri - FIN
ITT Julie - GER
JARZMANN Alfred - GER

8 LONDRES

JNEN Paavo - FIN
Carl - SUI
OVA Zdenka - TCH
ANEN Veikko - FIN
ROVA Marie - TCH
JEN Kalevi - FIN
OVA Miroslava - TCH
EROVÁ Milena - TCH
J Ferenc - HUN
CH Michael - SUI
Olavi - FIN
JKOVA Vera - TCH
VALA Aleksanteri - FIN
I Sulo - FIN
LAINEN Heikki - FIN
NOVA Olga - TCH
OVÁ Božena - TCH
JER Josef - SUI
SVIRTA Einari - FIN
IHOVSKA Zdenka - TCH



NORDIN Hjördis - SWE
PERELMAN Mikhail - URS
PETTERSSON Göta - SWE
RÄ-RING Gun - SWE
SANDAHL Ingrid - SWE
SHAGIRYAN Grant - URS
SHAMRAI Galina - URS
THORESSON William - SWE
URBANOVICH Galina - URS

1956 MELBOURNE

ASTAKHOVA Polina - URS
AZARYAN Albert - URS
BANTZ Heimut - EUN
BODO Andrea - HUN
CHUKARIN Václav - TCH
GULYAS-KOTEL
KALININA-IVANO
KELETI Agnes - HUN
KERTESZ Alice - HUN
KORONDI Margit - HUN
LATYUNINA Larisa - URS
MANINA Tamara - URS
MUBARAK

1976 MONTREAL

ANDRIANOV Nikolay - URS
COMANECI Nadia - ROU
FILATOVA Maria - URS
FUJIMOTO Shun - JPN
GROZDOVA Svetlana - URS
IGARASHI Hisato - JPN
KAJIYAMA Hiroshi - JPN
KATO Sawao - JPN
KENMOTSU Eizo - JPN
KIM Nellie - URS
KORBIT Olga - URS
MACYAR Zoltan - HUN
SAADE Elvira - URS
SUKAHARA Mitsuo - JPN
URISCHEVA Lyudmila - URS

1980 MOSCOW

ANDRIANOV Nikolay - URS
AZARYAN Eduard - URS
BRUCKNER Roland - GDR
COMANECI Nadia - ROU
GROZDOVA Svetlana - URS
ELTCHEV Stoyan - BUL
TYATIN Aleksandr - URS
FILATOVA Maria - URS
NAUCK Maxi - GDR
M Nellie - URS
MACYAR Zoltan - HUN
AKUTS B. - URS
ARKELI - URS
SUKAHARA Mitsuo - JPN
URISCHEVA Lyudmila - URS

1984 LOS ANGELES

COMANECI Nadia - ROU
SAADE Elvira - URS
Laura - ROU
ROBERT Timothy - USA
NG Lori - CAN
LORD Mitchell - USA
ROGORA Cristina Elena - ROU
SHIKEN Koji - JPN
WARTUNG James - USA
OHNSON Scott - USA
Ning - CHN
Yun Yun - CHN
IA Yanhong - CHN
MCNAMARA Julianne - USA
ROSCIE Shuang - CHN



1992 BARCELONE

BELENI Valeri - EUN
BOGINSKAYA Irina - URS
CHURAVINA Irina - URS
DIMAS - URS
GA - URS
DIR - URS
GIL - URS
L - URS
LYSSENKO Galina - URS
MILOSOVICI Lavinia - ROU
MISUTIN Gregor - EUN
ONODI Henrietta - HUN
PAE Gil-Su - PRK
SHARIPOV Rustam - EUN
SOSHENKO Aleksandra - EUN
SOSHENKO Aleksey - EUN

2004 ATHENS

SHIMANSKI
URZICA Mar
VIHOVS Ig
XIAO Junfen
XING Aowei
XANG Wei -
ZAMOLODC
ZHENG Lihu
ZILBER Irma

2008 PEKING

ALYCHUK I
BLANIK Les
CHEN Yibing
CHENG Fei
DENG Linlin
GAVRILENK
GORBUNOV
HE Kesin - C
HE Wenna -
HONG Un Jk
HUANG Xu
IZBASA San
JIANG Yuyou
JOHNSON E
KANAIEVA E
LI Shanshan
LI Xiaoping
LIUKIN Anat
LU Chunlong
POSEVINA I
SHKURIKHI
XIAO Qin - C
YANG Wei -
YANG Yilin -
YOUNG

Joke come true!



