

글로벌 ICT 표준 컨퍼런스 2023

Global ICT Standards Conference 2023

(세션2) 디지털 플랫폼 기반 기술 표준화 동향

스마트시티 국제표준화 동향

김용운 책임연구원, ETRI

주최



과학기술정보통신부
Ministry of Science and ICT



특허청
Korean Intellectual
Property Office

주관



국립전파연구원
National Radio Research Agency



IITP

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kista

ETRI

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01. About presentation

스마트시티 국제표준화는 다양한 국제표준화 기구, 지역 표준화 기구, 컨소시엄/포럼 단체에서 개발되어 왔는데, 이번 동향 발표에서는 ISO/TC 268, IEC SyC-SC, JTC 1/WG 11, ITU-T에서의 표준화 동향을 소개한다.

- Related standardization groups, ISO, IEC, JTC 1, and ITU-T
- What we have in our hands.
- NOT to know how, BUT to know what and where

02. 스마트시티 정의

유엔유럽경제위원회 (UNECE) 및 ITU



A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.

지속가능 스마트시티는, 경제적, 사회적, 환경적, 문화적 측면에서 현재와 미래 세대의 요구를 보장하면서도 시민들의 삶의 질, 도시 운영 및 서비스 효율성, 경쟁력을 향상시키기 위해 정보통신 기술과 기타 수단을 사용하는 혁신적 도시

ISO/TMB (기술관리이사회) 결의 68/2015



Smart City" should be described as a city that:

- dramatically increases the pace at which it improves its sustainability and resilience,
- by fundamentally improving how it engages society, how it applies collaborative leadership methods, how it works across disciplines and city systems, and how it uses data and integrated technologies,
- in order to transform services and quality of life to those in and involved with the city (residents, businesses, visitors).

스마트시티는,

- 도시와 관련된 사람들 (거주자, 기업, 방문객)에게 도시 서비스와 삶의 질을 변화시키기 위해,
- 도시의 지속 가능성과 탄력성을 향상시키는 속도를 극적으로 향상시키고,
- 도시가 시민사회에 어떻게 영향을 주는지, 협력적 리더십 수단들에 어떻게 적용되는지, 도시 운영 구성요소들과 도시 시스템에서 어떻게 작동하는지, 데이터와 통합 기술을 어떻게 사용하는지 근본적으로 개선시키는 도시

ISO/IEC 30182



Effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens

도시민들에게 지속가능하고 포용적이고 번영한 미래를 제공할 수 있도록 주거 및 공간 환경에 물리적, 디지털 및 인간 시스템을 효과적으로 통합하는 도시

IEC SyC-SC



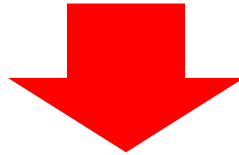
A city that systematically delivers sustainable, prosperous and inclusive social place for people who live and work there, and for future generations

도시에서 살고 있는 사람들과 미래 세대에게 지속가능하고 포용적이고 번영한 사회를 구조적이고 체계적으로 제공하는 도시

02. 스마트시티 정의

- 국내 스마트도시의 정의

- 도시의 경쟁력과 삶의 질의 향상을 위하여 유비쿼터스도시기술을 활용하여 건설된 유비쿼터스도시 기반시설 등을 통하여 언제 어디서나 유비쿼터스도시서비스를 제공하는 도시(출처: 유비쿼터스도시의 건설 등에 관한 법률, 2008.3)



- 도시의 경쟁력과 삶의 질의 향상을 위하여 건설·정보통신기술 등을 융·복합하여 건설된 도시기반시설을 바탕으로 다양한 도시서비스를 제공하는 지속 가능한 도시(출처: 스마트도시 조성 및 산업진흥 등에 관한 법률, 2017.2)

