



DISCOVERING TECHNOLOGY TREASURES

Experiencing technology development programs

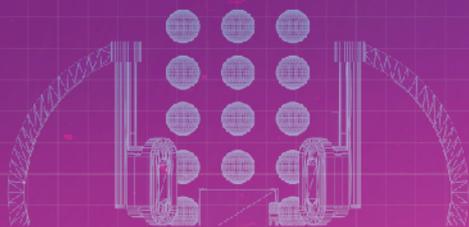
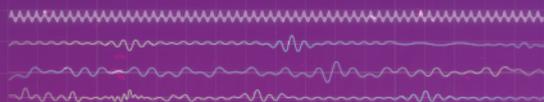
2016 Expro Guide Book

5.28 — 6.19 Kaohsiung

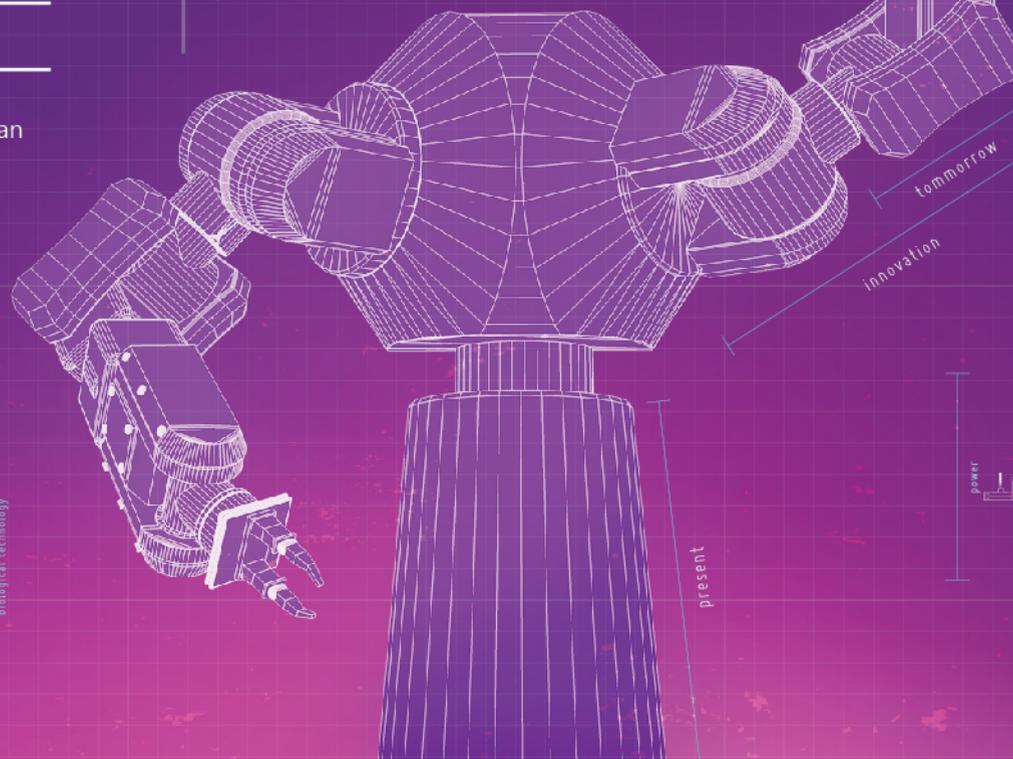
Warehouse P2, The Pier-2 Art Center
1 Dayong Road, Yancheng District, Kaohsiung City, Taiwan

7.18 — 7.28 Taipei

SYNTREND Creative Park.
12F 2 Sec 3 Civic Boulevard, Taipei City, Taiwan



biological technology

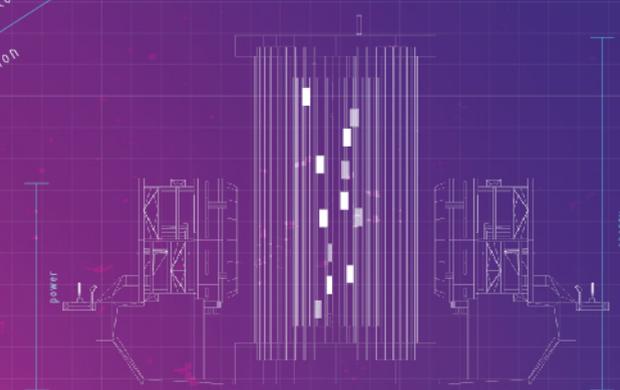
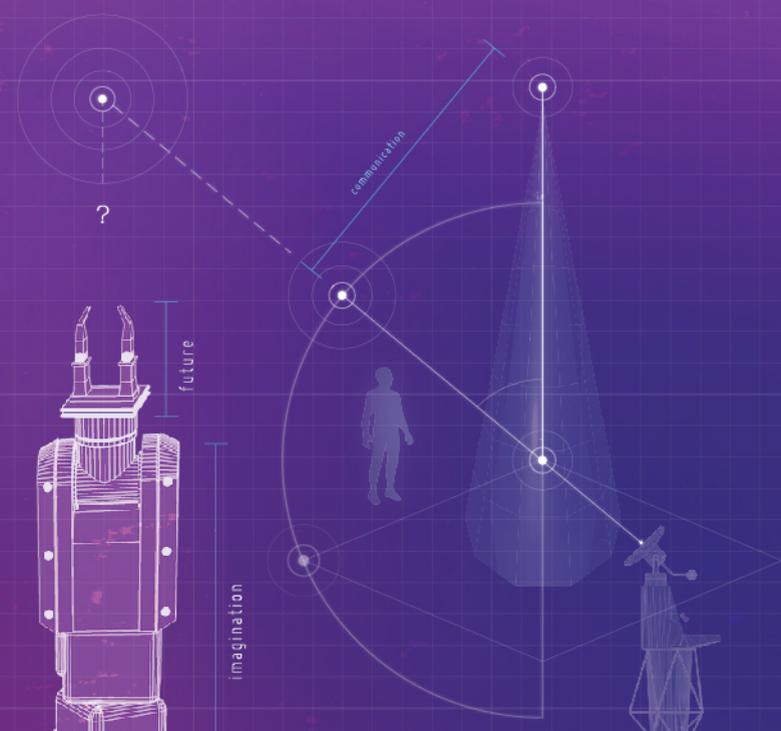


innovation

tommorrow

imagination

future



Kaohsiung

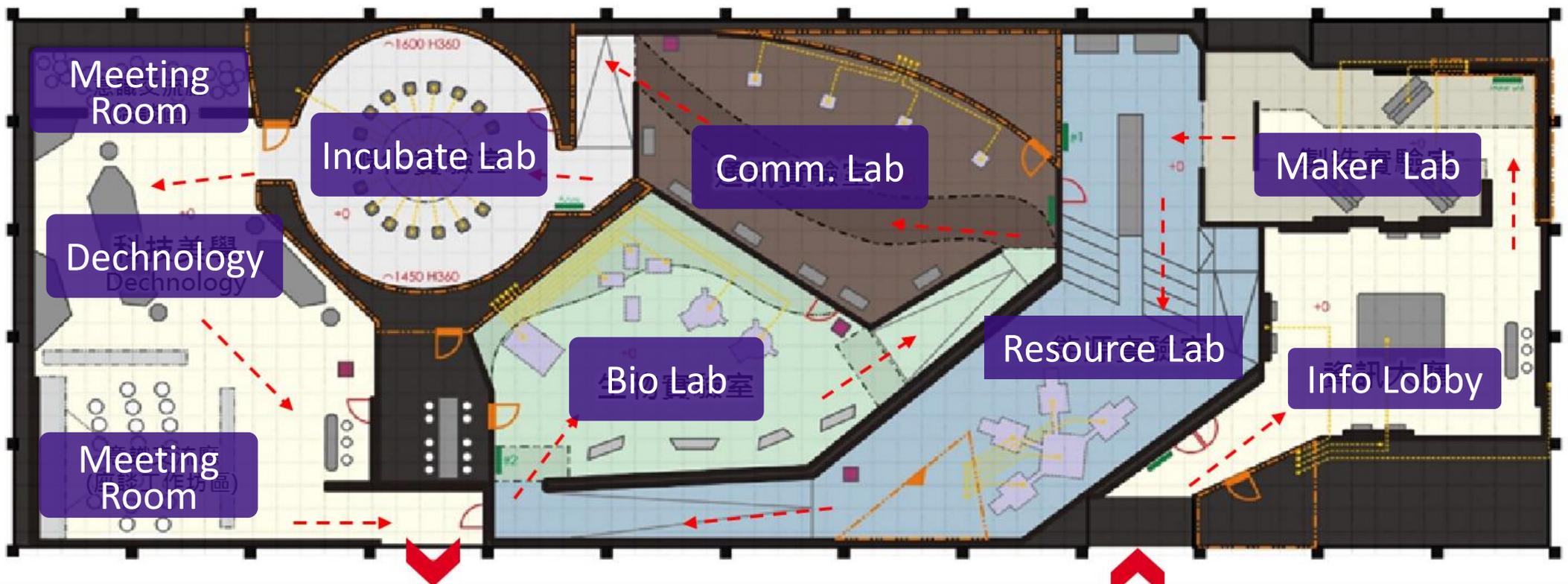
Dates: May 27th – June 19th, 2016

Time: 10 AM-6 PM Mon-Thu , 10 AM -8 PM Fri –Sun & holidays

Location: Warehouse P2, The Pier-2 Art Center

Address: 1 Dayong Road, Yancheng District, Kaohsiung City, Taiwan

77 technology items: 14 interactive demos, 48 prototypes , 15 Dechnology product concepts