Expectations for Judging Support System

Donatella SACCHI
President

Women's Artistic Gymnastics
Technical Committee



Arturs Mickevics
President

Men's Artistic Gymnastics
Technical Committee



Future Evolution of JSS & Human Motion Analytics Offering



October 5th, 2023

YOSHINAMI TAKAHASHI

SEVP, Head of Global Business Solutions
Fujitsu Ltd.



Our Purpose

Make the world more sustainable by building trust in society through innovation.



Vertical Areas

4 cross-industry fields to solve societal issues



Sustainable Manufacturing



Consumer Experience



Healthy Living



Trusted Society

Horizontal Areas

3 technology foundations to support cross-industry



Digital Shifts



Business Applications



Hybrid IT

Key Technologies



Computing



Network



AI



Data & Security



Converging Technologies

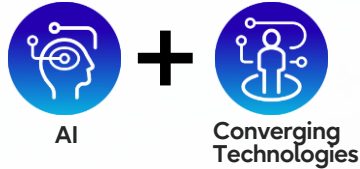
Our purpose

Make the world more sustainable by building trust in society through innovation.

Business activities with a focus on solving social issues



Technology to Empower People



Global Responsible Business (GRB)



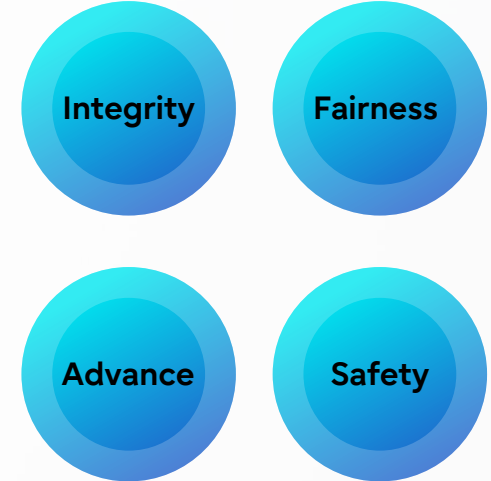
Fujitsu Sports



Long-term and stable contributions



Sports World



Creation of growth opportunities

History of completion 10 apparatuses



The completion of 10 apparatuses is one year ahead of the original schedule.

Overview of Judging Support System (JSS)

Data acquisition



Four 2K cameras
(8 for Floor)



AI

Skeleton Recognition



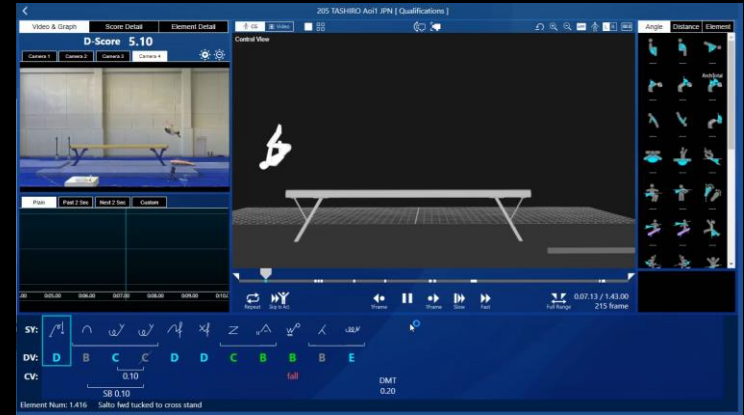
Data
analysis /
matching

Element Database

(Digitalizing Code of Points and movement of top athletes)



