
2015 년 한-중남미 지식공유포럼을 위한 IDB 지속가능한
도시 사업사례분석 / 글로벌 개발협력 역량강화
(국제사례연구를 통한 도시통합관계센터(IOCC)의 경제적
편익 분석 I) 출장 결과 보고서

2015. 1

목 차

I	해외출장 개요	1
	1. 출장개요	1
	2. 세부일정	2
	워싱턴(미국) 주요 수행내용	5
	1. Transportation Research Board (TRB) 한국참가자 모임 - Korea Transportation Association in America (KOTAA)	5
	2. 세계은행과의 “인도 타밀나두 지속가능한 도시개발 (TNSUDP) 모델시티 시범사업” 과제 업무협의회	6
	3. Meeting on IDB-KRIHS Joint Research - Economic Benefit Analysis on Integrated Operation and Control Center (IOCC) through International Case Studies	7
	4. 2015 Korea-LAC Knowledge Sharing Forum Preparation Workshop	9
	4.1. Welcoming	9
	4.2. Development Experience in LAC and in Korea	9
	4.3. Preparing for Busan - IDB EXR and Logistics - IDB KNL	10
	4.4. Presentation by Group 5: Sustainable Cities - 1	11
	4.5. Presentation by Group 5: Sustainable Cities - 2	14
	4.6. Meeting with Roberto Manrique, Senior Advisor of IDB IFD	16
	올랜도(미국) 주요 수행내용	19
	1. Visit to Orlando Operations Center and Meeting with the Center Head.....	19
	부록	23
	1. Key pages from the Orlando Operations Center Business Plan	23

I. 해외출장 개요

1. 출장개요

- **과제명:** 2015년 한-중남미 지식공유포럼을 위한 IDB 지속가능한 도시 사업사례분석 / 글로벌 개발협력 역량강화 (국제사례연구를 통한 도시통합관제센터(IOCC)의 경제적 편익 분석 I)
- **일시:** 2015년 1월 12일(월) - 1월 21일(수)
- **출장지:** 미국 (워싱턴, 올랜도)

□ 과제목적 및 내용

- 과제 1) 2015년 한-중남미 지식공유포럼을 위한 IDB 지속가능한 도시 사업사례분석

2015년 3월 부산에서 미주개발은행(IDB) 연차총회가 개최됨. 이 연차총회는 아시아에서는 두 번째로 개최되어 그 의의가 깊음. 미주개발은행과 한국정부는 한국과 중남미 국가들 사이에 개발경험을 분석·공유하기로 협의하여 연차총회의 일부로 한-중남미 지식공유포럼을 개최하기로 결정함. 따라서 '경제개발정책', '무역·투자', '지속가능한 에너지 개발', 'ICT 혁신과 생산성', '노동시장', '지속가능한 도시'라는 6개 주제 하에 국내연구기관과 중남미연구기관이 협동연구를 진행하기로 협의함. 6번째 주제인 '지속가능한 도시'는 국토연구원과 미주개발은행 Emerging and Sustainable Cities Initiative (ESCI) 연구진이 각자 한국과 중남미의 도시개발경험에 대하여 연구하기로 협의함.

본 연구는 지속가능한 도시개발을 위해 한국이 (i) 환경과 기후변화, (ii) 도시의 지속가능성, (iii) 재정적 지속가능성과 도시 거버넌스에 대하여 시행한 정책경험을 분석하여 중남미 도시들에게 시사점을 공유하는 데 그 목적이 있음. 아울러 한-중남미간의 도시사업 분야의 교류를 증진시키는 데 그 의의가 있음.

- 과제 2) 글로벌 개발협력 역량강화 (GDPC 내부과제: 국제사례연구를 통한 도시통합관제센터(IOCC)의 경제적 편익 분석 I)

빠른 도시화가 진행되고 있는 중남미 도시들은 교통, 방범, 방재, 에너지, 수자원 등의 분야에서 여러 도시문제들을 겪고 있음. 이러한 도시문제를 효율적으로 관리하기 위하여 세계의 여러 도시들은 ICT를 적용한 스마트시티 구축을 시도하고 있으며 도시관리작업을 통합하고 해당 담당자들이 하나의 센터에서 협업할 수 있는 도시통합관제센터(IOCC)와 같은 플랫폼을 구축·운영하고 있음. IOCC는 도시 내에 설치된 검지기 및 현장장비에서 실시간정보를 수신·분석하여 효율적이고 협력적인 의사결정 및 정책수립을 가능하게 함. 이러한 통합관제센터의 국내 사례로는 안양과 송도가 있고, 국제 사례로는 센터기능은 각각 다르지만 마드리드, 시카고, 싱가포르 등의 도시가 있고 중남미에서는 리오데자네이루가 첫 사례임. 상기 도시들의 IOCC가 도시관리의 효율성을 높이고 있다는 보도 및 자료들이 다수 존재하나 센터의 기능별 자세한 분석과 통합성으로 인해 얻어지는 시너지 효과에 대한 경제적 편익 분석이 부재함. 따라서 본 연구의

목적은 IOCC 와 유사한 센터를 운영 중인 아시아, 유럽, 북미, 중남미 도시들의 사례연구를 통하여 IOCC 의 경제적 편익을 분석하는 데 필요한 기초자료를 수집·분석하여 경제성 분석의 기본 틀을 개발하는 데 있음.

본 연구는 국제사례연구를 통해 도시통합관제센터(IOCC)의 경제적 편익을 분석하고자 함. 사례연구의 주요 내용으로는 통합관제센터의 장비 및 기능, 현장장비 목록 및 기능, 제공하는 서비스, 정보 수집 및 처리 구조, 정보 활용 및 보급 방법, 센터 관리 및 평가 시스템, 비용 구조 (초기 투자비, 관리비, 운용비 등), 센터 구축 후 성과 등에 대한 분석이 포함됨. 먼저 시정부 및 센터가 보유하고 있는 자료를 수집하고 부족한 정보는 센터 담당자들 및 관련 이해관계자들과의 인터뷰 및 시민 설문을 통해 수집하고자 함. 본 연구는 미주개발은행과 공동으로 진행하는 연구로서, 국토연은 안양, 송도, 시카고, 싱가포르 4 개 도시의 사례연구를 진행하고 미주개발은행은 마드리드 및 리오데자네이루를 포함한 중남미 도시들의 사례연구를 진행함. 본 연구의 초점은 국제사례연구이며, 연구범위는 국제사례연구를 통하여 통합관제센터의 센터 기능별 분석 및 통합성에서 얻어지는 시너지 효과에 대한 분석을 수행하는 것임.

□ 출장목적

이번 출장의 목적은 미주개발은행(IDB) 및 세계은행과의 업무협의회, 2015년 IDB 주최 한-중남미 지식공유포럼 준비 워크숍 참석 및 발표, 올랜도 도시관제센터 방문 및 관계자와의 업무협의회임.

