University of Tsukuba
Cybernics
fusion of human, machine and information systems
ImPACT

CYBERDYNE
SiP

The 5th ASEAN-Japan Smart Cities Network High Level Meeting
on October 26th and 27th, 2023 in Tsukuba City

Challenges for the Future !

"F-MIRAI" Center and Center for "CYBERNICS" Research

to shape the Smart City for Healthy and Well-being Society

Social Innovation: Society 5.0/5.1

"Cybernics" : Fusion of "Humans"+"Robots"+"AI/Information systems"
Cybernics improves, regenerates, complements and empowers human's functions.

Sankai Y.
Director, F-MIRAI Center, Univ. of Tsukuba
Executive Director/Professor, Center for Cybernics Research, Univ. of Tsukuba
President&CEO, CYBERDYNE Inc.
Program Director, Strategical Innovation Promotion (SIP) Program, Cabinet Office of Japan
International Fellow, The Royal Swedish Academy of Engineering Sciences

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TOYOTA & Univ.of Tsukuba

F-MIRAI

R&D Center for Frontiers of MIRAI in Policy and Technology

筑波大学未来社会工学開発研究センター

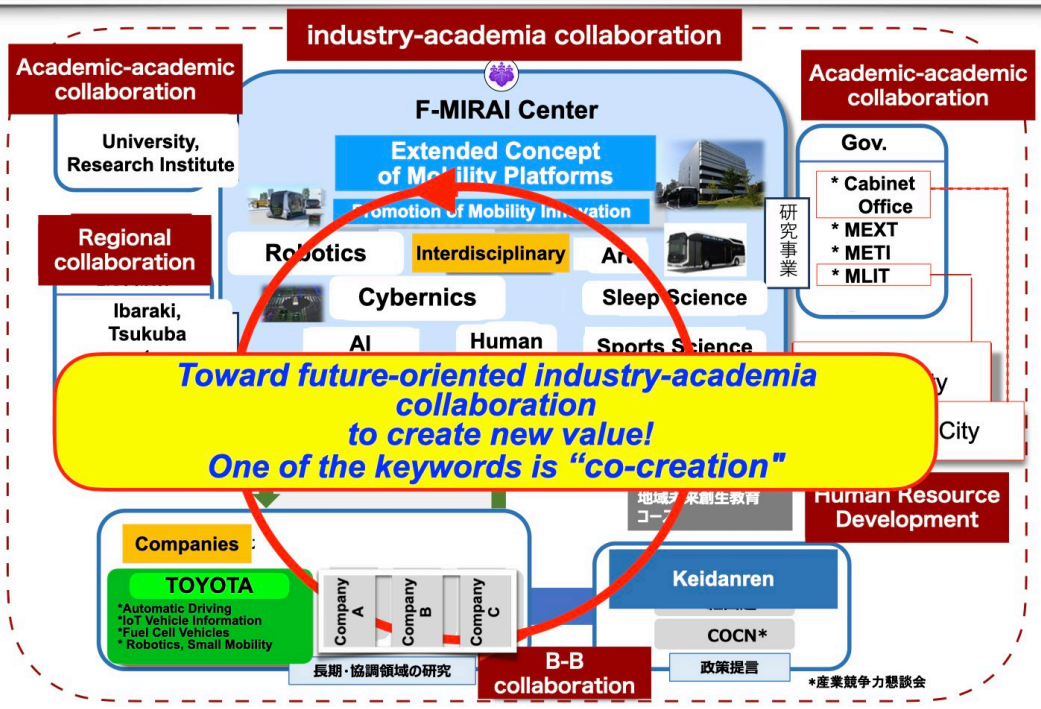
Making "Mobility" a "Social Possibility" through Smart/Super City project for Society 5.0/5.1

Director/Chairman: Y. SANKAI

Yoshiyuki SANKAI
Professor. Dr., Univ. of Tsukuba
Executive Research Director, Center for Cybernics Research (CCR), University of Tsukuba,
Director, F-MIRAI: R&D Center for Frontiers of MIRAI in Policy and Technology, University of Tsukuba,
CEO/President, Cyberdyne Inc.
sankai@golem.iit.tsukuba.ac.jp
sankai@cyberdyne.jp
sec@golem.iit.tsukuba.ac.jp
sec@cyberdyne.jp

F-MIRAI

F-MIRAI Collaboration Structure



CYBERDYNE & Univ.of Tsukuba

Cybernics
fusion of Humans, AI Robots and Information Systems

Center for Cybernics Research
fusion of Humans, AI Robots and Information Systems