Achieving transparency and fairness in judgment



Major Output Data

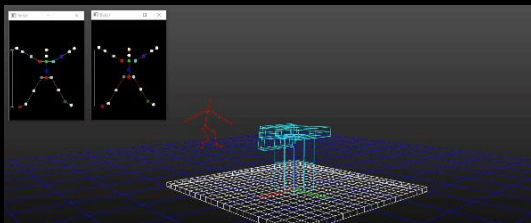
1. D-score, Difficulty, Group code, Connected value
2. Symbol mark (Element name)
3. CG, Skeletal data
4. Angle, Distance
5. Camera image, Timeline

World's first and only AI judging support for competitions

Human Motion Analytics to digitize diverse human movements with high precision

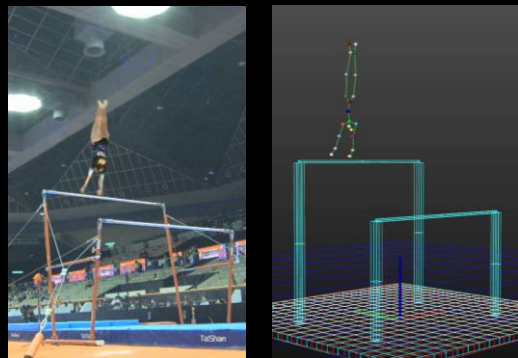
Motion-constraint corrector

Unique correction algorithm that significantly minimizes the jitter (estimation error) of posture recognition by deep learning, which has been a problem in image analysis.



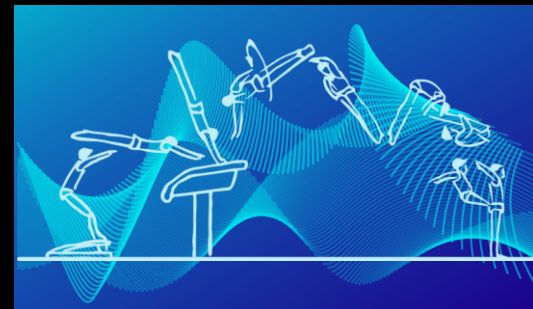
Zero-Annotation 3D Data Generator

Photorealistic technology artificially generates a large amount of training data useful for improving accuracy without annotation.



4-Dimension Capture

Capture human movement in 4 dimensions (3 dimensions + time series) and recognize motion as a series of movements.

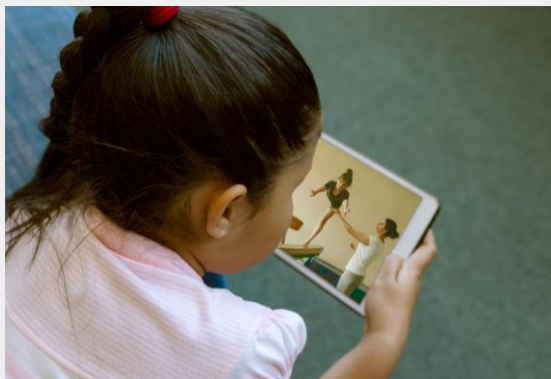


Over **200** patent applications

Expansion to training

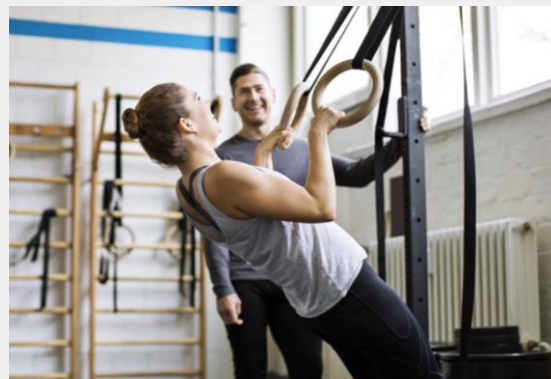
Humanity can further evolve

Opportunities for growth for people worldwide



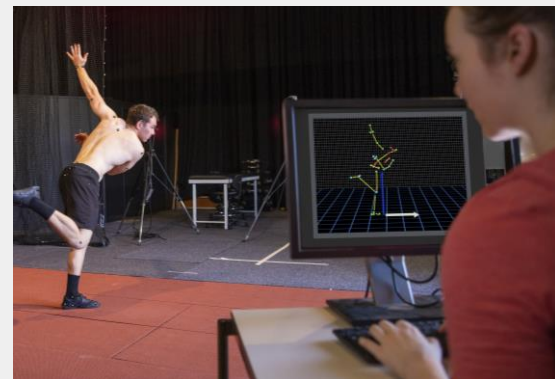
Remote coaching to areas lacking direct access to coaches