□ 출장자 명단

소속	직급	성명
국토연구원	본부장/선임연구위원	이상건
국토인프라본부	연구원	권희서

2. 세부일정

○ 이상건

월 일 (요일)	출발지	도착지	방문기관	업무수행내용	접촉예정인물	비고
1.12(월)	인천	워싱턴		- (10:15) 인천 출발 - (09:50) 워싱턴 도착		
1.13(화)			미주개발은행 (IDB) 세계은행	(18:00-20:00) Transportation Research Board (TRB) 한국참가자 모임 *당일 예정이었던 추가 회의가 1.14(수), 1.16(금) 로 연기됨.	- Dr. Youngjoon Moon - Dr. Inkyu Lim - Dr. Sangsu Kim	
1.14(수)			미주개발은행 (IDB)	- (11:00-12:00) 세계은행과 인도 타밀나두 지속가능한 도시개발 모델시티 시범사업 업무협의회	- Dr. Hyung-geun Wang - Mauricio	

				- (14:30-15:30) IDB 와 IOCC 경제적 편익 분석 과제 업무협의회	Bouskela - Karen Mokate	
1.15(목)				- (09:00-13:00) 개회식 및 지식공유포럼 준비 총괄세미나 - (14:30-16:00) 지식공유포럼 준비 총괄세미나 - (16:00-18:00) 개별발표세션	Carlos Gerardo Moline Federico Basanes Chang Sang Cho Mirna Lievano de Marques	
1.16(금)				- (09:00-12:30) 개별발표세션 - (15:00-16:00) IDB IFD 와의 업무협의회	Jose Juan Ruiz Gomez Moonjoong Tcha Ellis Juan	
1.17(토)	워싱턴			- (11:50) 워싱턴 출발		
1.18(일)		인천		- (16:30) 인천 도착		

○ 권희서

월 일 (요일)	출발지	도착지	방문기관	업무수행내용	접촉예정인물	비 고
1.12(월)	인천	워싱턴		- (10:15) 인천 출발 - (09:50) 워싱턴 도착		
1.13(화)			미주개발은행 (IDB) 세계은행	- (18:00-20:00) Transportation Research Board (TRB) 한국참가자 모임 *당일 예정이었던 추가 회의가 1.14(수), 1.16(금) 로 연기됨.	Dr. Youngjoon Moon - Dr. Inkyu Lim - Dr. Sangsu Kim	
1.14(수)				- (11:00-12:00) 세계은행과 인도 타밀나두 지속가능한 도시개발 모델시티 시범사업 업무협의회 - (14:30-15:30) IDB 와 IOCC 경제적 편익 분석 과제 업무협의회	Dr. Hyung-geun Wang - Mauricio Bouskela - Karen Mokate	
1.15(목)			미주개발은행 (IDB)	- (09:00-13:00) 개회식 및 지식공유포럼 준비 총괄세미나 - (14:30-16:00) 지식공유포럼 준비 총괄세미나 - (16:00-18:00) 개별발표세션	Carlos Gerardo Moline Federico Basanes Chang Sang Cho Mirna Lievano de Marques	
1.16(금)				- (09:00-12:30) 개별발표세션 - (15:00-16:00) IDB IFD 와의 업무협의회	Jose Juan Ruiz Gomez Moonjoong Tcha Ellis Juan	
1.17(토)	워싱턴	올랜도		- (10:00) 워싱턴 출발 - (12:32) 올랜도 도착		
1.18(일)				- (10:00-16:00) 지식공유포럼 준비		

				워크숍 내용 정리 및 발표자료·보고서 보완	
1.19(월)			Orlando Operation Center	(10:00-13:00) Orlando Operation Center 방문 및 관계자와의 면담	Emergency manager, operation center staffs etc.
1.20(화)	올랜도 아틀란타	아틀란타		(08:30) 올랜도 출발 (10:13) 아틀란타 도착 (12:20) 아틀란타 출발	
1.21(수)		인천		(17:30) 인천 도착	

II. 워싱턴(미국) 주요 수행내용

1. Transportation Research Board (TRB) 한국참가자 모임 - Korea Transportation Association in America (KOTAA)

□ 개요

- 일시: 2015년 1월 13일(화) 18:00~20:00
- 장소: 워싱턴 컨벤션센터
- 주요참석자:
 - 국토연구원: 이상건 본부장, 김혜란 책임연구원, 윤서연 책임연구원, 권희서 연구원
 - 버지니아 교통국: 임인규 (KOTAA 회장)
 - 오하이오대학: 김상수 (KOTAA 부회장)
 - 기타 교통관련 전문가 및 박사과정 학생 다수



<행사 사진>

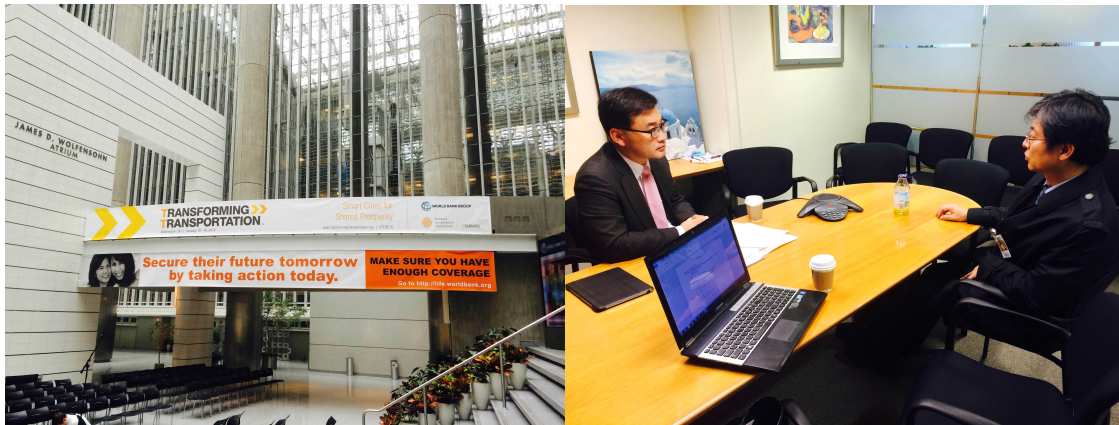
○ 주요 행사 내용

- KOTAA 참석자 소개, KOTAA 현황 발표, 취임 회장·부회장 소개, 회원 직군별 발표 현황
- 조용주 PIARC 2015 세계도로대회 조직위 수석 부위원장 연설.
- 김원태 PIARC2105 세계도로대회 조직위 기획실장 연설.
- 이강원 로드아일랜드 대학 교수 연설
- 김영수 노스캐롤라이나 주립대 교수 연설
- 국토연구원 연구분야 소개 및 미국내 박사과정 학생들과의 접촉

2. 세계은행과의 “인도 타밀나두 지속가능한 도시개발 (TNSUDP) 모델시티 시범사업” 과제 업무협의회

□ 개요

- 일시: 2015년 1월 14일(수) 11:00~12:00
- 장소: 세계은행 4층 회의실
- 주요참석자:
 - 국토연구원: 이상건 본부장, 권희서 연구원
 - 세계은행: 왕형근 박사



<회의 사진>

○ 주요 회의 내용

- 타밀나두 과제와 연관 되서 진행될 ‘인도 도시의 ICT 를 통한 녹색성장’ 과제 제안서에 임학진 과장님을 전자정부 전문가로서 합류시키는 것을 검토함
- 타밀나두 과제를 위한 인도 현지 컨설턴트는 인도 세계은행 country office 의 Shashank 를 통해서 소개받을 것임
- 타밀나두 과제는 6 월말까지 마무리하는 일정으로 협의함
- 현지출장일은 2 월 마지막 주~3 월 둘째 주 중 일주일 일정으로 진행하기로 함
- 인도의 ULB (Urban local body) 즉 시정부는 의사결정력이 매우 약하고, 많은 일이 주정부에 의해서 관장됨. 본 과제에 있어서 가장 critical 한 문제는 부서끼리의 데이터 공유임. 현재 시점에서는 기술지원에 앞서 먼저 거버넌스 체계에 대해서 현지 컨설턴트와 협의하고 Chennai 에 위치한 주정부와 긴밀한 회의를 개최하여 주정부의 의지를 확인하는 것이 필요함
- 과제 배경 설명으로서, 인도에서 최근에 발표한 100 개 스마트시티 계획 중 타밀나두 주에서 이미 5 개 도시가 선정되었음. 이 도시들은 인구 및 규모 면에서 본 과제 대상도시보다 크며 100 개 스마트시티 선정도시로서 매년 5 백만 달러를 받음. 본 과제 대상도시는 조금 더 소규모의 도시로서 100 개 스마트시티에는 선정되지 않은 도시임
- 타밀나두 주의 본 과제 대상도시 preliminary assessment 가 필요한 상황임