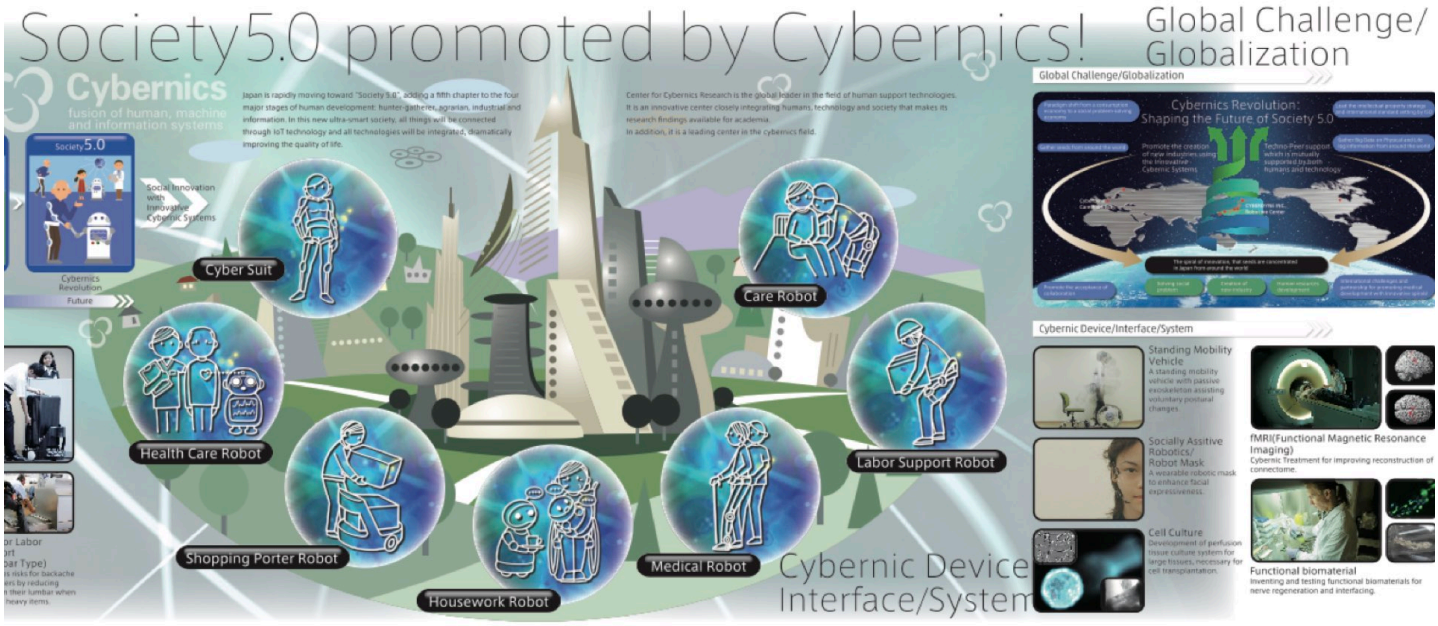
筑波大学サイバニクス研究センター

Innovative Cybernics Systems for Society 5.0/5.1
fusion of "Humans" and "Cyber/Physical Space"

Executive Director: Y. SANKAI

Yoshiyuki SANKAI
Professor. Dr., Univ. of Tsukuba
Executive Research Director, Center for Cybernics Research (CCR), University of Tsukuba,
Director, F-MIRAI: R&D Center for Frontiers of MIRAI in Policy and Technology, University of Tsukuba,
CEO/President, Cyberdyne Inc.
sankai@golem.iit.tsukuba.ac.jp
sankai@cyberdyne.jp
sec@golem.iit.tsukuba.ac.jp
sec@cyberdyne.jp

Pioneering the Future with Cybernics

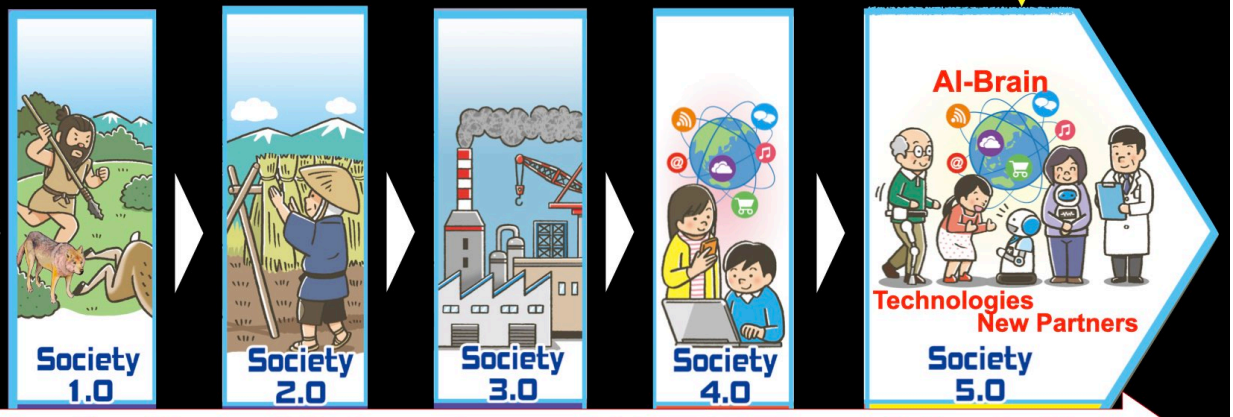


by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Symbiosis of Humans and Technologies:
The era of "Techno Peer Support"
Cybernics will solve social problems to realize Society5.0/5.1.