Taipei

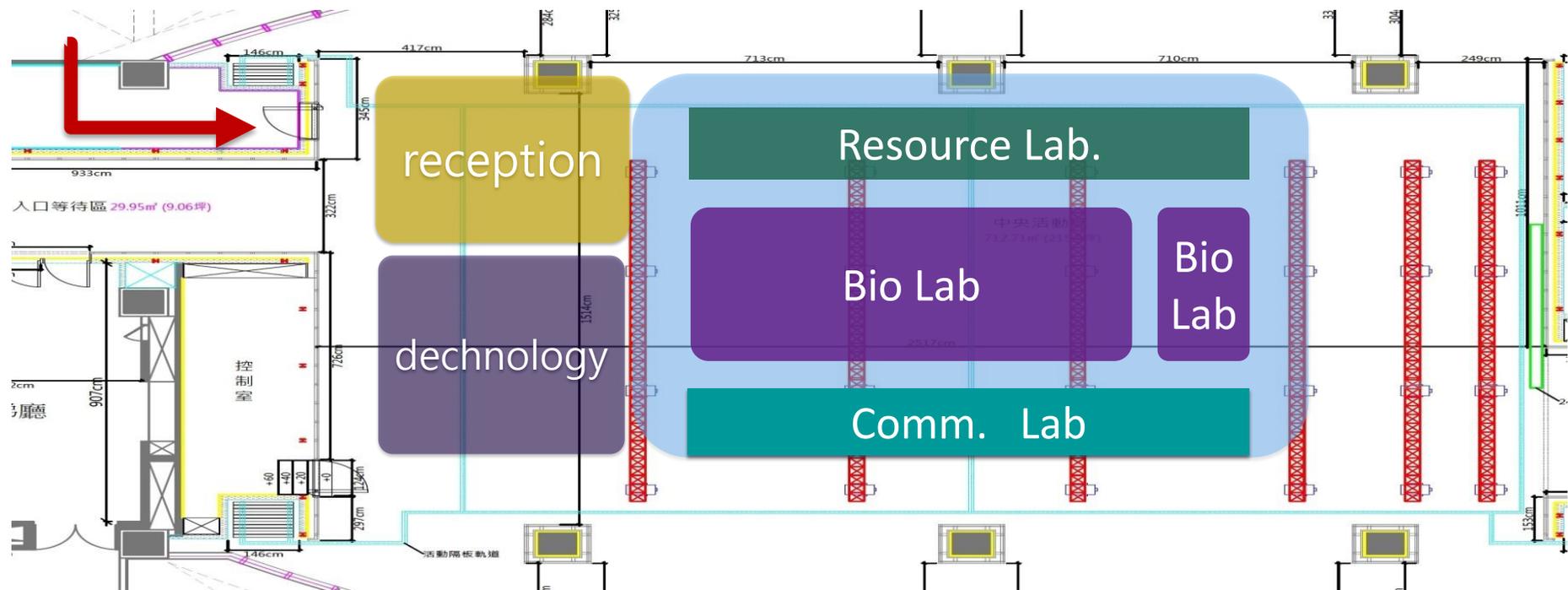
Dates: July 18th – July 28th, 2016

Time: 11 AM- 7 PM Mon-Sun & holidays

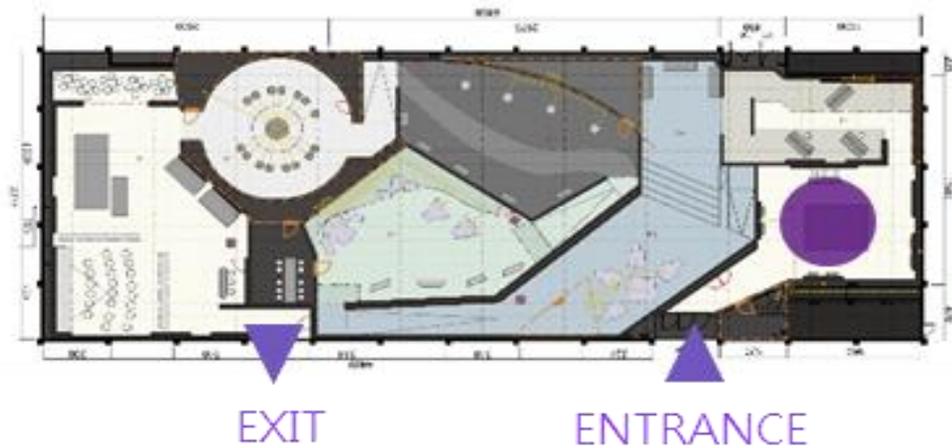
Location: SYNTREND Creative Park.

Address: 12F 2 Sec 3 Civic Boulevard, Taipei City, Taiwan

79 technology items: 11 interactive demos, 48 prototypes, 20 Dechnology product concepts



Info Lobby (Kaohsiung) (5 technology items)



	Organization	Technology
1	ITRI	Key e-Ticket Package Service Technology
2	ITRI	Vision Guided Robotics Software Module
3	PMC	Dual-Arm Robot Control via PC Based Software Controller
4	ARTC	Intelligent Information Integration for Head-Up Display
5	III	Internet Smart Energy

Key e-Ticket Package Service Technology



“Key e-Ticket Package Service” technology uses RFID card, Near-Field Communication, ZigBee, and QR Code as interfaces to connect with cloud services. The solution can be used in applications such as tourism or alternate reality games.

(Contact Person: ITRI Luo Kuo Shu · Tel:+886-3-5913405 · JonesLo@itri.org.tw)

Vision Guided Robotics Software Module



Vision Guided Robotics Software Module is based on an intelligent vision to integrate the vision guided and color analysis with multi-inspection function. The proposed module can be used to inspect the defect in factory. This module is simple, fast, and configurable to provide calibration, motion, communication, and visualization interface for configurable macro function. User can evaluate the automation system easily without any programming skill. This module could improve the competitiveness of production system and provide total solution for the intelligent manufactory requirement.

(Contact Person: ITRI Ya-Hui Tsai · Tel:+886-3-5916799 · yahuitsai@itri.org.tw)

Dual-Arm Robot Control via PC Based Software Controller



This Dual-Arm Robot has total 15 axis degrees of freedom (DOF), and each axis is general servo motor. The Dual-Arm Robot includes two 7 axis robotic arms and one waist axis. Every 7 axis robotic arm has 7 DOF with a high flexible motion characteristic. The mechanic structure of robot will be designed to the best payload location by the reachability and flexibility analysis. The Dual-Arm Robot only needs one controller, and uses high speed communication interface (EtherCAT) to achieve synchronized motion control in 1ms.

(Contact Person : PMC Chang Nai-Wen · Tel:+886-4-23595968 ext701 · e9706@mail.pmc.org.tw)

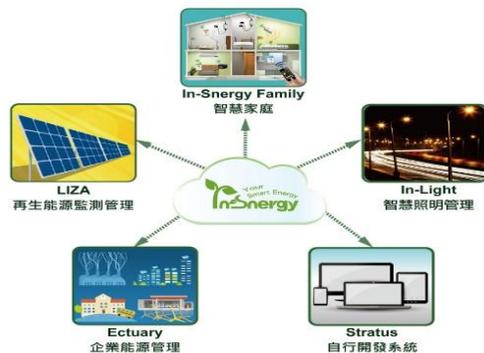
Intelligent Information Integration for Head-Up Display



Intelligent Information Integration for Head-Up Display combines Multiple-Image Coordinate Conversion Technology, Large Virtual Image Display Technology and Optical Thin Film Technology which reflects the images from vehicle information system on the coating film fixated on windshield and superposes the images on the scenery of road. The system can not only reduce parallax and eyestrain but also offer better visual comfort. With more safety information and greater integration, the advanced vehicle display system is both safer and more efficient.

(Contact Person: ARTC Adrian · Tel:+886-4-7811222 ext2353 · adrian@artc.org.tw)

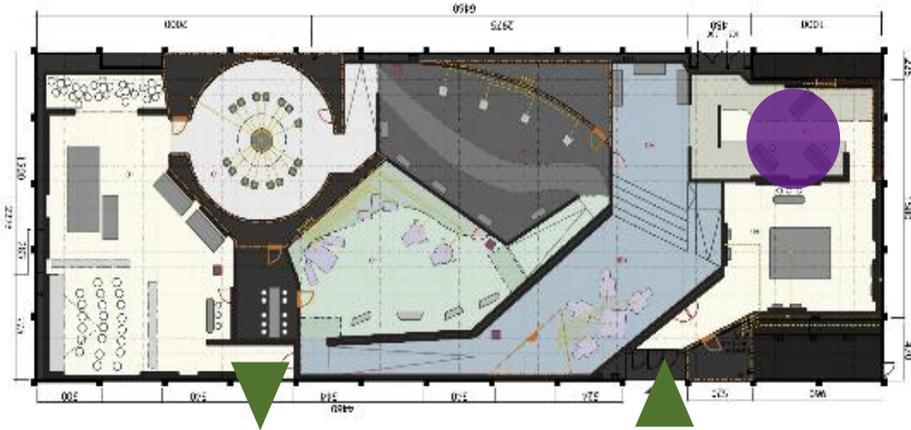
Internet Smart Energy



“In-Snergy” , short for “Internet Smart Energy” , is a common network platform of smart green energy. In-Snergy consolidates with stable platform, communication, hardware and software providing green IoT solutions. Based on the highly flexible structure, In-Snergy develops four applications for different requirements including smart home, enterprise energy management, renewable energy management and intelligent lighting management.

(Contact Person : III Chloe Wang · Tel:+886-2-66073558 · chloewang@iii.org.tw)

Maker Lab (Kaohsiung) (8 technology items)



	Organization	Technology
6	ITRI	Formaldehyde-free Wood Adhesive
7	ITRI	Energy Harvesting Technique
8	ITRI	Flexible OLED light source
9	ITRI	Visible Light Communication
10	NCSIST	speckle finger-guided system
11	PTRI	The Technology of Improving Color Performance for Powder 3D Printing
12	MIRDC	Nitinol (Shap memory alloy)
13	TTRI	textile switch

Formaldehyde-free Wood Adhesive



Formaldehyde-free Wood Adhesive uses cellulose derivatives as raw materials, which presents better characteristics on adhesion and water resistance. It is capable of resolving the problems of formaldehyde emission and environmental pollution. Formaldehyde-free Wood Adhesive can be used for products such as plywood and lumber core plywood. The potential applications include flooring, cabinetry, and interior renovation among others.

(Contact Person: ITRI Man-Lin Chen · Tel:+886-3-5913161 · man_lin@itri.org.tw)

Energy Harvesting Technique

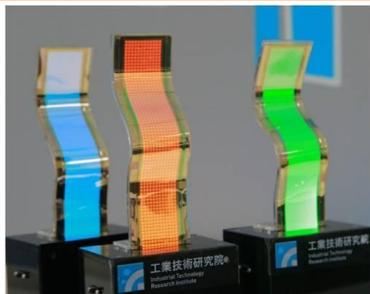


以室温與手的溫度差即可發電

The energy harvesting power management contains a DC-DC step-up converter and a maximum power point tracking (MPPT) algorithm. It boosts voltage from 15mV to 1.2V or more by using the temperature difference between human skin and the surrounding environment. This technology monitors the output voltage to achieve MPPT and optimize operating condition, featuring extreme low power consuming, fast power point tracking, and high efficiency. The proposed suit aims to supply power for sensors used in biomedical industry or the environment lack of basic infrastructure.

(Contact Person: ITRI Kevin Hsu · Tel:+886-3-5914771 · kevin8@itri.org.tw)

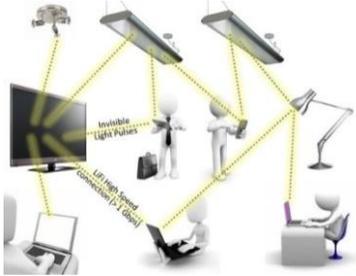
Flexible OLED light source



Based on existing know-how and experience in the field of TFT and OLED manufacturing process, ITRI has successfully developed an ultrathin flexible OLED light source, with total thickness less than 0.1 mm, by integrating FlexUPTM flexible substrate. This kind of flexible OLED light source, very thin and flexible, can be applied to wearable devices, automobile or aviation dashboard display, novel indoor lighting and so on.

(Contact Person: ITRI Emma Wu · Tel:+886-3-5913714 · Emma_Wu@itri.org.tw)

Visible Light Communication



Visible light communication system is a new wireless communications technology. Data transmission is conducted via visible light in the wavelength range from 380nm to 700nm. Visible light communication has the following features: Health Safety, EMI Free, No Regulation, Security, and Light of sight .

(Contact Person: ITRI Ying-Fen Chen · TEL:+886-3-5917281 · almada@itri.org.tw)

speckle finger-guided system



The laser speckle absolute positioning technique developed by NCSIST is when a laser beam is emitted uniformly on the surface of an object, it will provide a corresponding laser speckle. Since all the surfaces of any object are unique, the correlated laser speckle is also unique, which can act as an absolute positioning target. Via interactive technology of laser speckle finger-guided modules, any surface of an object can be clearly identified. To combine the modules with a sensor system, it can be used as a guiding system.

(Contact Person: NCSIST Hsin-Chang Chen · Tel:+886-3-4712201 ext 357074 · hcchen0429@gmail.com)

The Technology of Improving Color Performance for Powder 3D Printing



This technology, based on 3D printing technology, integrates various special features including image capturing process, color analysis and its reproduction as well as color database, output process and the evaluation of surface effect to engage advanced research of multi-color 3D printing. The goal is to improve the technologies of color and 3D printing manufacturing processes. The technology creates the metallic gloss effect of 3D products and makes 3D printing technology even better.

