DIGI+

數位國家·創新經濟

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智慧國家 出發
Let's go! Smart Taiwan

【賴清德】智慧台灣 啟動改變
Smart Taiwan, Change Now

【彭双浪】產官學攜手合作 智慧台灣就在眼前
Collaboration by Industries, Government and Academia to Make Taiwan Smart

【國際瞭望】借鏡國際 許台灣一個數位新未來
International A New Digital Future for Taiwan through Lessons from the International Community

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編者的話

科技會報辦公室
執行秘書 蔡志宏

行政院期望「數位國家 · 創新經濟發展方案」(簡稱 DIGI+ 方案) 的推動，能夠發展數位經濟，打造更好的投資環境，尋找產業成長新動能，建構我國未來的競爭優勢。回頭看 DIGI+ 方案的形成過程，有兩個重要里程碑，一是前年 11 月 24 日，科技會報辦公室郭前執行秘書耀煌在行政院院會中報告 DIGI+ 方案 (2017~2025)」(草案)，林前院長給予高度肯定與支持；另一則是去年10月，行政院賴院長核定DIGI+方案。其實為了廣徵意見，讓方案規劃可以更加完善，郭前執秘召開過許多場次的討論會議，產官學研各界先進相對也給予許多的協助，在此一併感謝。

目前方案正按規劃在執行中，為增進外界對 DIGI+ 方案的認識與認同，以形成國內對方案推動的共識，本辦公室編印出版本 DIGI+ 季刊，並以中英文對照的型式向國際介紹我們的方案。有別於過往政府刊物多是政府單方面的聲音，我們希望這份刊物有較多從民間的眼光來看政府政策，並展現台灣的民主多元。

◀ 人工智慧正透過改寫產業的規則，改變人們生活的每個層面（圖為具有影像辨識能力的機器人廚師）

在創刊號的內容上，我們規劃以行政院五大施政目標為主題，用以呼應 DIGI+ 方案的推動目的。我們特別邀請院長做五大施政目標與 DIGI+ 方案的總體論述，並沿著文化台灣、綠色矽島、智慧國家、公義社會、幸福家園這五條軸線，邀請該領域的菁英，請他們談談對於 DIGI+ 方案的期許。像是魏德聖導演用食材和鹽巴來比喻文化與科技的微妙關係，並認為要加強民眾的文化底蘊、創造多元人才培育的沃土，這樣我們才能將文化結合科技的作品（如動畫）做到世界頂尖；友達光電彭双浪董事長從自身企業不斷利用價值創造克服一次次挑戰，來看政府實踐智慧國家對於再創台灣產業榮景的意義；吳政忠政務委員規劃督導 DIGI+ 方案，要以科技、生活、文化三合一的致勝模式，來實現智慧國家；沈芯菱小姐是年輕世代的代表，她說明如何利用數位科技彰顯社會公義價值；台大社會系陳東升教授透過開課讓學生發現志業進而創造事業，為社會帶來影響和改變，實現幸福家園。

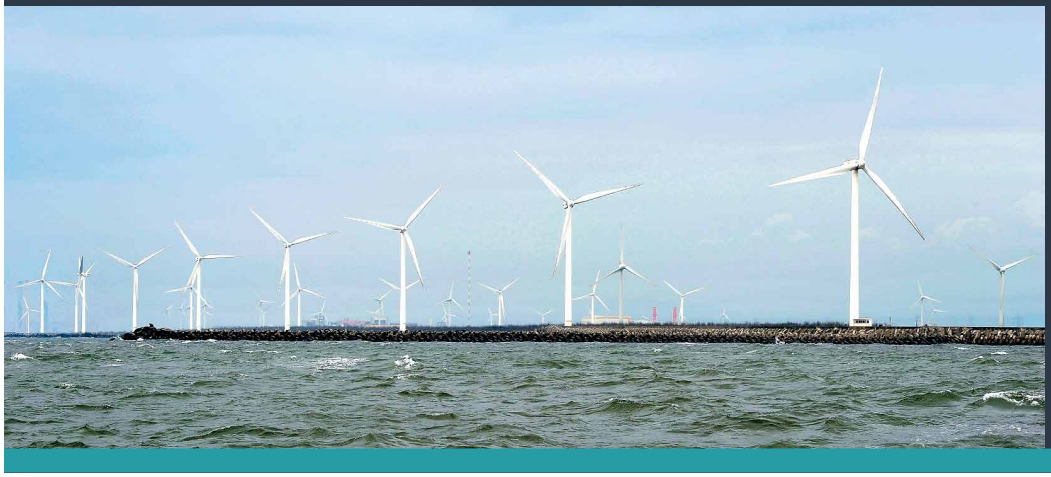
創刊號之後，接下來幾期 DIGI+ 季刊將會以方案的各個行動計畫為主題進行報導，如科技與人才、數位經濟、數位創新基礎環境等。我們希望透過這本能夠輕鬆閱讀的刊物，引領各界多了解與討論 DIGI+ 方案對我國的數位轉型產生巨大的影響，結合民間與政府的力量推動 DIGI+ 方案，以加速我國產業創新，創造智慧國家。

總論
行政院 賴清德 院長

我接任行政院院長，最重要的任務，就是建設國家、發展經濟、造福國人、壯大台灣，並逐步實現蔡英文總統的國家藍圖。因此，我在立法院施政報告中揭櫫建設國家五大施政目標：「文化台灣」、「綠能矽島」、「智慧國家」、「公義社會」、「幸福家園」，就是希望把台灣建設成人民得以安居樂業，繁榮幸福的美麗家園。

文化，是一個國家的靈魂。發展文化台灣，就是要建立台灣的主體性。簡單說，就是要讓每個生活在台灣的人，或是到台灣的外國人，都能很輕易地知道台灣文化的內涵，並進而讓國人對於台灣文化感到光榮，對台灣產生認同感。在這樣的前提下，也才有可能共同為台灣這塊土地打拚。

談到文化科技創新運用方面，文化部正結合地方政府，將在地原生文化，整合建置成國家文化記憶庫，提供做為文化創新的素材。另外，文化部與經濟部也正合作推動時尚跨界整合，結合數位科技、時尚美學及機能型紡織品，擴大台灣時尚文化輸出與影響力。這些都是透過科技，厚植我們國家的文化實力。



▲ 替代能源是建構幸福家園的基石，不僅希望達成穩定供電目標，更期待實現非核家園的願景

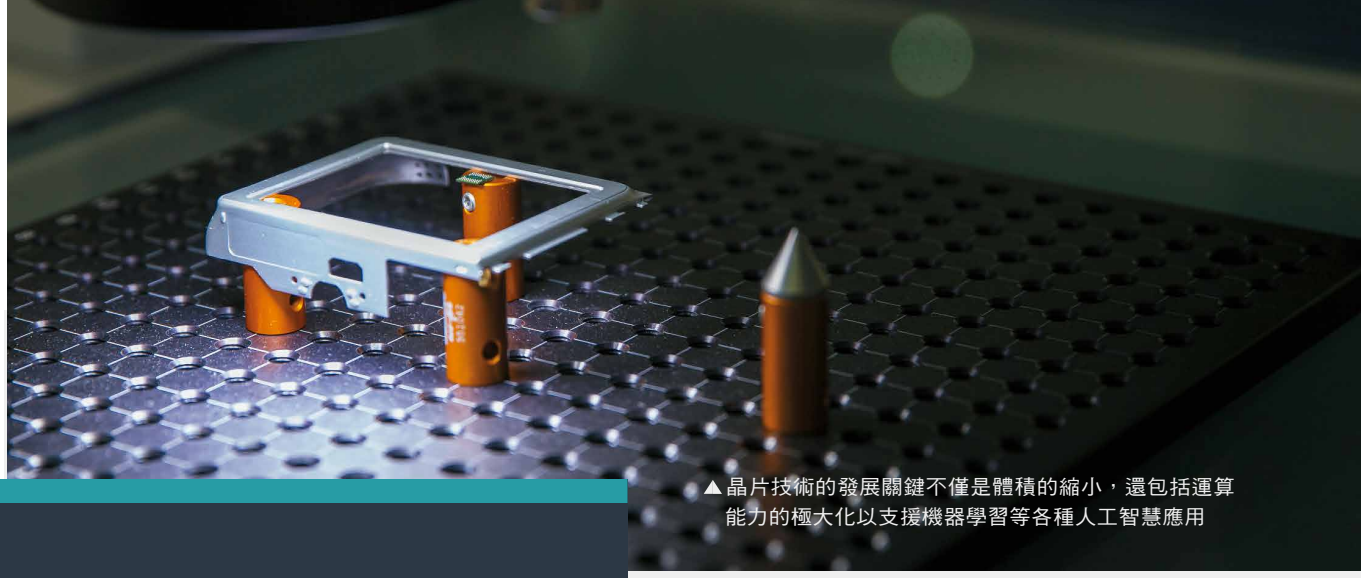
過去，我規劃台南市成為文化首都，我認為有古文化，也應該要有新文明，當時台南選擇的新文明就是低碳、綠能。為打造台灣成為安全、潔淨、永續的「綠能矽島」，行政院正積極推動能源轉型，而為達到 2025 非核家園願景，我們除了努力將再生能源佔總發電量比例提升到 20% 之外，同時採多元創能、智慧節能、科技儲能等方法，讓穩定供電的目標如期達成，並全力降低空氣汙染的問題，這些我們都已提出具體行動方案，未來要逐一加以落實。

談到「智慧國家」，台灣是資通訊的科技大國，我們將憑藉我國在晶片、半導體的優勢基礎，積極轉型為資訊應用的數位強國。我們正透過鬆綁法令、投資數位基礎建設、強化跨域數位人才培育，落實 DIGI+ 方案，希望運用大數據 (big data)、物聯網 (IoT) 和人工智慧 (AI) 等智慧科技應用技術，帶動產業轉型、提高民眾生活品質和政府行政效率，在這推動過程中，也可提供年輕人更多智慧創新的機會。