a low-birth super aged society

Brain
Intelligence
Tech.
Tools
Partner



Extending Human Life Expectancy with Technology → Aging Problems

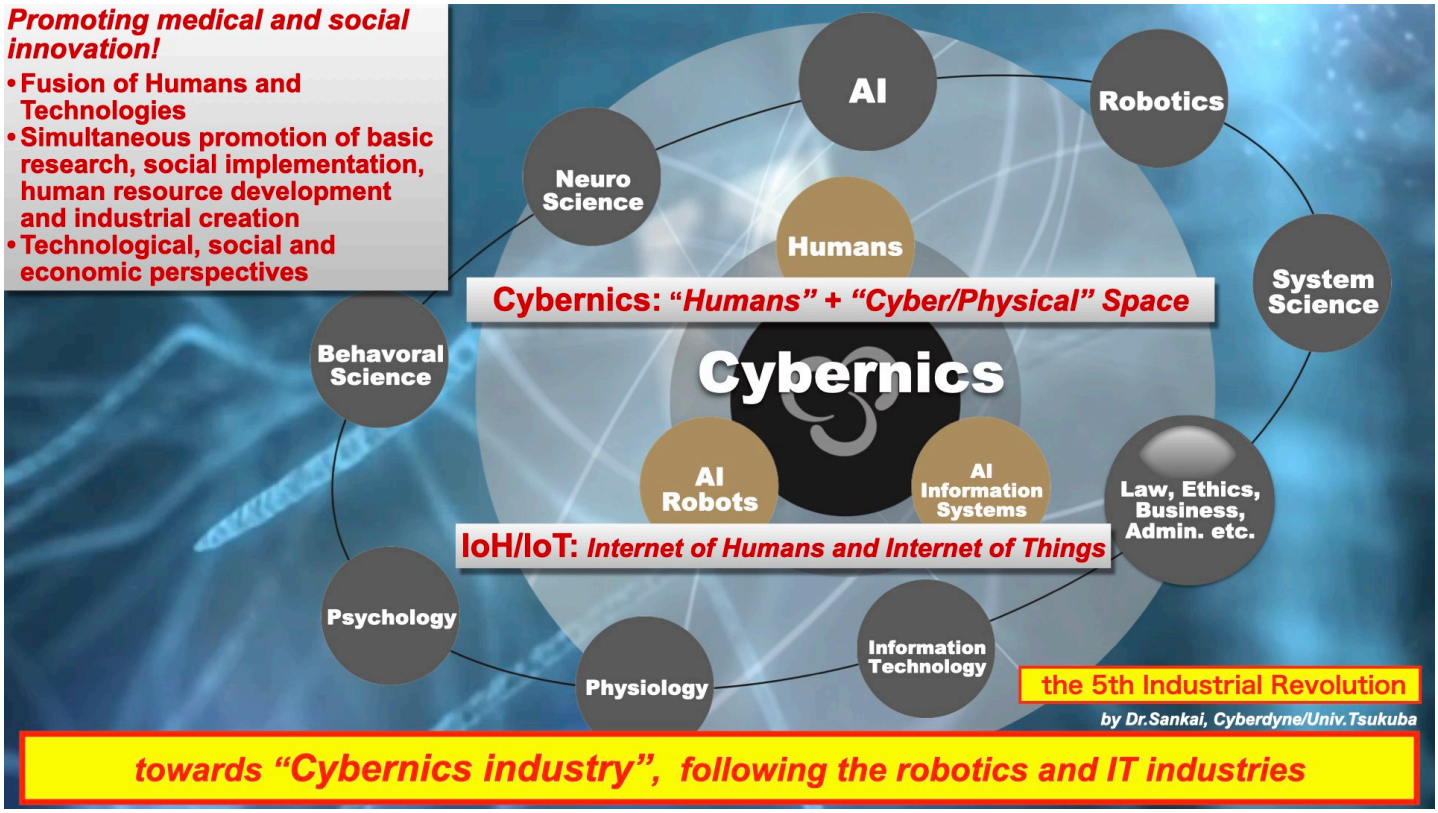
Physical Space | Cyber Space | Cybernics Space

"Cybernics" : Fusion of "Humans" + "Cyber/Physical Space"

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

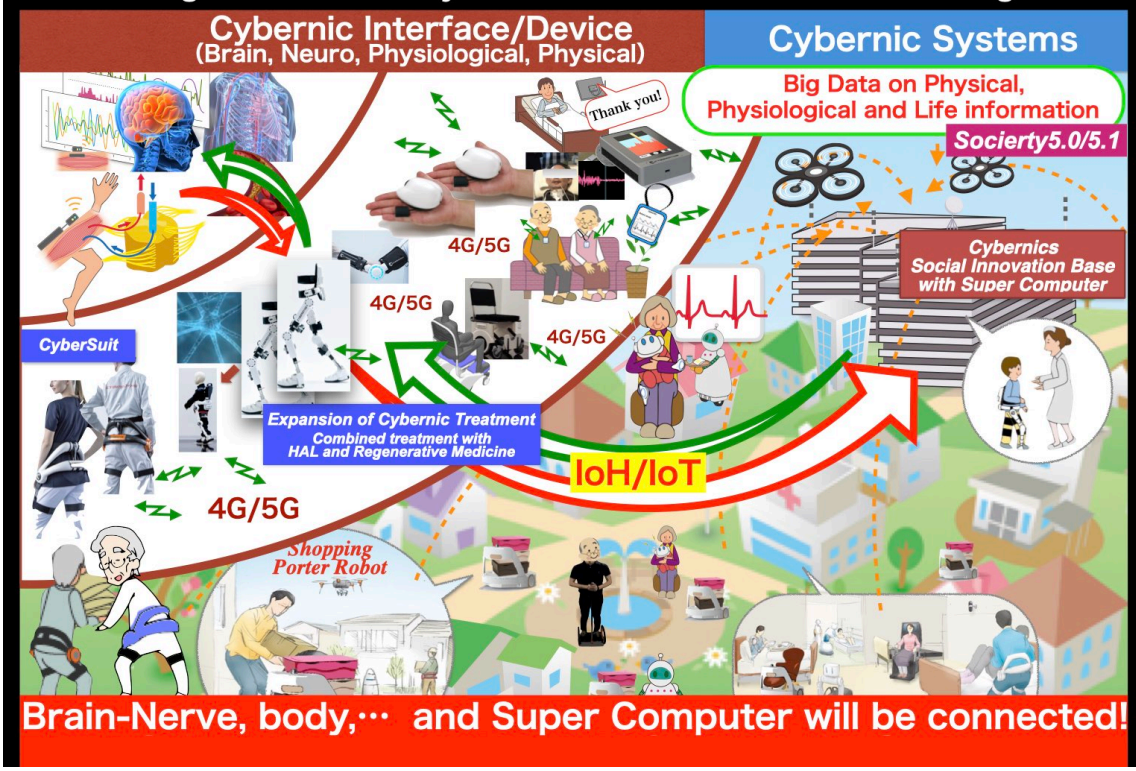
Promoting medical and social innovation!

