立方連接圈網路發展離島、金門觀光
Networking Cube-Connected Cycles for Developing Off-island, Kinmen Tourism

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Abstract

Radial-rings, with corporative connections, can be found in the world heritages and Kinmen- close to mainland China. For sustaining peace-imaged Kinmen, correlated surveillance based networks are proposed as the dedicated short range communication (DSRC) networks being built up along main paths of Kinmen, where the information-security system is inspected through sequential parallelism. With integrative connectivity, and reliability, such networks can also promote maintenance and ubiquitous service-oriented image; moreover benefit tourist industry. For sparsely populated areas, probes of wireless sensors are rational, especially if sensor nodes can be organized to enhance security, reliability, and flexibility. Applying alternative network topologies, such as spider-webs, generalized honeycomb tori, and cube-connected cycles, for comparing, analyzing is proposed in DSRC and cellular communications to enhance integrity in communications.

Keywords: *Detection Availability; Interference; Parallelism; Reliability; Tourism; World Heritage*

I Introduction

Offering real-time, location-based information is essential in the contemporary business. Evidenced through the history, Kinmen, as a former battlefield, off-islands of R. China, is sensitively enclosed by PR. China's commanding authorities (Fig. 1(a, b)). Hence, networking multimedia information to deal with highly quality demanded tasks should not be planned from perspectives of normal conditions, e.g., without pondering on terrorist activities, which can happen ubiquitously if they are politically demanded [1]. As the key or sensitive platform for successfully executing newly established "economic cooperation framework agreement" (ECFA) across the Taiwan Strait, that Kinman be gracefully exhibited cannot be overlooked.

Through the radial-ring's incorporative connections among the outer ring and inner rings, the Roman Testudo formation could get its competitiveness (Fig. 1(c)); Kinmen similarly has a robust radial-ring formation to connect scattered military spots integrally in resisting potential attacks from 1949 to 1990s. Consequently, to the peace of Taiwan or even the Asia-Pacific communities after the World War II, Kinmen had offered significant contributions. Yet, establishing its peace, integrity assured security, information service networks is getting more importance, and that is consistent with the U.S. President Obama's "the just peace encompass economic security and opportunity" addressed in 2009 Nobel peace prize speech.

The radial-ring defensive Tulous (in Fujian, PR. China) and "canals of Amsterdam" (the Netherlands, (Fig. 1(d, e))) had been assessed as world heritages, with plenty of cultural, economical, historical meanings. Moreover, both Kinmen and Tulous are closely located in the official Fujian province - recognized by cross-strait Chinese authorities. However, massive Tulou-like buildings in Kinmen can be too showy to count intentional attacks, probably from the sea in a relatively short time. Inherent waterways to well form radial-ring formation can be well observed from Kinmen, and similarly, from "canals of Amsterdam." Hence, formations should be adapted, including components if environmental conditions are different.

II Literature Review

The examination of casino surveillance systems, where more than eight cameras may be required for a game table, helps us to recognize that the line-of-sight environment can be dynamic, pairing of monitoring devices can cooperatively provide better images through the operation of correlated double sampling (CDS) [2]. That traffic surveillance, for example, employs the use of only one or two cameras being installed in the