3. Meeting on IDB-KRIHS Joint Research - Economic Benefit Analysis on Integrated Operation and Control Center (IOCC) through International Case Studies

□ Summary

- Date: 14 January 2015 (Wed) 14:30-15:30
- Venue: IDB 7th floor Mauricio Bouskela's office
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB: Mauricio Bouskela, Matteo Grazzi



<Meeting pictures>

○ Key meeting contents

Project progress & clarification

- Local consultant for Rio de Janeiro is decided to be Clara Schreiner.
- The final purpose of this study is to persuade the IDB and the governments to provide investment for smart city and integrated operation and control center.
- For this phase of the study, we need a snapshot of how smart cities work in various cities in different regions. The case studies in phase 1 will help brainstorm the methodology for the second phase, to enable b/c ratio calculation.
- KRIHS is going to assess Korea's existing city approach (Anyang) and new town approach (Songdo).
- Smart city can be understood as having a management system and interacts with and is integrated between different intelligent systems of different areas. This degree of integration and interaction perhaps define the degree of smart city development.
- ITU defines smart city as: a city that utilizes ICT to enhance quality of life for citizens, improve efficiency of urban services and pursue social, economic and environmental sustainability.
- Transportation sector began its integration of sub-sectors from 20 years ago into ITS.

- Smart city and the use of ICT is a mobile concept that changes over time depending on technology level.
- Smart city key words: data, information, integration, efficiency, efficient decision-making, synergy effect from data integration ...
- This study will focus on each city's integrated center with minimum two smart city sectors (transport, crime, disaster, water, energy, waste etc.).
- Three dimensions: 1) how many sectors are integrated; 2) Data quality; 3) Operating capability and quality of service.
- This project takes a more qualitative approach and quantitative. Phase 1 is not a scientific approach.
- Harmonization of the template, structure, methodology for data collection, interviews, and surveys are very important for the procession into Phase 2.
- Useful sources: kp.iadb.org/DigiLAC/es and Little daetabook on ICT by World Bank

Updates on Barranquilla, Colombia and Goiania, Brazil

- Barranquilla: A new challenge as the city government is changing soon with the election hence the policy priority will change. Good news is that IDB loan is recently approved by the Government of Colombia for the purpose of IOCC implementation.
- Goiania: The Municipal government hired a new CFO and expects the funding problems of the IOCC to be tackled.

4. 2015 Korea-LAC Knowledge Sharing Forum Preparation Workshop

□ Welcoming

- Date: 15 January 2015 (Thu) 09:00-09:30
- Venue: IDB Room B-300
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB: Federico Basanes, Bernardo Guillamon
 - MOSF: Yihan Kim
 - Total around 40



<Meeting pictures>

- Key meeting contents
 - Welcoming remarks by Federico Basanes, IDB KNL Manager, Yihan Kim, MOSF Korea Director, Bernardo Guillamon, IDB ORP Manager.

□ Development Experience in LAC and in Korea

- Date: 15 January 2015 (Thu) 09:30-11:15
- Venue: IDB Room B-300
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB: Jose Juan Ruiz Gomez
 - KDI: Moonjoong Tcha
 - Total around 30



<Meeting pictures>

- Key meeting contents
 - Introduction to a macro framework of development policies as well as their achievements and deficits in both Korea and LAC.

□ Preparing for Busan - IDB EXR and Logistics - IDB KNL

- Date: 15 January 2015 (Thu) 11:30-13:00, 14:30-16:10
- Venue: IDB Room B-300
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB ESCI: Carolina Barco
 - Ezquiaga firm: Jose Hana Ezquiaga
 - KDI: Moonjoong Tcha
 - MOSF: Doohee Han
 - Total around 40



<Meeting pictures>

- Key meeting contents

Recommended presentation technique

- Simple formula: Brief intro and thesis -> 3 pieces of supporting evidence or examples -> Conclusion and recommendation.
- No fence sitting, take a side and make a meaningful statement.
- Take a firm position, present one main thesis, be selective, be provocative, make recommendations, opt for memorable examples over statistics.
- Use big fonts and only use one concept per slide.
- Less is more - sweet spot is 600 words, 1,200 is maximum.
- Use conversational language. No jargon.

Useful web sites

- search.creativecommons.org
- www.iStockphoto.com
- www.Lynda.com

Blog title exercise

- How technology is making Korean New Towns greener
- 3 solutions that New Towns provide to urban challenges
- Why cities in LAC can consider New Town solution

Deadlines prior to Busan

- IDB will finance travel and accommodation for three persons from each think tank, nominate these participants by January 23rd.
- Highlights of the studies: by February 15th
- Videos: February 28th
- Papers: March 16th
- Supporting presentation: March 16th

In Busan

- The Knowledge Sharing Forum (KSF) will be held on March 26th, 2015 at the Busan Convention Hall at 10am sharp.
- Moderators and presenters are requested to be at the venue on Wednesday, March 25th by noon for the dry run. Interviews with presenters will be filmed this day.
- Materials produced in addition to the papers will be considered as output of the KSF program. The Bank will discuss dissemination strategies with each participating think tank.

□ Presentation by Group 5: Sustainable Cities - 1

- Date: 15 January 2015 (Thu) 16:10-18:00
- Venue: IDB Room B-302
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB ESCI: Ellis Juan, Carolina Barco
 - LAC Research Team: Jennifer Doherty-Bigara, Nancy Moreno
 - Ezquiaga firm: Jose Hana Ezquiaga
 - KDI: Sunghyun Ryu, Shinhye Kim
 - MOSF: Doohee Han
- Total around 10



<Meeting pictures>

○ Key meeting contents

Presentation by KRIHS

- Understanding Korea's Urbanization History
 - Overview of Korea's urbanization rate, economic growth and GDP
 - Country characteristics and its pursuit for efficiency, equity and sustainability
 - Efficiency: Seoul-Busan expressway, industrial complex, development/population growth around transportation/industrial corridors
- Identifying Sustainability Challenges during Urbanization
 - Expansion of urban slums
 - Traffic congestion and environmental pollution
 - Insufficient housing supply
- Sharing New Town Development Solution
 - 3 types of New Town development in Korea
 - 1st Phase: Bundang, Ilsan, Pyeongchon, Sanbon, Jundong
 - 2nd Phase: Sungnam Pangyo, Hwaseong Dongtan etc.
 - Redistribution of Seoul's population to Seoul Metropolitan Area
 - New Administrative Capital, Innovation Cities, Enterprise Cities, Equitable transportation network
 - Outcomes of New Town development: Housing market stabilization, Improvement of housing condition, Securement of public/green space, Ripple effect on related industrials and economy, Expansion of urban infrastructure (road, railway, power plant etc.)
- Proposing Lessons Learned from Korea's Experience
 - Success factors of Korea's New Town development
 - 1) Realistic planning and its implementation capabilities: the development plan of Korea's land was drawn in a piece of paper in 1962, the importance of plan, implementation and evaluation
 - 2) Institutional driving force and legal support: Bundang New Town's implementing organizations, stakeholder roles
 - 3) Feasible land acquisition methodologies: Land Readjustment (LR) projects
 - 4) Mechanism of public-private partnership: Publically Managed Development (PMD) projects - division of labor between public (land development) and private (housing construction)
 - Trial and error of Korea's New Town development
 - Smart Green City technologies in New Towns: Energy, transportation, water circulation, ecosystem, buildings, recycling etc.
 - Features of High-tech Pangyo New Town
- Discussing Implications for Sustainable Cities in LAC
 - Differences of urbanization characteristics between Korea and LAC
 - Differences of urban challenges between Korea and LAC