- **Fusion of Humans and Technologies**
- **Simultaneous promotion of basic research, social implementation, human resource development and industrial creation**
- **Technological, social and economic perspectives**



towards "Cybernics industry", following the robotics and IT industries

Strategies/Vision for Symbiosis of Humans and Technologies



CYBERDYNE

By Dr.Sankai

Contact us !

"CEJ Fund" was established to create Cybernics Industry!


医療・AI 300億円ファンド
サイバーダイン

Fund size:
Several hundreds of million USD

Symbiosis of Humans and Technologies with Innovative Cybernics Systems for Medical/Social Innovation

We will continue to challenge ourselves to pioneer the future by envisioning the ideal future where people and technology symbiotically coexist!

Cabinet Office: SIP Program
Cross-ministerial Strategic Innovation Promotion
Program Director since Apr. 2023

Tsukuba Innovation Eco System Business producer

Near future technologies Social implementation business

Cabinet Office: Disruptive Innovative R&D promotion program (ImPACT) PM

Cyberdyne Ph.D. program

WISE PhD program

Smart/Super City Project by MLIT, Cabinet office as expert member

Cabinet Office: World-Leading Innovative R&D Program (FIRST) Leader

Leading PhD program Sub-Leader

Cybernics GCOE Program Sub-Leader

Leader

WEF (Davos Conference) Council Member, Establishment of the 4th Industrial Revolution Center Partner

TSUKUBA Conf.
(Japanese version Davos meeting)

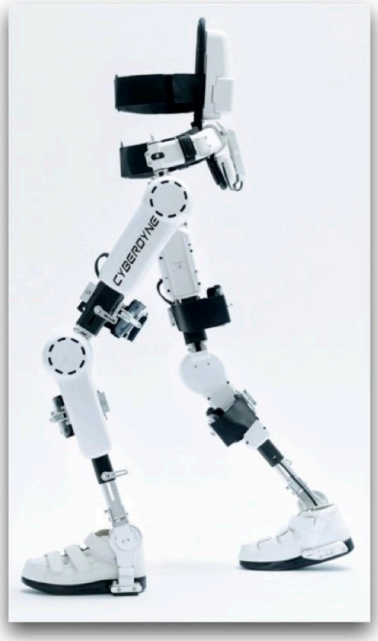
Innovation of virtuous circle, for Cybernics industry