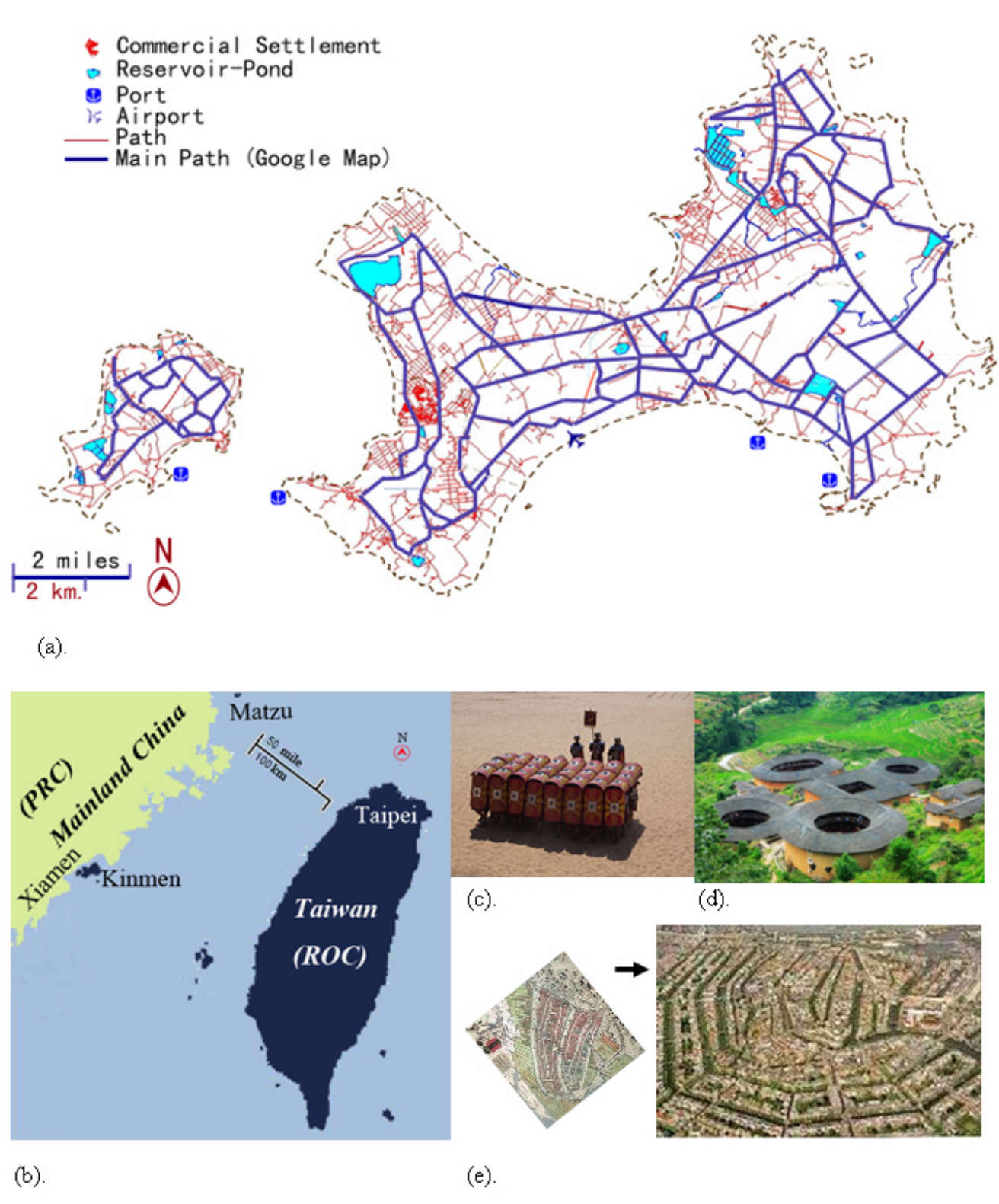

Figure 1. Radial-Ring formation (a). Radial-Ring as a formation for Kinmen - from 1949 to 1990s; (b). Kinmen, islands very close to Xiamen; (c). Testudo Formation with coorporative connections; (d) Tulous; (e). Inherent radial-ring with water-ways (Amsterdam). (Courtesy to drawings via referring to public resources, including Google map, wikipedia, and Kinmen governmental marketing booklets)