Longer lifespan as an athlete



Prevent injuries and provide safer training methods

Human Enhancement



Development of new elements and improvement of performance

Providing software for gymnastics training

TV contents

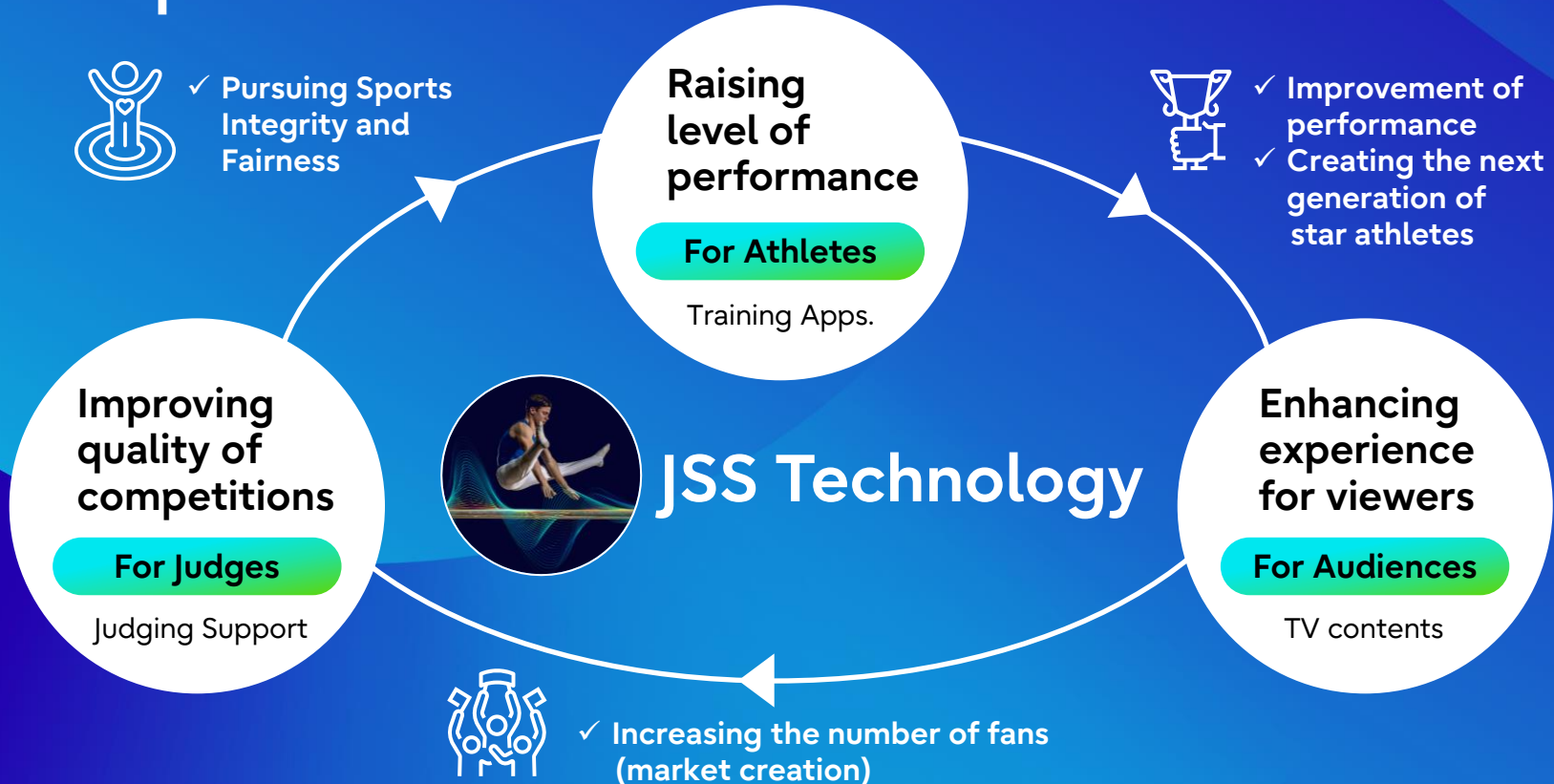


An unparalleled viewing experience

Technology offers viewers :

- ✓ the chance to better appreciate the elite skills of the sport by expressing the performance *visually as well as numerically*.
- ✓ the drama and the strategy, with *near real-time insights* into performance elements.