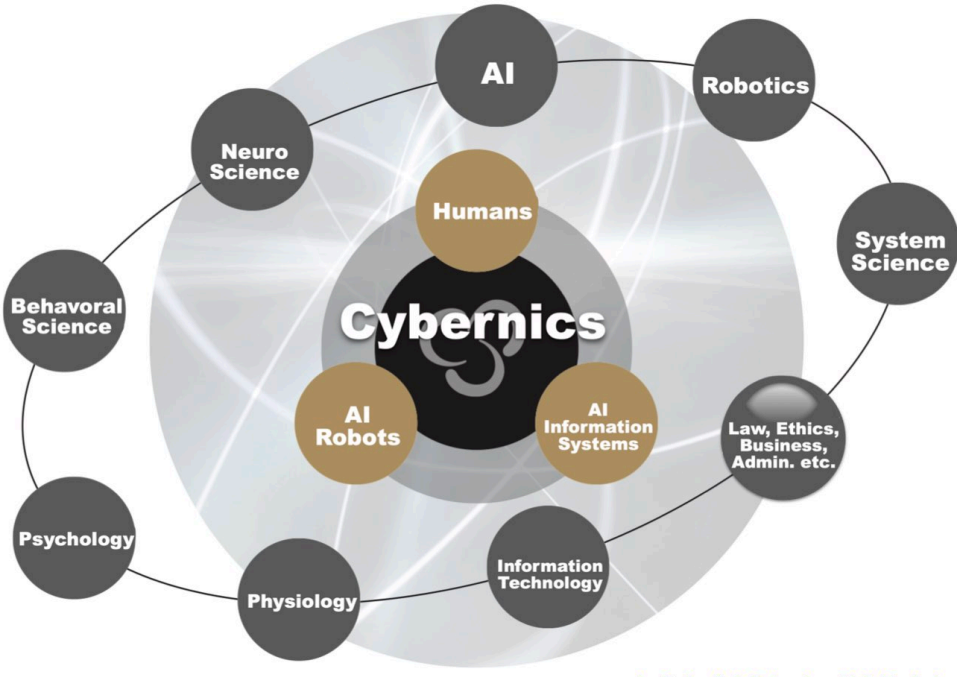
Collaboration with Tsukuba City

Promotion of improvement through direct dialogue with National Institute AIST

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

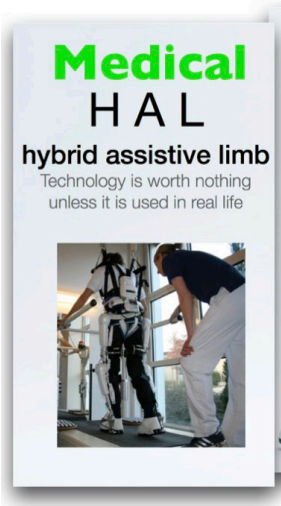
World's first Wearable Cyborg HAL : One of the Innovative Cybernic Systems New Medical Treatment for Brain-Neuro-Muscular Disease

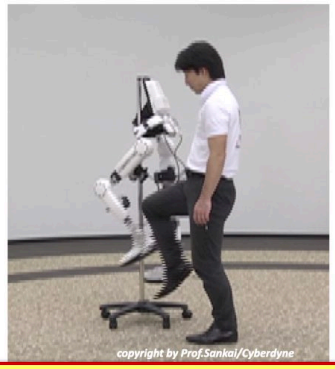


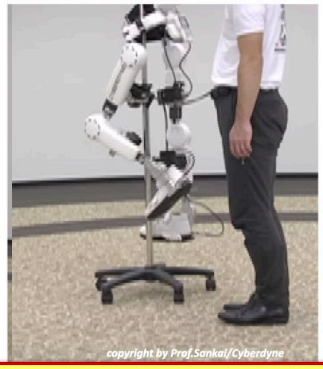


by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Wearable Cyborg HAL : One of the Innovative Cybernic Systems
New Medical Treatment for Brain-Neuro-Muscular Disease
“Cybernics Treatment”



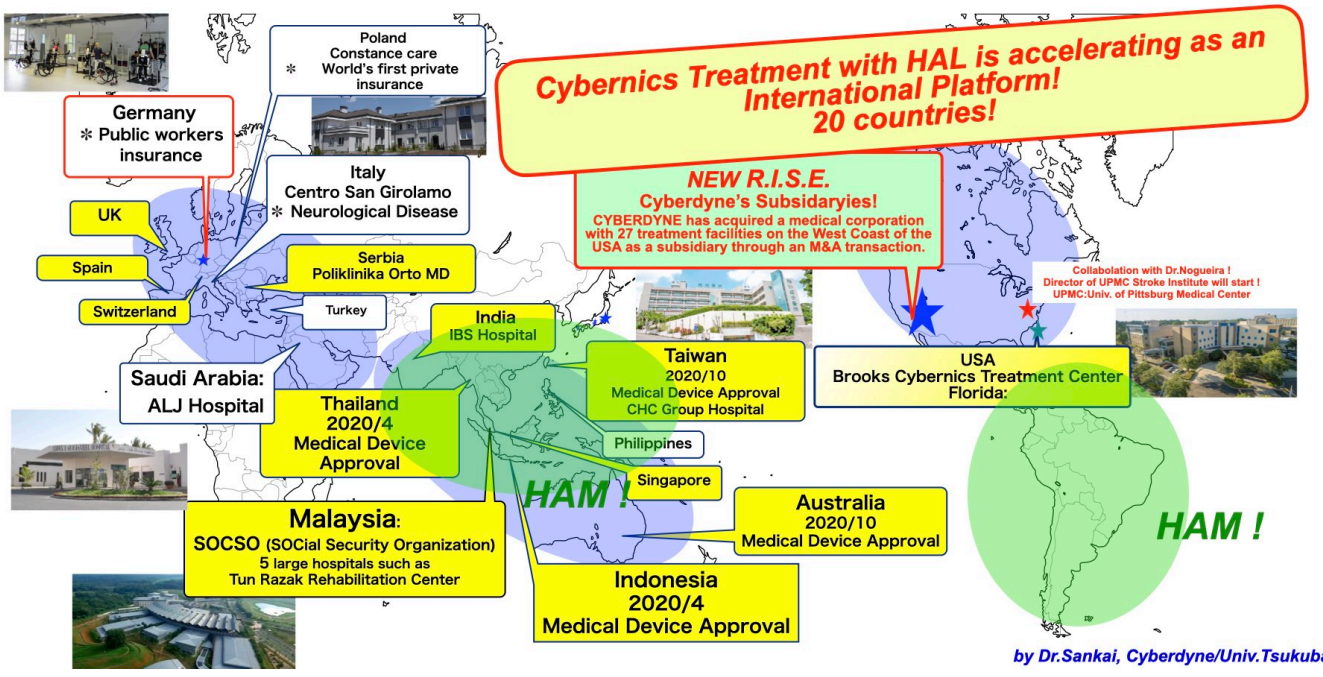




Technical Features of HAL:.
1) Obtain information on the brain-nervous-muscular systems from the periphery of the body.
(2) HAL functions in sync with a patient’s motor intentions.
3) Interactive biofeedback (iBF) loops between the human cranial nervous system and the body system to create a Cybernics treatment.