(Contact Person: PTRI Kinny Chen · TEL:+886-2-29990016 ext. 209 · kinny@ptri.org.tw)

Nitinol (Shap memory alloy)



Nitinol was developed by William J. Buehler and Dr. Frederick E. Wang team in 1958 at United States Navy weapon laboratory. Unlike ordinary steel materials, with maximum strain recovery amount less than 1%, Nitinol's shape recovery amount is about 7 to 8% within a specific temperature. In addition to the excellent shape memory characteristics, Nitinol has a super-elastic property and its elastic range is much higher than the ordinary steel materials. Therefore it is widely used in orthodontic wire, nail orthopedics and cardiovascular stents medical products. (Contact Person: MIRDC seafood · TEL:+886-7-3513121 ext. 2576 · seafood@mail.mirdc.org.tw)

textile switch

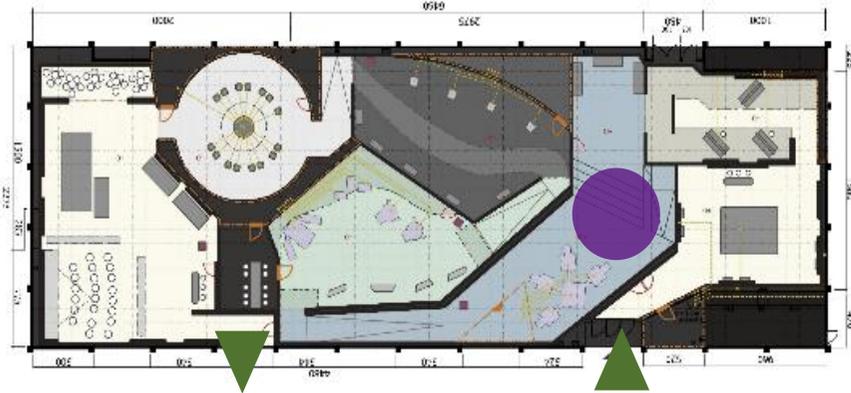


The idea behind the technology is to develop a woven textile structure which features a switching function by weaving conductive fibers and non-conductive fibers alternatively. It then creates a variety of circuit patterns. The structure is divided into two areas, one is conductive and the other is not. When skin enters in contact with the conductive area, it will trigger the electrical phenomenon and activate the switch. It offers a distinct spatial patterns from the traditional switching device thanks to the flexible and highly stretchable characteristics. Moreover the textile switch can be woven in just one time, so that there is less chance of variability and higher stable switching characteristics.

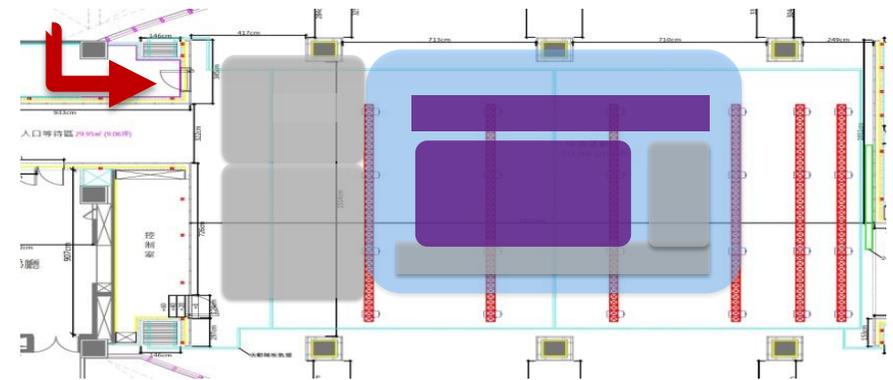
(Contact Person: TTRI Chien Lung Shen · TEL:+886-02-2267032 ext.3413 · clshen.0865@ttri.org.tw)

Resources Lab (20 technology items)

Kaohsiung



Taipei



	Organization	Technology
14	ITRI	Energy Harvesting Technique
15	ITRI	Ultra-thin OLED Lighting
16	FIRDI	Validation of antimicrobial materials applied in food systems
17	FIRDI	Aseptic processing process R & D service platform technology applications for health functional drink
18	ITRI	Portable Spectrograph
19	MIRDC	Functional Granulation Technology
20	ITRI	Bio-Protein Alchemic Technology
21	ITRI	Printing CIGS Solar Cells
22	NCSIST	The Battery Second-Use Technique
23	PMC	ARM (Automatic Recycling Machine)

	Organization	Technology
24	ITRI	Qwater
25	SRDC	Deep sea water therapy application development technology
26	FRT	Lightweight Adjustable Insole
27	FRT	Extra-lightweight Outsole
28	ITRI	Heat-retaining textile
29	TTRI	Physiological Monitoring Textiles
30	TTRI	Modified Nylon, Modified Nylon Fibers and Preparation Thereof
31	TTRI	Micro/Nano Fiber Composite HEPA Filter Technology
32	TTRI	Technology for Thermal Insulation of Composite Nonwoven
33	PIDC	Application and development of Shape Memory Material Technology

Energy Harvesting Technique



The energy harvesting power management contains a DC-DC step-up converter and a maximum power point tracking (MPPT) algorithm. It boosts voltage from 15mV to 1.2V or more by using the temperature difference between human skin and the surrounding environment. This technology monitors the output voltage to achieve MPPT and optimize operating condition, featuring extreme low power consuming, fast power point tracking, and high efficiency. The proposed suit aims to supply power for sensors used in biomedical industry or the environment lack of basic infrastructure. (Contact Person: ITRI Kevin Hsu · Tel:+886-03-5914771 · kevin8@itri.org.tw)

Ultra-thin OLED Lighting



Ultra-thin, light and flexible OLED lighting mimicking natural light are developed by effectively choosing materials and processing techniques. OLED Lighting Commercialization Alliance (OLCA) has been established to deliver the best cost performance for OLED lighting products through cross-disciplinary integration and streamlining OLED manufacturing and supply chains. (Contact Person: ITRI Sandy Chung · Tel:+886-3-5917128 · ishan@itri.org.tw)

Validation of antimicrobial materials applied in food systems



This is a simulation test platform to evaluate the antimicrobial functions of the new packaging design, and a antimicrobial packaging for packaged food is also developed. The benefit of this test system includes the followings:

1. The selection and minimum material used for antibacterial functions;
2. The estimated shelf life of food;
3. The overall functions when integrated with multiple antibacterial technologies.

(Contact Person: FIRDI Yu-Chi Cheng · Tel:+886-6-3847355 · cyc20@firdi.org.tw)

Aseptic processing process R & D service platform technology applications for health functional drink



Functional drink products often require low temperature shipment. This project established the aseptic processes platform technology, so these product packages can be shipped in room temperature. In addition, in this RD platform, ingredient or formulation samples can be tested by agents around the world to taste the flavor, and then can make flavor fine-tuned for each country difference. Therefore the final products would be ready for international market competition.

(Contact Person: FIRDI Yu-Ming Chen · Tel:+886-5-2918904 · cym@firidi.org.tw)

Portable Spectrograph



This spectrograph collects and analyzes visible to near infrared light scattered from the surface of an object and compares the spectrum with existing cloud database using dedicated algorithms to obtain composition of the object, including both chemical and physical characteristics. As an example, rice noodles made with pure rice and rice/corn starch mixture have distinct reflected light spectra and this spectrograph can be used successfully to tell them apart.

In the future the system can be combined with portable devices to monitor our surroundings anytime and anywhere.

(Contact Person: ITRI Yan Rung Lin · Tel:+886-3-5732287 · linyr@itri.org.tw)

Functional Granulation Technology



▲各式無縫膠囊粒徑

▲剖面圖



▲爆漿果汁球



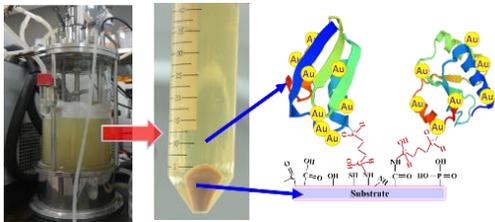
▲舌下滴丸

Functional Granulation means the encapsulation technology for health care 、 medicine or snack foods.

- Seamless Capsules : High valued oil encapsulated by gelatin to form the spherical seamless capsules, size in 2.5~10mm.
- Exploding Juice Balls : Concentrated fruit juice coated by herbal shell material, size in 8~10mm.
- Dropping Pills : Herbal extraction or functional ingredients with PEG excipients granulated by orifices and suitable for sublingual absorption.

(Contact Person: MIRDC Yang Sheng-Chung · Tel:+886-7-3513121 ext 2632 · yangsj@mail.mirdc.org.tw)

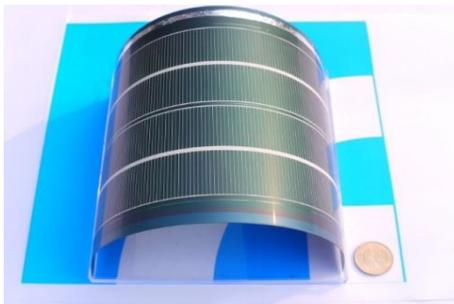
Bio-Protein Alchemic Technology



An innovative bio-technology for precious metal (Au) recovery using functional proteins as adsorbent is developed. The proteins are secreted from a novel slightly thermophilic bacterium isolated from hot springs and immobilized onto an aldehyde modified biomass to form a high density protein biosorbent. This low cost biosorbent can achieve 95% Au adsorption efficiency for aqueous solutions in low Au concentration (<5ppm). This result is better than currently available commercial technologies and research results.

(Contact Person: ITRI Yin-Lung Han · Tel:+886-3-5916352 · CocoHan@itri.org.tw)

Printing CIGS Solar Cells



We have successfully demonstrated CIGS solar cells and sub-modules on flexible stainless steel foils with 14.6% and 14% efficiency respectively using ink-printing process. Ink printing is an attractive approach to mass produce future light weight electronic devices at low costs, such as rechargeable power supplies, wearable power sources, self-powered IoTs and rooftop photovoltaics.

(Contact Person: ITRI Tung-Po Hsieh · Tel:+886-3-5914414 · tp@itri.org.tw)

The Battery Second-Use Technique



The electrical capacity of lithium-iron traction batteries used in EVs for 5-7 years will be degraded down to 70~80% comparing with a new one. The performance of such batteries doesn't satisfy the usage of EVs, but their capacity density are still much higher than the new Pb-acid batteries. These retired batteries, which can be inspected, tested, assorted, and reassembled into a new product can be applied to energy-oriented vehicles, backup power system, energy storage system, and etc. The eco-system can construct 3 industries, including EV, ESS, and B2U.

(Contact Person: NCSIST Ruo-Jiun Yu · Tel:+ 886-3-4712201 ext 352013 · june8527962@gmail.com)

ARM (Automatic Recycling Machine)



For Taiwan government policy of carbon reduction and the trend of intelligent living, 3R (Recycle-Recycling, Reduce-Reduction, Reuse-reuse) cycle concept is used to construct 「Plastic Bottle & Metal Cans Recycle Bank」 through integration and its related technology in order to develop Taiwan domestic recycling equipment. The POS (Proof of Service) innovation and value-added service of Recycling industry is built to provide the public with the station of recycling convenience and reward mechanism. The main core values of this program are giving an incentive to people's recycling behavior and reducing improper disposal of any container.

This innovative POS service program expects that Kaohsiung City is the first exemplary business running city toward a low-carbon, resource recycling, energy conservation, and environment protection life. In the future, the successful result of this program will be expanded to service field such as stations and MRT. Introducing this new service system creates a solution for the environment protection and to contribute global sustainable business.