「公義社會」與「幸福家園」，簡單說就是要讓國人安居樂業。政府除了發展經濟、強化治安，也會致力縮短城鄉數位落差，保障、落實數位時代的基本人權。

我們除了持續落實推動前瞻基礎建設及五加二產業創新方案外，也針對解決產業五缺問題與建構友善的新創環境提出具體方案，來加速發展經濟、壯大台灣。

在強化治安方面，政府除了持續加強六大緝毒系統的團隊合作，落實跨機關、跨區聯防，結合民力，深入社區，全面緝毒、溯源斷根外，今年也將以倍增的經費，更多元的方式，來提升防毒、拒毒、緝毒與戒毒成效；在打擊詐欺犯罪方面，去年成功攔阻詐騙案件數及金額，也較前年提升 72%及 42%；在打擊黑幫組織方面，去年 4 月「組織犯罪防制條例」修正施行後，各地檢察署新收移送組織犯罪犯嫌起訴率，已由原本的 1.6%提升至 54%。不管在緝毒、打詐、或是掃蕩黑幫上，我們都運用了許多科技的協助，來提升整體治理效能。我們藉由智慧科技的運用，協助政府落實治安、食安、防災、醫療、交通及觀光等各項政策，對於提升國人整體生活品質，也都起了很大的作用。



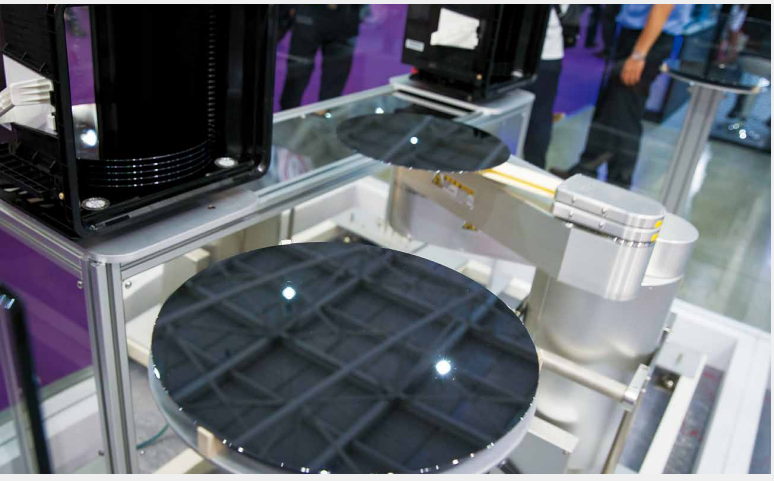
▲晶片技術的發展關鍵不僅是體積的縮小，還包括運算能力的極大化以支援機器學習等各種人工智慧應用

「智慧國家」是行政院五大施政目標之一。我們要以智慧科技做為發展數位經濟的基礎，進而推動產業創新、驅動產業高值化，而 DIGI⁺ 方案的落實，就是達成「智慧國家」最重要的行動計畫。在推動 DIGI⁺ 方案中，對於相關法規的鬆綁尤其重要。台灣是小國，在國際激烈的競爭環境當中，要保有靈活彈性，才能因應快速變化，我們如果沒有把包袱拿掉，就會事倍功半，這是台灣必須要有的「小國大戰略」。

以美國職棒大聯盟和職業籃球為例，去年 10 月的美聯冠軍賽，太空人隊淘汰洋基隊，球場中球迷拿出上面寫著 Altuve(奧圖維) MVP 的紙牌。奧圖維是個身高不到 170 公分的選手，但是他已經連續幾年，每年安打數超過 200 支，更讓對手頭痛的是，他只要一上壘，就能一溜煙的盜壘，而且他在一壘，只要球打到外野，他常常就從二壘、三壘跑到本壘了。太空人隊打敗洋基隊有兩場是二比一，這兩分裡面都有一分就是奧圖維得到的，他可能是保送，或可能是安打，然後他就跑回來了。林書豪為什麼有辦法在美國職籃繼續打下去，他也是速度快。美國分析林書豪籃下切入第一步的速度，是全美國職籃裡面排第三名到第五名，奧圖維也是。這都是告訴我們，台灣也該有這樣的速度。

為了要增加數位經濟發展的靈活彈性，目前我們 DIGI⁺ 方案在法規鬆綁面向，已經完成立法的就有「金融科技發展與創新實驗條例」，推動金融科技創新；「外國專業人才延攬及雇用法」，填補產業所需人才與技術缺口；「科學技術基本法」，放寬學研運用與兼任等規定；「資通安全管理法」，完善台灣資通安全的法制基礎。已經提送或將提送立院審議中的則有「數位通訊傳播法」、「電信管理法」、「無人載具科技創新實驗條例」等草案，我們一定要用更具彈性的

法規做後盾，來搶佔高科技發展的先機。為了符合業界需求，政府積極完善資通訊基礎建設，預計 2020 年寬頻網路速度 1Gbps，覆蓋率達 90%、2025 年 2Gbps，覆蓋率 90%。此外，我們也已規劃推動「台灣 AI 行動計畫」、「優化新創事業投資環境行動方案」、「資安產業發展行動計畫」等，每個方案都訂有明確的期程及經費，要來培育相關人才及推動數位科技發展。我們在面對每一項重大施政議題，都採用「三部曲」方式，也就是修改 (訂定) 法令、編列預算、提出行動方案。有了法令、經費與行動方案，就好像有了指導原則與戰術，每個人在崗位上，本於職責，各就各位去發揮，就會成功。



▲ 台灣需要在半導體產業鏈的優勢上積極轉型

今年以來，許多國際知名大廠包括微軟、Google、Amazon、思科、IBM 等，紛紛來台設立其智慧創新研發中心，他們為什麼會來？正因為看中台灣充足的科技領域人才、完善及穩定的基礎建設環境、在相關隱私法規上的自由保護，以及政府政策上的大力支持。我對台灣很有信心，相信一切只是開始，未來還有無限可能。

另外，科技的應用也必須貼近民眾需求，我們積極打造空氣品質物聯網感測基礎建設，預計至 2020 年將可完成超過 1 萬個空氣品質感測點，提供民眾更精準的即時資訊，維護國人健康；在行動支付方面，我們也積極拓展使用環境與試驗場域，在政府與民間共同努力下，去（2017）年普及率已達到四成左右，今年可望突破五成，我們希望在 2025 年能夠達到九成，這不僅是為了提升國人消費生活的便利性，也能進一步帶動創新金融服務。

DIGI^{+} 方案目前無論是在數位經濟的法規調適與政策完善、優化數位基礎環境、提升數位公共服務等面向，都已有階段性的成果。後續，各部會都會持續照這個方案分工合作去進行，我們希望早日達到促進數位經濟創新發展，提高國人生活品質的目標。

實現智慧國家：科技、生活、文化三合一，翻轉致勝模式

當數位轉型成為全球企業與國家的一致方向，台灣也正式啟動全程 9 年的 DIGI+ 方案，為我國 5+2 產業創新打造數位沃土，讓國內的產業創新蓬勃發展，加速我國邁向「智慧國家」。然而，在所有行動的背後，策略觀與決勝點是什麼？

「過去台灣擅長硬體製造，但現在要把文化跟生活也加進去」，行政院政務委員吳政忠直指核心。自 2001 年起始，政府當時以國家資通訊發展方案奠定了台灣的資訊硬體基礎，多年來歷經 e 台灣、M 台灣、i 台灣的建設，當硬體與產業已臻成熟，「我們發現，還缺了最後一哩路，就是要走到應用。」證諸於全球大國與當紅企業，應用無疑已成為所有科技能否解決產業挑戰、改善生活品質或甚而創造市場需求的關鍵點，但是台灣真的能夠嗎？亞洲其他國家怎麼做？

關鍵動力來自思維的改變

韓國從資通訊開始，在 20 年間就從技術一路走到文化；就連製造能力遠不如台灣的新加坡，都運用創意與既有的金融中心優勢打造金融科技主戰場；而日本的社會 5.0 也是運用科技力量解決高齡、少子化問題的範例。

文化、創意、生活儼然成為下個數位競爭的新關鍵詞

「過去我們把產品做出來之後，國際品牌加上包裝就獲得很好的利潤，然而台灣的代工業卻只能賺取 2% 的毛利。所以，我們想要擺脫代工的包袱，就要確保台灣的科技能夠跟生活結合，因為，做出來的產品越接近人，價值越高。」吳政忠強調。但這樣的轉向絕非一蹴可幾，台灣真的能做到嗎？該怎麼做？

吳政委對台灣有莫大信心，「為什麼微軟、IBM、Google 都要在台灣設立人工智慧的研發總部？就是看重我們有充足的科技領域人才、強大的硬體製造能力，有傑出而靈活的中小企業及產業群聚，在這些利基上，只要有了軟體與人工智慧的加持，我們就是全球最好的未來生活實驗場域。」而這正是行政院長賴清德喊出智慧國家願景的策略觀，只要能結合既有的科技能力，結合對美好生活的追求、台灣引以為傲的文化底蘊，台灣在數位時代就能取得莫大優勢，而 DIGI⁺ 方案即是要將這樣的思維，從數位基礎建設一路貫穿到產業創新。然而，正由於這樣的思維翻轉，也使得 DIGI⁺ 方案成為歷年來捲動最多部會的一個專案計畫。

法條現代化 人才未來化

身負協調重任的吳政忠說明，「DIGI⁺ 方案是一個非常大的計畫，過去一年，我們主要在建構能支撐未來基礎架構的法規，包括資通安全管理法、數位通訊傳播法、金融科技發展與創新實驗條例，以及無人載具科技創新實驗條例都包括在內，透過對陳舊法規的逐一翻新，創新才有脈絡可循。」

緊接著下一步就是人才的培訓，吳政委提出了一個關鍵觀點：「我們要培育的是未來的人才。」但如何確保這不僅僅是口號？

吳政忠認為首先要打破過去先撰寫教案、分級、認證等等步驟才能進到課堂的流程，以新的概念進行人才培育：以終為始。特別是針對新的科技議題如人工智慧、物聯網、大數據等，首先要找到市場的需求，緊接著同時銜接企業的資源、老師與學生的投入，用三個月時間同步進行實驗，只要能看到創新的萌芽，那就是台灣的機會，也才能讓我們盡快地培育出人才。吳政忠強調：「重點是一定要快，快才有機會，有人才有機會。」

翻轉舊模式 啟動新生機

除了培育人才的方式需要翻轉，DIGI⁺ 方案還要翻轉產學合作的模式、中央與地方的合作模式。

「過去台灣在做科技與產業的結合與研究，多是從上游的研發、中游的法人一直串連到下游的廠商，這種方式一定會有落差。而現在，我們要讓研發跟企業需求更為貼近，而前瞻計畫中的數位基礎建設就是這整個模式翻轉的基石。」