Technology's contribution to the development of the Sports World



The future we want to create

Gymnastics is known as the “King of Sports” — a discipline with a great variety of human movements. Fujitsu will apply its technology for digitizing such movement, developed through Judging Support System, to various other fields.



Sports & E-sports



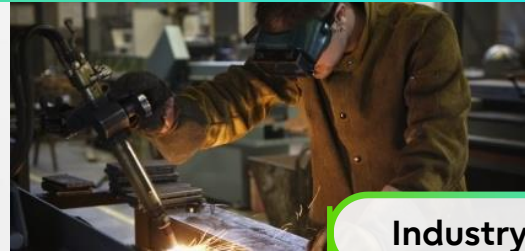
Entertainment & Games



Technologies cultivated through JSS development will empower people everywhere to have more enriching and enjoyable life experiences, while enhancing their personal skills.



Education, Health & Healthcare



Industry & Culture



Human Motion Analytics Offering



Better experience



Improve your skill



Active life forever



Sports



Entertainment



Healthcare



Retail



Industry

Gymnastics
Judging

Gymnastics
Training

Expand
to
other
sports

Business applications

Over 100 basic movements



Human Motion Analytics



Motion-constraint
corrector



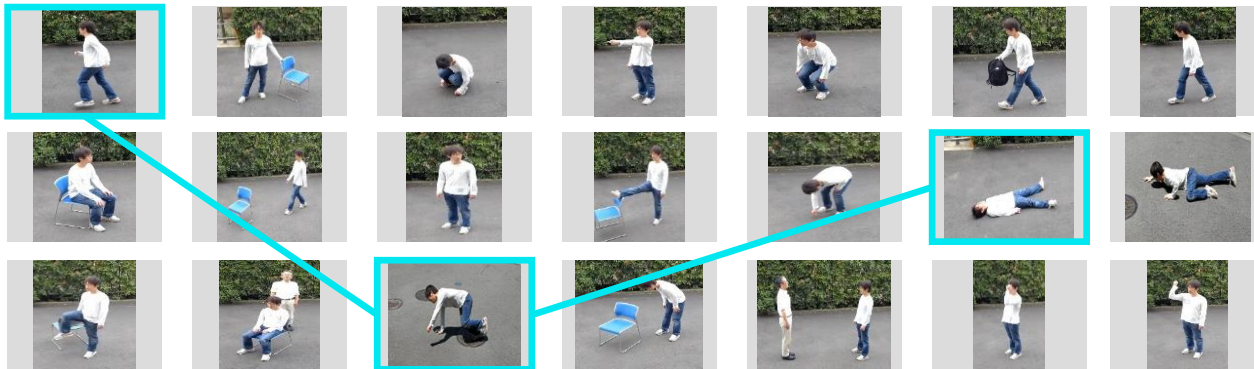
Zero-Annotation
3D Data Generator



4-Dimension Capture

Expansion into other fields

100+ basic movements are supported with a combination of various gestures and actions.



E.g.: Feeling sick and falling over



Achieved world-class accuracy results against key international benchmark

Fujitsu
World Top Level Accuracy
at the international benchmark

CVPR (Computer Vision and Pattern Recognition)

No.1 accuracy of product recognition at "AI City Challenge – Track 4"
hosted by CVPR that is the top conference of AI image recognition, Jun 2023.



ICPR
(International Conference
on Pattern Recognition)

No.1 accuracy

Problem 1

Take time to
prepare
learning data
and verify



Solution

**Basic action
recognition**
100 Basic Action
Learned Model

Problem 2

Difficult to
customize
after
deployment



Solution

Behavioural estimation
Easily define complex
behavior

To a sustainable society



Thank you

