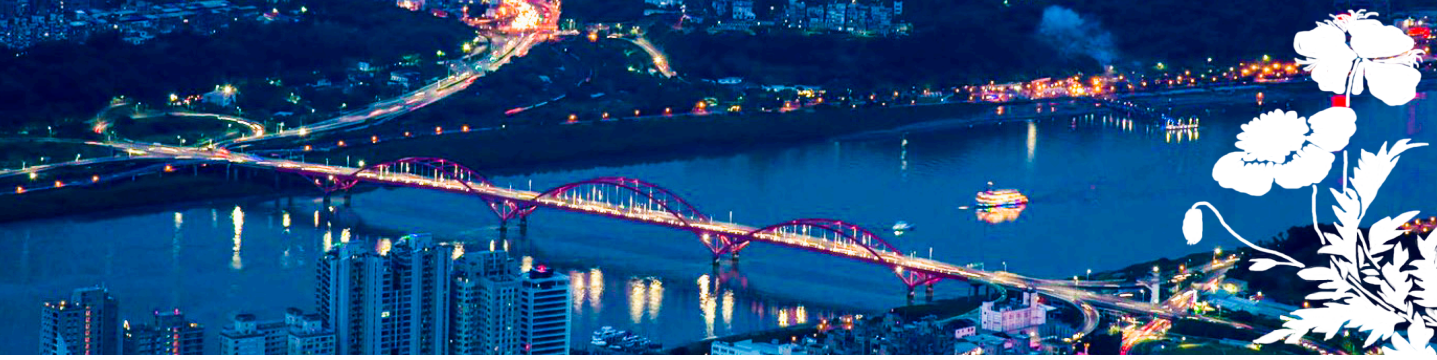


本署毒品資料庫之籌設、發展與運作

呂坤宜

壹、前言

我國施用毒品人口逐年增加，已成為政府必須面對、亟待解決之社會問題，打擊毒品犯罪更是國家重點施政方針之一（如行政院「毒品防制會報」、檢察機關排怨計畫等）。為充分配合法務部政策昭示「毒品問題侵蝕社會各階層及校園問題嚴重，必須火網全開，面對新世紀之鴉片戰爭，全力打擊中、小盤藥頭，俾利降低施用毒品人口」，擔任第一線偵查主體之檢察機關勢需提出精進方案，有效遏止中、小盤藥頭所帶動之毒品流通，除維持檢警調、海巡、憲兵等指揮體系之正常運作外，順應新時代雲端科技之蓬勃，本署擬針對毒販平日使用設備連絡交易之通話紀錄，發展一套情資分析程式，將其通聯紀錄加以解析、探勘，產出販毒嫌疑者四周之人際脈絡，從而正確判讀出各該中、小盤毒品流通路徑之情資，藉以採取最佳之偵查作為，此舉將可提昇帷幄時整合通聯紀錄