此外，DIGI⁺ 方案涵蓋的範圍與產業發展計畫相較，是更為廣泛的，因此更希望能夠做到中央與地方的新合作模式，過去是用國家創新系統的方式在做，但現在我們需要啟動區域創新，讓在地政府、在地大學與在地產業能夠更緊密的結合。

擁抱智慧國家願景，DIGI⁺ 方案正從各個部會的具體計畫中蓄積台灣轉型的能量，下一步是從每個新的一步而來，新的機會唯有新的模式才能催生。合作、匯流、翻轉中，看見台灣數位生機。

台灣發展智慧國家的推動，需要 DIGI⁺ 方案、5+2 產業創新、文化科技、服務科技、半導體與晶片設計的相加乘做為基礎

產官學攜手合作

智慧台灣就在眼前

「智慧國家是最好的機會，也是最大的挑戰。」對於台灣政府積極透過 DIGI+ 方案將台灣建設為智慧國家，友達光電董事長彭双浪表示認同，認為該舉不僅能提供民眾更智慧、便捷且貼心的生活體驗，也是再創台灣產業榮景的關鍵。

從歐美日等國家發展趨勢來看，以智慧化應用為基礎的智慧國家發展是未來主流，想在這一波浪潮中取得致勝先機，必須由政府建立跨部會、跨都市的團隊，以高規格建構基礎框架、制定標準與優化資源，其後，透過自行研發、產學合作與策略聯盟等方式提供符合市場需求的創新服務。

「要想實現智慧國家，得先有完善的基礎建設，如智慧家庭、智慧交通、智慧教育、智慧醫療、智慧商店、智慧工廠等應用，在建置的過程中，不僅有助於強化台灣企業對軟體與服務的掌握度，還可以進一步化零為整、集結台灣企業一起進軍國際市場。」彭双浪進一步解釋，因為台灣地方不大、人口集中且高度都市化、生活水平的差異不大，再加上資訊基礎架設相對完善，非常適合驗證各項智慧化應用，更重要的是，當台灣企業透過各個示範場域驗證服務的可行性後，可以進一步將智慧化系統與服務輸出國際，提升台灣在未來世界的全球排名。

政策引導　推動創新

對於打造智慧國家所帶動的產業機會，彭双浪面帶微笑地表示：「政府扮演極關鍵的角色，適切的政策導引不僅有助於激發創新變革，更能活化產業發展。」舉例來說，台灣政府在依照各縣市發展特色設立智慧製造、智慧觀光、智慧能源、智慧醫療等智慧國家示範場域後，還應該更進一步運用法規輔導、誘使企業向國際大步邁進。如立法院於去年底三讀通過「金融科技發展與創新實驗條例草案」等，在風險可控的狀況下，讓台灣企業發揮創意，多方測試、驗證智慧化服務的可行性。此外，還可以透過稅賦減免獎勵企業投資、藉由數位轉型提升對智慧化服務的掌握度。

「隨著時代的改變，過去的成功模式，未必適用於未來，唯有積極創造價值，方能取得市場先機。」對於瞬息萬變的市場趨勢，帶領友達光電成功度過一次又一次挑戰的彭双浪表示，友達早已擬定對應的策略與行動方針，將從「價值提升」、「軟硬整合」、「創新技術」、「智慧管理」與「智慧服務」等五個面向優化競爭力，開創藍海市場。

彭双浪以智慧醫療應用為例說明，隨著高齡化社會的到來，如何透過新科技極大化照護資源等議題，變得十分重要，為解決這個問題，友達集團積極透過自行研發、產學合作與策略聯盟等方式提供專屬長照產業的企業資源規劃 (ERP) 系統與健康照護設備等系列產品服務，協助醫院與養護中心實現智慧照護服務，完善台灣的醫療照護服務能量。

▲積極響應政府實施「太陽光電 2 年推動計畫」，友達正加速太陽能系統的佈建

產學合作　開創無限可能

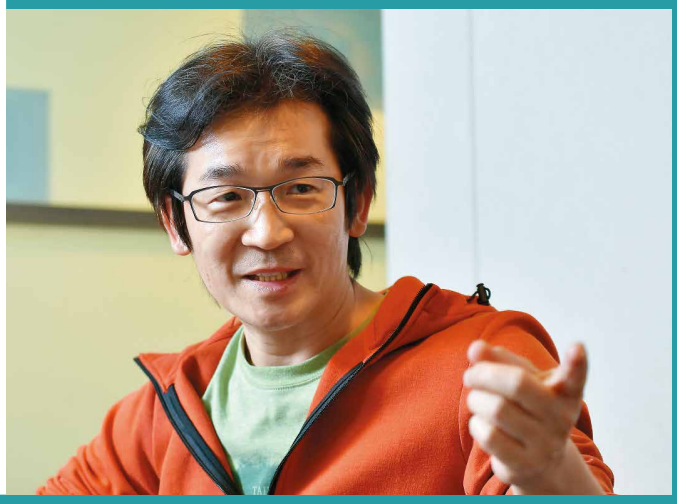
「智慧國家要成功，除需要政府以靈活有度的方式打造有利於企業投資的環境，產學合作也很重要。」彭双浪表示，為提升創新服務能量與確保產學接軌，友達以「學、用、就業一條龍」思維設計推動一系列的活動，讓莘莘學子們在就業前可以透過實習掌握產業動態，例如一同執行研發專案、將 3.5 代廠的產線轉型為面板實習工廠、將數位學習教材放到像 MOOC 這類公有教學平台，以及藉由 A+ 種子實習計畫培育所需人才等。

透過 A+ 種子學習計畫，友達已在世界各地培育超過 1,400 位種子實習生 (台灣約 530 位)，接下來，友達將與學校進一步合作，以微課程 (Micro-lecture) 等創新模式讓領域專家以業師身分進行教學或輔導，藉此凝聚產學創新能量，激發無限可能。

「未來，有著無限的可能，只要速度夠快，就有機會取得先機。」也因此，彭双浪期望政府政策能夠與時俱進，讓企業可以放開拳腳、大施身手，以智慧化服務協助政府將台灣轉化為智慧國家，同時，集結眾力，搶佔龐大的智慧化應用服務市場商機。

創造台灣的新文化：科技創造文化大躍升

數位科技對全球電影產業掀起了莫大的波濤，這個不可逆的趨勢對素來以鏡頭美學與寫實風格為特色的台灣電影帶來了什麼樣的衝擊？



一個男孩、一隻老虎、一座水池，透過數位科技，可以變成一部以海洋漂流為背景、將生死哲學寓意於奇幻異境的《少年 Pi 奇幻漂流》電影，在全球累積超過 6 億美元票房。

同樣拜科技所賜，電影《賽德克．巴萊》創造出一幕幕驚心動魄的戰爭畫面，引人入勝的故事，加上逼真的電影場景，讓《賽德克．巴萊》創下近 9 億元台灣票房，這些都是運用科技讓文化大躍升的最佳例證。

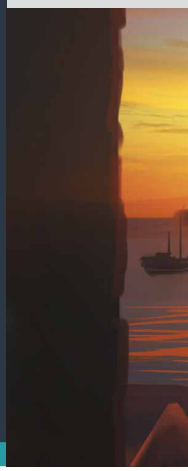
▼在魏德聖導演每一部訴說動人故事的電影背後，其實都不乏科技的加持

無論是導演《賽德克．巴萊》或監製棒球電影《KANO》，數位科技一直是導演魏德聖電影作品的重要元素。因為數位科技，觀眾看到了原住民勇士在森林裡奔跑的風吹草動，也看到了棒球場上的塵土飛揚，魏德聖笑說：「文化像鹽巴，科技像食材，若沒有經過鹽巴調味，食材很有可能會令人食不知味。」

在魏德聖眼中，文化如同鹽巴是一種需經過長時間曝曬、精煉的結晶，這個結晶相當具有利用價值，當食材過多或有腐敗危機時，人們可利用鹽巴醃漬食材，一來可呈現食材的不同風味，二來能夠幫助保存食材，創造附加價值，這也是文化與科技之間微妙的互助關係。

但文化結合科技要如何發揮最佳效益？

魏德聖認為：「要先搞清楚兩者之間的主從關係，究竟主體是文化，還是科技。」這個問題並沒有標準答案，端看思考者的需求、最大賣點是什麼？身為電影創作者，魏德聖認為故事內容、在地文化是主角，但科技卻是讓更多人來體驗文化的輔助工具。



文化結合科技
創造經濟價值

有了清楚思維後，魏德聖正在進行一項劃時代的文化創作，他想以科技為輔具，帶領電影跳脫 3D、4D 思維，直接轉變為全立體，觀眾不僅可以觀賞故事性十足的電影，還能進入電影描寫的時代，真實感受當時的人文氛圍，觸碰電影場景的一磚一瓦，可說是文化運用科技創造高經濟價值的最佳體現。

魏德聖以預計 2020 年開拍的新電影《台灣三部曲》作為實驗先鋒，他將結合電影創作、建築與科技等不同專業團隊，一邊打造 400 年前的台灣第一大城「熱蘭遮城」，一邊將建造過程拍攝成電影，並講述 400 年前荷蘭人統治台灣，到明朝鄭成功來台的歷史經過，電影殺青後，這座城將被保留成為主題文化體驗園區，並運用科技讓觀眾親歷電影其境。

魏德聖的創新想法來自現實壓力，電影產業往往是票房論英雄，一部用心打造的台灣電影，上映時若遇到強勢行銷的美國好萊塢電影，通常難以在第一時間突圍創造高票房，爾後便走向快速下檔，只能在電影台頻道播放的命運，於是魏德聖跳脫框架思考：可否創造一個可長期播放一部電影的多媒體空間，在這裡可以訴說故事、展演藝文，還能利用科技進行文化教育。

▲電影、戲劇、策展…文化創意產業是台灣產業轉型的重要驅動力

計畫正在慢慢實現，面對政府積極推動 DIGI+ 方案的用心，魏德聖不諱言，其中一大困境是台灣的文化、美學教育不夠扎實，數位科技團隊組成也不夠多元，譬如歐美動畫片製作團隊會集結藝術、文學、資工等不同專業，但亞洲團隊大多只有資工背景，技術相當純熟到位，卻因美感不足而無法做到頂尖。因此，魏德聖建議除了政府要具備更開放的思維，還要加強民眾的文化底蘊、創造多元人才培育的沃土，DIGI+ 方案才能真正落實。