02. 스마트시티 정의

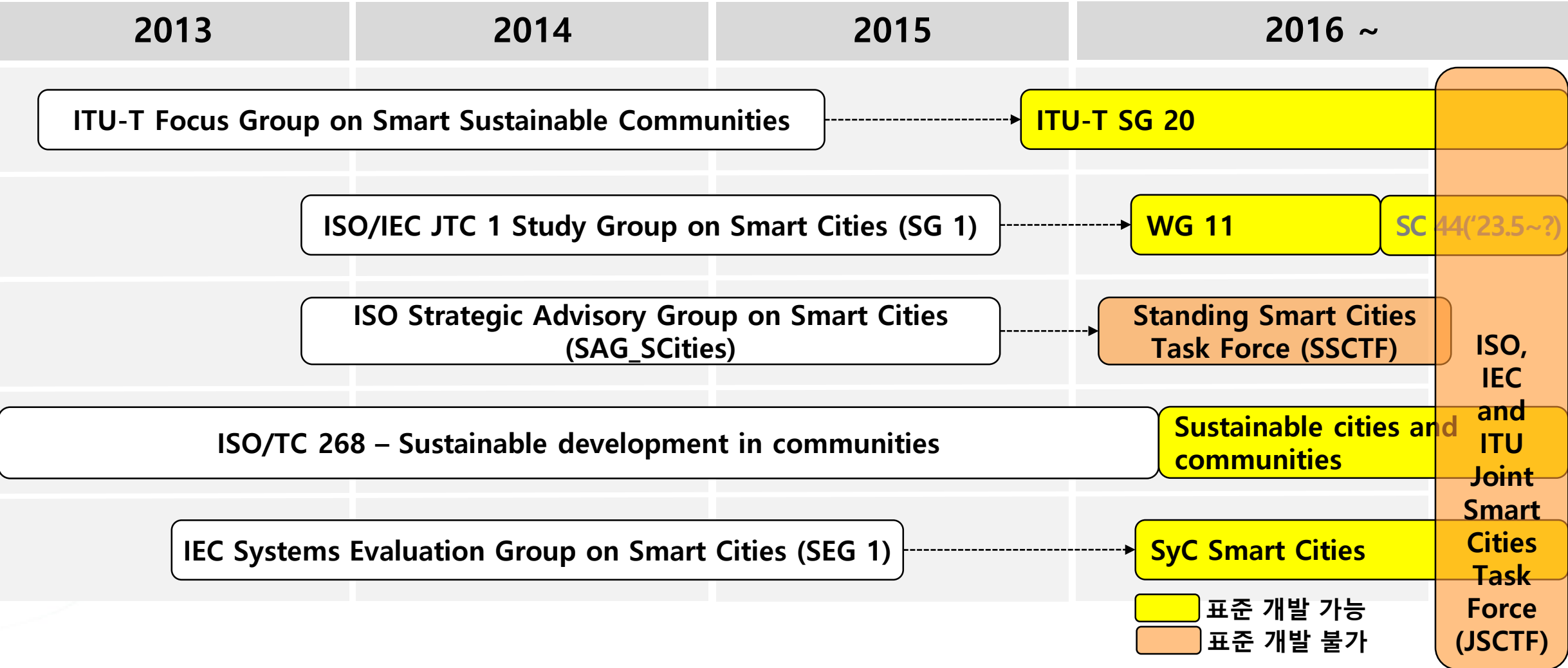
교육 금융 에너지 환경 행정 보건 의료 주택 안전 상수도 하수도 교통 통신 ...