Automatic Recycling Machine(ARM)

(Contact Person : PMC Chiou, Jiun-Da · Tel:+886-4-23595968 ext.621 · e9638@mail.pmc.org.tw)

Qwater



The extreme climate change brings worldwide natural disaster and causes huge casualties to social society. Once it happens, the primary urgency is to provide clean water for victims to restrain further epidemic disease and environmental pollution. Therefore, an efficient water purification technique for supplying the demand of public during emergency is highly required. "Qwater" is a system developed to provide high quality and large quantity of water under emergency. This system is characterized as high mobility, low energy consumption, and high efficiency. In addition, it is capable of purifying a variety of water resources. Including surface water(river, lake), underground water, spring, brackish water and sea water.

(Contact Person: ITRI Hsin-Ju Yang · Tel:+886-3-5732035 · kyang@itri.org.tw)

Deep sea water therapy application development technology



By using the characteristics of deep sea water which are clean and rich in mineral salts, as well as adjusting the ratio of salts or ions, it is expected to collect physiological signals and skin before soaking in the state after the data, so as to establish the best reference for deep sleep, optimal diastolic pressure and seawater skin conditioning.

Based on our research result foundation, it is to develop more competitive, industry-related, healthy leisure experience hardware (deep sea water therapy products and facilities) and software (experience process) for deep sea water. Combined with "preventive health care and health leisure" concept, it is the goal to introduce leisure application of deep sea water therapy and design deep sea water therapy tour with health benefit, so as to promote the health of mankind.

(Contact Person: SRDC Molly Hsu · Tel:+886-3-8423899 · mollyhsu@srdc.org.tw)

Lightweight Adjustable Insole



Based on the domestic foot type information and human gait stability requirements, the FRT (Footwear & Recreation Technology Research Institute) has developed the Lightweight Adjustable Insole considering product weight, cost, durability, and foot arch support. The airbag structure of the insole enables air charging or discharging, resulting in changing of its thickness, thus it can adapt to different foot arch types promptly according to different foot arch supporting requirements.

(Contact Person: FRT Peggy Hsieh · Tel:+886-4-23590112 #302 · 0498@bestmotion.com)

Extra-lightweight Outsole



The FRT (Footwear & Recreation Technology Research Institute) has applied the unique formula, using elastomeric foaming material, to develop the extra-lightweight dress shoes outsole. The outsole is 20% lighter, 45% less slippery on wet ground, and 15% less slippery on dry ground while its exterior appearance remains good.

(Contact Person: FRT Peggy Hsieh · Tel:+886-4-23590112 #302 · 0498@bestmotion.com)

Heat-retaining textile



Infrared rays have a significant thermal impact when they are absorbed. To increase wearer comfort during cold winter days, we develop light-color, transparent, and cost-effective heat-retaining materials which can absorb infrared heat-rays with high efficiency. We then integrate these materials into fiber to make functional textiles, which is able to absorb infrared heat-rays and with high heat-retaining upon exposure to a variety of infrared sources such as camp fire, lamp light, human body radiation, solar light, and other IR sources.

(Contact Person: ITRI Yi-Chun Kuo · Tel:+886-3-5732710 · kuoyc@itri.org.tw)

Physiological Monitoring Textiles



1. The fashion smart cloth is made by integrating the digital textile printing technology and elastic textile electrodes. The cloth with elastic and comfortable property and slim design shows the sports fashion.
2. Combining with the Bluetooth Smart/ANT and heart rate transmission module, the fashion smart cloth becomes the optimal wearable device to support the self-health management by connecting with cell phone and smart ring.

(Contact Person: TTRI Mr. Chien-lung Shen · Tel:+886-2-22670321 ext.3400 clshen.0865@ttri.org.tw)

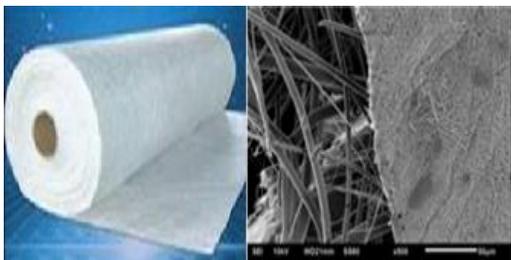
Modified Nylon, Modified Nylon Fibers and Preparation Thereo



This technology uses the bio-based modified Nylon pellets which have the characteristic of being resistant to the impact of low temperature and features the sheath-core spinning technology (sheath: modified nylon with high impact resistance to low temperature, core: general nylon) to develop the low-temperature toughness and abrasion resistant nylon fibers. Impact strength at room temperature of these modified Nylon pellets is up to 1080 J / M, and which of the pellets at low temperature (-20 °C) is up to 342 J / M.

(Contact Person: TTRI Mr. Denny, Chen · Tel:+886-2-22670321 ext. 2203 · wmchen.1060@ttri.org.tw)

Micro/Nano Fiber Composite HEPA Filter Technology



The precise air-absorbent filter has been successfully developed using micro/nano scale fiber and the control of filter porosity with surface graft modification of fiber characteristics, control of charge distribution, and composite structure design. The properties of nano-fiber are as follow: average diameter ≤ 200 nm, air permeability of the composite filter ($\text{cc}/\text{cm}^2\text{sec}$) ≥ 4.3 , lifetime of the filter > 12 months (dust- holding capacity method). The filter remains efficient at more than 99% even stored two weeks at a 80% humidity rate.

(Contact Person: TTRI Chao chun Peng · Tel:+886-2-22670321 ext.3300 · ccpeng.0875@ttri.org.tw)

Technology for Thermal Insulation of Composite Nonwoven



This method combines the technology of meltblown nonwoven fibers and the technology of air-laid implant staple-fibers and uses a one-step process to form the composite multi-component nonwoven fibers. The properties of the meltblown microfibers are as follow: fiber fineness $< 5\mu\text{m}$, natural fiber content $> 50\%$, compression elasticity $\geq 85\%$, compression recovery $\geq 90\%$, bulkiness $12\sim 30 \text{ cm}^3/\text{g}$, warmth $\geq 1.8 \text{ CLO}/\text{cm}$, and warmth preservation ratio $\geq 60\%$.

(Contact Person: TTRI Chao chun Peng · Tel:+886-2-22670321 ext.3300 · ccpeng.0875@ttri.org.tw)

Application and development of Shape Memory Material Technology



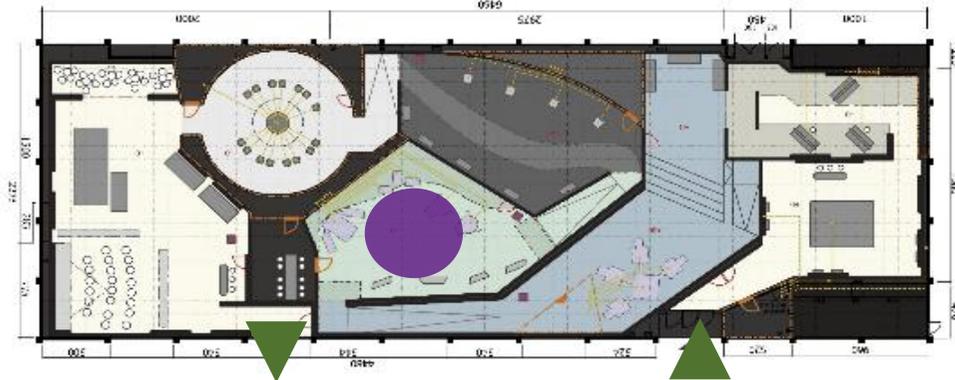
The shape-memory technology is to make the plastic polymer material to form the shape that you want, for create your own idea. A special ingredient is added to the plastic, which makes the plastic shape-memorable. It looks simple but it can be different shape according to the temperature changes. PIDC has developed a series of shape-memory materials for plastic clay product, which can be easily used for DIY home repair.

(Contact Person : PIDC Ms.Tsai · Tel+886-4-23595900#238 · sinfang1988@pidc.org.tw)

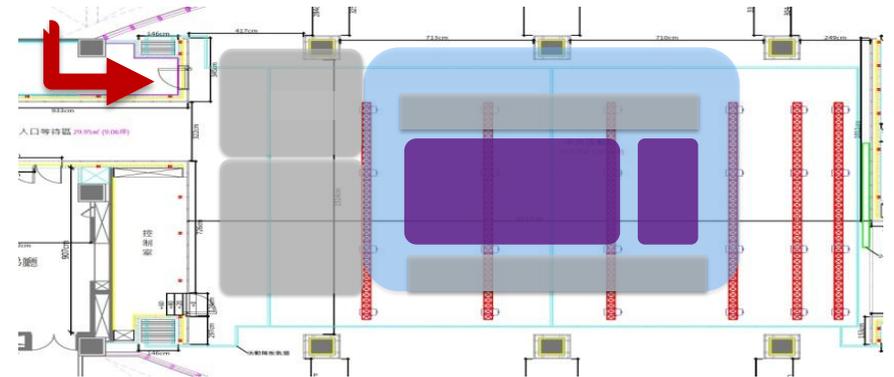
(Contact Person : PIDC Mr. Chang · Tel:+886-4-23595900#507 · Tony0711@pidc.org.tw)

Bio Lab (19 technology items)

Kaohsiung



Taipei



	Organization	Technology
34	ARTC	Intelligent Information Integration for Head-Up Display
35	NCSIST	speckle finger-guided system
36	TTRI	textile switch
37	ITRI	High Precision Automated 3D Scanner
38	ITRI	Flexible OLED light source
39	MIRDC	Nitinol (Shap memory alloy)
40	ITRI	Implantable transparent biomaterials development
41	ITRI	3D Printing cannulated screws
42	ITRI	Handheld Optical Coherence Tomography
43	TTRI	Bio-based thermal plastic polyester

	Organization	Technology
44	NCSIST	Digital Dental X-ray System
45	MIRDC	blue laser line intraoral scanner
46	MIRDC	Minimally Invasive surgical guide
47	ITRI	High Potency MSC Serum Free Medium (SF1)
48	ITRI	Hya-Heal+/MMpH+ Anti-Aging Active Ingredient
49	DBC	Therapeutic monoclonal antibody development for HSV-1/-2 infected diseases.
50	DBC	Botanical anticancer drug from Crassocephalum rabens extract
51	PITDC	Medical and Pharmaceutical Industry Technology and Development Center
52	PITDC	Medical and Pharmaceutical Industry Technology and Development Center

Intelligent Information Integration for Head-Up Display



Intelligent Information Integration for Head-Up Display combines Multiple-Image Coordinate Conversion Technology, Large Virtual Image Display Technology and Optical Thin Film Technology which reflects the images from vehicle information system on the coating film fixated on windshield and superposes the images on the scenery of road. The system can not only reduce parallax and eyestrain but also offer better visual comfort. With more safety information and greater integration, the advanced vehicle display system is both safer and more efficient.

(Contact Person: ARTC Adrian · Tel:+886-4-781-1222 ext2353 · adrian@artc.org)

speckle finger-guided system



The laser speckle absolute positioning technique developed by NCSIST is when laser beam is emitted uniformly on the surface of an object, it will provide a corresponding laser speckle. Since all the surface of any object is unique, the correlated laser speckle is also unique, which can act as an absolute positioning target. Via interactive technology of laser speckle finger-guided modules, any surface of an object can be clearly identified. To combine the modules with a sensor system, it can be used as a guiding system.

(Contact Person: NCSIST Hsin-Chang Chen · Tel:+886-3-4712201 ext 357074 · hcchen0429@gmail.com)

textile switch



The idea behind the technology is to develop a woven textile structure which features a switching function by weaving conductive fibers and non-conductive fibers alternatively. It then creates a variety of circuit patterns. The structure is divided into two areas, one is conductive and the other is not. When skin enters in contact with the conductive area, it will trigger the electrical phenomenon and activate the switch. It offers a distinct spatial patterns from the traditional switching device thanks to the flexible and highly stretchable characteristics. Moreover the textile switch can be woven in just one time, so that there is less chance of variability and higher stable switching characteristics.

