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SDG- Prelude to Taiwan's IT Software Development

In 1979, to promote the development of software industry, the Institute for Information Industry (III) invited internationally prestigious software engineering experts to attend Taiwan's first-ever held symposium on software engineering. In 1981, III presented to people in Taiwan the first Chinese guidebook on software engineering methodology, ***Guidelines for Software System Development Procedures***.

In 1979, III took advantage of the joint venture **HP-TAC** launched by HP and procured the authorization to publish ***Introduction to HP-SLI***, an internal standard document detailing HP's software life cycles. It was the first book in Taiwan that gave a comprehensive introduction of software development methodology practiced in an internationally renowned corporation. In the same year, III co-worked with IBM's Japanese division and developed the first Chinese computer, IBM 5550. During the cooperation III also learned from IBM about procedures and methods of software development and project management.

In 1983, III joined hands with National Defense Management College on a project called *System Software Engineering Technology*. They followed the criteria stipulated by the US military and published *Systematic Development of Software Engineering Technology Manual*. In 1984, III worked with IBM and set up Software Engineering Institute (SEI) in Taiwan, the namesake of Carnegie Mellon University's SEI, a program initiated in 1988 by the US Ministry of National Defense to promote CMMI (Capability Maturity Model Integration) domestically and globally.

III and IBM cooperatively ran the courses of SEI for three years. Afterwards, III independently took charge of the SEI operation for another four years. It was the first exclusive training course centering on software engineering offered in Taiwan. In addition to IBM's courses on Education and Training Methodology, SEI also developed a series of software engineering courses. When introduced to the public, the courses were so popular that top

managers and senior staff of the Information Center of many institutions, public and private, wasted no time in registering for the program. Despite the high tuition fee, entry for every newly opened class was filled to capacity soon after the news went public. The series of courses were actively promoting a systematic development approach for structured software as well as broadening understanding and application of software engineering. Thanks to the courses, many IT workers have strengthened their software engineering competences and contributed in return to enhance their companies' software development and management.

In March 1986, having taken the domestic status quo into account, III issued *Software Development Guide 1.0 (SDG 1.0)*. Based on structured analysis and design method, SDG 1.0 states a set of methods and guidelines for software development and operation. It also provides samples for document writing. During the early stage of Taiwan's IT software industry, this very operation guidance helped set rules for software program development and solution. In the same year, III accomplished developing Kanga Tool, the first CASE Tool (Computer-Aided Software Engineering Tool) ever produced on the island.

On 1 Dec 1988, assisted by Technology Development Program of the Ministry of Economic Affairs and guided by software development criteria of DOD-STD-2167A and IEEE (Institute of Electrical and Electronics Engineers), III went on issuing *Software Development Guide 2.0, SDG 2.0* that came out in 18 volumes. Starting from the year of 1989, III spared no efforts in launching educational training programs related with SDG 2.0 in order to raise talents for software development and system installation urgently needed in Taiwan.

From May 1990 onward, III continued staging achievement presentations about SDG 2.0 nationwide. In 1991, following the mode of *Business System Planning*, III published another *Information System Planning* with an aim to bringing forth a great number of IT software development talents for Taiwan. By this time IT industry in Taiwan has demonstrated strengths in software engineering planning, designing and implementing. For an information society, the needed IT human resources are fully prepared to take the next step.

SDG 2.0 has become the process management benchmark for government institutes to follow when carrying out contracts on projects of software development. It contributes a lot to Taiwan in upgrading on-job performance capabilities of its software engineering. Under the support of Software Engineering Five-Year Development Plan directed by Industrial Engineering Bureau, III commissioned CISA (Information Service Industry Association) and Chinese Society for Quality to take charge of the composing of Software Technical Document Guidance Manual. In the preface of Chapter 1 of the book, it says, "…SDG 2.0 provides well-recognized methods and guidance for software development. Standardized operating procedures of software development along with technical documents of unified contents have greatly improved the quality of software development. The impact that SDG 2.0 exerts on Taiwan's IT industry is far-reaching and beyond description." It was not until 2005 that SDG 2.0 was gradually replaced by CMMI (Capability Maturity Model Integration).