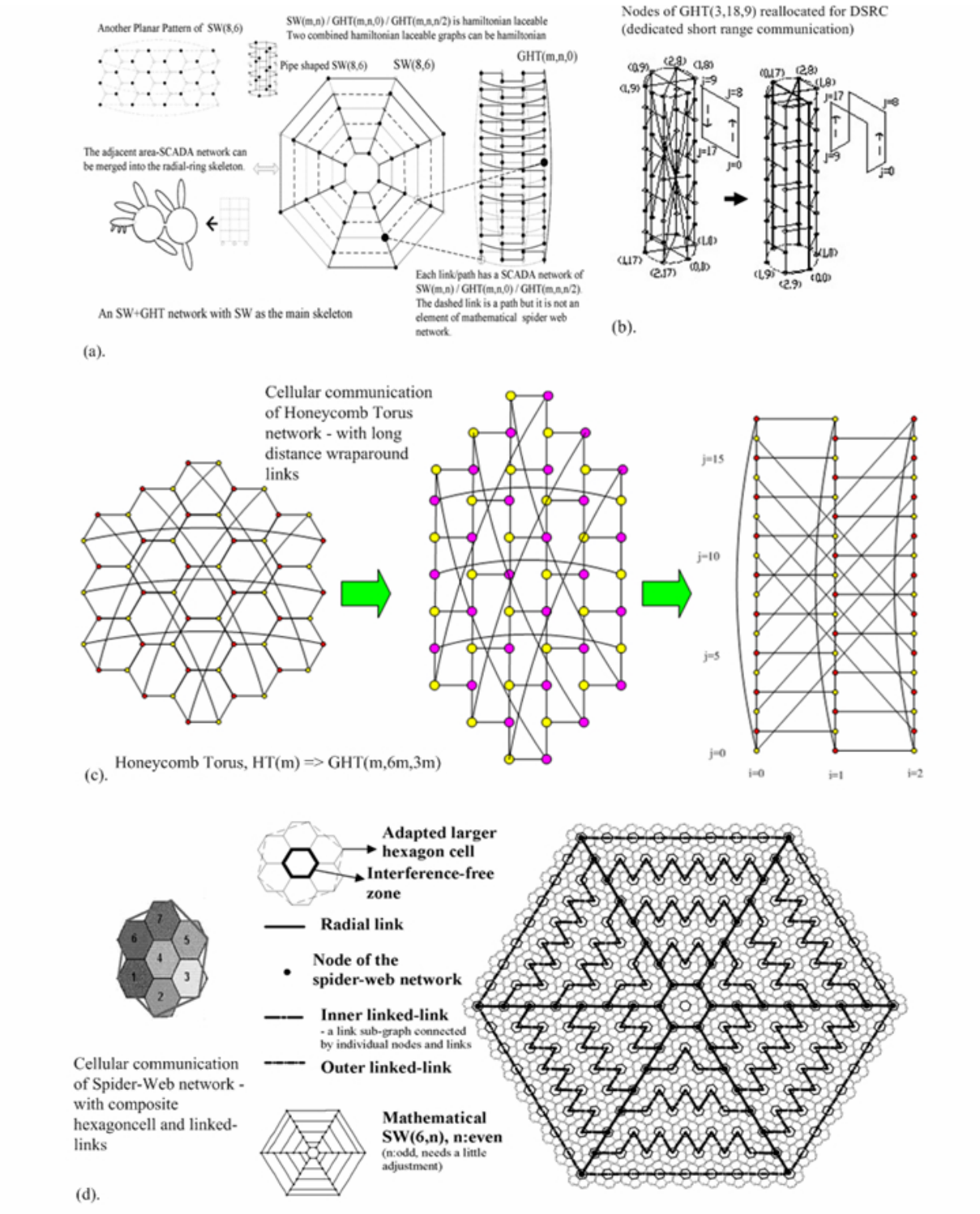

Figure 2. Link adaptability in wide area communication network [3], (a) urban dedicated short range communication network with Spider-Web networks' integration and fractal connectivity performances; (b) wireless communication quality affected by link adaptability; (c) cellular communication modeled by honeycomb tori, generalized honeycomb torus (GHT) networks; (d) cellular communication modeled by Spider-Web networks.

middle of a section of road, can hardly provide left- or right-side views of vehicles in the left- or right-hand traffic systems. Moreover, monitored targets can easily be hidden by vehicles. Hence, mathematical, optimal-degree, dual-surveillance based spider-web network prototypes, are proposed, including dedicated short range communication (DSRC) network being built up along radial-ring main paths.

In order to sufficiently serve customers via wireless communications, including applying pervasive radiant frequency identification (RFID) technologies, managing the safety issues affected by such as radio interference, surrounding environments, and the system itself needs to be counted, by comparing the difference among signals acquired through parallel sequences of location-defined sensors , i.e., the performance of mutually independent Hamiltonian paths (MIHPs) [3, 4, 5]. Moreover, routine maintenance in sequential order for highly security regulated systems cannot be neglected [6]. Furthermore, wireless spoofing or interference devices, including personal privacy devices (PPD) intentionally used by truck drivers to evade legal wireless tracking in the global position system (GPS), may cause dangerous events [7, 8, 9, 10, 11].

For public safety, countering interference should be deemed in the infrastructure, which may not be used only for the PPD using truck drivers [9]. Moreover, using relatively low-layer equipment, probably incorporated with other mathematical techniques [12] to pervasively benefit preventing interference issues or promoting in wireless communication integrity is intended to support quality-assured space, with possibilities of mobile business services should be seriously concerned [13].

III Mathematical Preliminaries

Communication networks are usually illustrated by graphs in which nodes represent processors and edges represent links between processors. Let G=(V,E) be a graph if V is a finite set and E is a subset of {(a,b) |(a,b) is an unordered pair of V}. A path is delimited by $(x_0,x_1,x_2,\ldots x_{n-1})$. A path is called a Hamiltonian path if its nodes are distinct and span V. A cycle is a path of at least three nodes such that the first node is the same as the last node. A cycle is called Hamiltonian cycle or Hamiltonian if its nodesare distinct except for the first node and the last node, and if they span V span *V* [14]. A bipartite graph G = (V,E) is a graph such that V=A∪B and E is a subset of {(a,b)| a∈A and b∈B}; if G-F remains Hamiltonian for any F={a,b} with a∈A and b∈B, then G is 1_p-Hamiltonian. A graph G is 1-edge Hamiltonian if G-e is Hamiltonian for any e∈E; moreover, if there is a Hamiltonian path between any pair of nodes {c,d} with c∈A and d∈B, then the bipartite graph G is Hamiltonian laceable.

The bipartite spider web network, SW(m,n), is the graph with the node set {(i,j)| 0≤ i<m, 0≤j<n}, where m and n are ≥4, even integers such that (i,j) and (k,l) are adjacent if they satisfy one of the following conditions: (1) i=k and j=l±1; (2) j=l and k=i+1(**mod** m) if i+j is odd or j=n-1; (3) j=l, k=i-1(**mod** m) if i+j is even or j=0. SW*(m,n)* is proved to be 1-edge Hamiltonian and 1_p-Hamiltonian [15]. Thus, the fault-tolerance engaged in is systematically based. Moreover, SW(m,n) are Hamiltonian laceable [16], see Fig. 2(a,d).

Assume that *m* and *n* are positive integers, where *n* is even and m≥2. Let *d* be any integer such that *(m-d)* is even. The *generalized honeycomb torus* [17], *GHT(m,n,d)* is the graph with the node set *{(i,j)| 0≤ i< m, 0≤j<n}* such that *(i,j)* and *(k,l)* are adjacent if they satisfy one of the following conditions: (1) *i=k* and *j=l±1(***mod** *n)*; (2) *j=l* and *k=i-1* if *i+j* is even; and (3) *i=0*, *k=m-1*, and *l=j+d(***mod** *n)* if *j* is even. It is proved that GHT(*m*, *n*, 0), also named *HReT*(*m*, *n*), is *1-edge Hamiltonian* if $n \geq 4$; 1_p-Hamiltonian if $n \geq 6$ or $m = 2$, $n \geq 4$ [18]. When *m* and *n* are positive integers with *n*, $m - n/2$ being even, *GHT*(*m*, *n*, *n*/2) is proved *1-edge Hamiltonian* if $n \geq 4$; 1_p-Hamiltonian if $n \geq 6$ or $m = 2$, $n \geq 4$ [19]. Besides, *SW*(*m*, *n*) is proved *1-edge Hamiltonian*, 1_p-Hamiltonian [15]. Thus, the fault-tolerance in which we are engaged is systematically based. Moreover, *GHT*(*m*, *n*, *0*), *GHT*(*m*, *n*, *n*/2) Fig. 2(a,b,c), and *SW*(*m*, *n*) are *Hamiltonian laceable* if *m*, $n \geq 4$ integers [16, 20].