需求創造改變：
青年慈善家沈芯菱眼中的智慧城鄉

科技自學翻轉鄉下孩子沈芯菱的命運，讓不可能變成可能，成就她投入慈善與公益的人生。她的夢想與 DIGI+ 方案，在建構智慧城鄉的共同道路上相遇。

出生雲林偏鄉的沈芯菱，今年 28 歲，從小家境並不富裕，但 11 歲那年，她利用網路賣掉阿嬤家的 3 萬顆文旦，而後靠著科技自學，架設英語免費教學網路平台為偏鄉學童找尋學習資源，更利用科技幫助農民打開農產品銷售通路。

善用科技發揮影響力，解決偏鄉問題

「如果不是因為網路科技，我想我所做的事情其實無法發揮這麼大的影響力。」回想自己投身公益與慈善的最初，正是因為看見生活中有許多城鄉差距帶來的問題，所以她開始積極尋求解決之道，成為青年慈善家。

沈芯菱的成長故事影響了許多人，而她的行動傳奇也被收錄在許多本教科書中，如今她仍持續藉由科技關注社會各角落的需求。而在社會各角落，科技彰顯社會公義價值的故事也在持續發生。例如：透過物聯網翻轉養殖漁業，過去，漁民日復一日、不分晝夜地測量魚塭中的水質、溫度，現在透過系統化科技工具與物聯網就能能幫助漁民監控，讓他們有更多的時間去思考行銷、觀察市場進而擴大收益。

又例如教育創新，有愈來愈多偏鄉的熱血老師們透過 3D、AR 技術，結合在地特色，讓學習內容更立體，運用即時互動的科技，打造不一樣的學習體驗。

沈芯菱說：「我相信數位科技將成為解決城鄉問題的同義詞。」因為透過科技可以發掘、行銷、展現更多城鄉特色，並且進一步幫助城鄉創造無可替代的價值，朝向永續發展。

從需求出發，厚實智慧城鄉建設

為了建構理想中的智慧城鄉、公義社會，沈芯菱認為要同時關照不同族群對數位科技的不同需求，「觀察現今的偏鄉，無論是山巔海角，我發現這些地方最多的就是老人跟小孩。」老人最需要的是交通跟醫療，小孩最需要的是教育資源，而青壯年最需要的就是創造產業與工作機會，她期待透過制度的建立、資源的引流，讓科技應運需求而生，為社會帶來更多改變。而這樣的思維，正與 DIGI⁺ 方案加強數位基礎建設以創造社會公義的策略目標不謀而合。

她也建議在發展智慧城鄉的過程，不妨透過 Design Thinking 策略與工具的運用，從使用者出發的角度，思考硬體、軟體與服務三大面向，從服務往回推，遇到問題可以怎樣解決？可以提供哪些服務？再往回推就會發現需要什麼樣的軟體、內容，再透過 DIGI⁺ 方案連結中央和地方，避免資源重複投入。

▲沈芯菱建議年輕人走出城市，腳踏實地到在地蹲點，嘗試用居民的角度去思考，才能看見公義社會的真實需求

改變的起點，科技讓你贏在轉捩點

近年來，有愈來愈多的年輕世代帶著科技能力投入關懷城鄉發展，發掘在地問題並探索解方。沈芯菱分享自己的經驗，「網路的發達讓大家快速認識偏鄉，但無論資訊有多豐富，親自腳踏實地到在地蹲點，嘗試用居民的角度去思考，才能真正感受土地的溫度。」這些觀察能幫助他們切入核心，真正看到問題並尋求解決之道。

願意持續專注、活在當下，才能發現問題，進而解決，沈芯菱深信：「城鄉的發展其實和人生一樣，即使無法贏在起跑點，但我們仍可以持續努力，抓住機會、善用科技，贏在轉捩點。」她更樂見政府扮演領頭羊的示範角色，透過 DIGI⁺ 方案整合資源、串聯應用、落實創新，創造機會讓更多人看見智慧城鄉新未來。

改變台灣的新力量：由社會青年家交織的創業革命

一堂社會學創業課程，為未來埋下希望的種子，歷經時間的淬鍊、洗滌，社會青年家發起一場又一場的創業行動，正悄然改變你我生活、讓台灣變得更好。透過 DIGI⁺ 方案所建立的平台，青年也將為台灣發揮更大的影響力，打造幸福家園。

對社會學系的學生來說，常見的上課方式是：針對社會議題進行討論，從中找出引發社會事件的癥結點，但對台大社會系的學生來說，光只是這樣還不夠，透過「社會經濟組織的創新與設計」課程，台大社會系學生與跨學科的夥伴有機會一起「動手解決問題」。

用社會創業課程培育 新世代青年創業家

被問及開設「社會經濟組織的創新與設計」課程的初衷，台大社會系教授陳東升坦言，一開始的想法是，鼓勵學生做想做的事情，讓學生發現志業，進而創造事業。不過，對陳東升來說，培育青年創業家固然是目標之一，但更重要的是，協助學生思考、想像自己能為社會帶來哪些改變，並且在他（她）們心中埋下創業的種子。

「開創事業並不是件輕鬆事，平均每年只有 2 到 3 名學生會在課程結束後創業，但是，透過創業課程，可以吸引更多學生參與、加入有助於改變社會的創業活動。」回顧過去五年，陳東升表示，確實有不少學生秉持理想創業，以新科技串聯人、場景與服務，為改變社會盡一份心力，例如在台北提供青年共居服務的「玖樓共生公寓」、協助台中老城再造的「好伴社計」、將都市閒置空間轉換為農地的「饗耕，可食綠屋頂」等，但是，要將這些理念發揚光大、擴展影響力，需要取得更多夥伴的認同與支援。

值得特別注意的是，時代在變，青年創業家的創業模式、使用的工具也與以往有所不同。

科技是必備工具

陳東升舉例，致力於推廣太陽能資源的「陽光伏特家」便透過群眾募資方式，利用社群平台邀請民眾投資太陽能板，讓台灣的太陽能電廠可以遍地開花。

無論是將科技運用於產品 / 服務本身，或是利用各種媒體及社群平台，「對新世代青年創業家來說，數位科技是必備的工具，但不用複雜，只要串對方式就可以對社會帶來舉足輕重的影響。」

有了工具，也需要平台。而 DIGI^{+} 方案正是希望透過基礎建設的完善、科技人才培育的機制更能與市場銜接，促使年輕人善用科技工具，將他們的熱情投注於社會創新，進而實現幸福家園的理想境界。

在規劃「社會經濟組織的創新與設計」課程時，陳東升先後參考荷蘭與北歐各國的社會發展現況，對於德國提出 Industry 4.0、日本提出 Society 5.0 的口號，鼓勵多元發展的模式感到肯定，認為很值得台灣效法。此外，為讓青年創業家擁有更大的發揮舞台，陳東升也建議政府在執行 DIGI^{+} 方案時，除了以數位建設縮減城鄉的數位落差，還要建立一個開放平台、創意環境吸引更多的青年創業家加入，培育他們以數位科技實踐理想、擴散影響力，改變社會。

「展望未來，建議更積極的培育創新 (創業) 人才，同時，鼓勵各界相互交流，激盪出最適合台灣的發展途徑。」對於台灣該如何在這一波全球變革中佔得一席之位，陳東升將持續帶領熱血青年們以群眾智慧成就高競爭力的數位國家、建設美好的未來家園。

◀ 越來越多企業看重青年的創意，透過黑客松的舉辦凝聚激發學生的創新能量，以解決企業或社會的問題

借鏡國際

許台灣一個數位新未來

影響國家競爭力的主要指標：人才及教育、基礎建設、金融市場發展、創新及企業成熟度等各個面向，科技既是基本元素與新興趨勢，且更是決勝關鍵。故而全世界各國都在這樣的體認下銳意強化科技實力。因為，這是決戰科技的新世紀。

在日本，老年人藉由平板而能夠獲得即時的用藥提醒、飲食警示。在韓國，智慧生活不只是一個夢想，更是兩大國民品牌 LG 與 Samsung 傾盡研發資源要站上全球龍頭戰略地位的核心概念，也是讓人們引以為傲地生活在物聯網實境中的新日常。在美國，這股力量更是沛然莫之能禦，新創的科技能量、製造業回流捲動的就業機會、市場生機，以及科技巨頭催生的數位變革都具備其他國家難以企及的規模。

科技催生 國家級產業戰略

Industry 4.0、Bank 3.0、新零售、區塊鏈、物聯網、金融科技、擴增實境…科技正帶來新一波的產業革命，從製造業、金融業到消費性產品，無一倖免，甚至促使全球各國紛紛推出了國家級的產業戰略。

工業 4.0 的發起國，德國，在龐大的隱形冠軍支撐下，不僅在智慧製造上掌握了先行者優勢，更由德國聯邦政府的經濟與能源部，在 2016 年公佈了『2025 年數位策略計畫 (The Digital Strategy 2025 Programme)』，要積極推動數位科技應用，使得企業得以善加利用科技創造優勢，進而達到 GDP 成長目標。

借鏡各國策略，台灣的 DIGI^{+} 方案則是從建構有利數位創新的基礎環境、深耕前沿科技研發以掌握自主技術解決方案、以數位創新支持跨產業轉型升級等各個面向，去因應企業在基礎平台、人才缺口與研發資源不足等面向上面對的挑戰。

▲ 機器人已成為日本服務業因應高人力成本的解決方案，在台灣，機器人應用的各種研發仍需要產官學攜手合作

智慧領頭 實現夢想新生活

除了硬實力的強化，各國也紛紛將目光轉向智慧科技對軟實力的改造。

在日本公布的『世界最先進 IT 國家創造宣言』中，各種社會議題包括地方創生、解決少子超高齡化社會等課題躍然於重點項目之中。同樣面臨高齡化與城鄉差距挑戰的台灣，則是更為廣泛且積極的在 DIGI+ 方案中，具體將普及智慧城鄉生活應用、偏鄉寬頻接取環境、發展智慧運輸系統等都納入重點策略中。

在擁抱科技以描繪美好生活的路上，台灣正與全世界共同往前狂奔競逐領先優勢，但這不是一段短跑，而更像是一場需要各方支援接力的三鐵大賽，需要產官學凝聚共識，才能贏在未來。