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1979 年**資策會**成立後，為促進台灣資訊軟體業的發展，邀請國際知名的**軟體工程專家**，舉辦國內第一場軟體工程**研討會**。1981 年資策會編撰出版「**軟體系統發展程序綱要**」，為國內第一本**軟體工程方法論**相關的中文指引書。

1983 年資策會利用參與 HP 公司台北應用開發中心 HP-TAC 的合作計畫，與 HP 協商取得**授權**，**摘要**編譯 HP 公司軟體**生命週期** HP-SLC **內部標準文件**，出版了「HP-SLC 介紹」，是國內第一本完整介紹世界知名公司軟體發展方法論的專書。同年，源於資策會與 IBM 日本公司合作開發 IBM5550 中文電腦，資策會於過程中向 IBM 公司學習軟體開發及**專案管理**的程序與方法。

1983 年資策會與**國防管理學院**合作**系統軟體工程技術專案計畫**，參考**美軍標準**，出版「**系統發展軟體工程技術手冊**」。 1984 年資策會與 IBM

公司合作，在台灣設立軟體工程研究班(Software Engineering Institute，簡稱 **SEI**，與後來 1988 年由美國**國防部**設於**卡奈基美隆大學**，負責在美國及全球推廣 **CMMI 制度**的 SEI 同名)。

資策會與 IBM 合作執行 SEI 計畫三年，後來資策會又自行營運四年，這是台灣最早也是唯一以軟體工程為**軸心**的訓練課程。在 SEI 計畫下，除導入 IBM 公司**教育訓練方法論**之外，並開發出一系列軟體工程的課程。SEI 課程**開風氣之先**極受歡迎，許多公私機構資訊中心的主管及資深人員報名踴躍，即使收費不低，每次開班很快就會額滿。這個系列課程在國內推動**結構化軟體系統發展方法**的風潮，促進了軟體工程的瞭解與運用，許多資訊從業人員因此建立了軟體工程的**基本素養**，並協助了各別公司強化其軟體發展與管理能力。

1986 年 3 月，資策會參酌國內的情形，發表軟體發展指引(Software Development Guide 1.0, **SDG 1.0**)。依據**結構分析**與**結構化設計方法**，所制訂的軟體發展方法與**準則**，規範軟體發展的作業程序，並且提供了一套**文件撰寫**的範例，此一軟體發展的作業指引，建立我國**資訊軟體業界**初期之**軟體程式**及發展系統解決方案之依循規範，同年並完成開發 Kanga Tool，這是國內第一套軟體工程輔助工具(CASE Tool)。

1988 年 12 月 1 日資策會續在**經濟部技術處科技專案**的支持下，再依據 DOD-STD-2167A 及 IEEE（Institute of Electrical and Electronics Engineers，電機電子工程師學會）軟體發展標準，出版「**軟體發展指引** SDG 2.0」，全套共 18 冊。 1989 年起，資策會為讓各界了解軟體發展程序，便**大力進行** SDG 2.0 相關教育訓練，以積極培養我國所需之軟體開發與系統建置人才。

1990 年 5 月起，資策會並持續至各地舉辦「軟體發展指引 SDG 2.0」**成果發表會**，1991 年，資策會再依據企業系統規劃方法(Business System Planning)，出版「**資訊系統規劃指引**」 ，以大量培養我國**資訊軟體開發人才**，此時我國業者已具備**軟體工程規劃**、設計與**建置能量**，我國邁入資訊化社會所需資訊人才基礎已經成形。

SDG2.0 成為許多包括政府機關**軟體開發**合約雙方做為專案執行時的**流**

程管理基準依據，對台灣軟體工程**實務能力**提升有很大貢獻。2001 年 12 月，資策會在**工業局**「**軟體工業五年發展計畫**」的支持下，委託**中華民國軟體協會(Information Service Industry Association, CISA)**，並由**中華民國品質協會**負責執行「**軟體技術文件指引手冊**」撰寫，在其第一章前言提到：「…SDG2.0 提供公認合適的軟體發展方法與準則，規範標準化的軟體發展作業程序以及內容一致性的技術文件，對於軟體發展的作業品質，SDG 2.0 的貢獻厥偉並且影響深遠！」約在 2005 年後，SDG2.0 才漸被「能力成熟度模型整合 CMMI(Capability Maturity Model Integration)」取代。