The number of links connecting a node is called the degree; networks regularly having smaller degree are generally economic [21]. Two Hamiltonian paths, $P_1=(u_1, u_2,\ldots,u_{n(G)})$ and $P_2=(v_1,v_2,\ldots,v_{n(G)})$ of G from u to v are independent if $u=u_1=v_1$, $v=u_{n(G)}= v_{n(G)}$, and $u_i \neq v_i$ for every $1<i<n(G)$. A set of Hamiltonian paths, $\{P_1,P_2,\ldots,P_k\}$, of G from u to v, are mutually independent if any two distinct paths in the set are independent from u to v [3]. SW(m,n) has the performance of at least two mutually independent Hamiltonian paths between any pair of bipartite nodes [22].

The definition of hypercubes is given as follows. Let $u = b_{n-1} \ldots b_i \ldots b_0$ be an *n*-bit binary string. For any *j*, $0 \leq j \leq n - 1$, we use $(u)^j$ to denote the binary string $b_{n-1} \ldots \underline{b_j} \ldots b_0$. Moreover, we use $(u)_j$ to denote the bit b_j of *u*. The *Hamming weight* of *u*, denoted by wH(*u*), is the value of $|\{0 \leq i \leq n - 1|(u)_i = 1\}|$. The *n*-cube (or hypercube) Q_n consists of 2^n nodes and $n2^{n-1}$ links. Each node corresponds to an *n*-bit binary string. Two nodes, *u* and *v*, are adjacent if and only if $v = (u)^j$ for some *j*, and we call link $(u, (u)^j)$ *j*-dimensional. The Hamming distance between *u* and *v*, denoted by *h*(*u*, *v*), is defined to be the number of elements in $\{0 \leq i \leq n - 1|(u)_i \neq (v)_i\}$. Two nodes- *u* ,*v* are adjacent if and only if *h*(*u*, *v*) = 1.

IV Network Proposal

Recently, for promoting energy conservation, peaceful amenity, and mobile business platform, stablishing friendly urbanism, tourism has been encouraged by a lot of countries. Depending on rural (including water ways) or urban areas, two approach directions are proposed. One is for occlusion and interference and concerns urban areas; the other is for

maintainability and concerns less populated areas (including water-ways).