(Contact Person: TTRI Chien Lung Shen · TEL:+886-2-22670321 ext.3413 · clshen.0865@ttri.org.tw)

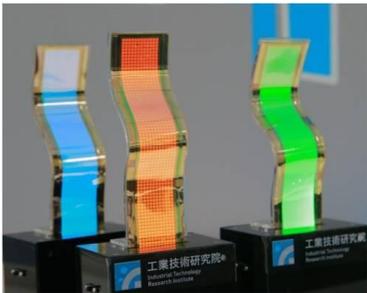
High Precision Automated 3D Scanning System



ITRI' s high precision automated 3D scanning system includes multiple heads to enhance accuracy and accelerate the capturing time simultaneously. With its systematical integration, large area scanning can be executed for speedy and high precision modeling. Applications such as 3D modeling and printing for individuals, personalized healthcare, 3D image inspection, heritage preservation, and digital archive are the potential areas to make use of.

(Contact Person: ITRI Jenny Lin · Tel:+886-3-5916705 · jmlin@itri.org.tw)

Flexible OLED light source



Based on existing know-how and experience in the field of TFT and OLED manufacturing process, ITRI has successfully developed an ultrathin flexible OLED light source, with total thickness less than 0.1 mm, by integrating FlexUPTM flexible substrate. This kind of flexible OLED light source, very thin and flexible, can be applied to wearable devices, automobile or aviation dashboard display, novel indoor lighting and so on.

(Contact Person: ITRI Emma Wu · Tel:+886-3-5913714 · Emma_Wu@itri.org.tw)

Nitinol (Shap memory alloy)



Nitinol was developed by William J. Buehler and Dr. Frederick E. Wang team in 1958 at United States Navy weapon laboratory. Unlike ordinary steel materials, with maximum strain recovery amount less than 1%, Nitinol' s shape recovery amount is about 7 to 8% within a specific temperature. In addition to the excellent shape memory characteristics, Nitinol has a super- elastic property and its elastic range is much higher than the ordinary steel materials. Therefore it is widely used in orthodontic wire, nail orthopedics and cardiovascular stents medical products. (Contact Person: MIRDC seafood · TEL:+886-7-3513121 ext. 2576 · seafood@mail.mirdc.org.tw)

Implantable transparent biomaterials development



There is a great need for better biomaterial to satisfy diverse clinical requirements. The implantable transparent biomaterial, designed with high transparency and high degree of conformability to any surface, can benefit fields dealing with ocular surgery and bone tissue regeneration. The collagen-based material has gained FDA approval for transplants, and has shown to be biocompatible and suturable. Potential products include artificial cornea and tissue engineering scaffold. The wide variety of characteristics that this biomaterial possesses makes it a unique addition to the current product development pipeline.

(Contact Person: ITRI Yu-Bing Liou · Tel:+ 886-3-5914945 · YBLiou@itri.org.tw)

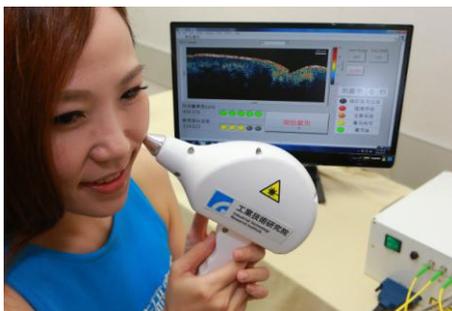
3D Printing cannulated screws



This technology uses 3D printing (additive layer manufacturing) methods to design and manufacture the bio-active cannulated implants, such as bone screws and dental implants. The bio-active cannulated implants are high porosity and controllable components that can be combined with bioceramic or osteogenic materials to increase osteoinductive activity and osseointegration in bone regeneration. The properties of the bio-active implants were verified with the help of computer modeling and material testing system. The 3D printing-related products could lead to new applications in medical implants for orthopedic, dentistry, and plastic surgery.

(Contact Person: ITRI Pei-Yi Tsai · Tel:+886-3-5918799 · peiyi@itri.org.tw)

Handheld Optical Coherence Tomography



Optical Coherence Tomography (OCT) is a noninvasive optical diagnosis equipment. By using broadband light source, integrated with galvo scanner and achromatic lenses, the OCT can execute non-destructive 3D scan on the sample. The resolution of the OCT depends on the numerical aperture of objective lens, the central wavelength and bandwidth of the light source. The OCT scan depth depends on the transparency of the sample to the given light source. The conventional OCT is designed as a desktop system and is mostly used for ophthalmology. The bulky form prevents clinicians to use OCT as a diagnostic tool for patients who are disabled, confined to bed or infants. The newly designed handheld OCT addressed this challenge by utilizing micro-scanner and miniaturizing the probe size. Full field OCT is under development, and the reduced size and cost can potentially enable the dissemination of this technology to high market value fields such as dentistry and dermatology.

(Contact Person: ITRI Chung-Ta Cheng · Tel:+886-3-59 18341 · CTcheng@itri.org.tw)

Bio-based thermal plastic polyester



This bio-based thermal plastic polyester is derived from plant oil. It features rapid reshaping, no skin allergy and irritation. The operating temperature is 60~70°C. This bio-based product could be applied on stable splint or special filter.

(Contact Person: TTRI Wei Hung Chen · TEL:+886- 2-22670321 ext.2706 · Whchen.1093@ttri.org.tw)

Digital Dental X-ray System



20141208攝於核研所

Aiming at the demand of X-ray scanning machine system industry in Taiwan, this project is to develop the medical image apparatus and focus on the application of computed tomography (CT) system. Systematic applications plan to develop (a) CsI, which is the key material of scintillator for medical X-ray image technology, and (b) CMOS image sensor array the key technology of medical X-ray image. This project will assist our country's medical industry to stride into dentistry's X-ray industry.

(Contact Person: NCSIST Tsung-Lin Chen · Tel:+886-3-4712201 ext 357249 · lukechen305@gmail.com)

blue laser line intraoral scanner



MIRDC introduces a high performance intra-oral scanner providing fast, precise, open solution for digital impression.

- The wand is designed with a large image capturing area and is capable of acquiring 3-unit bridge at one time, ensuring high accuracy and efficiency of treatment.
- User-friendly software interface guides users to proceed the scanning process.
- Powder-free blue laser scanning technology enhances the visualization of details
- Large single view, high precision model realignment, ideal for single crown/inlay/onlay case, bridge treatment and orthodontic treatment tracking

Open system to output STL/PLY file for dental CAD/CAM software integration

(Contact Person: MIRDC Solberg Hu · TEL:+886-7-3513121 ext. 3545 · solberg@mail.mirdc.org.tw)

Minimally Invasive surgical guide



The minimally invasive dental implant technology guide plate provides fast and precise implant design to reduce patients' burden. Generally, implant surgery results in patients with wounds and long recovery time, and increase the risk of treatment. With the use of the implant guide plate bonded to the tooth-loss position, as well as computer tomography surgical planning, this technique can accurately define the position of the implant and guide the dentist through the implant guide hole to perform implant surgery, achieve rapid and safe surgical purposes, and could be applied to different types of edentulous patients.

(Contact Person: MIRDC Yao-Te Peng · Tel:+886-7-6955298 ext. 256 · yaute@mail.mirdc.org.tw)

High Potency MSC Serum Free Medium (SF1)

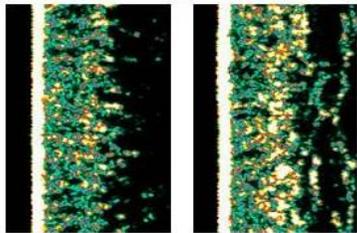


Biomedical products use a lot of culture medium during the manufacturing process. It is necessary from the early stage of RD to pilot production and clinical trials until final market release. Medium use makes about 40% to 60% of the total RD and incubation cost. As a matter of fact, bio industries in Taiwan have always been lacking behind internationally in the development and production of culture medium technology. In order to narrow the gap, ITRI developed the serum-free culture medium technology for high rate multiplication of human mesenchymal stem cells for cell therapy. The medium features low cell seeding density ($0.5 - 1.0 \times 10^3/\text{cm}^2$) but high multiplication rate. For mesenchymal stem cells originating from fat, 80 to 120 times multiplication can be achieved within 5 days. It is a multiplication performance significantly better than serum-containing culture medium. High rate multiplication drastically reduces culturing costs, and more importantly it helps reducing the cell passage as well. This technology helps to better maintain stem cell stemness in order to enhance the safety and success rate of cell therapy. Future plans include working with local biomedicine industry and set up a GMP plant for pilot production of this culture medium. The aim is to build Taiwan' s first R&D and production center for culture medium, so the domestic biotech pharmaceutical industry could establish its own value chain.

(Contact Person: ITRI Ing-Kae Wang · Tel:+886-3-5912815 · ikwang@itri.org.tw)

Hya-Heal+/MMpH+ Anti-Aging Active Ingredient

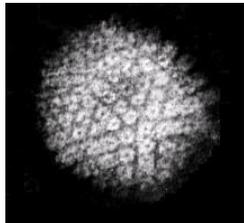
MMpH+ After 28 days



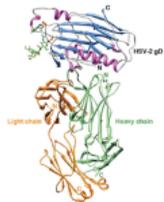
People spend billions of money every year for anti-aging products to stay young. The key component is anti-aging active ingredients. It promises to diminish fine lines and wrinkles, abolish sun damage, and lift sagging part on the face. Hya-Heal+/MMpH+ can inhibit the activity of certain proteinase therefore reduce degradation of natural collagen.

(Contact Person: ITRI Teresa Shih · Tel: +886-3-5913720 · tingyu@itri.org.tw)

Therapeutic monoclonal antibody development for HSV-1/-2 infected diseases.



A picture of the Herpes Simplex Virus-1 from a scanning electron microscope

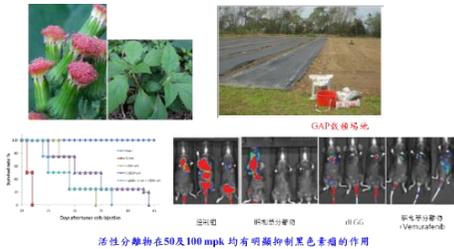


Ribbon diagram of the HSV-2 gD-E317-Fab complex

Infectious diseases are disorders caused by foreign organisms, such as bacteria, viruses, fungi, protozoa, and helminths. The ways to cause infection mainly depends on the host and infectious agent. For example, anthrax, a disease caused by bacterial pathogen, can be transmitted by respiratory way and digestive tract. Others like human immunodeficiency virus (HIV) can be passed from person to person by exchange of body fluids or tissues: HSV-1 (Herpes simplex virus type 1) associated with oral and ocular disease, HSV-2 associated with genital disease. However, lesion location is not necessarily indicative of viral type. We have identified a therapeutic monoclonal antibody (mAb) which can recognize both HSV-1 and HSV-2 through interaction with the viral surface glycoprotein-gD and which has the ability to fight the infection. Currently, there are 48 mAb products in the market. Among them, 10 of them are human antibodies. The numbers of human mAb used in clinical experiments have increased significantly in the past decade and it indicates that human antibodies features better pharmacological properties and lower immunogenicity.

(Contact Person: DCB Hsiao-Li Yu · Tel: +886-2-26956933 ext 2441/ 2447 · mito512@dcb.org.tw)

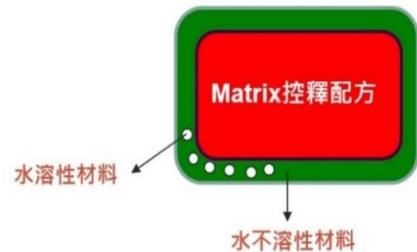
Botanical anticancer drug from *Crassocephalum rabens* extract



The development of the botanical drug from *Crassocephalum* extract originates from the research of Academia Sinica. Further improvement and development on the process of manufacturing, capability of good agriculture practice (GAP), identification of medicinal raw materials, batch production and assessment result of experiment on animal have been done recently. Extracts from *Crassocephalum* have the ability to inhibit tumor proliferation. This research result has applied and granted US and Taiwan patent.