1. 本文作者為本署檢察事務官兼組長。

之效能，減少不必要之執法勞力、金錢、時間等耗費。形成標準作業流程後，對查緝毒品案件擬定正確偵查作為，自有極大助益。

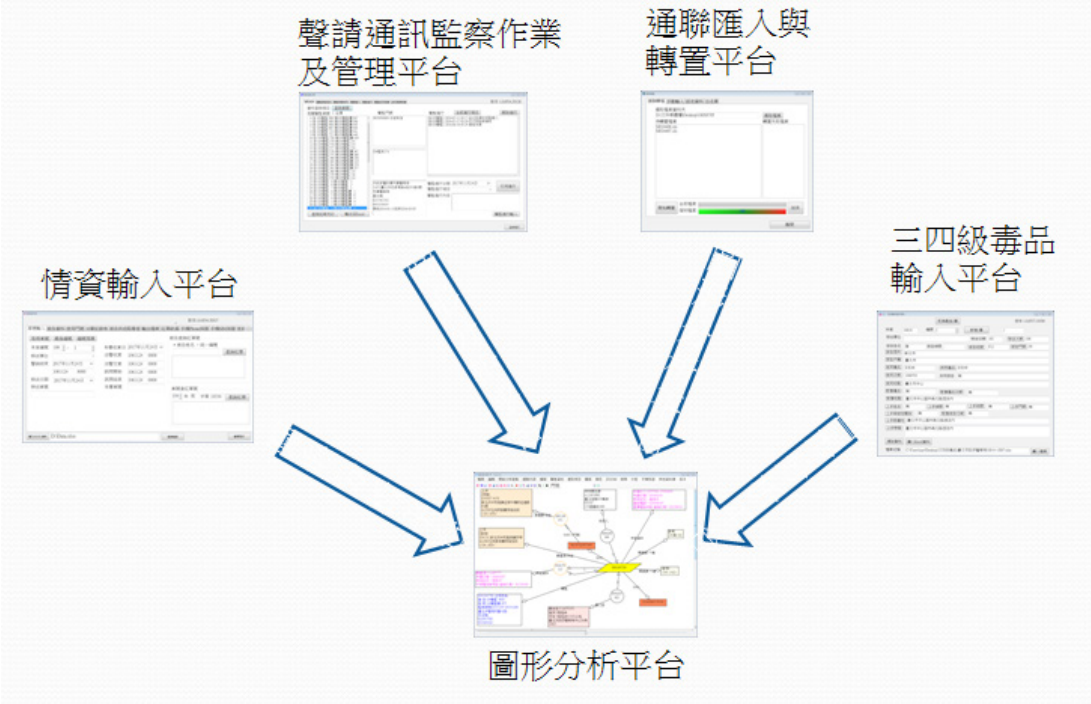
本署自 100 年 2 月 28 日，楊治宇檢察長召集主任檢察官孟令士、張紹斌、朱應翔、資訊室主任李瑞明、書記官長邱秀玉、檢察事務官呂坤宜、張孝甄等同仁，召開毒品資料庫籌備會議，裁示自 100 年 3 月 1 日起，參考臺中地方法院檢察署及臺南地方法院檢察署等毒品資料庫優點，由本署檢察事務官自主開發建置毒品資料庫，並由孟令士主任檢察官選派檢察事務官負責開發撰寫毒品資料庫程式、張紹斌主任檢察官及資訊室提供資訊設備及維護服務、朱應翔主任檢察官負責毒品資料庫業務督導，其後指派林達檢察官擔任執行秘書，檢察事務官室旋依朱應翔主任檢察官及林達檢察官構想，自主開發上開資料庫，獲取初步成效，其後並榮獲法務部指定本程式，供全國各地檢署作為建置毒品資料庫使用。另自 102 年起，楊治宇、蔡碧玉檢察長為創新毒品資料庫各項軟硬體設備，先後指派緝毒專組戴東麗、陳明進、吳義聰、周士榆主任檢察官等擔任「開發建置雲端毒品智慧情資分析系統」(即毒品資料庫進階版) 計劃主持人，向法務部申請科技計劃，獲科技部於 104 年提供 225 萬元，用以改善相關軟、硬體設備，並持續增進毒品資料庫功能迄今。

貳、協助檢察官主動發掘案源

本署自主開發、建置毒品資料庫主程式，包括：(1) 情資輸入平台（需輸入施用毒品者持用行動電話門號之通聯情資與最近通聯對象、供出之上手年籍、買受毒品時間地點、販毒者特徵、交通工具等其他足以識別販毒者特徵等之供述情資，轉化成可供資料庫加值利用之有效資訊）。(2) 聲請通訊監察作業及管理平台。(3) 通聯匯入與轉置平台（將網路查詢取得之行動電話門號通聯及申設人資料透過此平台加以轉置、儲存至資料庫，利於後續分析）。(4) 三四級毒品輸入平台 (將臺北市警察局提供三四級毒品裁罰資料，儲存至毒品資料庫)、(5) 圖形分析平台（整合上開資料，產出圖形介面資料，分析販毒者聯繫網絡是否符合聲請通訊監察門檻），各系統詳如圖一。