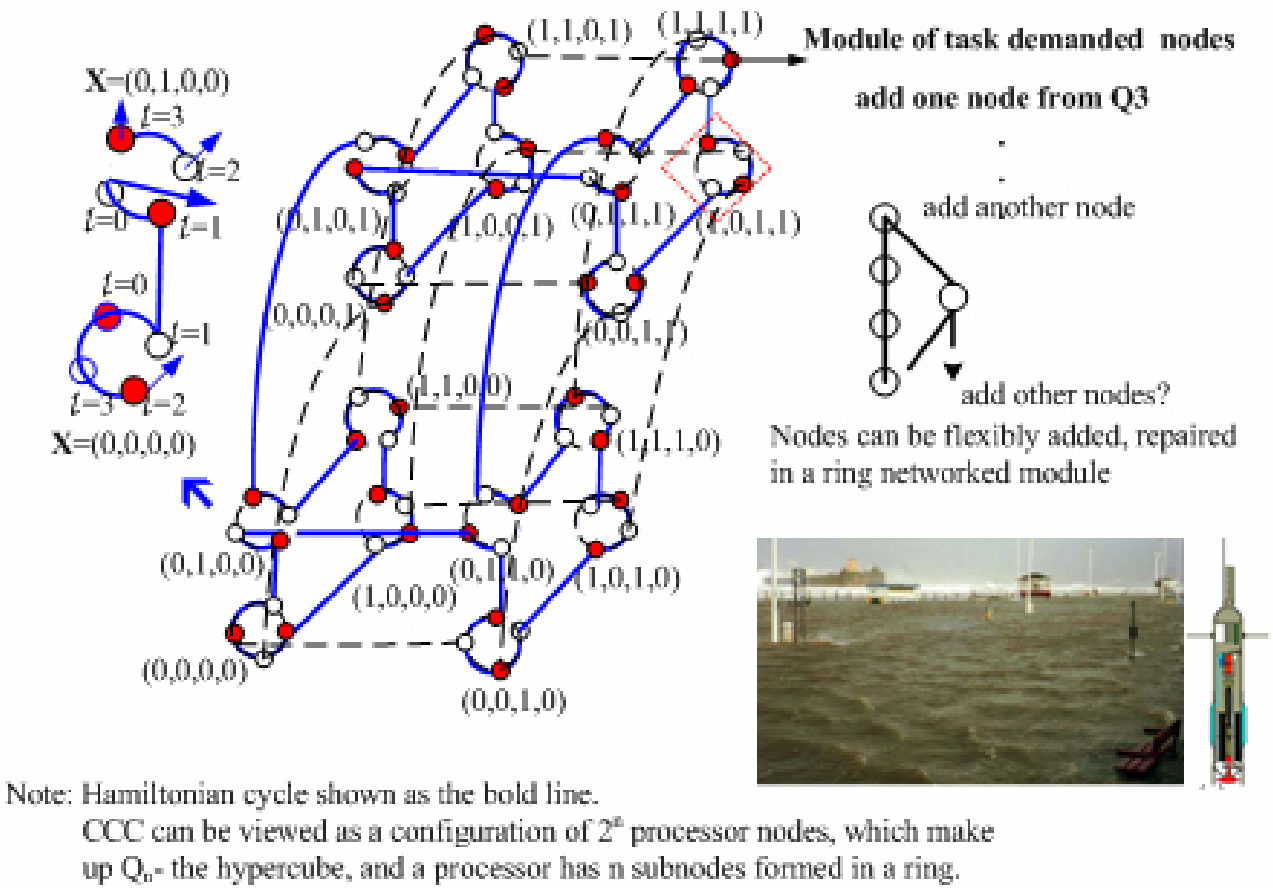

Figure 3. Probe Concept (refer the prototype aiming for global warmth monitoring, as the right), Relationship between Hypercubes and Cube-Connected-Cycles, CCC_4 [3, 4].

4.1. *Along Streets—DSRC Proposal* [3]

From small settlements to big cities, the traditional cities generally have relatively convenient accessibilities, and enough living resources, and then it can be developed step by step—inherently in a radial-ring configuration, probably including water ways, centered in the original settlement.

By inherent, real radial-ring motion flow, a grid urban pattern can enlarge its original scope of urban activities. In this perspective, a grid pattern can rationally be adapted to a radial-ring pattern [23]; moreover, the grid can be illustrated to be the radial-ring. It is found that bipartite spider-web networks have mathematical laceability (Figure 2(a)) to sustain the ring performance of connected spider-web networks.

The proposed radial-ring DSRC (Dedicated Short Range Communication) network prototype is integrated via the spider-web network; in other words, it can be a spider-web (radial-ring) network of spider-web (radial-ring) networks. Furthermore, just as cities may be multi-centered, flexible amounts of radial-rings of radial rings can be composed or sub-divided (e.g., in a campus site, a large vehicle architecture); *i.e.*, fractal. Such connected rings can have sequential order [6], fault-tolerance for maintenance, and hierarchical management.

In another perspective, historical heritage and other cultural or natural assets are often resources for tourism development. However, such assets may affect flows of spatial development. Apart from adopting underground or overpass construction technologies, such assets can be more economically concerned with, or preserved if the proposed information network prototype can be applied to prevent adversary effects on traffic flows and spatial development—*i.e.*, proposed information networks can be well connected either underground or overpass to help keep traffic moving.

Parallelism along paths is aimed to analyze spatial-tempo interference. Moreover, the system manager may use such parallelism for operating dynamic authentication/authorization in transporting privacy demanded tasks, which can be recorded through active RFID (radio frequency identification) systems. This paper proposes a network in which the sequence of such orderly operation can be both flexibly and logically adjusted in a Hamiltonian way, because the network has scalability and Hamiltonian laceability.

Hence, the aforementioned, highly reliable security-information networks can offer continuous and thoughtful protection for travelers. That is vital in planning future urban infrastructure. Such infrastructure can offer another benefit, specifically regarding bikes' parking, which can be organized in parking spaces, definitely not on the sidewalks, ubiquitously. Moreover, enhancing more flexibility in infrastructure can be considered via networking; parking structures may provide an alternative place for freight distribution and economical synergies [24].

4.2. *Probe Proposal* [3, 4]

In detection of tasked areas, a processor's maintenance needs to be highly concerned. Grouping a set of sensors in a probe can benefit scheduled maintenance errands. For energy saving and fault-tolerance, such wireless sensors in a probe can be linked in a cycle, which is like a row of nodes in the GHT graph. Hence, GHT(m, n, d) can be packaged in m probes (Figures 1 and 2), and each probe has n nodes. Naturally, probes and their inner sensors can be configured in a network model.

The hypercube graph can be one of the most efficient networks for parallel computation. Yet, one drawback is that its degree (number of connections to each node) grows with the size of the network [25]. The regular degree-3 CCC network is a hypercube's derivatives. In the CCC network, each probe is considered to have n sensing operations or n subnodes, which can be processed and integrated in a ring independently [26]. Each probe is represented as a node of a hypercube, which can be organized in an ad-hoc network of 2^n sup-nodes, or $n2^n$ nodes totally in a planned zone. A probe integrates all its nodes' operation, and then wirelessly transmits information to other probes, and other areas via cellular communication and global positioning systems.

4.3. *Linking Alternatives*

Proposed network prototypes can have different mathematical performances. Hence, a set of nodes can be linked differently to form or reside in different network topologies. Then, such performances can be compared and analyzed to enhance communication integrity and reliability. For example:

(1) GHT(m, n, 0) and GHT(m, n, n/2) are different, but in the radio transmission in DSRC, their communication restrictions can be similar (Figures 2(a)).

(2) On cellular communication, both SW(6, n) and GHT(m, 6m, 3m) are proposed (Figure 2(c,d)) with MIHP, fault-tolerance performances.

(3) Radial-ring, SW networks, have more fault-tolerance than ring networks. The area DSRC network can be configured as an integral SW network. Naturally, radial-ring can be grouped, and even configured as a radial-ring of radial-rings (Figure 2(a)).