德國 以工業 4.0 倍增產值

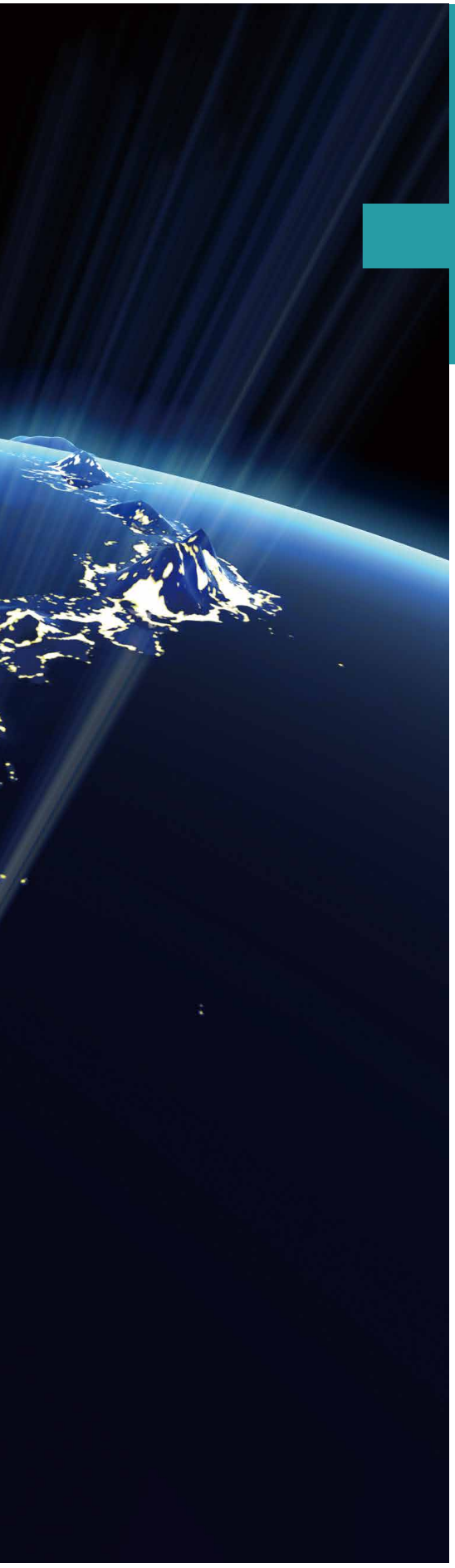
工業 4.0 首次在德國漢諾威工業展提出，德國政府隔年訂為國家重大政策，由聯邦教育及研究部和聯邦經濟及科技部雙主導，結合傳統機械業、電子電機業及資通訊業，建立產官學研共同平台，以西門子、SAP、博世等大企業帶小企業的方式推動。

https://www.cw.com.tw/article/article.action?id=5063560

美國 從教育開始振興製造

2017 年底，美國國防部高級研究規劃局（ＤＡＲＰＡ）宣布，今年九月新學期，在加州十六所高中試行「造物空間導師計劃」，試行每週三小時的新工藝教育。四年內將投入三億台幣，要在一千所高中推動此課程。這是近幾年，美國科學與工藝教育最有企圖心的改革計劃。

https://www.cw.com.tw/article/article.action?id=5045124



To accelerate Industrial Innovation, to create Smart Taiwan.

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A New Digital Future for Taiwan through Lessons

Editor's Words

TSAI Zse-hong, Executive Secretary, Office of Science and Technology

Through the promotion of the "Digital Nation & Innovative Economic Development Program" (DIGI+ Program in short) it is the hope of the Executive Yuan to develop digital economy, create a better investment environment, seek new momentum for industrial growth, and shape competitive niches for future Taiwan. Looking back at the formation process of the DIGI+ Program, there are two important milestones. One of them was when Kuo Yau-hwang, former Executive Secretary of the Office of Science and Technology, reported on the "DIGI+ Program (2017-2025)" (program draft) at the Executive Yuan meeting on November 24th, 2016, which received great recognition and support from former Premier Lin Chuan. The other milestone was when Premier Lai Ching-te approved the DIGI+ Program last October. In fact, in order to incorporate diverse perspectives to further improve the program's planning, former Executive Secretary Mr. Kuo Yau-hwang organized multiple discussion meetings and experts from the government, the industry, and the academia provided significant assistance; sincerest appreciation to all.

The program is currently being carried out. To enhance the general public's understanding and support toward the DIGI+ Program and to form a consensus within the country about its implementation, this office publishes a seasonal publication of DIGI+, bilingual in English and Chinese, to introduce the program to the international society. Unlike previous governmental publications with mono-perspectivity of the government, we hope this publication include more viewpoints from the people to examine government policies and present Taiwan's democracy and diversity.

◀ Robotic Chef with Visual recognition capability

For the content of this inaugural issue, we organized it based on the five policy objectives of the Executive Yuan as a correspondence to the implementation goals of the DIGI+ Program. We made a special invitation to the Premier for an overall illustration of the five major policy objectives and the DIGI+ Program. Based on the five themes of Cultural Taiwan, Green Silicon Island, Smart Taiwan, Just Society, and National Well-being, we also invited elites in the corresponding fields to talk about their expectations for the DIGI+ Program. For example, Director Wei Te-sheng uses salt and food ingredients as a metaphor to describe the delicate relationship between culture and technology and states that in order to produce top-notch creations that combine culture and technology (such as animation), it is necessary to enhance the general public's cultural enrichment and to create a land of rich nourishment to cultivate diverse talents. From the enterprise's experience in overcoming challenges through continuous value creation, Chairman Peng Paul SL of AU Optronics Corporation examines the significance of the government's recreating Taiwan's industrial prosperity through the implementation of Smart Taiwan. Minister without Portfolio Wu Tsung-tsong supervises the DIGI+ Program and plans to carry out Smart Taiwan with the successful model of combing technology, life, and culture. Ms. Shen Hsin-ling represents the younger generation and illustrates how to manifest the value of social justice with digital technology. Through his courses, Professor Chen Dung-sheng from the Department of Sociology at National Taiwan University enables students to discover their vocations and establish their careers, creating influences and changes to the society and realizing National Well-being.

Future DIGI+ quarterly journals following this inaugural issue will report on topics in each action plan from the DIGI+ Program, for example technology and talents, digital economy, and the infrastructure for digital innovation. We hope to, through this easy-to-read publication, inspire understanding and discussion in all sectors about the substantial impact that the DIGI+ Program will create for our country's digital transformation and by combining the forces of the government and the people to promote the DIGI+ Program to accelerate our country's industrial innovation to create a Smart Taiwan.

The Digital Taiwan

Premier LAI Ching-te

My most important responsibilities as a Premier are to improve the infrastructure, develop the economy, enrich the people, make Taiwan stronger, and progressively realize President Tsai Ing-wen's visions. Therefore, I announced the five major policy objectives for the country which are Cultural Taiwan, Green Silicon Island, Smart Taiwan, Just Society, National Well-being in the policy address to the Legislative Yuan. They are aimed to grow Taiwan into a beautiful place where people can live, work, and prosper in happiness.

Culture is the soul of a country. To develop a culturally rich Taiwan, we need to establish Taiwan's subjectivity. To put it simply, we need to allow everyone living in Taiwan or visiting Taiwan to easily experience the depths of Taiwan's culture. In so doing, we make people feel proud of Taiwan's culture and have a sense of identity with Taiwan. This is the only premise on which we can strive together for a better Taiwan.

With regard to cultural and technological innovation, the Ministry of Culture is working with local governments to integrate local cultures into a national cultural memory bank that serves as a source of inspiration for cultural innovation. In addition, the Ministry of Culture and Ministry of Economic Affairs are also working together to promote crossover integration in the fashion industry with digital technology, fashion aesthetics, and functional textiles to expand the productivity and impact of Taiwan's fashion. These are all ways to enhance Taiwan's cultural strength through technology.

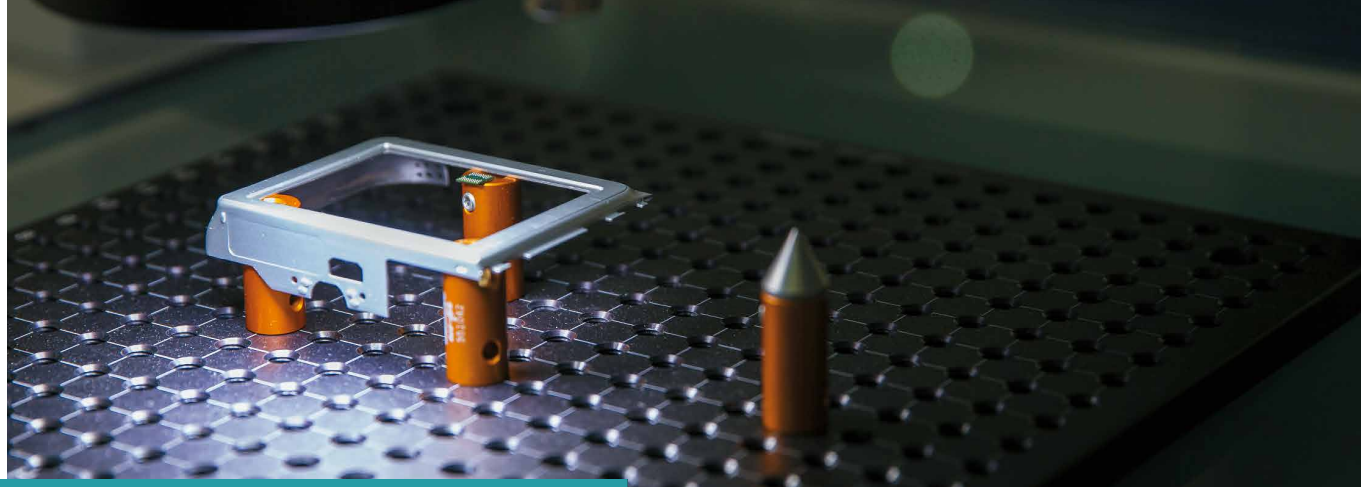
In the past, I had planned to make Tainan City our cultural capital. I believe that traditional culture and new civilization should coexist and grow together. At that time, the new civilization chosen for Tainan was low-carbon and green energy. To build Taiwan into a safe, clean and sustainable Green Silicon Island, the Executive Yuan is driving energy transformation. In order to achieve the vision of a nuclear-free homeland by 2025, we have adopted diversified energy production measures, smart energy saving, and energy storage technologies while increasing renewable power generation to 20% of the total power generation in order to achieve the goal of a stable power supply on schedule. Meanwhile, we also need to be committed to reducing air pollution. We have put forward concrete action plans for these objectives, and we are committed to seeing their fruition.