參、分析流程說明

本署分析程式，以上開資料轉置後，劃分為「關係通聯」、「被告個資」、「被告供述」、「三 / 四級毒品」、「聲請通



圖一、毒品資料庫各平台架構

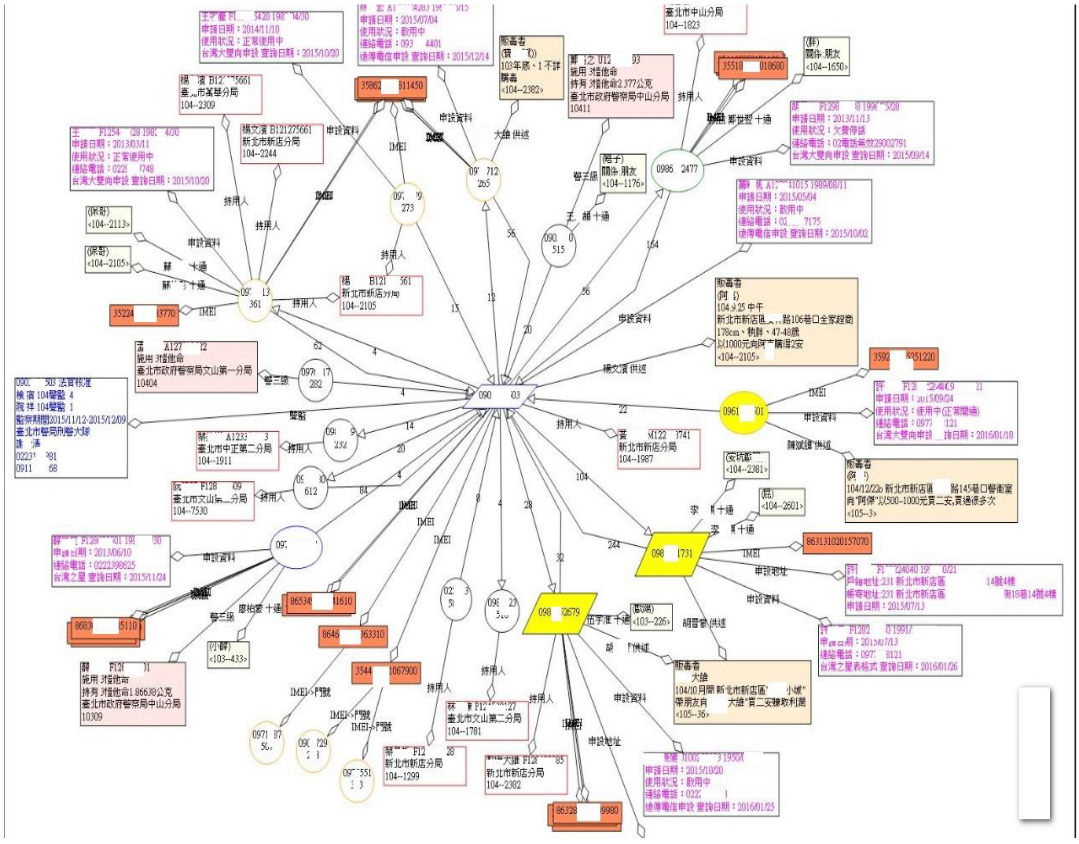
訊監察」資料庫等五大情資來源，而產出脈絡、層次明確之分析圖，目的在使法院能更認同檢警調機關聲請搜索或通訊監察時備妥之犯罪證據，進而提升法院核准執行搜索或實施通訊監察之心證程度。

肆、操作方式及結果

在圖一之分析程式之文字框輸入行動電話門號（舉例為 0937XXX986 ），按下箭頭所指之按鈕，即會自動分析並產出該行動電話門號分析圖，若有不足，在欲分析圖之門號上，再 Double-Click 即可依上開方式，由程式自動將門號填入上開文字框內，按下上開箭頭所指按鈕，可就該門號進行分析。亦可利用功能表就該等分析圖擴展上開「關係通聯」、「被告個資」、「被告供述」、「三 / 四級毒品」、「聲請通訊監察」資料庫等資料，細部分析被告人際網脈，經整理上開分析結果，將版面排列，即可得圖二（毒品資料庫分析軟體）之內容，而該結果可以圖檔等格式儲存，便於分享。

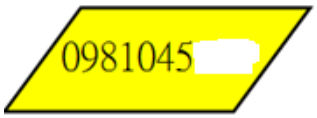
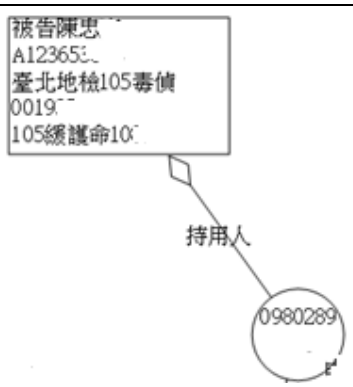
茲以較為簡潔明瞭之圖四加以例示分析結果說明如附表所示：