V Significance in promoting Urbanism

The economy of the sustainable city of the future will be based upon networks of information whose creative, pervasive contexts will drive the new economy and more lovable / sustainable environments. [11, 13, 27, 28]. Knowledge economy can be considered an important issue to all the people of this global village; hence, we need more efficient and effective information. Especially, networks related to tourism industry should be concerned on pedestrian or human-centered image [29, 30], flexible land-uses, supply-chain economy synergistically. Hence,

the information-service network prototypes proposed in this paper, is consequently aimed. Three main potential feature directions are discussed as follows.

5.1. Fractal extensibility sustains resource-use

Similar to military formations, defensive constructions, dominant cities of the world, including Beijing, London, Paris, Moscow, and Washington D.C., generally have radiant path configurations, including through waterways, to develop efficient governing and defensible accessibilities. Although, such configurations can be affected by geo-environments; moreover, contemporary metropolitans or cities have economical, hierarchical multi-centers, radiant path configurations can still be traced more or less. In general, from small settlements to big cities, the dominant cities have relatively convenient accessibilities, and enough living resources, and then it can be developed step by step - inherently in a radial-ring configuration centered in the original settlement [23, 31, 32].

By inherent but real radial-ring motion flow, a grid urban pattern can enlarge its original scope of urban activities. In this perspective, a grid pattern can rationally be adapted to a radial-ring pattern; moreover, the grid can be illustrated to be the radial-ring [23, 33]. It is found that bipartite spider-web networks have mathematical laceability (connectivity) to sustain the ring performance of connected spider-web networks. Such connected rings can have features for hierarchical management, sequential order for maintenance, and fault-tolerance.

The proposed radial-ring configured DSRC network prototype is made of spider-web networks; in other words, it is a spider-web (radial-ring) network of spider-web (radial-ring) networks. Furthermore, just as cities may be multi-centered, flexible amount of radial-rings of radial rings can be composed or sub-divided (e.g., in a campus site, a large vehicle architecture); i.e., fractal. Land resources are limited. If scattered land resources can be more effectively managed for certain regulated usages, such as free-taxed production areas, prototyped networks can help get more flexibility, reliability, and service quality in management on restriction-use and in sustaining future development.

In another perspective, historical heritage and other cultural / natural assets are often resources for tourism development. However, such assets may affect flows of planned spatial development and were often sacrificed. Except for adopting underground or overpass construction technologies, such assets can be more carefully dealt with, or kept if the proposed information network prototype can be applied to prevent adversary effects on traffic flows and spatial development - i.e., proposed information networks can be well connected either underground or overpass to help traffic well moved.

5.2. Reliable parallelism supports network performance

Due to the concern on security, information integrity and detection availability is aimed to count dynamic traffic occlusion or blind spots, so that dual-surveillance applying the pair of bipartite nodes is considered. The cooperative mechanism of two sensor nodes just like of human-beings' two eyes or ears; however, adaptation or using different types of sensors is naturally allowed. Moreover, for any pair of the bipartite nodes in individual spider-web network, there exist two mutually independent Hamiltonian paths (MIHP, parallel paths and each path passing all nodes of an independent network once).

Such parallelism along paths is aimed to analyze noise or interference [7], which is probably caused by such as material (like water or metal) interference and wireless spoofing attacks, from related tempo-spatial data. Moreover, the system manager may use such parallelism for operating dynamic authentication / authorization in transporting privacy demanded tasks, which are recorded through active RFID (radio frequency identification) system. Recently, personal privacy devices (PPD) are used by truck drivers [8] to counter detection through the global position system (GPS). Such devices already have shown adversary effects on the traffic control of airports and seaports.

Besides, false detections may happen for many reasons such as multipath effects, node or link (transmission) faults, and a combination of the two. After configuring adaptable dual-surveillance as a basic detection-availability platform, systematic fault-tolerance, connectivity, and management efficiency enhances detection-availability. Furthermore, a diagnostic performance MIHP can be established to analyze time-series related adversary conditions using independent, alternative, time-series recordings for data mining or diagnosing problems. This is similar to physicians employing independent alternatives and time-series records to diagnose a disease.

It must be assumed that rivals are sometimes privy to ciphered information. In order to protect infrastructures, confidential information must be transmitted without alerting such individuals. Therefore, depending only on ciphered words may not always be the best approach for transmitting security-related information. A security network also requires routine maintenance, auditing, and accounting, aspects for which radio-frequency identification can naturally be considered. Such tasks can be operated or managed by different authoritative hierarchies and initiated on random occasions. To maximize efficiency and effectiveness, such routine tasks can be operated in an orderly way through either the entire or the defined part of the network. This article proposes a network in which the sequence of such orderly operation can be both flexible and logically adjusted in a Hamiltonian way, because the network has Hamiltonian

laceability.

5.3. Caring mobile information sustains tourism/business dominance

Such routine work may be initiated from different nodes, so that special meanings can be assigned in the operation from both active and passive sides. In other words, the routine operation can be accompanied with special meanings, including any necessary authorization or authentication [34] from its processing sequence and operation scope. The execution of MIHP-related authentication/authorization can also be initiated via RFID, and active RFID can be better reauthorized to deal with privacy issues.

Senior citizens represent one of the fastest-growing segments of the population. Therefore, it is important for transportation/urban design to provide demand-responsive environments in order to best accommodate elderly, disabled individuals [35, 36] and foreigners. Hence, the aforementioned, highly reliable security-information networks can offer continuous and thoughtful protection for travelers. It is vital to make travelers and transportation customers safe and accessible when planning future urban infrastructure. Addressing such significant aspects of safety and welfare can benefit the economic development of various locations in the community.