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Social Impact ! Overseas approval status of HAL treatment:
Global reach of world’s first wearable cyborg HAL



by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Collaboration & Innovation

Malaysia's Advanced Initiatives

National Neuro-Robotic and Cybernics Centre in Malaysia

On June 11, in Ipoh, Perak, Malaysia, our business partner, the Social Security Organization (SOCSO), a Malaysian government-affiliated organization, held a groundbreaking ceremony for the National Neuro-Robotic and Cybernics Centre, one of the largest medical complex in Southeast Asia.

The outline of National Neuro-Robotic and Cybernics Centre

The National Neuro-Robotics and Cybernics Centre is scheduled for construction in Bandar Meru Raya, a new area being developed in Ipoh, Perak, northern Malaysia. The grounds of the new center is going to be 37 hectares and will simultaneously enable about 700 patients to receive comprehensive treatment for a period of time, making it one of the largest medical complex in Southeast Asia. Construction is scheduled to be completed around the end of 2024.

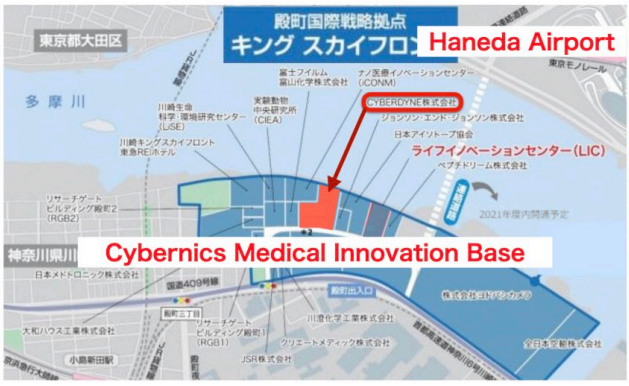
Malaysia's National Neuro-Robotic and Cybernics Centre

It will be completed in Malaysia at the end of 2024. We would like to strongly promote innovative "Cybernics industry" (industry dealing with Human + Cyber/Physical space) following robotics and IT industries, in the scenario of science, technology and innovation strategy and collaboration between Malaysia and Japan, focusing on Human Resource Development in Advanced Science and Technology fields, labor support and health maintenance support, science and technology Hub in Asia region formation, Medicine, health and Care, etc., which we would like to strongly promote through collaboration with the SIP program of the Cabinet Office and through cooperation with other companies. It will also become a Science and Technology Hub for the world's most advanced cybernics technology and human-collaborative robotics technology.

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Cyberdyne Medical Innovation Base facing Haneda Airport!

Combined therapy with Regenerative medicine, Drug etc.



川崎に新興企業集積

サイバーダイン 22年、医療・バイオ系

サイバーダインの新拠点「サイバニクス イノベーション ベース」の完成イメージ

January 2023,
Cybernics Bio-Medical Innovation Base
in the National Strategic Medical Innovation Zone facing Haneda Airport.

サイバーダイン 川崎に新拠点

連携企業を総合支援

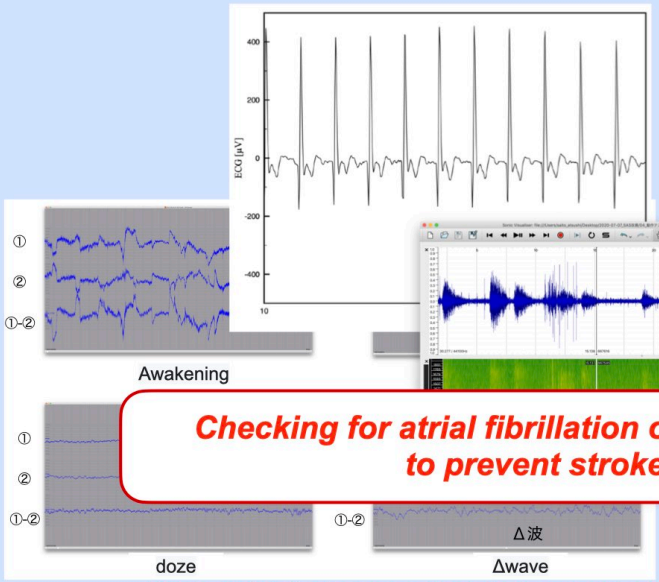
山海嘉之社長

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Newly developed Cybernic Vital Sensor:

continuous measurement of Heart Activity and Brain Activity for 14 days,

Bioelectrical Signal (ECG, EEG etc), Movement, BodyTemperature, SpO2/Breath condition(option), etc.



Checking for atrial fibrillation on a daily basis to prevent stroke!

Cyvis-P (Weight: 9g, Wireless)

Cyvis-2 (Weight:34g, Wireless)

We just finished our medical device application for Japanese FDA in April 2023 !