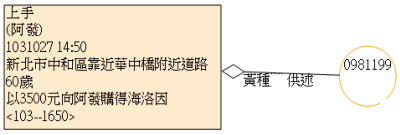
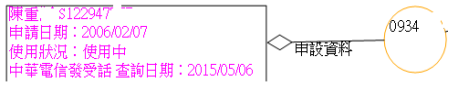
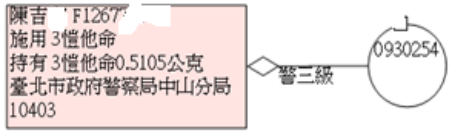
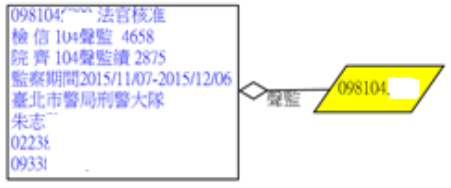
圖二、毒品資料庫分析軟體



圖三、毒品資料庫分析結果

附表

圖形	說明
	分析對象之電話門號
	行動電話門號 0930254 及 0976215 號，其中 0976215 號(邊框為橘色)，曾調閱通聯紀錄。
	行動電話門號 0934179 號撥打 15 次電話至行動電話門號 0981041 號，另行動電話門號 0981041 號撥打 2 次電話至行動電話門號 0934179 號。
	行動電話號碼 0981045 號之 IMEI 號碼為 35190506717 號。
	行動電話門號 0980289 號，持用係被告陳忠，身分證字號 A12365，本署案號 105 毒偵 19、105 緩護命 10。
	楊意十通通聯紀錄表內之行動電話門號 0981045 號，係為發哥。

圖形	說明
	黃種供述行動電話門號 091199 號係上手阿發及販賣毒品時、地及種類、價格。
	行動電話門號 0934 號申設人為陳重，身分證號為 S12294 7，並提供申請日期等資訊。
	行動電話門號 0930254 號，持用人陳吉，因施用三級毒品愷他命，為警行政裁罰。
	行動電話門號 098104 號，經法院核准自 2015 年 11 月 7 日起至同年 12 月 6 日止，執行通訊監察，承辦人為臺北市刑大朱志。

伍、迄今之成效及挑戰

（一）販賣毒品是萬國公罪，打擊此類犯罪始終是國家執法政策的重中之重，國際社會亦齊聲呼籲以司法互助深化打擊毒品犯罪之成效；本署毒品資料庫刻已置入本署查緝毒品標準作業流程，並為各檢察機關查緝是類犯罪，俾利斷根溯源，運用科技辦案之先驅，未來自可以本系統之運作為基礎，再擴充其功能之深度與廣度，例如：進一步發展雲端分享犯罪情資技術、結合 GPS 定位圖資掌握查緝對象行蹤等，以期促進、推展各檢察機關間，抑或與其他執法機關間協力打擊犯罪之成效。

（二）本系統將來面臨之挑戰：

1. 網路通訊（以 LINE、WeChat 微信等為例）技術日新月異，傳統使用電話通訊者，為避免遭執法機關以通訊監察方式蒐集傳統語音之犯罪證據，往往遁入網

路通訊之領域彼此溝通連絡，又該等通訊軟體，不勝枚舉，廠商往往又對其傳輸資料加密。另該等軟體營運廠商散布世界各地，若個案須透過司法互助調取該等通訊內容，顯然緩不濟急，致以現行通訊監察蒐集證據方式將逐漸式微，恐須耗費更多人力資源執行跟監等偵查作為，俾蒐集相關犯罪事證。

2. 通訊監察除對電話門號監聽外，雖可對國際移動設備識別碼(IMEI)監聽，然行為人時常透過購買以他人名義(如外籍勞工、國際遊客)申請之行動電話門號作為犯罪工具，且快速頻繁更換使用，使執法機關無法立即知悉該門號實際持用人，又該等門號往往搭配 IMEI 為「0」之行動電話機具(下稱零碼機)使用，當犯罪行為人更換行動電話門號後，使用該零碼機人數高達數萬人，尚無法由 IMEI 反查其接續使用之門號，此部分仍有待突破。