- Potentials of New Town development for urban sustainability in LAC
- Points of consideration for LAC when promoting New Town development
- Future collaboration areas between LAC and Korea for Sustainable urban development

Presentation by ESCI

- o Urbanization in LAC and Asia
 - Global context: the growth of urban population continues worldwide, midsize cities (0.3~5 million) will keep growing worldwide
 - LAC and Asia: Asia could become LAC's main trade partner in this century
 - LAC's challenges: Rapid growth of midsize cities, social inequality, waste of natural resources, cost of urban sprawl, decline of traditional urban cores, institutional weakness, climate change
- o Consequences of the Deficit of City Planning Policies
 - Urban sustainability
 - Lack of planning instruments
 - Unfocused policies
 - Investment in infrastructure is low in LAC
 - Inappropriate scales of planning
 - Climate change
- o Lessons Learned
 - What is ESCI?
 - Why intermediate cities?
 - Evaluation strategy for a city in the Emerging Sustainable Cities Initiative
 - Cross-tab analysis: theme factors that are statistically correlated - infrastructure, social status, economic development, security, efficient local government
 - Concerning detailed implementation: solve problems at their own scale, address problems detected through indicators and traffic - light diagnosis in the proposal of the Action Plan, early socialization, it is advisable to coordinate ESCI times with electoral mandates, it is advisable to implement early actions since the inception of the Action Plan.

Discussions

- Fast growing LAC cities are very much interested in the concept of New Town for solving the existing urban challenges.
- ESCI agrees on the Korea's success factors: strong national government planning, strong regulatory framework etc. These are the areas that LAC countries greatly lack.

□ Presentation by Group 5: Sustainable Cities - 2

- Date: 16 January 2015 (Fri) 09:30-12:30
- Venue: IDB Room B-302
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB ESCI: Ellis Juan, Carolina Barco
 - LAC Research Team: Jennifer Doherty-Bigara, Nancy Moreno
 - Ezquiaga firm: Jose Hana Ezquiaga
 - KDI: Sunghyun Ryu, Shinhye Kim
 - MOSF: Doohee Han
 - Total around 10



<Meeting pictures>

- Key meeting contents
 - o Presentation method (powerpoint or prezi)
 - 25 minute presentation
 - 40 to 45 slides (using pictures and photographs)
 - English language
 - Deadline: Monday March 2nd for first draft
 - Outline Structure
 - a. Urbanization Trends (Korea and LAC - separate in each presentation)
 - b. Sustainability Challenges of the Urbanization Process
 - c. Urbanization Strategy: Public Policy Response (New Towns in the case of Korea)
 - d. Lessons Learned from Korea and LAC experiences
 - e. Implications/Recommendations for Sustainable Cities in LAC
 - o Paper
 - 1 page Executive summary
 - 30 page maximum length
 - English language
 - Deadline: Monday March 16th
 - Outline Structure

- a. Urbanization Trends (Korea and LAC - separate in each presentation)
 - b. Sustainability Challenges of the Urbanization Process
 - c. Urbanization Strategy: Public Policy Response (New Towns in the case of Korea)
 - d. Lessons Learned from Korea and LAC experiences
 - e. Implications/Recommendations for Sustainable Cities in LAC
- o Event: Session 4, APEC Hall (205), Thursday March 26th, 16:40~18:10 (Moderated by Dr. Kyung-hwan Kim of the Korea Research Institute for Human Settlements (KRIHS))

Opening	- Dr. Kyung-hwan Kim (President of KRIHS)	2 minutes (no presentation)
Introduction	- Ellis J. Juan (IDB ESCI Coordinator)	4 minutes (no presentation)
Korea's Experience	- Dr. Sang Keon Lee (KRIHS)	25 minutes (visual presentation)
LAC's Experience	- Dr. Jose Maria Ezquiaga (Politecnico de Madrid) - Dr. Carolina Barco (IDB ESCI)	25 minutes (visual presentation)
Implications/Recommendations for LAC	Moderator: Dr. Kyung-hwan Kim Panels: - Ana Maria Rodriguez-Otriz - Nestor Roa - Dr. Kyung-hwan Kim - a representative from LH (Ellis Juan will invite) - Dr. Carolina Barco - Ellis J. Juan.	25 minutes (verbal discussion with visual support)
Conclusion	- Ellis J. Juan (IDB ESCI Coordinator)	4 minutes (no presentation)
Closing	Dr. Kyung-hwan Kim (President of KRIHS)	2 minutes (no presentation)

Additional discussions

- Development gain investing into urban infrastructure (especially for connectivity through highways and metro) is a crucial factor for the success of New Town development.
- Narrow down the best model of New Town with specific target based on feasibility analysis.
- Lack of urban policies led to LAC's slums and favelas.
- IDB ESCI thinks that Panel discussion will be more effective than audience Q&A session, and will arrange this with IDB KNL.
- It was agreed that Dr. Kyung-hwan Kim, the President of KRIHS will perform the moderator role for the panel discussion as well as opening & closing of the Session 4.
- Regarding the video presentation, IDB ESCI will use its PR video. KRIHS will edit its

- existing visual materials into 2-3 minute video file in collaboration with LH.
- The final goal of this knowledge sharing forum for sustainable cities would be to initiate some kind of Korea-LAC regular seminar on the topic of new town development and make a success case of sustainable new town development in the LAC region.
- IDB ESCI will provide KRIHS with the analysis on the challenges and problems LAC cities had with their new town development (e.g. Brasilia of Brazil, Guayana of Venezuela, satellite cities of Mexico City etc.)
- IDB ESCI will also include information on what Korea can learn from LAC such as citizen participation etc.

Upcoming deadlines

- Paper: Completion by 9th March 2015, edition and submission by 16th March 2015 including 2-page summary
- Video: 28th February 2015
- Powerpoint file: 16th March 2015

□ Meeting with Roberto Manrique, Senior Advisor of IDB IFD

- Date: 16 January 2015 (Fri) 15:00-16:00
- Venue: IDB Roberto Manrique's office
- Key participants:
 - KRIHS: Sang Keon Lee, Heeseo Rain Kwon
 - IDB IFD: Roberto Manrique (Senior Advisor), Soyoung Lee



<Meeting pictures>

- Key meeting contents
 - Institution for Development (IFD)'s four divisions: Fiscal and Municipal Management Division (FMM), Institutional Capacity of the State Division (ICS), Capital Markets and Financial Institutions Division (CMF) and Competitiveness and Innovation Division (CTI).
 - Updates on the KIUDA: 14 scholars from LAC are working together.
 - Introduction on the roles of the IDB panels who will be participating in the Knowledge Sharing Forum in Busan: Ana Maria Rodriguez-Ortiz and Nestor Roa.