Scattered land blocks can be integrally used for a common use if they can be well monitored and controlled to fit operational requirements. For tourism development, Kinmen's abundant culture resources generally can be connected via their potential or adaptable radial-ring road systems. Hence, in addition security operation, more caring services can be provided through the proposed communication networks by the authority. Flexibility in existing infrastructure supports robust urban functions.

In transportation, we need to make long-term infrastructure decision in general [37]. In another perspective, however, right decision to adapt exiting land-use condition to satisfy new demand is also needed; e.g., "Does downtown need circulator shuttle and then how to implement it productively?" [13] Except for adopting underground or overpass constructions, another alternative approach, "enhancing more flexibility in existing infrastructure" can be considered.

For example, it is important to consider the ideal story height for vans which transport the elderly or disabled individuals. The ideal height of a parking garage should be greater than nine feet. Such an environment can offer another benefit, since parking spaces would be able to potentially provide an alternative place for freight distribution [24]. The aforementioned highly reliable network system can help to prevent potential water damage in the event of a disaster. Moreover, the radio's multipath effect is concerned in the proposed network prototype. Hence, the prototype networked space for parking can also serve as an adaptable platform for freight cross-docking via small trucks used for crowding cities, which is based on the efficient integration of information, facility, and total transportation systems.

In fact, by computing, telecommunication technologies, many spaces can be adapted for new uses. Specifically, the activities held in traditional assembly halls can be placed in scattered spaces if in need. However, the qualities such as reliability, integrity, ubiquity of those computing, video-audio telecommunication technologies are important. That has already been considered in the aforementioned network prototype.

VI. Conclusions

The degree of SW(m,n) is optimal in offering hierarchical order for maintenance or operation. For any pair of bipartite nodes, spider-web networks can offer at least two mutually independent Hamiltonian paths (MIHP). Similar to physicians' employing independent alternatives and time-series recordings to correctly diagnose the disease, abnormally changing signals and multipath effects of radio/wireless communication can be analyzed via MIHP performance, to improve information reception and to prevent false alarms via independent time-series recordings. Classified authentication/authorization can be dynamically inherently implied via the specified sequence of routine operation. With reliability, flexible connectivity, noise-reducibility, and detection-availability, spider-web networks are prototyped as detection-information networks for protecting infrastructures.

For sparsely populated areas, probes of wireless sensors are rational, especially if sensor nodes can be organized to enhance security, reliability, and flexibility. Applying alternative network topologies, such as spider-webs, generalized honeycomb tori, and cube-connected cycles, for comparing, analyzing is proposed in DSRC and cellular communications to enhance integrity in communications.

Kinmen had been devised hidden radial-rings connecting scattered military spots. Tulous- world heritage at Fujian, mainland China, similarly, established a radial-ring connection to resist pirates in history. Dual-surveillance based detection-information service networks with radio-frequency identification (RFID) applications are proposed as the dedicated short range communication (DSRC) networks being built up along main paths of Kinmen. By establishing having same securing, caring and radial-ring defensive/peace images in neighboring Kinmen and Tulous, more wide-scope tourist industry is intended.

References

[1] Y. Mansfeld, and A. Pizam, Tourism, security, and safety - from theory to practice, Burlington, MA, Elsevier BH, 2-5, *2006*.

[2] V. Damjanovski, CCTV networking and digital technology, Amsterdam, Netherlands, Elsevie, 159-168, *2005*.

[3] Li-Yen Hsu, Ubiquitous Integrity via Network Integration and Parallelism—Sustaining Pedestrian/Bike Urbanism. Algorithms, 6(3). 459-470, *2013*.

[4] Li-Yen Hsu, Developing Probe Networks with Cube-Connected-Cycles and Parallelism. *J. Northerthern University – Natural Science,* 34(S1). 340-344, *2013*.

[5] Y.-H. Teng; J. Tan, T.-Y. Ho, and L.-H. Hsu, On Mutually Independent Hamiltonian Paths. *Applied Mathematics Leteters*, 19, 345-350, *2006*.

[6] J. Knezevic, Systems maintainability – analysis, engineering and management, London. Chapman Hall, 11, 221, *1997*.

[7] Y. Chen, W. Xu, W. Trappe, and Y-Y. Zhang, Securing Emerging Wireless Systems: Lower-Layer Approaches, New York, Springer, 3; 175-177, *2009*.

[8] (PNT) National Space-Based Positioning, Navigation, and Timing Advisory Board. National PNT Advisory Board comments on Jamming the Global Positioning System - A National Security Threat: Recent Events and Potential Cures http: //www.gps.gov/governance/ advisoryrecommendaions 2010-11jammingwhitepaper. pdf (accessed on 30 March 2014), AIAA, Reston, VA, USA, November, 4, *2010*.

[9] F. J. Polak, S. Attfield, and W. A. Wallace, Compatibility of two 3D Kinematic motion analysis systems during simultaneous real time gait acquisition. *Gait Posture*, 4, 167-208, *1996*.

[10] M. Malik, O. Magaña-Loaiza, and R. Boyd, Quantum-ecured imaging, *Applied Physics Letters*, 101(24-1103), *American Institute of Physics, 2012*.