(Contact Person: DCB Tzung-Hsien Lai · Tel:+886-2-26956933 ext. 2427 · thlai@dcb.org.tw)

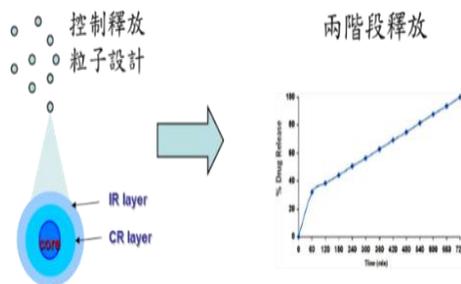
Medical and Pharmaceutical Industry Technology and Development Center



The drug with a constant release rate can be applied in drug administration for a steady plasma concentration. In this technology, we combine matrix granulation and porous coating to modulate the release rate of drug from the tablets.

(Contact Person: PITDC Jia-Ling Wei · TEL:+886-2-66251166 ext.5201 · wei@pitdc.org.tw)

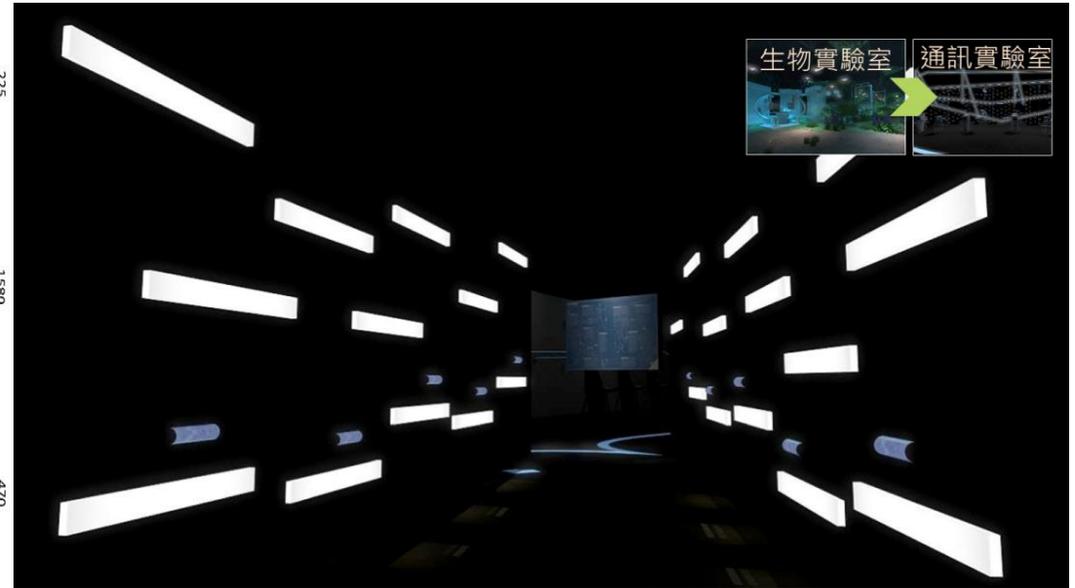
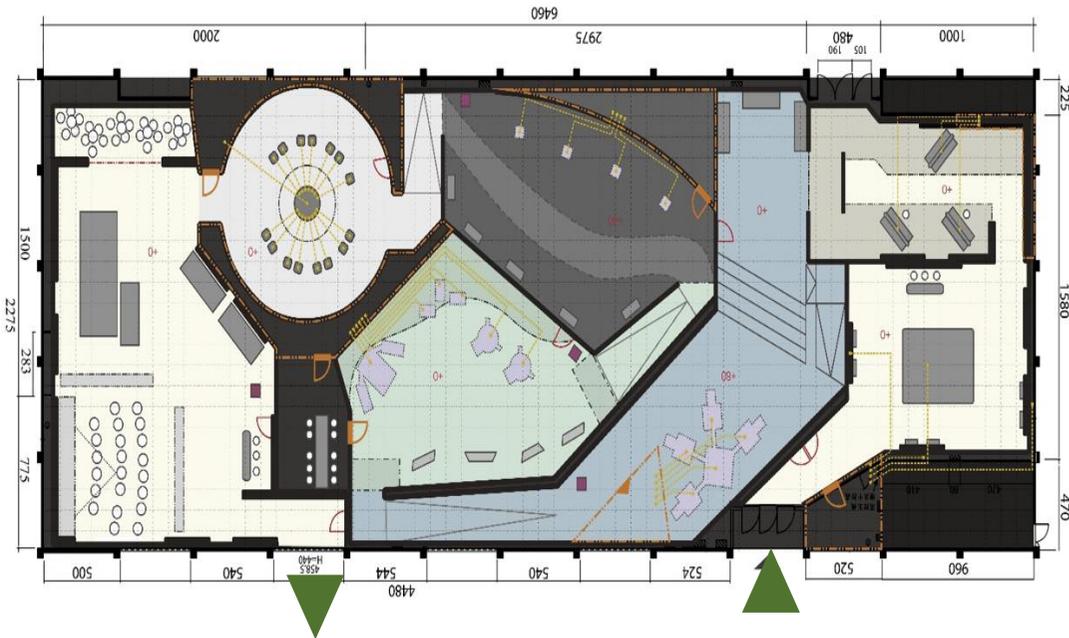
Medical and Pharmaceutical Industry Technology and Development Center



Biphasic oral controlled release technology is a drug product containing two different release rate mechanisms. In chronic disease therapy, to keep the drug concentration in plasma at steady state, the drug product must have immediate dose and enduring dose. Until now, two granules in one dosage form were applied in current products. Our technology combined the properties of drug and coating materials to achieve biphasic release.

(Contact Person: PITDC Jia-Ling Wei · TEL:+886-2-66251166 ext.5201 · wei@pitdc.org.tw)

Time Passage (Kaohsiung) (1 technology item)



	organization	Technology
53	Uneo (ITRI tech. transfer)	Thin film pressure sensor

Thin film pressure sensor



Uneo™ sensor, or Micro-Deformable Piezoresistive Sensor, is a technology developed for force sensing applications requiring a slim and light form factor.

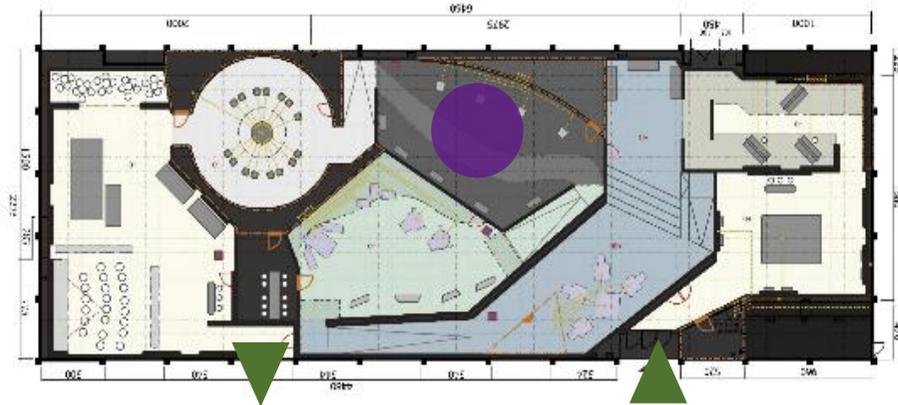
Incorporating various patented microstructure and surface engineering innovations, the device is more environment-friendly and achieves unprecedented versatility and reliability to satisfy customer expectations in performance and cost.

Originally developed at ITRI, the IP and development team were acquired by UCCTW and eventually a subsidiary Uneo Inc was established to commercialize the technology. Uneo's technology has received several international awards including 2010 Wall Street Journal Innovation Award, 2015 Edison Award Gold Medal, and 2015 R&D 100 Award. Through disruptive innovation, Uneo has worked with major players in various fields to bring unprecedented features to consumers.

(Contact Person: Uneo Eric Huang · TEL:+886- 2-22252018 · uneo@uneotech.com)

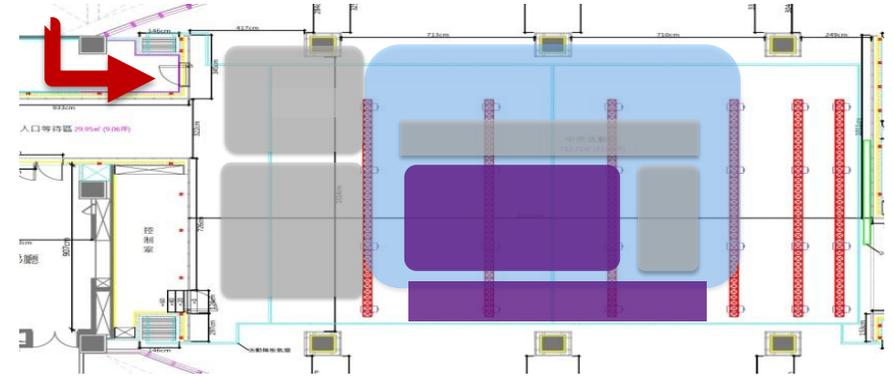
Comm Lab (16 technology items)

Kaohsiung



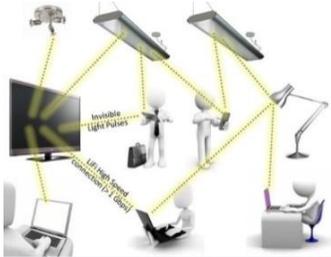
	Organization	Technology
54	ITRI	Visible Light Communication
55	ARTC	Parking Collision Avoidance System
56	ARTC	Forward Safety Warning System (FSWs)
57	CHC	BIKE security System
58	CHC	Electrical Hand-Bike technology
59	SOIC	Super Yacht 238'
60	ITRI	Video Fire Detection System
61	ITRI	MEMS technology
62	SOIC	Underwater Environmental Monitoring System
63	III	Heterogeneous IoT Gateway

Taipei



	Organization	Technology
64	III	The Beacon Deployment & Management / CheckMe APP
65	ITRI	LWA(LTE-A / Wi-Fi Aggregation)Advanced Small Cell System and IC Technique
66	ITRI	Proximity-based (D2D) Communication Service Platform Technology
67	ITRI	G's VIEW video streaming services
68	ITRI	Wearable device used in intelligence factory system
69	ITRI (start up) (HIT)	VR360 Live Streaming System

Visible Light Communication



Visible light communication system is a new wireless communications technology. Data transmission is conducted via visible light in the wavelength range from 380nm to 700nm. Visible light communication has the following features: Health Safety, EMI Free, No Regulation, Security, and Light of sight .

(Contact Person: ITRI Ying-Fen Chen · TEL:+886-3-5917281 · almada@itri.org.tw)

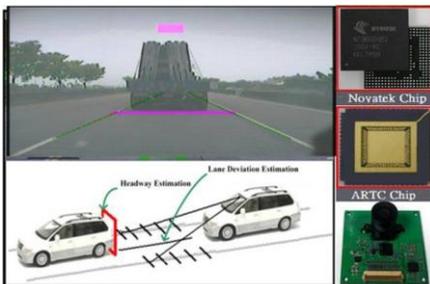
Parking Collision Avoidance System



This system combines ultrasonic and image sensing fusion technology with iEPB system (Integrated Electronic Parking Brake) to execute the brake assist for preventing collision when the driver is parking. The function of ultrasonic sensors notifies you as you get closer to an obstacle and the wide-side camera module detects moving objects from long range. With the ultrasonic and image sensing fusion technology, this system will be able to recognize multiple objects at a wide range in the rear view.