5. Visit to Orlando Operations Center and Meeting with the Center Head

□ Summary

○ Date: 19 January 2015 (Mon) 10:00-13:00

○ Venue: Orlando Operations Center

○ Key participants:

- Orlando Operations Center: Manuel Soto and center staffs on duty

- KRIHS: Heeseo Rain Kwon

* Note: The meeting took place in the morning of MLK Day by the kindness of the Center Head, Mr. Manuel Soto. Hence only few staffs on duty were present.



<Meeting pictures>

○ Key meeting contents

Overview of Orlando

- Orlando City: area 287km² with 249,562 population.

- Greater Orlando (Orlando Metropolitan Area): area 10,400km² with 2,171,360 population.

- City characteristics: significant inflow and outflow of population, being a popular city for tourism (world-famous attractions including the Disney World) and convention (Orange County Convention Center located in Orlando is the second largest convention center in the U.S.) hence city operations and management on sectors such as transportation, security, and disaster (especially against hurricane) are of great deal to the city of Orlando.

Overview of the Orlando Operations Center

- The Orlando Operations Center (OOC) is a 28,000 sq ft (2601m²) joint facility that provides public safety support and the continuity of government during major disaster, since 2001.

- OOC is comprised of four major operations for the City of Orlando. It houses the Traffic Management Center, the 911 Communications Center (both Orlando Fire Department and Orlando Police Department), the Network Operations Support, and the Emergency Operations Center.

- The Emergency Operation Center (EOC), part of the OOC, is a centralized place where government officials and representatives of emergency response agencies can go to jointly manage major emergencies and disasters.

- EOC has several levels of redundancy for critical systems such as electricity, internet and communications to ensure that they can continue operation in disaster environments when primary systems may not be available.
- EOC features an operational area with workstations for functional groups including police, fire, health, infrastructure, finance/administration, GIS personnel and supporting agencies. The facility also has an Executive Policy Group Room where decision-level managers convene to set strategic and executive level objectives and share incident information, and a media room that supports public information development.
- EOC has access to radar, cameras, power outage maps and flood sensors. Web-based log-in programs record incident actions.
- EOC not only deals with disaster emergencies such as hurricanes, but with virtually all kinds of incidents and events that require multi-agency approach, for example sporting events such as NBA All Star, ECHL Hockey etc. We have lines of communication with 17 embassies, councils and honorary councils to support the international crowd.



<Meeting pictures>

Questions and answers

- **Q1: How many years have you worked for this center?**
- A1: Since its opening in 2001. As a head, I have a great degree of attachment, leading the development of the center from the beginning.
- **Q2: Do you think your center is related to smart city initiative of Orlando, possibly?**
- In Korea, integrated city operation centers or often employed in the concept of smart city centers. In fact in some view that a complete city management center can incorporate most of the sectors for management such as transportation, crime, disaster, water, energy, waste, and other social services (health, education etc.).
- A2: I don't think that the OOC was built under the smart city initiative, yet I agree that integrated city management is beneficial for communication between agencies, efficient decision-making process, and provision of quality service to citizens. OOC is opened to incorporating other sectors of city management such as waste, water and energy management in the future if we see clear benefits of doing so.
- **Q3: How many fiber-optic network do you operate and are they self-owned**
- A3: We operate 4 fiber optic networks, shared between departments, of which one

is self-owned. This sharing of networks between departments significantly decreases the network size requirement.

- Q4: Do center staffs control traffic signals remotely from the center?

- A4: Yes, we do it at our Traffic Operations Center, a sub-center of OOC.



<Traffic Management Center. It does not control public transportation at present and OOC is considering about incorporating bus management as another function.>

- Q5: When disaster is detected, how do you prevent/manage/advertise to citizens?

- A5: The center enables efficient communication and collective decision-making between different agencies involves which fastens the city's reaction to such disaster. We provide updated information to citizens through our media room and SNS.



<The Mayor of Orlando comes to the Orlando Operations Center to make announcements on topics regarding city management and citizen safety issues.>



here is a station that monitors web responses (especially facebook and twitter) on incidents through keyword search technology etc. Sometimes citizens upload useful pictures on certain incidents before we reach the location so those information on SNS can also be helpful for us, and also we are able to take action if we spot wrong information being spread.>

- Q6: Did the center evolved into an integrated center or did it start as an integrated center?

- A6: There was a severe hurricane season in 1997 (Mitch) that closely affected Orlando and at that time, observing the inefficiency or having to request data to each departments and agencies, the Mayor realized a need for integrated city operations facility that enables data share and collaborative decision-making - a one-stop information platform. So the Mayor initiated the OOC project in 1998, construction began and the center opened in 2001 as an integrated center with four sub-centers as you know: the Traffic Management Center, the 911 Communications Center (both Orlando Fire Department and Orlando Police Department), the Network Operations Support, and the Emergency Operations Center.

- Q7: Has there been some measurable effects since the establishment of OOC? Do you have a system for center evaluation?

- A7: I believe there has been significant benefits in terms of shortened decision-making and response time, service quality to citizens, better management of city traffic, better management of incidents and disaster through cooperation between transport, fire and police department etc. but the data has not been compiled in a comprehensive manner. It would be greatly interesting to see your research eventually developing a methodology to classify the benefits and put them in monetary terms somehow. When you think about the economic impacts that the city management decisions can make, for example, imagine declaring to close the airport due to incapability of managing certain incidents that broke out. Also the increased real and perception of public safety would definitely add to the inflow of tourists, investment and business. One of our centers purpose is to support the economic engine of the city running. For Emergency Operations Center (EOC)

though, we have a concrete set of national standards that we measure our performance upon, called Emergency Management Standard by Emergency Management Accreditation Program (EMAP) incepted in 1997. OOC has recently received EMAP accreditation, as first in Florida and 7th in the country. OOC abides to the EMAP standards to benchmark our center performance and provide consistent service to the citizens.



<EMAP standards>

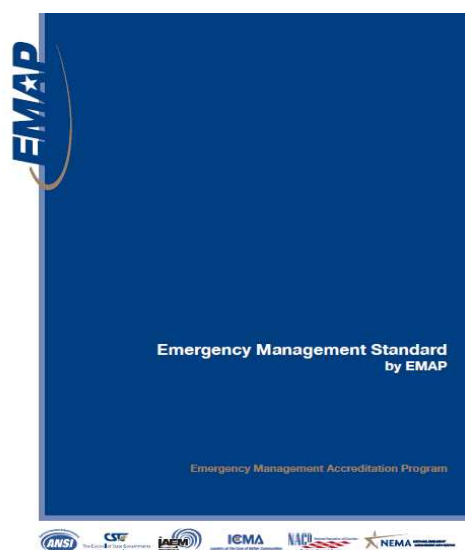
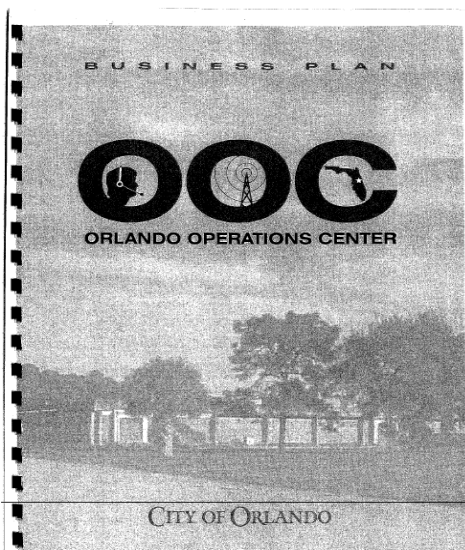
- **Q8: How much maintenance fee is required to run this center a year? And how many staff do you have working at the center? And to what extent do you utilize private companies for equipment maintenance, CCTV image provision etc?**
- A9: Just thinking about big ticket items such as power and water, I would say about 26~35,000 every two months. Staff number, we have around 53 working during daytime and 23 during nighttime. We have several private sector contractors who provide maintenance service for many systems being operated in the center as it sometimes works out more economical to outsource.
- **Q10: Some worry that having it all in one center makes the city information vulnerable to information security such as hacking. What is your opinion on this?**
- A10: The risk is understandable but I think there are more advantages you can get from having many functions integrated in one center to create synergy effect from one another. Also, as opposed to putting information security efforts to each center separately, the security team can focus its attention on one center. As one of the responses to those worries, we have backup data centers in Atlanta and New Jersey on top of our data center in the basement of OOC.
- **Q11: You may be well aware of the Operations Center in Rio de Janeiro designed by IBM. These kinds of modern city operations centers tend to be characterized by a set of large screens on the wall. Do you think this is necessary?**
- A11: I know of the center in Rio de Janeiro well. In fact we had many visitors from Rio who wanted to study our center in designing theirs. The mayor of Rio visited our center and I organized a meeting with our Mayor in Orlando as well. Yes, I think those large screens on wall are very helpful. We have screen walls in our