3. 毒品犯罪往往與幫派組織、非法持有槍械、人口販運等掛勾，造成社會治安之隱憂灼然，如有突發案件，即可以毒品資料庫查詢人脈關係等資訊，惟現有架構僅建立毒品資料庫，資料尚有不足，未來如能納入本署既有「案件管理系統」等各類犯罪資訊資料，相信更能發揮事前整合資料平台功能，俾利研判各類型犯罪行為特徵。

4. 毒品交易仍在特種行業場所（如制服酒店、夜店）暗中進行，查緝不易，甚至流入校園，此部分交易雙方經常是面對面磋商，並無電子通訊之情形，以至防不勝防。是此部分如何結合影像辨識，判斷販毒者人臉、身影及行走姿態等人工智慧技術，有效監控毒品犯罪，進而查獲販毒者，仍有發展空間。

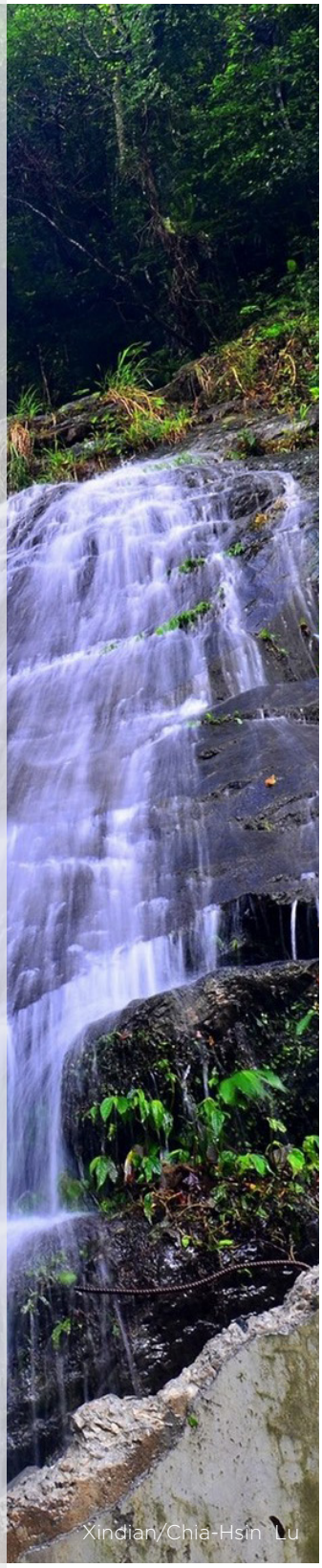
陸、未來展望

本署研發毒品資料庫迄今，在刑泰釗檢察長領導下，奠基於上開設備及經驗，又陸續研發選舉資料庫、妨害風化資料庫，並開放本署既有技術，與臺灣高等法院檢察署研發森林保育法資料庫，及與基隆地方法院檢察署研發廢棄物清理資料庫。未來預計再與士林地方法院檢察署共同研發金融犯罪資料庫。希能將上開建置資料庫技術，供全國各檢察署參考，以利蒐集各項資訊，有效打擊犯罪。

科技辦案能力的提升，為避免行為人濫用新式通訊軟體作為聯絡工具、交易方式(如運用無人機，自動駕駛車輛運送毒品)、及金流(如比特幣)等，作為其販毒網路之資訊流、物流、金流等逃避追緝，執法機關仍需持續研究開發，以因應上開日新月異之軟體資訊，並透過人工智慧技術，尋找潛藏的販毒情資，以建立毒品資料庫更強大之功能。

Preparation, Development, and Operation of Drug Tracking Database in Taipei District Prosecutors Office