(Contact Person: ARTC Chang.Che-Hao · TEL:+886-4-7811222 ext.2353 · adrian@artc.org.tw)

Forward Safety Warning System (FSWs)



The breakthrough technology integration of LDW and FCW can help driver under lane change reminding and safe distance separation when driving in highway or expressway. Easily installed on the front windshield by replacing the original rear view mirror, capture and record the road condition constantly.

This system will integrate within digital video recorder at primary stage. The smart DVR is comprised of a 2.0 MP SONY Exmor CMOS sensor and new NVT chip with wide viewing angle and 2.7" hi-resolution digital monitor which is specialize designed of the commercial vehicle. When G-sensor detects collision and impact over threshold, the video file will be saved and locked onto the SD card. Under the incident or accident, this product also provides direct transfer between your Android/iOS device over Wi-Fi - no computer needed. Furthermore, a road safety camera database is built and calculated for speed limit warning via GPS positioning.

(Contact Person: ARTC Chang.Che-Hao · Tel:+886-4-7811222 ext2353 · adrian@artc.org.tw)

BIKE security System



Combination of the Intelligence mobilization and sensors, Bike will immediately remind the biker by these sensors while facing the vibration and motion caused by external force. Through the notification of messages or the alarm, it may notice biker for their safety; further, the device can integrate the Internet and GPS to tracking and remote monitoring.

Contact person: Cycling & Health Tech. Industry R&D Center (CHC)

(Contact Person: CHC Sandy Tasi · TEL:+886- 4-23501100 ext. 811 · sandy@tbnet.org.tw)

Electrical Hand-Bike technology



The design & development process of hand-bikes must integrate biomedical engineering, human factors Engineering, electronic and industry technological design.

In the beginning, the VOC is the most important. We need to know users' needs and then transfer them to be engineering specifications (spec.)

Human factors Engineering > Innovational design > Engineering analysis such as concurrent engineering, CAD (Computer Aided Design) and CAE(Computer Aided Engineering) > Prototype making > Standard testing and finally road testing.

(Contact Person: CHC Alfred Huang · TEL:+886- 4-23501100 ext.311 · alfred@tbnet.org.tw)

Super Yacht 238'



To adapt to the development of domestic super yacht trend, SOIC design a 17.5 knots, 70 meters all aluminum super yacht. the detailed functions:

1. Shallow draft only 3.10 meters compared to steel hull 4.10 meters
2. Bow thruster and stabilizers with superior maneuverability and sea-keeping
3. Low-resistance bulbous bow and hull form by state-of-the-art CFD technique
4. Helicopter pad and facility for personnel transportation
5. Compliance with MCA intact and damaged stability
6. Robust hull as per DNV structural scantlings requirement

(Contact Person: SOIC James Liu · TEL:+886-2-28085899 ext.950 · james@mail.soic.org.tw)

Video Fire Detection System



With images taken from CCTV cameras or other compatible video capturing devices, video fire detection system (VFDS) recognizes the existence of smoke or fire by using advanced image-processing and statistical analysis methods and alerts relevant personnel.

(Contact Person: ITRI CHAO, HAO-TING · TEL:+886-3-5918564 · HTZhao@itri.org.tw)

MEMS technology



The gas sensor device consists of a micro-hotplate with an embedded temperature sensor and a metal-oxide semiconductor sensing material layer formed on the micro-hotplate. In order to achieve the target of ultra-low power micro gas sensing, the voltage control circuit of the device is designed to control the millisecond level rapid heater (Micro-hotplate), and also the high thermal isolated film is embedded a miniature thermometer. The gas sensor chip size has a size of 0.9mm x 0.9mm x 0.4mm.

(Contact Person: ITRI Miss Kelly Huang · TEL:+886-3-5914382 · huang0606@itri.org.tw)

Underwater Environmental Monitoring System



The measurement instrument such as ADCP, CTD and sound meter are integrated with a connecting device for collecting underwater noise, wave, ocean current, temperature, and salinity density. The aforementioned digital signals are transmitted to the weather observation tower by an armored optical fiber composite power cable. Therefore a safe, stable, efficient and long term underwater environmental monitoring can be attained. This technology should help meeting the requirement of underwater measurement of sea weather observation tower which is requested by 「Offshore wind power generation system demonstration incentives」.

(Contact Person: SOIC James Liu · TEL:+886-2-28085899 ext.952 · james@mail.soic.org.tw)

Heterogeneous IoT Gateway



Heterogeneous IoT Gateway integrates all kinds of IoT sensors which could be applied to industry, agriculture, environment monitoring, energy management, smart city, and so on. This system provides an open and unified interface to connect to sensors, data, applications and services. IoT Gateway supports Alljoyn open source framework which offers an easy way to connect to and manage Alljoyn-enabled devices and applications.

(Contact Person : III Chen Yan Ting · TEL:+886-2-66073665 · yan@iii.org.tw)

The Beacon Deployment & Management / CheckMe APP- Mobile Engagement

The Beacon Deployment & Management is an easy-deployed and multi-system managing platform which allows user to control and monitor operating status of beacon any time, including distribution condition, deploying amounts, power signal and abnormal percentage. Additionally, 80% beacon devices from different brands on the market have already been integrated into the platform. Therefore, it is possible to purchase beacons from different vendors in consider of the budgets and specific requirements.



“CheckMe” is the first marketing APP in Taiwan using iBeacon indoor Bluetooth positioning technology in cooperation with physical retailers for customized marketing campaign. People are encouraged to visit stores and search for promoted products to collect bonus points for rewards. Moreover, CheckMe collects and analyzes purchasing behaviors of consumers which help sellers to optimize their services.

(Contact Person : III Amanda Chang · TEL:+886-2-6607-2645 · amandachang@iii.org.tw)

(Contact Person : Open-Life CHECKME Service · +886-2-7709-9696#122 · business@open-life.com)

LWA(LTE-A / Wi-Fi Aggregation)Advanced Small Cell System and IC Technique



ITRI-ICL UDcell provides a 3GPP compliant LTE eNodeB solution with following key functions: baseband, RF hardware platform and software tasks. The software includes PHY and L2/L3 protocol tasks, and has been fully integrated and end-to-end tested with Aeroflex TM500 UE emulator, commercial UE dongles and smart phones.

(Contact Person: ITRI Jiun-Jyi Chen · TEL:+886-3-5914465 · sidchen@itri.org.tw)

Proximity-based (D2D) Communication Service Platform Technology



The advanced D2D Relay Gateway technology is developed based on the Device-to-Device technology. It can be applied in the areas with high population density of mobile users such as megastores, concerts, stadiums, and etc. With our Smart iShopping App on the smart device, we demonstrate various D2D-related applications and management systems, such as interactive Digital Signage, Push eCoupon service, remote manager, content management, Network Assisted D2D offload and cellular call offloads VoIP call. These D2D-based applications provides users free indoor Internet access, intranet mutual calls, paging service and commercial advertisement. For the commercial advertisement, consumers will automatically receive the discount eCoupon on their mobile devices as they are within 5 meters around the stores. The interactive Digital Signage will also show the products that they might be interested in.

(Contact Person: ITRI Ming-Hui Chen · TEL:+886-3-5913316 · MeganMHChen@itri.org.tw)

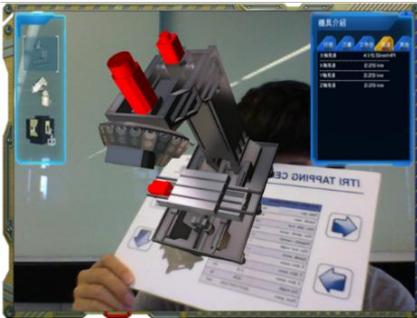
G's VIEW video streaming services



o facilitate the overall development of smart city, the Department of Industrial Technology(DoIT), Ministry of Economy Affairs(MOEA) collaborates with Industrial Technology Research Institute (ITRI) constructively to develop total solutions of innovative application services can be used in our daily lives, and constructs video streaming services (named as G's VIEW). "G' s VIEW" not only provides exclusively customized channel, multimedia contents, live services on hot scenic spots and events, but integrates multimedia social networking services, and supports synchronized cross-media, cross-screen, cross-platform network viewing.

(Contact Person: ITRI Yuanyuan Lin · TEL:+886-3-5915606 · qyuan@itri.org.tw)

Wearable device used in intelligence factory system



ITRI integrates the technologies of machine tools and augmented reality to develop the AR mobile device demonstration system for machinery (MAR system). Users simply download an app and print out tracking markers of MAR system. It will identify the marker on which virtual machine tools are displayed. Therefore, customers from all over the world can operate and experience the characteristics and capabilities of machine tools on line. Through this mode, salesmen of machine tools companies can instantly do a demonstration to their customers. It is expected that this system will improve Taiwan's machine tool industry's digital marketing strength.

(Contact Person: ITRI LIAO CHIEN CHIH · TEL:+886- 49-2345313 · kenziliao@itri.org.tw)

VR360 Live Streaming System

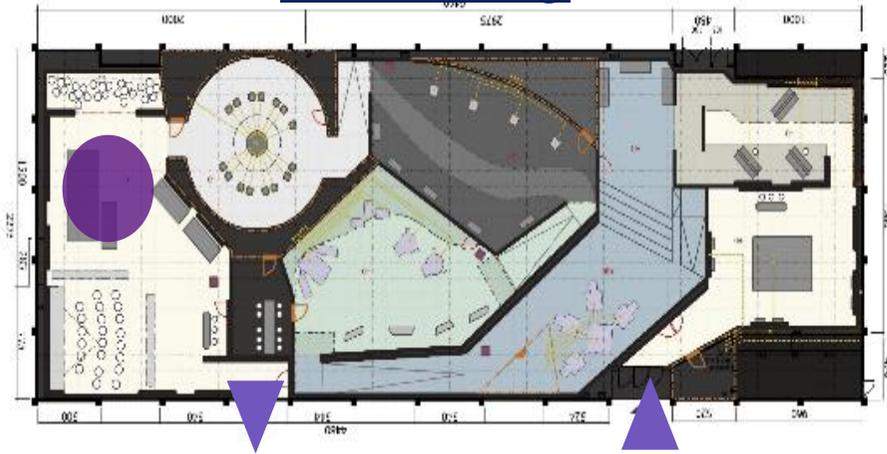


This system uses multi-camera array to capture surrounding images and stitch them into 360 degree videos in real time. The 360-video will be compressed by a directed machine, which uses an RTMP protocol to connect a CDN server. The CDN server then stream the 360-video to various gadgets with the requested software, which decompresses the video for watching.