transportation room but not yet in other rooms. We have been requesting for fund to have them installed in our center too, and got the funding secured last year. We are in the procurement stage so hopefully we'll have 3-4 walls of our center covered with screens, one in the common discussion room, one in the fire department room, one in the police department room and one in the decision-making room possibly. We hope to have them installed soon.



<Combined office of Fire department and Police department. Large size monitoring screens will be installed on the walls of each side this year in 2015.>

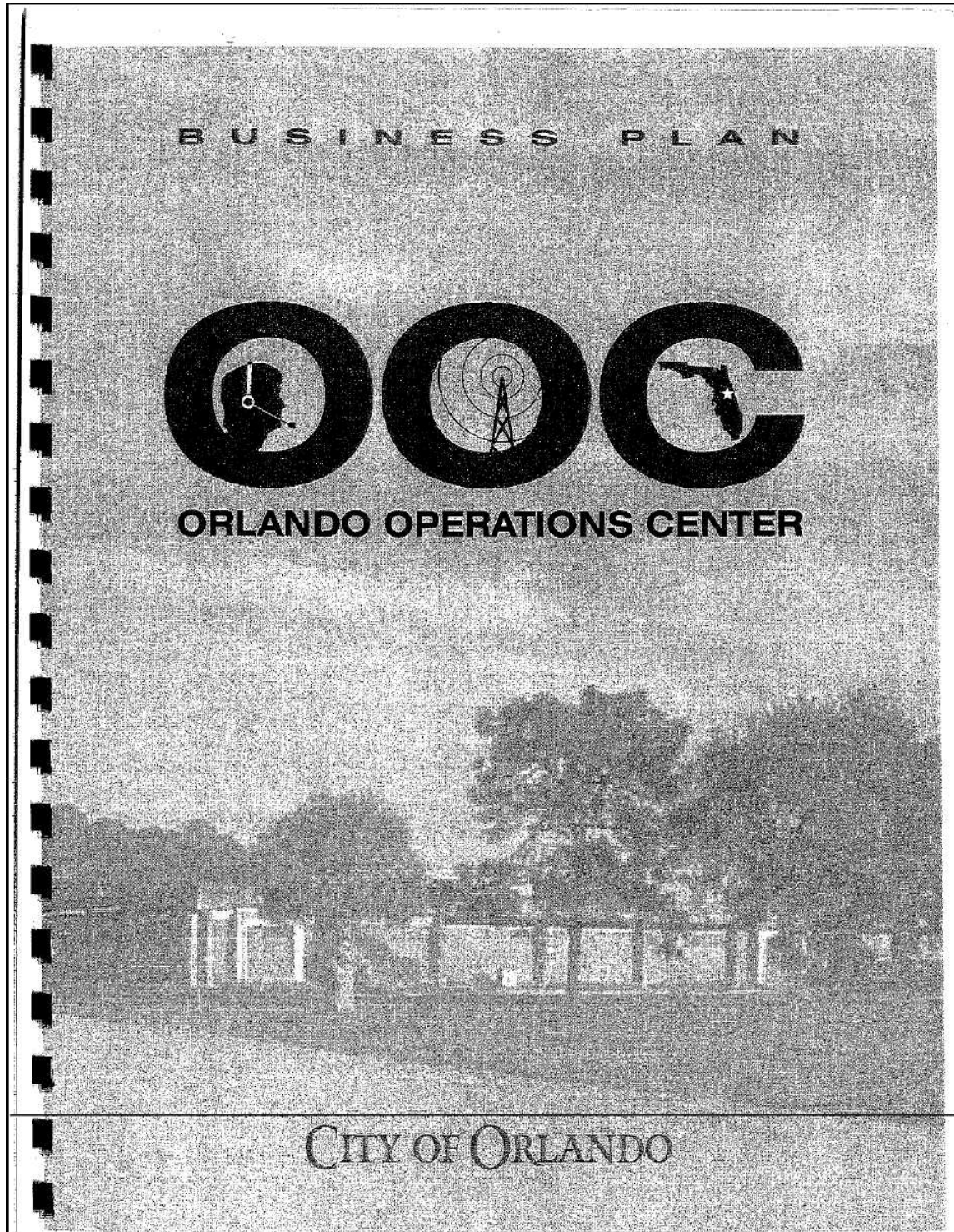
- Q12: As explained, our institution recently started a study on the benefit analysis of integrated city operation centers. Could we make another visit to OOC later on this year and perform more in-depth case study?
- A12: Sure, please let me know the dates, I will make arrangements for your visit. OOC also works closely with the County-level operation center in Orange Country where Orlando belongs. I will try to arrange a visit there for you as well.



<Example of documents acquired at OOC>

VI. 부록

1. Key pages from the Orlando Operations Center Business Plan



□ Table of Contents

Table of Contents	
	Page
Executive Summary	3
Purpose	4
Trends and Events	7
Growth	7
Tourism	8
Home Ownership	9
Traffic	9
Orlando Police Department Calls for Service	10
Orlando Fire Department Response	11
Technological Advances	11
Diversification of Demographics	12
Businesses	12
Natural Disasters	12
Major Events	12
Threat of Terrorism	13
Analysis of Future Needs	14
Space Requirements	14
Site Identification	14
Cost Analysis	19
Implementation Decisions	22
Approvals	22
Funding Resources	22
Implementation Issues	22
Management of the Center	23
Organizational Structure	23
Mission	25
Elements of the Plan	26
Acquisition of the Property	26
Demolition	26
Design/Build	27
Information Technology	28
Consultants	28
Participation by other Organizations	30
Governance for the Facility	31
Conceptualization	32
Exhibits	33

□ Executive Summary

Executive Summary

The Business Plan is designed to serve as a guide for the City of Orlando's Public Safety Team, consultants, and other organizations that choose to co-locate their dispatch operations. The Plan addresses the design, implementation, management, and operation of a new facility known as the Orlando Operations Center (OOC).

The City of Orlando identified a desire to bring the Police Department Dispatch, the Fire Department Dispatch, and a portion of the Transportation Engineering Bureau known as the Traffic Management Center together, in a combined facility. Also identified was a need to create a new, permanent Emergency Operations Center (EOC). The synergy of co-location in a single facility will provide citizens, visitors, and businesses with a reliable, efficient public safety communications and emergency operations system. This will be accomplished by managing communications, traffic, and event coordination in a central/secured facility; creating a new permanent EOC; providing space for present and future needs; and integrating new technologies.