Kuan-yi Lu



Xindian/Chia-Hsin Lu

I. Introduction

The gradual increase of illicit drug users in Taiwan has become a serious social problem for the government to address, and the war on drug crimes has been at the top of the government's agenda (e.g. the Executive Yuan's anti-drug meetings; complaint handling projects by prosecutors offices). The Ministry of Justice has declared war on drugs, as they have eroded different levels of society and schools. In the opium war of the new century, it is necessary to attack wholesalers and small-time drug dealers at full force, in order to reduce the population of illicit drug users. Understandably, prosecutors and investigators on the front line should develop plans to effectively suppress the circulation of drugs by wholesalers and small-time drug runners. In addition to the normal works of the command system comprised of prosecutors, investigators, police officers, coast guard, and military police officers, it is time to meet the challenge brought by the booming development of Cloud technology. Taipei District Prosecutors Office has developed an intelligence analytics program able to sift through the daily communications of the devices used by drug dealers, in order to probe into and map out the contact networks of suspects. Information regarding the paths of small-time drug dealers serve as the groundwork for optimization of the investigation process, which enhances the effectiveness of the integration of communication records, and reduces the waste of time, effort, and money. When standard procedures have been established, it will benefit the formulation of appropriate investigation behaviors for drug tracking.

On February 28, 2011, Head Prosecutor Chih-yu Yang called Chief Prosecutors Ling-shih Meng, Shao-pin Chang and Ying-hsiang Chu; Director of Information Technology Department Jui-ming

Li; Chief Secretar Hsiu-yu Chiu; Prosecutor Investigators Kuan-yi Lu and Hsiao-chen Chang to convene a preparatory meeting for a drug tracking database. The team was tasked with the development and deployment of the database, starting on March 1, 2011, by drawing lessons from the drug tracking databases run by Taichung District Prosecutors Office and Tainan District Prosecutors Office. The prosecutor investigators, as selected by Chief Prosecutor Ling-shih Meng, would be responsible for programming and deployment; while Chief Prosecutors Shao-pin Chang and the Information Technology Department would provide IT equipment and maintenance services, and Chief Prosecutor Ying-hsiang Chu would supervise the operations of the database. Later, Prosecutor Ta Lin was appointed the Executive Secretary for the project. Shortly after the kickoff meeting, Prosecutor Investigator Offices began to develop this database, as based on the concepts of Chief Prosecutor Ying-hsiang Chu and Prosecutor Ta Lin. After the review of our preliminary results, the Ministry of Justice instructed that all prosecutor offices in Taiwan should use our program for their drug tracking databases. In order to revamp the hardware and software for the database, Head Prosecutors Chih-yu Yang and Pi-yu Tsai, appointed Chief Prosecutors since 2013, appointed Chief Prosecutors Tung-li Tai, Ming-chin Chen, Yi-tsung Wu, and Shih-yu Chou in the Anti-Drug Division to chair the Anti-Drug Tracking Database and Cloud-based Analytics System (the advanced version of the database). The technology project team filed an application to the Ministry of Finance for support and obtained a budget of NT$2.25 million in 2015 from the Ministry of Science and Technology. The funds were used to improve the hardware, software, and bring functionality up to date.

II. Assistance to Prosecutors in Generating Leads

The main program, as developed by Taipei District Prosecutors Office for the drug tracking database, consists of the following components:

1.Intelligence input platform

Communication data and recent contacts for the mobile numbers owned by drug users in order to extract information (such as drug abuse history, locations and times for drug buying and selling, characteristics of suppliers, transportation methods, and other details sufficient to identify the profile of substance suppliers), and to convert the data into effective information for the value added processing of the database

2.Communication monitoring and management platform

3.Communication data importing and conversion platform

Communication data and contact details for the mobile numbers and owners, as retrieved online, are converted to this platform, and then, stored in the database for subsequent analytics;

4.Input platform for category 3 and 4 drugs

Data provided by the Taipei City Police Department regarding the punitive measures in relation to category 3 and 4 drugs are stored in the database.

5.Graphic analytics platform

Generation of graphic data is based on the above information, in order to analyze whether the contact network of the drug dealers concerned meets the criteria for prosecutors to apply for communication monitoring.

III. Analytic Workflows

After the transposition of the above-mentioned data, the analytic program will divide the data into five intelligence sources, i.e. communication of contact networks, personal data of the defendants, statements from the defendants, category 3 and 4 drugs, and applications for communication monitoring. The output consists of an analytic graph with a clear hierarchy and different levels of information. The purpose is convince the courts, via the enhancement of mental impressions, into approving the application from prosecutors and police departments for search or communication monitoring in order to gather crime evidence by enhancing the mental impression of courts.