In terms of Smart Taiwan, because Taiwan is a technology giant in information and communication, we will actively transform Taiwan into a digital leader in information application through our advantages in wafers and semiconductors. We are implementing the DIGI+ Program by relaxing laws and regulations, investing in digital infrastructure, and enhancing the training of talents in digital industries. It is our goal to apply big data, Internet of Things (IoT), artificial intelligence (AI) and other smart technology applications to drive industrial transformation and improve people's quality of life and the government's administrative efficiency. In this process, we can provide more opportunities for smart innovation to our younger generations.

Just Society and National Well-being, put simply, are to help people live and work in peace and prosperity. In addition to economic development and enhancing public security, the government will also strive to reduce the digital gap between urban and rural areas in order to protect and ensure the basic human rights in the digital era.

Apart from continuous implementation of the Forward-looking Infrastructure Development Program and the 5+2 Industrial Innovation Program, we will also put forward concrete solutions for the "five major shortages" facing the industries and create a friendly, innovative environment to accelerate economic development and make Taiwan stronger.

In terms of strengthening public security, the government has continued to enhance the coordination among the six major drug enforcement systems to implement cross-agency and cross-jurisdiction joint defense and integrate resources in the private sector for thorough drug enforcement on the community level to eliminate the sources of narcotics. Moreover, this year, the government will enhance the performance of drug prevention, anti-drug education, drug enforcement, and drug rehabilitation through a wider range of means and twice the budget. In combating fraud, the number of fraud cases successfully prevented and the amount of money involved last year increased by 72% and 42%, respectively, compared to those of the previous year. In terms of combating organized crime, after the amended Organized Crime Prevention Act came into force last April, the prosecution rate of new criminal suspects by prosecutor's offices across Taiwan has increased from 1.6% to 54%. We have utilized a wide range of technologies to assist and enhance the overall governance effectiveness in drug enforcement, fraud investigation, and combating organized crime. By applying smart technologies, we have been able to implement policies in public security, food safety, disaster prevention, healthcare, communications and transportation, and tourism, which have contributed significantly to the improved quality of life of our citizens.



▲Taiwan should lead transformation with our strong strength on Semi-Conductor industry

Smart Taiwan is one of the five major policy objectives of the Executive Yuan. We will use smart technology as the foundation for developing digital economy, with which to drive industrial innovation and high-value industrial development. The implementation of the DIGI+ Program is the most important action plan to achieve Smart Taiwan. Relaxing relevant laws and regulations is particularly important for implementing the DIGI+ Program. Taiwan is a small country, and we have to maintain our flexibility in the highly competitive international environment in order to respond to rapid change. If we do not free ourselves from such restraints, we will spend greater efforts for smaller effects. This is the overarching strategy that Taiwan must have as a small country.

Take Major League Baseball (MLB) and the National Basketball Association (NBA) for example, when the Astros beat the Yankees in the American League Championship Series (ALCS) last October, fans in the field held the MVP signs for Altuve. Jose Altuve is a player who is less than 170 centimeters tall, but he had achieved more than 200 hits annually for several years. Moreover, what made him an even more fearsome opponent was that once he was on first base, he could easily steal bases. If he was on first base, and the ball flew to the outfield, he often easily ran to second and third base and then back to home base. The Astros beat Yankees by a score of two to one in two games, and in both games, Altuve won one of the points. There were either base on balls or hits, and then he reached home base. Why is Jeremy Lin able to continue to play in the NBA? The answer is that he is very fast. Based on analysis conducted in the U.S., the speed of Jeremy Lin's cuts ranked from third to fifth among all of American professional basketball players. Altuve is also one of the fastest in his sport. Their stories tell us that Taiwan should also move at a fast pace.

To increase the flexibility in our development of digital economy, with regard to the relaxation of regulations in the DIGI+ Program, we have completed the legislation of the Financial Technology Development and Innovative Experimentation Act for financial technology innovation, the Act for the Recruitment and

Employment of Foreign Professionals for closing the talent and technology gaps in the industry, and the Fundamental Science and Technology Act for relaxing the regulations for the application of academic research and for holding concurrent posts. The Cybersecurity Management Law has made the legal infrastructure of Taiwanese information security robust. Meanwhile, the Digital Communication Act and Telecommunication Service Management Act have been submitted to the Legislative Yuan for review, whilst the unmanned vehicle technology experimentation act is being reviewed by the Executive Yuan. It is imperative that we legislate more flexible regulations to allow the industry to seize opportunities in the development of advanced technologies.

To meet the needs of the industry, the government has been actively improving and infrastructure. Broadband network speed in Taiwan is expected to reach 1Gbps by 2020, with a coverage rate of 90%, and 2Gbps by 2025, with a coverage rate of 90%. In addition, we have also formulated the "AI Taiwan Action Plan," "Action Plan for Improving the Environment for Investing in Startups" and "Action Plan for the Development of the Cybersecurity Industry". Each of these plans has a clear schedule and budget for cultivating relevant talents and promoting the development of digital technologies. We have adopted a "trilogy" approach, comprising amending (or formulating) laws and regulations, budgeting, and proposing an action plan, for each major policy area. With laws and regulations, budgets, and action plans, we have the guiding principles and tactics that we need. Once all of us are on our posts and fulfill our duties, we will succeed.

Since the beginning of this year, many globally influential companies, including Microsoft, Google, Amazon, Cisco, and IBM, have started to establish their smart innovation research centers in Taiwan. The reasons why they chose Taiwan are that Taiwan has sufficient talents in the technology sector, provides comprehensive and stable infrastructure, offers legal protection of privacy, and supports innovation with government policies. I have great confidence in Taiwan and believe that this is only the beginning of a future of infinite possibilities.

Moreover, the application of technology must serve the needs of the people.. We are actively building the air quality IoT monitoring infrastructure and expect to complete more than 10,000 air quality detection points by 2020, so that we can provide citizens with more accurate real-time information and protect their health. In terms of mobile payment, we are actively expanding usage and testing scenarios. With the joint efforts of the public and private sectors, the prevalence of mobile payment reached about 40% last year (2017). We expect it to exceed 50% this year and aim to reach 90% by 2025. This will not only enhance convenience for consumers but also further promote innovative financial services.

The DIGI^{+} Program has yielded results from previous phases in terms of regulatory adaptation and policies improvement for digital economy, optimization of digital infrastructure, and enhancement of digital public service. In the future, all government agencies will continue to collaborate based on the strategies laid out in this plan. We hope that we can achieve the goal of promoting innovative development in digital economy and improving the quality of life for our citizens in the near future.

To Realize a Smart Taiwan

Flip to the Successful Model that Integrates Technology, Life and Culture

As digital transformation becomes a shared objective of businesses and countries across the globe, Taiwan has officially launched the nine-year DIGI+ program to establish the digital foundation for the 5+2 industrial innovation, help industrial innovation prosper in Taiwan, and accelerate our pace in becoming Smart Taiwan. However, what are the strategic views and winning points behind all actions?

"Taiwan was good at hardware manufacturing in the past. However, we are going to add culture and life into it," said Mr. Wu Tsung-tsong, Minister without Portfolio of the Executive Yuan. The government started to lay the foundation for information hardware in Taiwan by the national Information and Communication initiative since 2001. After the establishment of e-Taiwan, M-Taiwan and iTaiwan, the hardware and industry has been mature. "However, we are still one step away. That is application." If we look at the Great Powers and popular companies in the world, applications have undoubtedly become the key point for technologies to solve industrial challenges, improve quality of life or even create market demand. However, can Taiwan really do it? What are the approaches of other Asian countries?

The key power comes from changing our thinking

Staring from ICT, Korea has shifted from technology to culture in the past twenty years. Even Singapore, whose manufacturing capacity is inferior to that of Taiwan, has applied creativity and its advantages as a financial center to make itself the main battle field of financial technology. In Japan, Society 5.0 is also an example of using the power of technology to solve the problems of aging society and low birth rate.

Culture, creativity, and life are the new keywords for the next digital competition

"In the past, we made products and international brands packaged the products. If we want to get rid of the burden of low price OEM, we have to ensure that Taiwan's technology can integrate with life because products that are closer to people have a higher value," emphasized by Wu Tsung-tsong. However, Rome is not built in one day. Can Taiwan really do it? How should we do it?

Wu Tsung-tsong has great confidence in Taiwan. "Why did Microsoft, IBM, and Google set up artificial intelligence R&D headquarters in Taiwan? We have sufficient talents in the technology sector, immense hardware manufacturing capacity, outstanding and flexible small and medium-sized enterprises, and industrial clusters, and, with the addition of software and artificial intelligence, we will be the best field in the world for experimenting future life." This is the strategic view of the Smart Taiwan proposed by Premier Lai Ching-te. If we can combine the existing technology capacity, the pursuit of a better life and the cultural heritage we are proud of, Taiwan can achieve a great advantage in the digital era. The DIGI+ Program is to carry through this thinking from digital infrastructure to industrial innovation. Due to the flip-thinking, the DIGI+ Program has become the project that has involved the most ministries.

Modernization of laws and futurization of talent

Wu Tsung-tsong, who is responsible for coordination, explained, "the DIGI+ Program is a huge project. In the past year, we focused on establishing the laws and regulations that can support the future infrastructure, including the Cybersecurity Management Law, the Digital Communication Act and the Financial Technology Development and Innovation Experimentation Act as well as the unmanned vehicle technology innovation experimentation act. Innovation is only well founded after the update of old regulations."

The next step is talent training. Wu Tsung-tsong believes that the first step is to break through the conventional process that involves writing lesson plans, classification and certification before entering the classroom. The new concept of talent cultivation is to begin with the end. Especially for new technology topics, such as artificial intelligence, Internet of Things and big data, we have to find the market demand first before connecting the corporate resources, teachers and students and simultaneously conducting experiments for three months. Wherever innovation sprouts, it is where Taiwan's opportunities are. In this way, we can cultivate talent as soon as possible. Wu Tsung-tsong emphasized, "the key is to be fast. We can only have an opportunity if we are fast and our talent is ready."

Flip the old model to activate new life

In addition to the way of talent cultivation, the DIGI+ Program will flip the cooperation mode between industry and academia as well as the cooperation mode between the central and local governments.

"In the past, Taiwan's industrial technology R&D was mostly a linear model from upstream R&D and midstream research institutes to downstream industries. There were gaps in this approach. Now, we need to make R&D closer to the demand of the industries. The digital infrastructure project in the forward-looking program is the cornerstone for flipping the whole model."