There is ample room in the center to co-locate other non-city organizations that have similar or complimentary functions. The information contained in this document assists in the identification of these participants and their current requirements and future needs. It also identifies the steps necessary to mold the interior design of a building to functionally meet those needs. The Plan explores the technology that is expected to support this new facility. It further identifies the personnel and organizational structure of City departments that will comprise the Center.

Trends and Events are explored in an attempt to analyze the external environment, which will impact the planning for services in the future. Funding is a critical step to any new effort and the Plan sets the budget requirements and identifies the funding sources. The Plan also examines the mission of this new, combined organization. Finally, there are 7 critical issues that bring an operation such as this from the planning stage to the operational stage. These are: (1) acquisition of the property, (2) demolition of some interior features, (3) design/build of the improvements, (4) information technology requirements, (5) consultant's role, (6) participation by other organizations, and (7) governance of the facility.

The Orlando Operations Center has a formidable and important mission. The functions of the organizations include the critical task of protecting the health, safety and welfare of citizens, businesses, and visitors. Identifying and planning for each component will enable the operation to be efficient and effective in the delivery of public safety communications and emergency operations services. It is expected that this facility can adequately serve the City of Orlando's needs and those of outside organizations for many years.

□ Purpose

Purpose

The Public Safety Team is comprised of representatives of Orlando Police Department, Orlando Fire Department, Transportation Engineering, Technology Management, Fleet/Facilities Management, Project/Construction Management, Real Estate Management, and Internal Audit. The Team was established to discuss and identify issues relating to Public Safety. These issues include providing emergency services for future annexations, delivery of emergency operations, budget requirements, technological advancements, and decentralization of police through substations.

In the past two years, several team members have traveled to New York City, New York; San Diego, California; Phoenix, Arizona; Mesa, Arizona; and Houston, Texas. The purpose of their trips was to inspect emergency dispatch facilities, software applications, new technologies and operational practices that could be adopted by the City of Orlando. One of the cities - Houston, Texas - had an operations center that combined Traffic Management with some Police Dispatch and Fire Dispatch functions. Their goal was to consolidate operations into a single, shared facility for increased effectiveness and efficiency. This operation provided the beginning of the vision of a City Operations Center concept in Orlando.

Houston Transtar Operations Center



It was decided to combine the Orlando Police Department, the Orlando Fire Department, Orlando Traffic Management, and the Emergency Operations Center in a similar design. Currently, the Orlando Police Dispatch is located in the Orlando Police Headquarters on Hughey Avenue. The Orlando Fire Dispatch is located behind Fire Station #1 in downtown Orlando. This operation is slated to move, as the building will be demolished as a part of a possible new development on the site. Traffic Management is housed in a City owned parking garage on Central Street in downtown Orlando. The Emergency Operations Center is currently a temporary operation located in a classroom inside the Police Headquarters.

□ Analysis of Future Needs

Analysis of Future Needs

Space Requirements

Rather than analyzing the future needs of each organization in the context of space requirements, an analysis was performed to determine the number of calls received in the past, the number of calls taken presently, and the number of calls expected in the future. The call volumes disclosed in this analysis, indicated the number of consoles that are needed now and the number that will be required in the future.

Consoles needed for dispatch functions

In 1999

- OPD has 18 Consoles
- OFD has 6 Consoles
- TMC has 3 Consoles
27 Consoles

In 2005

- OPD needs 25 Consoles
- OFD needs 10 Consoles
- TMC needs 4 Consoles
39 Consoles

Total Console space capacity in the refurbished OPH facility is 42

This console analysis serves as a general guide for determining the City of Orlando's expansion needs. The study indicates that the configuration of the Orlando Police Headquarters could accommodate growth only for the next five years. To adequately meet the future needs of Orlando and its citizens, significant additional space is needed for operations.

Site Identification

Attempts to find solutions to the limited growth potential in the OPH building resulted in discussions about alternate sites. One site identified was the Herndon Annex located at the southeast quadrant of the Orlando Executive Airport, just northeast of the toll plaza at Highway 408. The site is accessed via Andes Avenue off Lake Underhill. The vacant property was a part of the base closure at the Orlando Naval Training Center. The United States Navy previously used the 34,000 square foot structure on the site known as building 606 as a secure computer facility. Previously, the City of Orlando entered into a lease for the entire parcel of land with the Navy and subsequently subleased it to the Greater Orlando Aviation Authority (GOAA). As the City has now identified a need for this portion of the land, GOAA has agreed to release to the City, a section that includes building 606.

□ Analysis of Future Needs

Cost Analysis

Orlando Police Headquarters

An analysis of the cost to renovate the Orlando Police Headquarters was completed. The cost of this renovation is high given the rather limited benefit derived from this site.

	<u>Projected Cost</u>	<u>Alternative Funding</u>	<u>Total</u>
Orlando Police Headquarters (OPH)			
- Renovations / FFE	\$ 1,900,000		
- Radio Consoles		\$ 1,000,000*	
- Computer Equipment & Optic Lines	\$ 900,000		
- Traffic Mgt. Equipment / Move		\$ 950,000**	
- Operational Consultant	\$ 100,000		
- Contingency (10%)	<u>\$ 400,000</u>		
• Subtotal	\$3,300,000	+ \$1,950,000 =	\$ 5,250,000
• Currently Funded	<u>- \$2,075,000</u>		
TOTAL	\$1,225,000		

* *Expected to be funded by traffic surcharge*

** *Expected to be funded by grant funds / federal government*

□ Analysis of Future Needs

Orlando Operations Center

At the first site inspection, representatives of Police, Fire, Transportation Engineering, Technology Management, Fleet/Facilities, Project/Construction Management, Real Estate Management, and Internal Audit readily agreed that the facility offers a tremendous opportunity. An additional study was conducted on site by qualified technicians to inspect the condition and costs to renovate. The blueprints for the facility were secured along with the environmental inspection reports. Results were studied and analyzed. The cost benefit analysis of this facility is attached.

	<u>Projected Cost</u>	<u>Alternative Funding</u>	<u>Total</u>
Orlando Operations Center			
- Renovations / FFE	\$2,700,000		
- Sanitary Sewer Relocation		\$ 525,000*	
- Road Extension / Survey	\$ 620,000		
- Radio Consoles		\$2,000,000**	
- Computer Equipment & Optic Lines	\$1,300,000		
- Traffic Mgmt. Equipment / Move		\$ 950,000***	
- Operational Consultant	\$ 100,000		
- Contingency (10%)	<u>\$ 500,000</u>		
• Subtotal	\$5,220,000	+ \$3,475,000	= \$8,695,000
• Currently Funded	<u>- \$ 500,000</u>		
TOTAL	\$4,720,000		

* To be funded from Wastewater Fund

** Expected to be funded by traffic ticket surcharge

*** Expected to be funded by grant funds / federal government

□ Implementation Decisions

Implementation Decisions

Approvals

A special workshop of the Orlando City Council was conducted on November 23, 1999 where the Public Safety Team presented the options of renovating the Orlando Police Headquarters or the building at the Herndon Annex. City Council approved and funded the staff recommendation to proceed with the new Orlando Operations Center at the Herndon Annex at their regular Council meeting on December 6, 1999.

GOAA also approved at their Board Meeting to release the parcel needed by the City in exchange for the City moving an existing sanitary sewer line that currently runs through the center of their property. The location of this sewer line prevents development of the land. Current negotiations are underway with GOAA and the United States Navy to finalize the transfer of ownership for the parcel of land and buildings shown in the survey.