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

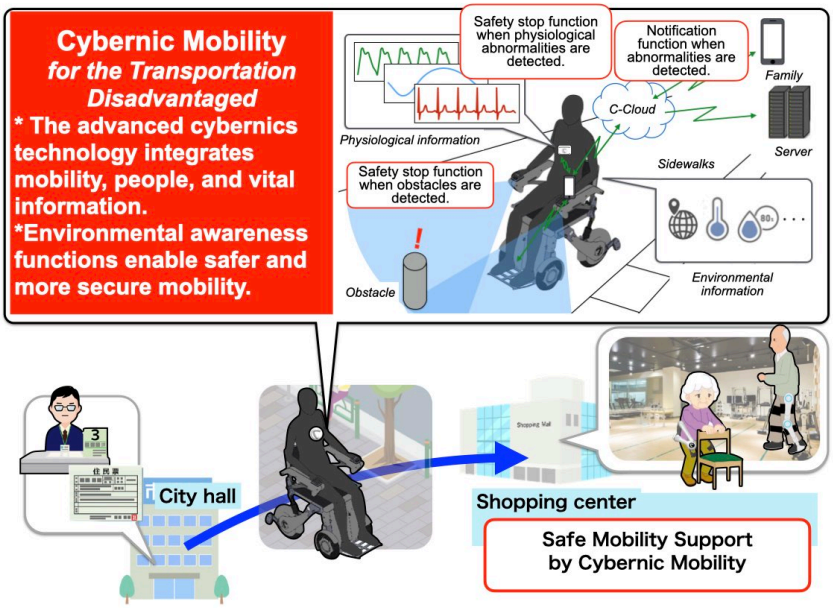
Cybernic Mobility *for the Transportation Disadvantaged*

CYBERDYNE

Indoor/Outdoor Driving

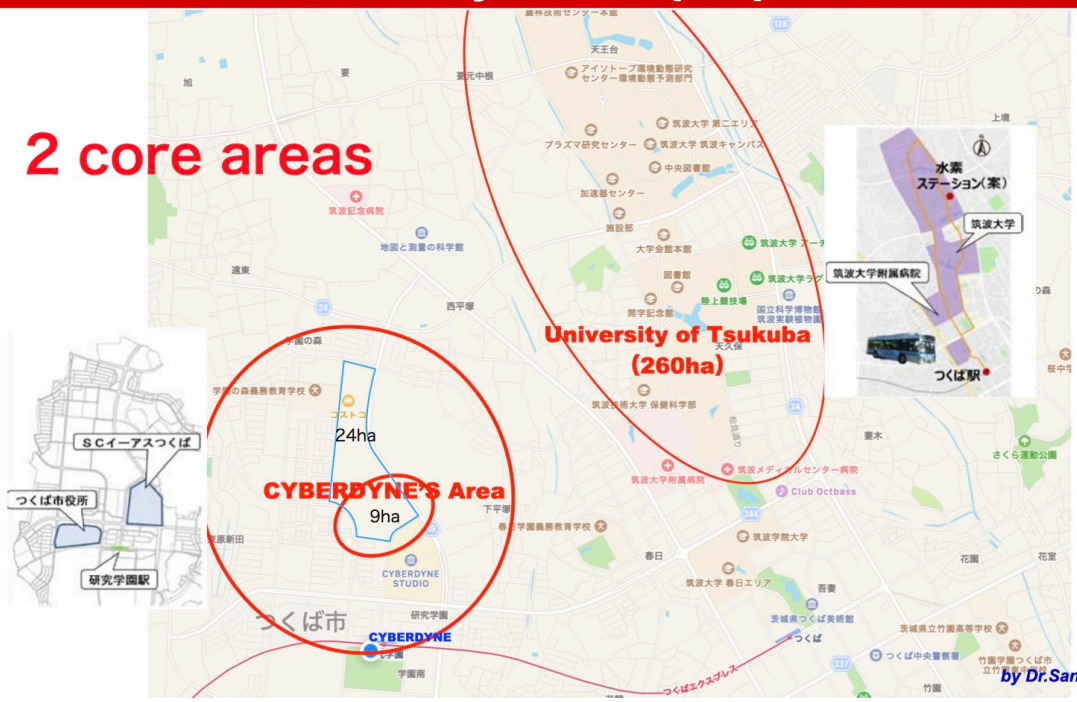
Cybernic Mobility
for the Transportation Disadvantaged

*** The advanced cybernics technology integrates mobility, people, and vital information.**
***Environmental awareness functions enable safer and more secure mobility.**



by Dr.Sankai, Cyberdyne/Univ.Tsukuba

One of the approaches of the Tsukuba Smart City Initiative is Mobility. However, we had better think about the future society from many different perspectives.