With the vision of Smart Taiwan, the DIGI+ Program is accumulating energy for transforming Taiwan from various ministries' specific projects. The next step comes from every new step, and new opportunities come from a new model. We will see Taiwan's digital vibrancy rising from cooperation, convergence and flipping.

To develop Taiwan as a Smart Taiwan, we need complementation and synergy among the DIGI+ Program, 5+2 industrial innovation program, cultural technology, service technology, semiconductors and chip design.

Collaboration by

Industries, Government and Academia to Make Taiwan Smart

"Smart Taiwan is our best opportunity as well as the biggest challenge", said Peng Paul SL, Chairman of AU Optronics Corporation, in his support for the DIGI+ Progrm initiative by Taiwan government. He believes that this scheme will be able to create smart, convenient and user-friendly experience in the daily life of citizens in Taiwan. It will be also a driver for prosperity of the industries in Taiwan.

Japan, the US and countries in Europe all embrace the vision of smart nation built on an infrastructure of smart applications. To stay ahead of the game, it is necessary to establish a cross-department and multi-city team, to develop the framework for high-specification infrastructure, standards and resources optimization. This should be followed by a plethora of innovative services catering to market needs via a combination of in-house development, cooperation between industry and academia and strategic alliances.

"A Smart Taiwan is only possible with a robust infrastructure, such as smart homes, smart transportation, smart education, smart medical care, smart shops and smart factories. The deployment of the infrastructure helps Taiwanese companies to develop competences in software and services. It also facilitates the consolidation of resources for the industries in Taiwan to make a foray into the international market", explained by Peng. Taiwan is a small island where the population is concentrated. The high level of urbanizations means limited variances in the living standards across cities. In addition, the well-established information infrastructure is an ideal testing ground for a wide range of smart applications. More importantly, once the use of the services has been proven on the testbed by companies in Taiwan, these services and smart systems can be exported overseas. This will improve the global ranking of Taiwan in the future.

Policy Drives Innovations

As far as the opportunities created by the Smart Taiwan initiative are concerned, Peng said with a smile, "The government plays a pivotal role. Well-thought policies encourage changes and innovations, as well as invigorate industrial developments. For instance, after the Taiwan government has developed demo sites and counties for smart manufacturing, smart tourism, smart energy and smart medicare according to the characteristics of different cities and counties, they should also assist Taiwanese companies to march toward the international market with regulatory support. A case in point is the Financial Technology Development and Innovation Experimentation Act that passed the third reading by the Legislative Yuan at the end of last year. This legislation aims to encourage companies in Taiwan to pursue innovations and conduct tests to validate the feasibility of smart services in an environment with controllable risks. Meanwhile, it incentifies corporate investments with tax cuts/exemptions. The purpose is to enhance the knowhow in smart services via a digital transformation.

"The changing times mean the past successes may not be repeated in the future. Market leadership is only possible with value creation", said Peng, who has been navigating AU Optronics Corporation through challenges time and again, in the constantly changing marketplace. The company has devised blue ocean strategies and action plans to boost competitiveness by enhancing value, software/hardware integration, technology innovation, smart management and smart services.

Peng illustrates the importance of smart healthcare and resource maximization with technology to deal with an aging population. To respond to this issue, the AUO Group has launched a series of products/services such as ERP and healthcare equipment via in-house development, collaboration with universities and strategic alliances. The purpose is to assist hospitals and nursing homes with smart healthcare services and add to the service capability of medical care in Taiwan.

Cooperation between Industry and Academia to Create Unlimited Possibilities

"The success of a Smart Taiwan requires a flexible approach from the government to make the business environment conducive to corporate investments. Meanwhile, the collaboration between industry and academia is also important", said Peng. To inspire innovations and services and ensure the connection between companies and universities, AUO Optronics Corporation has been organizing activities by promoting the synchronization of studying and employment. It is hoped that internships may help students to stay on top of industry developments. Examples are joint R&D efforts, the conversion of 3.5G production lines into an internship factory for panel manufacturing, the publication of digital learning materials on MOOCs (massive open online courses), and talent development with A+ Seed Internship programs.

AUO Optronics Corporation has welcomed over 1,400 interns around the world (including 530 or so in Taiwan) with its A+ Seed Internship programs. Going forward, the company intends to deepen its cooperation with colleges and universities by bringing domain experts to the campus in the format of micro lectures. It is envisioned that their instructions and support can inspire innovations in industry and academia and create unlimited possibilities.

"Possibilities know no boundaries. Opportunities are for those who act fast", said Peng. He hopes that government policies can keep up with the times so that companies can be nimble and flexible, in order to offer smart services and to assist the government in transforming Taiwan into a Smart Taiwan. This will facilitate collective efforts to capture the huge market for smart applications and services.

Creating Taiwan New Culture:

Technology Creation, Cultural Leap

Digital technology created transformative waves in the global film industry. What kind of impact did this irreversible trend caused on Taiwanese films industry, which has long been characterized by realism and lens aesthetics?

A boy, a tiger, and a pool. Through digital technology, they can be transformed into *Life of Pi*, a movie that embedded life and death philosophy in the fantasy world with a background of ocean drifting, creating over 600 million U.S. dollars in global box office. Also, with the magic finger of technology, Seediq Bale created breath-taking battle scenes, an intriguing story, and lifelike movie scenes, generating close to NT$ 900 million in box office. These are all best examples of creating a cultural leap through utilizing technology.

Whether it is directing *Seediq Bale* or producing the baseball film *KANO*, digital technology has been a crucial element in Director Wei Te-sheng's films. Digital technology enables the audience to see the subtle movements of the indigenous warriors running in the forests and the flying dusts on the baseball field. "Culture is like salt and technology is like food ingredients; without salt as a seasoning, food ingredients might be tasteless" says Wei, smiling.

In the eyes of Wei, culture, just like salt, is crystallization created through an extended period of sun exposure and refining. This crystallization has high utilization value. When there is a surplus of food ingredients or when they face the disaster of spoilage, people can season it with salt, presenting a different flavor as well as preserving it, creating added value. This is also the delicate, reciprocal relationship between culture and technology.

However, when culture is combined with technology, how does it create the greatest benefit?

Wei believes that "the subject and object relationship between the two must first be clarified. Is culture the main subject or technology?" There is no standard answer to the question, depending on the need of the thinker and greatest selling point. As a film creator, Wei considers story content and local culture as the leading roles; however, technology is an aiding tool that enables more people to experience culture.

Combining culture and technology, creating economic value

With these clear thoughts, Wei is working on a landmark cultural creation. He wants to, with technology as the aiding tool, directly transform a movie into full dimensional, breaking through 3D and 4D thinking. The audience will be able to not only enjoy but also enter the historical period depicted by the movie and authentically experience the cultural atmosphere of that specific time, touching the bricks and stones in the movie scene; it can be seen as the best embodiment of culture creating high economic value through utilizing technology.

Wei plans to use Taiwan Trilogy, which will start filming in 2020, as an experimental pioneer. He will incorporate diverse professional groups from the fields of film creation, architecture, and technology. While creating Zeelandia, the largest fortress in Taiwan 400 years ago, the creation process will be filmed, telling the history from the Dutch's colonization of Taiwan 400 years ago to Cheng Cheng-gong's arrival in Taiwan during the Ming Dynasty. Upon completion of the film, the fortress will be preserved to become a cultural theme park and to allow the audience to be personally immersed in the movie scenes through technology.

Wei's innovative idea comes from pressure from reality. Since the success and failure in the film industry often lies in the box office, it is usually difficult for a Taiwanese film, created with earnest effort, to be a huge box office hit if it clashes with American Hollywood movies with marketing blitz and will soon be out of theaters and be seen only on movie channels on TV. Therefore, Wei thought out of the box: to create a long-term multimedia space to show films, a space where stories can be told, cultural performances can be provided, and cultural education can be conducted by utilizing technology.

The plan is being carried out gradually. Seeing the government's devotion to promoting the DIGI+ Program actively, Wei honestly points out that the major predicament is the poor cultural and aesthetics education foundation in Taiwan. The digital technology team is not diversified enough either. For example, animation production teams in Europe or the U.S. incorporate professionals from arts, literature, and information engineering; however, most teams in Asia include only information engineering, providing fairly mature technology skills but unable to produce top-notch films due to insufficient aesthetic sensibility. Therefore, Wei suggests that in order to really carry out the DIGI+ Program, the government should be more open-minded and the general public's cultural enrichment should also be enhanced and to create a land of rich nourishment to cultivate diverse talents.

◀ Behind the scenery of *Seediq Bale*

Demands Induce Change:

Smart Hometown in the Eyes of Young Philanthropist SHEN Hsin-ling

Furnished with technological knowledge which she learned by herself, Shen Hsin-ling, a girl hailing from the countryside, has launched her career in charity and public services. She now intends to engage in the development of a smart hometown, following the rollout of the DIGI+ Program by the government.

Shen Hsin-ling, 28, was born to a rather poor family in a village of Yunlin County. She had her first contact with cyberspace at 11, when she sold 30,000 shaddocks online for her grandmother. With the further increase of her Internet knowledge, thanks to self-study, she later applied her expertise in helping other villagers, including establishing a free English learning platform for children and online sales channel for farmers.

Contributing to a solution of rural problems with technology

" My efforts would not have produced such a significant influence, had it not been for Internet technology " says Shen, noting what prompted her to engage in charity and public services was intended to contribute to the solution of problems stemming from the urban-rural divide.

With her story spreading, articles on her legendary experience have been included in many textbooks, as she continues to dedicate to various social causes via the utilization of her Internet expertise. Many people have followed her footsteps, taking advantage of Internet technology for social good.

An example of application of the IoT (Internet of Things) in aquaculture, helping farmers easily monitor the status of their fishing ponds, including water quality and temperature, without the need of constant in-person inspection, even late into the night, as in the past. As a result, farmers have more time observing the market status and engaging in marketing to augment their profits.

Another field is educational innovation, as more and more teachers in rural areas embrace 3D and AR technologies, plus local features, creating 3D interactive learning, which greatly inspires interests of students.

"I believe that digital technology will be the answer to the solution of rural problems," remarks Shen Hsin-ling, noting that technology can facilitate the discovery of more rural features and creation of rural value for use in marketing, which can sustain rural development.