IV. Operational Procedures and Outcomes

The system will automatically analyze and generate an analytic graph for a specific mobile number after the user inputs the number (e.g. 0937XXX986) in the text column of the program, and presses the button. If this does not work, the user should double- click on the number to be analyzed, in order that the program will automatically input the number into the abovementioned text column. Once the user clicks on the button by following the arrow sign, the system will analyze the number. Alternatively, the user may use the function chart to expand the data into the five modules: communication of contact networks; personal data of the defendants; statement from the defendants; category 3 and 4 drugs; applications for communication monitoring, in order to conduct in-depth analysis of the contact network of the defendants. The analytical findings can be laid out and stored in image files for sharing.

V. Achievements and Challenges

1.Drug trafficking is condemned by all countries in the world, and combating drug dealing is always the top priority for law enforcement bodies. Cross-border judicial cooperation is called for to enhance the effectiveness of the war on drugs. Our drug tracking database has been incorporated as part of our standard procedures, as we are a pioneer in harnessing the power of technology in crime investigations. This database sets an example among prosecutors that drug tracking should aim for the origin. Going forward, the system can be extended in scope and depth. For example, crime intelligence can be placed on the cloud for sharing. Data can be integrated with GPS information to keep on top of the suspect's whereabouts. It is hoped that prosecutor offices and other law enforcement bodies work together to fight crime.

2.Challenges

(1)Online communication (e.g. LINE, WeChat) technology continues to advance. Offenders seek the safe havens of online communication to circumvent traditional phone tapping by law enforcers. There are multiple online messaging programs on the marketplace, and vendors often encrypt the data. Moreover, it will be a race against time to collate data from software companies in different countries. As the traditional approach of gathering communication evidence is on the decline, it is necessary to increase resources and labor for monitoring and evidence collection.

(2)Although it is possible to track IMEI (International Mobile Equipment Identity) codes in phone number tracking and communication monitoring, wrongdoers usually use other

people's names (e.g. foreign labors and international tourists) to apply for mobile phone numbers, and frequently change their numbers, which makes it difficult for law enforcers to immediately identify the user of specific numbers. Meanwhile, this type of number is usually operated on mobile devices with an IMEI code of "0", which is used by tens of thousands of people. The problem remains that it is impossible to track back the subsequent number with IMEI once the user switches to a different number.

(3)Drug-related crimes are often linked with gangster activities, human trafficking, and illegal possession of guns and other weapons, which are threats to society. The drug tracking database can serve as a powerful tool to map out the web of contact networks in case of emergency; however, the current architecture of the drug tracking database and the data available are not sufficient. Information will be better integrated if the database can be incorporated into our existing Case Management System to stay on top of crime intelligence and better monitor profile criminal behaviors.

(4)Drug dealing hides in the dark corners of specific industries (e.g. night clubs and bars with ladies in uniform), and hence, is difficult to track. Some drugs even find their way to schools. Transactions are usually done face to face, without electronic communication trails. Additional efforts are in order to combine artificial intelligence (such as, image recognition of faces, gait, and body figures, such as tattoos and scars, of drug dealers) to effectively crackdown on drug crimes.

VI. Future Projects

After the deployment of the drug tracking database, the Taipei District Prosecutors Office leveraged on this experience, and developed the election database and indecent exposure database, under the guidance of Chief Prosecutor Tai-chao Hsing. We share our knowhow with the Prosecutors Office for Taiwan High Court in the development of the forest conservation law database, and with the Prosecutors Office for Taiwan Keelung District Court in the development of a waste cleanup database. Going forward, we will be collaborating with the Prosecutors Office for Taiwan Shilin District Court in the development of a financial crime database. We hope to share our experience and competences with all prosecutor offices in Taiwan in order to gather information and combat crime.

Law enforcement authorities should continue to develop tools and technological competences in order to avoid the abuse of new communication software, financial instruments (e.g. Bitcoin), and vehicles (e.g. drones and driverless cars to transport substances) to circumvent the tracking and investigation of the flows of information, goods, and capital for drug trafficking. It is necessary to deploy artificial intelligence and powerful software capabilities to enhance the functionality of the drug tracking database in order to uncover the elusive intelligence of drug dealing.

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