[11] L.-Y. Hsu, and M.-S. Yuan, Informing Vehicle Architectures with Diagnosability and Security. *Information Engineering,* 2(4), 61-67, SEI Pub., *2013*.

[12] P. Zhang, T. Thomas, and S. Emmanuel, Privacy enabled video surveillance using a two state Markov tracking algorithm, *Multimedia Systems*, Springer, 18(2), 175-199, *2012*.

[13] Jeffrey Tumlin, Sustainable Transportation Planning—Tools for Creating Vibrant, Healthy, and Resilient Communities, Hoboken, NJ, Wiley, 2-5, *2012*.

[14] L.-H. Hsu, and C.-K. Lin, Graph Theory and Interconnection Networks, New York, CRC Press, 1-20, *2008*.

[15] S.-S. Kao and L.-H. Hsu, "Spider Web Networks: A Family of Optimal, Fault Tolerant, Hamiltonian Bipartite Graphs. *Applied Mathematics & Computation*, 160(1), 269-282, *2005*.

[16] S.-S. Kao and L.-H. Hsu, Hamiltonian Laceability of Spider Web Networks. *Chung Yuan Journal (Taiwan)*, 33(1), 1-10, *2005.*

[17] H.-J. Cho and L.-Y. Hsu, Generalized Honeycomb Torus. *Information Processing Letters*, *86*, 185-190, 2003.

[18] H.-J. Cho and L.-Y. Hsu, Ring Embedding in Faulty Honeycomb Rectangular Torus. *Information Processing Letters,* 84, 277-284, *2002*.

[19] L.-Y. Hsu, F.-I. Ling, S.-S. Kao and H.-J. Cho, Ring Embedding in Faulty Generalized Honeycomb Torus - GHT(m,n,n/2), International *Journal of Computer Mathematics*, 87(15), 3344-3358, Taylor & Francis, UK. *2010*.

[20] L.-Y. Hsu, T.-Y. Lin and S.-S. Kao, The Hamiltonian Laceability of some Generalized Honeycomb Tori. *AIP Conference Proceedings – International Electronic Conference on Computer Science 2007*, Springer; 1060(1), 302-306, *2008*.

[21] I. Stojmenovic, Honeycomb networks: Topological properties and communication algorithms. *IEEE Transactions on Parallel and Distributed System,* 8, 1036-1042. *1997*.

[22] L.-Y. Hsu, "Scalable Parallelism in Spider-Web Networks." International Journal of Information Engineering, 2(4), 169-183, *2012*.

[23] Lewis Keeble, Principles and Practice of Town and Country Planning, London, Estates Gazette, 102, 112, *1969*.

[24] G. Pivo, D. Carson, M. Kitchen, and D. Billen, Learning from Truckers: Truck Drivers' View on the Planning and Design of Urban and Suburban Centers, *Journal of Architectural and Planning Research,* 19(1), 13-29, *2002*.

[25] F. T. Leighton, Introduction to parallel algorithms and architectures: arrays. trees . hypercubes, Morgan Kaufmann: Burlington, MA, USA, 389-392, *1992*.

[26] F. Preparata, and J. Vuillemin, The cube-connected cycles: a versatile network for parallel computation. *Communications of the ACM*, 24, 300-309, *1981*.

[27] Tigran Haas, (ed., 2012 print), New Urbanism and Beyond – designing cities for the future, Rizzoli, New York, *2008.*

[28] Nikos A. Salingaros, Principles of Urban Structure, Techne Press, Amsterdasm, The Netherlands, 170, 171, *2005*.

[29] N. Ashford, S. Mumayiz, and P. Wright. Airport Engineering: Planning, Design, and Development of 21st Century Airports, John Wiley, New York, NY, 660-665, 679-681, 684, *2011*.

[30] (ARC) Atlanta Regional Commission. Hartsfield-Jackson Atlanta International Airport – Issues and Opportunities around the "Worlds' Busiest Airport," http://www.atlantaregional.com/File Library/ Land Use/airport/HJAIAIssuesOpportunities.pdf (accessed on 31 March 2014), ARC, GI, USA, 6, *2011*.

[31] Michael Batty and Paul Longley, Fractal cities: a geometry of form and function, London, Academic Press, 7-57, *1994*.

[32] Michael Batty, The size, scale, and shape of cities." Science, 319(5864) 769-771, *2008*.

[33] L.-Y. Hsu, Networking Dual-Surveillance / Dual-Pair-Tele -Paths for Critical Urban Areas. *Journal of Southeast University - English Edition,* 24(S), 114-119, *2006*.

[34] A. Lee, J. Boyer, C. Drexelius, P. Naldurg, R. Hill and R. Campbell, Supporting Dynamically Changing Authorizations in Pervasive Communication Systems. *Security in Pervasive Computing*. edited by D. Hutter and M. Ullmann, LNCS3450, New York, Springer, 134-150, *2005*.

[35] A. Chrest, M. Smith, S., Bhuhan, D. Monaham, and M. Igbol, Parking Structures, Boston, Kluwer. 40-48, *2001*.

[36] Martin Wachs, Mobility for California's Aging Population, CPRC Brief*,* No.6, Institute of Transportation Studies, University of California, Berkeley, *2001*.

[37] Joseph Sussman, Introduction to Transportation Systems, Boston, Artech House, 4, 25, 259-272, *2000*.

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