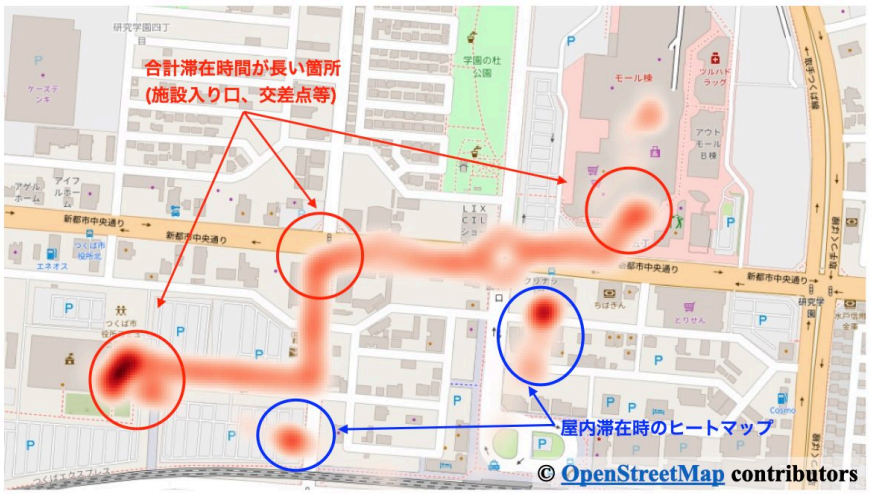
by Dr.Sankai, Cyberdyne/Univ.Tsukuba

1. SC : Indoor/Outdoor Driving Experiment

CONFIDENTIAL CYBERDYNE

Environmental information:

Identifies dwell points on outdoor driving routes



by Dr.Sankai, Cyberdyne/Univ.Tsukuba

World's most advanced energy storage device

Confidential

Fast charge

- Don't require wait time
- Increased energy efficiency with regenerative braking

High power

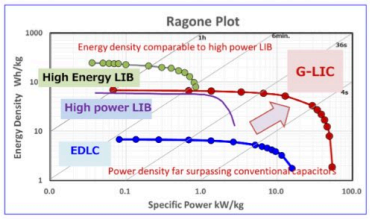
- Can support rapid acceleration and product high output instantly

High safety

- No risk of explosion

Long life

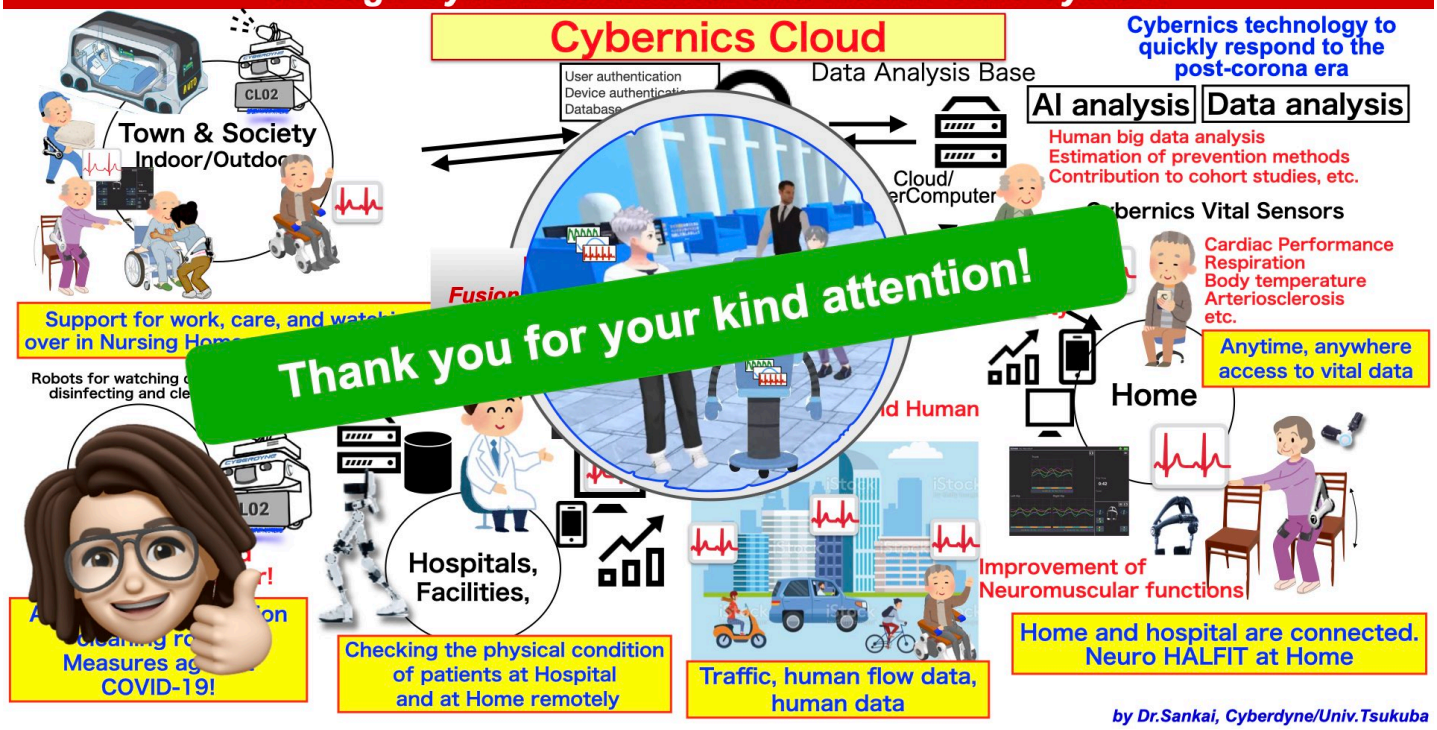
- Can be charged and used over million times
- Can cover million km without battery replacement



Make contribution to SDG

by Dr.Sankai, Cyberdyne/Univ.Tsukuba

Techno-Peer-Support through Cybernics Medical and Health Care System



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