Construction of smart hometown from demand

For construction of smart hometown and just society, Shen Hsin-ling believes that it is necessary to take care of the different digital needs of various groups in the society, noting "In remote areas, for instance, the focus should be on the elderly and children, which constitute the bulk of local population." What the elderly need is transportation and medical care and children educational resources, different from young and middle-aged people who care about business opportunities and job openings. She expects that more needs for technological applications will emerge via establishment of institution and inducement of resources, which matches the goal of DIGI+ Program creating a just society via intensified construction of a digital infrastructure.

She expresses that for the development of smart hometown, it is advisable to view problems from the angle of users, considering the three aspects of hardware, software, and service and utilizing a design-thinking strategy and tools. After determining what kinds of services to be offered, the kinds of software and contents in need can be decided and overlapped inputs of resources by the central and municipal governments can be avoided, via the coordination of the DIGI+ Program.

▲ It is necessary to actually stay in those areas and understand their problems, said by Shen Hsin-ling.

Technology makes change possible

In recent years, more and more young people have dedicated to rural development via the application of Internet technology, pinpointing local problems and offering solutions. "Although the Internet has greatly raised understanding of remote areas, to help with the development those area, it is necessary to actually stay in those areas and understand their problems from the angle of local residents," She points out.

"Thanks to the assistance of technology, rural areas, despite lagged development, can catch up and turn around their fate, via continuous effort and timely grasp of opportunities," remarks Shen, adding that the odds of rural areas have become much greater, in the wake of the DIGI+ Program, which can integrate resources, coordinate applications, and materialize innovation.

A New Force Changing Taiwan:

Startup Revolution Triggered by Youth

A sociology course on startups planting seeds of hope, blossoming, after a lapse of time, into a litany of startups launched by young people, which is changing the lives of many people and making Taiwan a better society. The DIGI+ Program is playing a critical intermediary role in the establishment of national well-being.

At most classes of the department of sociology, students would gain insight into key social issues via heated discussion. For the course "innovation and design for social and economic organizations" at the Department of Sociology, National Taiwan University, students of the department and cross-discipline students would have opportunity contributing to the solution of social issues.

Fostering young startup founders

Chen Dung-Sheng, professor at the Department of Sociology at NTU, explains that his original motive in opening the course is to encourage students finding their interest and launching startups. Even more important, says Chen, is to inspire students thinking and imagining what kinds of changes which they can bring to the society, thereby planting in their minds seeds for startups.

"Founding startups is not easy, as a result of which only a couple of students would actually take action for founding startups after the course ends every year. However, the course has prompted more students participating in startups conducive to changes in the society," says Chen. Chen points out that over the past five years since the inauguration of the course, a number of students have actually founded startups according to their ideals, integrating humans, scenes, and services with new technology, in order to contribute to changes in the society, such as the "Chiulou apartment building for co-inhabitance," helping young people find residence in Taipei, "good companion and community," an urban renewal project in Taichung, and "edible green rooftop," farming at idle urban space. More recognition and support is needed for proliferation of such startups, according to Chen.

It is noteworthy that along with changes of the times, startup models and tools embraced by young founders are quite different from the past.

Technology an indispensable tool

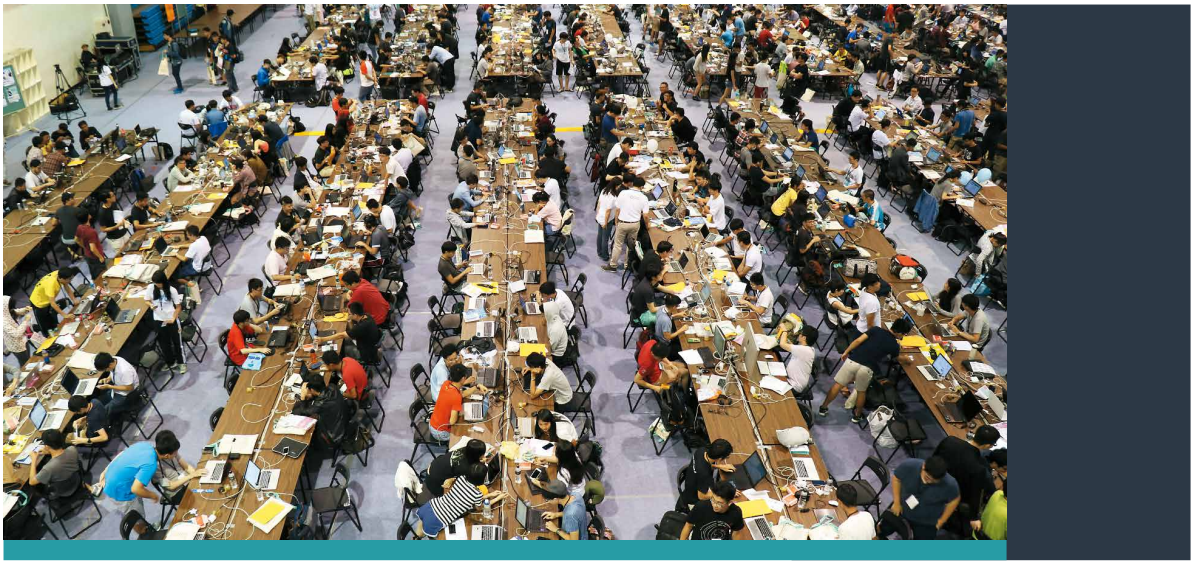
Chen cites the example of "Sunshine Voltage House," a project for pushing solar energy by having local people invest in the installation of solar panels via crowdfunding.

Technology has been increasingly applied in products/services and utilization of various media and social platforms has become quite common. "For young startup founders, digital technology has become an indispensable tool, which, if applied properly, can bring about significant changes in the society," remarks Chen.

A platform is also necessary. A good example is the DIGI+ Program, which aims to tailor a mechanism for cultivation of technological talents to market needs, assisting young people in the utilization of technological tools for engagement in social innovation and materialization of national well-being.

In designing the "innovation and design for social and economic organizations" course, Cheng Tung-sheng referred to the social development status of the Netherlands and North European nations, as well as Germany's Industry 4.0 and Japan's Society 5.0, whose plural development model is worthy of emulation by Taiwan. In executing the DIGI+ Program, Chen suggests the government to, in addition to bridging urban-rural digital divide, establish an open platform and innovative environment, attracting participation by more young startup founders and helping them cultivate digital-technology ability, so as to disseminate their influence and change the society.

"In addition to intensified cultivation of talent for innovation and startup, we should encourage cross-field exchanges, so as to pinpoint an optimal development approach for Taiwan," says Chen, who pledged to lead enthusiastic youth to utilize crowd wisdom in contributing to the development of Taiwan into a highly competitive digital nation and to build national well-being in the future.



▲ More and more enterprise aggressively leverage young people's creativity, Hackathon is a trendy approach.

A New Digital Future for Taiwan through Lessons from the International Community

The main indicators affecting national competitiveness are talent and education, infrastructure, development of financial market, innovation and corporate maturity. Technology is not only a basic element and an emerging trend but also the key to success. Therefore, all countries in the world are determined to strengthen their technological strength because we are in a new century featuring battles of technology.

In Japan, the elderly can receive instant medication reminders and dietary alerts through tablets. In Korea, smart life is not just a dream. Korea's two major national brands - LG and Samsung - have considered it as the core concept for taking a leading position in the world and have exhausted their R&D resources on it, and, through Internet of Things, it has become a new daily life in which people proudly live. In the US, this force is irresistible. The innovative technological capacity, the employment opportunities created by the return of the manufacturing industry, market vitality and the digital transformation induced by the technology giants in the US are at a scale that is hard to match by other countries.

National-level Industrial Strategies Induced by Technology

Technology is bringing a new wave of industrial revolution, including Industry 4.0, bank 3.0, new retail, blockchain, Internet of Things, financial technology and augmented reality. From manufacturing, financial industry to consumer products, no one is spared. Every country in the world has been launching national-level industrial strategies.

Under the support of a massive number of hidden champions, Germany, the origin of industry 4.0, has grasped the advantages of pioneers in smart manufacturing. Moreover, the Federal Ministry of Economic Affairs and Technology of Germany published the Digital Strategy 2025 Programme in 2016 to actively promote the application of digital technology so that enterprises can create advantages by making good use of technology, and then achieved the goals of GDP growth.

Through lessons of various countries, Taiwan's DIGI+ Program focuses on creating an environment with infrastructure favorable to digital innovation, investing in R&D of cutting-edge technologies to master the autonomous technological solution and supporting cross-industrial transformation and upgrade by digital innovation in order to cope with the challenges faced by enterprises in terms of basic platform, talent shortage and insufficient R&D resources.

▲ Japan is using robots to serve the needs of aging society.

Realize the dreamy new life with smart technology

In addition to strengthening hard power, countries have also turned their attentions to the transformation of soft power by smart technology.

In the Declaration to be the World's Most Advanced IT Nation announced by Japan, various social issues, such as local creation and solution to hyper-aged society, have been included in the key projects. Facing the same challenges of aging society and urban-rural gap, Taiwan has specifically included the prevalence of smart urban and rural life applications, broadband access environment in rural areas and development of a smart transportation system in the key strategies of the DIGI+ Program in a more extensive and active manner.

On the way to a beautiful life made possible by technology, Taiwan is rushing forward with the world to compete for the leading advantage. However, this is not a sprint but more like a triathlon that requires support from all parties. It needs the consensus among the industry, government and academia to win in the future.

Germany doubles its output by industry 4.0

Industry 4.0 was first proposed at the Hannover Fair in Germany and was set as a major national policy by the German government the next year. It was led by the Federal Ministry of Education and Science and the Federal Ministry of Economic Affairs and Technology and combines traditional machinery industry, the electronic and electrical industry and the information and communication technology industry to establish a joint platform among industry, government, academia and research. It has also been promoted by mentorships between big enterprises, such as Siemens, SAP and Bosch, and small enterprises.

https://www.cw.com.tw/article/article.action?id=5063560

The United States revives manufacturing from education

At the end of 2017, the Defense Advanced Research Projects Agency (DARPA) of the United States Department of Defense announced that the DARPA Makerspace Mentor Program will be piloted in 16 high schools in California in the new semester from September. This program will feature three hours of new technology education every week. NT$300 million will be invested in this program in four years, and DARPA will promote this course in 1000 high schools. This has been the most ambitious reform plan in science and technology education in the US in recent years.

https://www.cw.com.tw/article/article.action?id=5045124

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