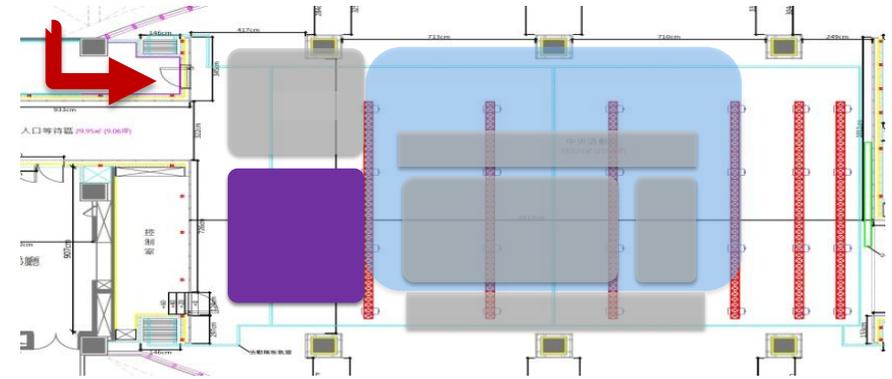
(Contact Person: HIT Jason Cheng · TEL:+886-3-5820009 · jason@hyperimmersion.com)

Dechnology (20 product concepts)

Kaohsiung



Taipei



	Organization	Product concept
70(K/T)	ITRI	Flexible Screen AMOLED
71(K/T)	ITRI	Inter-vehicle Communication Shark Fin Antenna
72(K/T)	ITRI	Emergency Response Infrared Multi-Gases analyzer
73(K/T)	ITRI	Ezair Portable Electrostatic Precipitating Air Cleaners
74(K/T)	TTRI	Ying-Niao Smart Clothes
75(K/T)	SOIC	Slippers Rescue Boat
76(K/T)	FIRDI	Ultrasonic Oil Extractor
77(K/T)	MIRDC	MEER Thermo Bottle Titanium Thermo Bottle
78(K/T)	III	Smart Footwear Platform, SaFePlay (Smart Insoles + Smart Knee Braces)

	Organization	Product concept
79(K/T)	SOIC	Water 911 Personal Water Craft (PWC) emergency rescue appendages
80(K/T)	TTRI	LED Electro-optical Clothing
81(K/T)	MIRDC	Nitinol Knee Guard for sports and medical use
82(K/T)	TTRI	Floating Garden
83(K/T)	TTRI	Composite Down Warm Coat
84(K/T)	TTRI	Long-Acting Hot Patch Mask
85(T)	ITRI	Pure-Water UVCup
86(T)	ITRI	Food Dryer
87(T)	ITRI	ZMI FES CYCLING BIKE DESIGN CONCEPT
88(T)	ITRI	Pocket Chopstick Sanitizer
89(T)	ITRI	Kitchen alarm of gas monitor

Flexible Screen AMOLED



Flexible Screen AMOLED

Given that smart handheld device industry flourished in the recent years, related products are also being developed to achieve lighter, thinner, more resistant and more flexible properties. The flexible Touch AMOLED panel technology developed by ITRI is in line with these innovative trends. For this technology, Dechnology assisted the Flexible Touch AMOLED development team in designing the hardware mechanism in order for the product to feature better technical characteristics such as being lighter, thinner and easily foldable.

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Inter-vehicle Communication Shark Fin Antenna



Inter-vehicle Communication Module

Communication between vehicles is one of the most important technological developments in intelligent transportation. The design of the antenna (Shark Fin Solution) is loaded with communication modules developed by the Information and Communication Research Laboratories (ICL), and is currently used in the radar communication set up for intersection anti-collision function. It will also be extended to various applications of intelligent transportation in the future.

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Emergency Response Infrared Multi-Gases analyzer



Gas infrared spectrum automatic qualitative and quantitative techniques

Unlike traditional human assessment which can take a long time, the automatic qualitative and quantitative assessment properties present in this product can detect the composition of a gas sample as well as the concentration of all detected gases within 3 seconds. When a chemical emergency or accident occurs, this device has the ability to quickly and accurately detect the composition and the concentration of the harmful gases. The engineers on site can use this information to act accordingly, thus immediately deal with the emergency and avoid possible further damage caused by the chemical spreading or even explosion.

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Ezair Portable Electrostatic Precipitating Air Cleaners

Air Cleaning Technology



The size of the portable electrostatic precipitating air cleaners is about the size of a book. It is easy to carry and applicable in a car, office or coffee shop. The product is designed to use for 4 to 6 hours after charging. It provides personalized air purifying service without disturbing others. Through a smartphone app, the product can integrate with micro-climate data from the feedback of cloud users to intelligently monitor air quality and remind users.

The product does not require other supplies but the cleanness of air purifying modules to ensure its effectiveness which takes one hour to filter 99% of PM2.5 particles from air volume of one cubic meter.

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Ying-Niao Smart Clothes

Fabric capacitor Technology



This is a textile product with light kinetic energy. The product runs two systems. The power generation system is constructed by the light kinetic energy battery module. The flexible energy storage system includes flexible lithium battery and flexible supercapacitor.

Sports jackets with photoelectric textile have moisture absorption, quick-drying and cool sensation advantages and also have the active warming function. Therefore, it can be used in dark, dim, as well as bad weather areas. Clothes with photoelectric textile could also be extend its use to the outdoor recreational activities, such as jogging, cycling, mountain-climbing and camping because of its special characteristics.

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Slippers Rescue Boat

Rapid Expansion and Enhanced Stability Technology



This technology can increase the stability and the rescue capability of jet ski in a very short amount of time. The installation is done by placing the kits in the water and quickly mount the stern of the kits onto the jet ski. The installation process is as simple as wearing slippers, it is also known as slippers rescue boat.

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Ultrasonic Oil Extractor

Technology of Ultrasonic Oil Extraction



Combined with the technology of ultrasound extraction, this portable appliance is designed for the household use, particularly in the preparation of food oil or health oil products. This device can be handled easily by the consumers themselves for making healthy (or care) oil products.

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MEER Thermo Bottle Titanium Thermo Bottle

Hydroforming Technology



"MEER Thermo Bottle"

Response to reducing use of disposable products, titanium is adopted with its merit of light weight, high strength, corrosion resistance, and not leaching toxic substances. The hydroforming technology is used to break the mold of traditional design, and create innovated products with aesthetics and outstanding performance through capacity maximization and value-added image of oceanic culture.

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Smart Footwear Platform, SaFePlay (Smart Insoles + Smart Knee Braces)

Foot Mechanics Analysis and Feedback Technology



SaFePlay provides a continuous, real-time and lightweight solution to monitor daily conditions of knee joints. Insoles and knee braces collect data from users and transmit to the smartphone app through Bluetooth connection. The app tracks the data instantly, records the analyzed data of gait and activity log from users, and proposes recommendations for correction. SaFePlay is suitable for all kinds of activities. It helps users to adjust their gait in order to prevent from damages on knee joints.

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Water 911 Personal Water Craft (PWC) emergency rescue appendages

Hidden Emergency Rescue Airbag Technology



The idea behind this technology is to install an airbag system on both sides of a jet ski. This lightweight technology has a very small influence on the mobility performance of the jet ski so it will not impair the high-speed rescue ability of the vehicle. The rescue crew can activate the inflate valve to quickly pump the air bags and stabilize the jet ski, thus enhancing the safety conditions when saving the drowning victim. These air bags also keep the victim's mouth and nose away from the water surface and allow the rescue crew to perform first-aid rescue techniques directly.

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LED Electro-optical Clothing

LED Yarn Technology / Dynamic Fabric Sensing Technology



The intelligent clothing system is used in pair with a smartwatch or a smartphone and receives dynamically the heartbeat information inside clothes through Bluetooth. At the same time, it can be controlled dynamically to drive the Photonic textiles on the vest. Smartphones can display dynamically the person's heart rate as well as the intensity of the work out. The Photonic textiles on the clothes, which are driven by photoelectric controller controlled through levels of exercise intensity, show different luster effects..

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Nitinol Knee Guard for sports and medical use

Nitinol Technology



The design of Nitinol knee guard is featured with super-elasticity and shape memory. The product uses 3D molded Nitinol wire to simulate knee tendon and ligament during flexion and extension. With super-elastic characteristics, nickel-titanium alloy provides an elastic force for flexion and extension and allows a wide range of knee motion in sports. It also effectively bolstering the knee thanks to its close contact with skin. The property of shape memory ensures optimal covering even in high-intensity sports, thereby helping to stabilize joints, protect ligaments and fully enhance the function of tendons.

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Floating Garden



3D Fabric Manufacturing Technology

The floating garden is a great way to grow plants, vegetables or flowers in water (fish) pool. The 3D three-layer textile structure (PET bottle recycling material) are modularized and combined with low density polymer material to make it float on the water. Meanwhile, the interwoven layers can filter water and provide nutrients for plant growth. This product embodies a new form of textile applications with the most green attributes. This product also received German 2016 IF Gold Design Award.

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Composite Down Warm Coat



Digital Printing Technology/One Process Melt-blown Technology

This product combines high-strength ultra-fine melt blown fibers spun into non-woven fabric. Functions range from high thermal insulation effect and high elasticity to convenient transport and storage. Sewing method and thermal insulation in the product are the same as traditional down coat. The material used in the product is an advanced thermal insulation composite material made out of melt blown insulation cotton. Since it combines special advanced materials with digital inkjet technology, fashion designers thus have a brand new entry to create a new kind glamorous composite down jacket.

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Long-Acting Hot Patch Mask



Conductive Fabric Technology

This product is an application of conductive fabric. It has the following characteristics:

1. Combination of the micro-current controller and the conductive elastic fabric
2. Uniform treatment and no need to be held by hand. In addition, the mask is washable.
3. A popular micro-current beauty apparatus
4. About one millionth of an Ampere current. Functions include wound healing and tissue repairing, relaxing muscle tension and reducing edema. (Contact Person : TTRI Jen-Hsiung Lee ·

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Pure-Water UVCup



UVCLED Module

The sterilized portable cup is developed using high-performance UV LED light modules. The special light of LED has a rapid bactericidal effect.

It can kill 99.9% of bacteria by simply irradiating 80-90 seconds. In the future, you only need to take a cup-formed LED disinfection device and then you can drink clean water no matter where you go.

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Food Dryer



Adsorbent Hollow Fiber Technology

The Food Drier allows users to enjoy the peace of mind and the fun of DIY food at home. The device employs the unique adsorbent hollow fiber low temperature drying technology to maintain food' s nutrients and tastes. It is also low energy consumption and therefore saves your money.

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ZMI FES CYCLING BIKE DESIGN CONCEPT

Capacitive Emg Monitoring Electrodes.

EMG - Force Relationship Signal Process.

Functional Electrical Stimulation (FES) Cycling System.



Who said rehabilitation equipment is always lifeless? Rehabilitation equipment has given people the general feeling of being too icy and lifeless. In addition to basic norms of dimensions and human factors, the overall visual perception has ignored the considerations on user' s mood and impression, causing most users to always have a sense of distance on rehabilitation equipment. This design (ZMI FES CYCLING BIKE) has adopted the visual concept to incorporate with the skeleton of heavy motorcycle, giving the rehabilitation bike a value-added sporty touch. The basic pipe frame has been coordinated with a beating sense of primer, allowing this bike to fill with the spirit of health promotion. Meanwhile, the color-matching vivacious hues will urge the user' s body and mind to step on it continuously to improve health.

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Pocket Chopstick Sanitizer

UVCLED Module



The portable "Pocket Chopstick Sanitizer" is the first environmentally friendly chopstick box in the world that can quickly sanitize chopsticks in 90 seconds. The 10mW UVC -LED laser-like reflective-projection module provides uniform UVC lights that can sterilize under normal temperatures, leaving no residues, is non-corrosive and non-polluting, and can effectively kill bacteria and viruses on chopsticks of various sizes. It comes in a lightweight size of only 12.5X4.7X3.1cm, with a safety power design, and can be carried conveniently in your pocket.

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Kitchen alarm of gas monitor

Home safety smart device for gas monitoring



The "Kitchen alarm of gas monitor" is an integral unit to detect carbon monoxide, propane gas, temperature and humidity functions. Users can use the mobile phone to link with the home detector through Internet of Things (IoT) technology to monitor the current detection values. Whenever an indoor air value has exceeded the norm, the detector will emit a warning sound and flash, and automatically notify the emergency contact person. It is a good helper to keep a close watch on home air safety. Featuring built-in SIM card and auto-dialer function, the home detector can be connected with Network to help users to view the current detection values through the Internet, or preset with an air anomaly emergency contact list. Whenever the detector has detected an excessive value, it will automatically inform the emergency contact person or the police unit.

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