Funding Resources

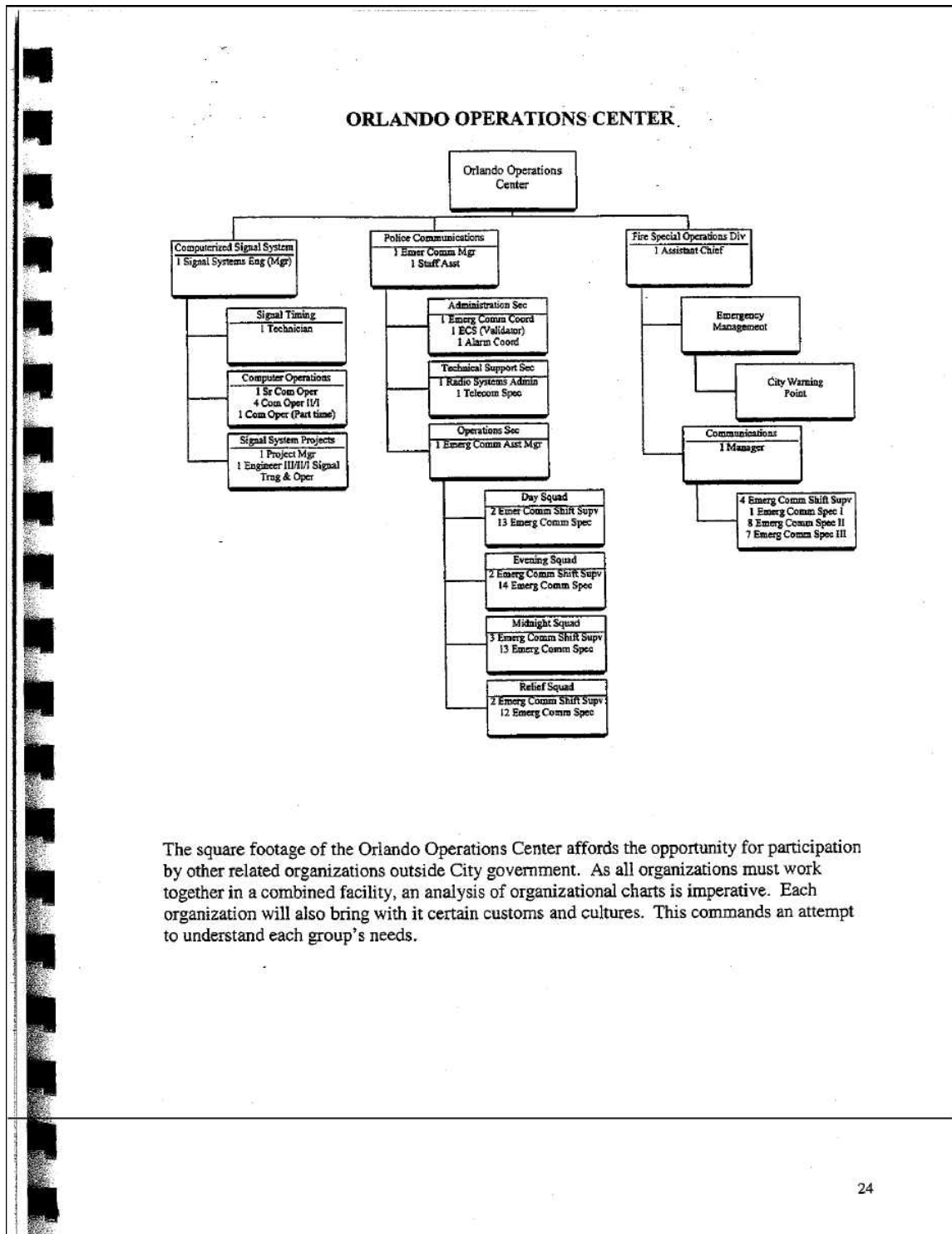
Orlando City Council approved the concept and funding for the project at the Herndon Annex with the expectation that additional revenue sources would be obtained to mitigate the City's costs. Revenue sources will be needed to acquire and renovate the building, purchase the necessary furnishings, fixtures, and new equipment, and move the operations to the site. Additional revenues are expected through several sources. One source is grants. The City of Orlando has funded and hired a new grant writer who will initially be tasked with researching sources for possible grant opportunities.

Another source of revenue will come from outside organizations that utilize the facility. The size and configuration of the existing facility allow for the City to bring in outside organizations that provide a similar service. The City can receive fair market rent or services in kind from these organizations for their use of the facility. It is expected that any organizations having an interest would either lease space in the building or contract with the City dispatch operation for their dispatch function.

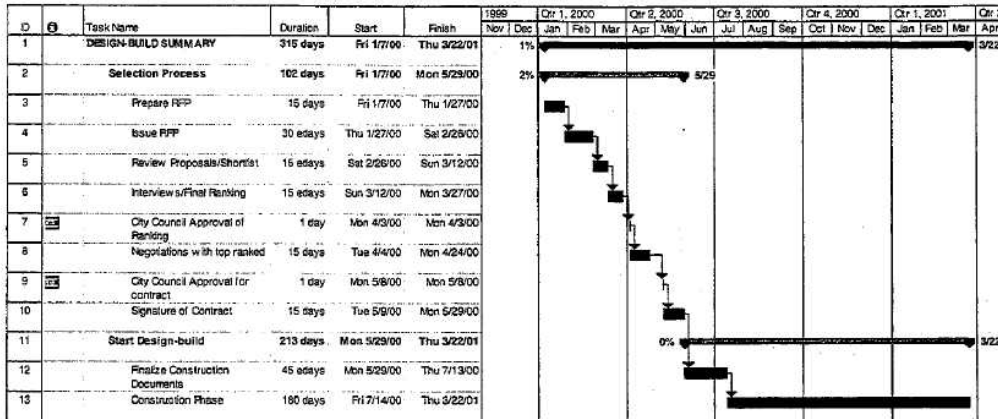
Implementation Issues

Implementation of a complex operation is further complicated when dealing with organizations that respond to emergencies 24 hours a day / 365 days a year. Understanding the culture and needs of each organization enables the process of design, implementation, and management for a shared facility. Technology issues are critical to the process. A thorough understanding of the technology and telecommunications requirements of each organization is crucial. Other issues that must be resolved include new equipment, backup systems, and effects on neighboring community telecommunications operations. A full analysis of current and future needs of each organization and their impact on the community must be completed. Another aspect of equal importance to the implementation is the physical move of these units

□ Implementation Decisions



□ Elements of the Plan



Information Technology

A major component of the Orlando Operations Center (OOC) renovation will be the information technology (IT) plans. The initial architecture must be built to effectively support the computer and communications systems and networks. Further, the technological infrastructure must allow the City to easily and efficiently add/upgrade network components as technology improves and additional services are required. Essentially, there are two perspectives from which to view the OOC. These two perspectives are provided in Exhibit A.

Consultants

The implementation of this project requires the use of various consultants that have professional experience in their fields.

A. The Warner Group - The City has solicited assistance from the Warner Group for the successful implementation of the co-location to the new facility. The Warner Group (TWG) is a management consulting firm specializing in Information Technology, Communications Technology, and Performance Improvement. They are a provider of consulting services to government and industry, and are recognized as a consulting leader throughout the nation in technology and strategic planning to public sector and public safety/criminal justice agencies.

The Warner Group will work closely with the City to facilitate the development of a governance structure that will allow for user department representation in decision-making