지능화

삶의 질 + 지속가능성



03. 스마트시티 국제표준화 그룹



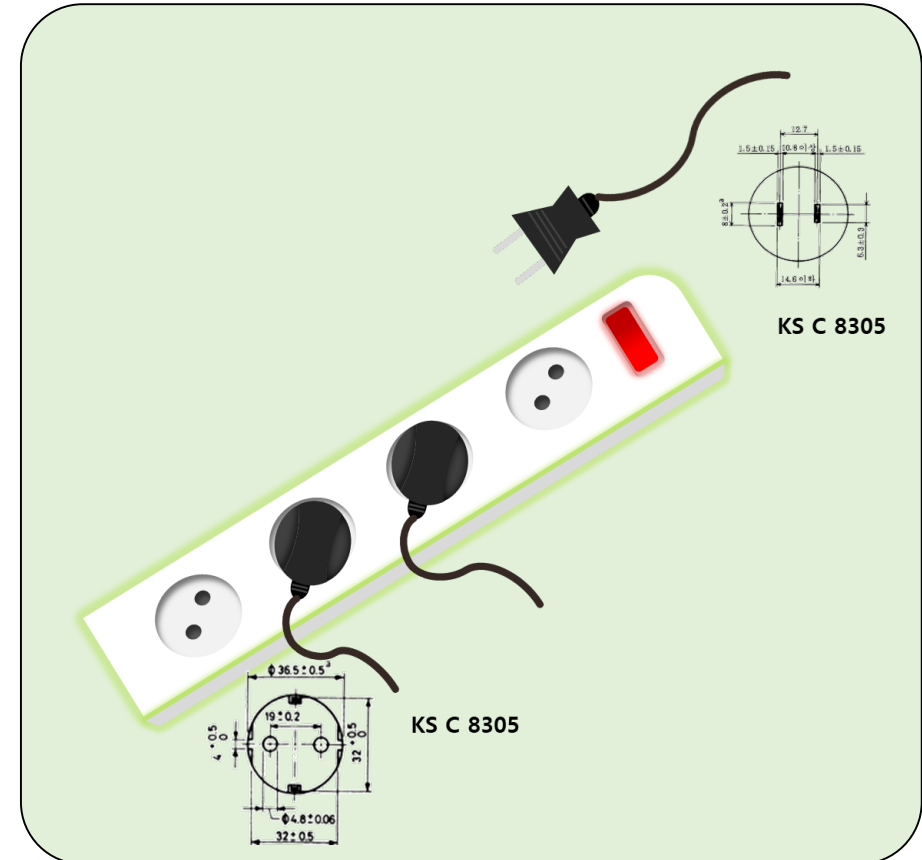
03. 스마트시티 국제표준화 그룹 - 표준 유형

Guidelines by ISO/TC 268, IEC SyC-SC, JTC 1/WG 11, ITU-T SG 20

- 전기제품은 KS마크가 있는 것 사용
- 정격용량의 전선 사용
- 노후된 전선 교체, 노후된 전열기구의 사용 금지
- 누전차단기 설치
- 전열기코드의 문어발식 사용 금지
- 퓨즈는 정격용량의 규격용 사용 (철사 사용 금지)
- 평상시 불필요한 전원은 끄고, 외출 시 사용하지 않는 전원코드는 뽑아둠
- 전원 플러그를 뺄 때 전선을 당기지 않음
- 전선이 문틈으로 통하거나 전기장판을 접지 않음
- 전기난로는 커튼 등으로부터 바람이 불어도 닿지 않는 거리에 설치
- 공사할 때 한 곳에 여러 개의 전선을 놓지 말 것
- 움직일 수 있는 전선은 밟거나 눌리지 않게 조심
- 스위치 등의 전선 접속 부분이 열 흔적이 있을 때는 교체



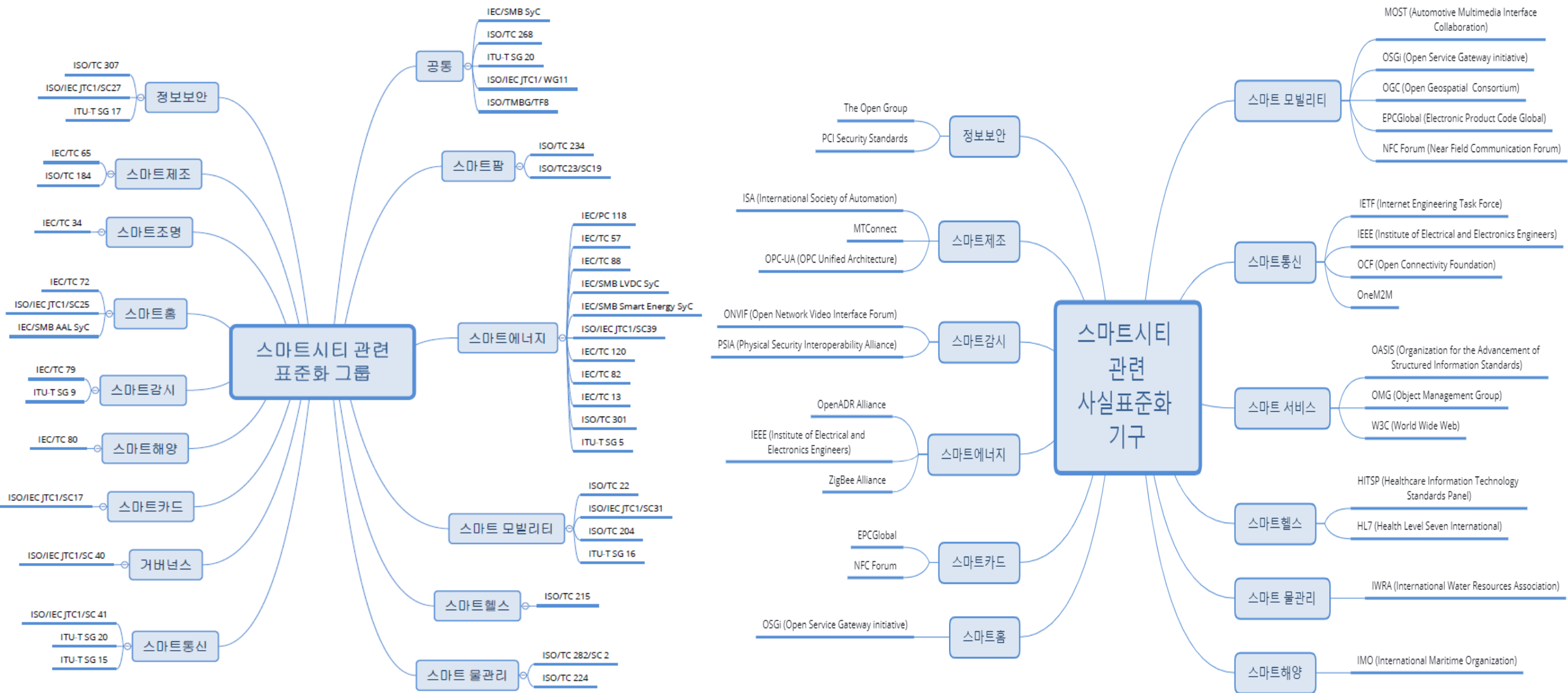
Specifications by others



03. 스마트시티 국제표준화 그룹 - 표준 유형



03. 스마트시티 국제표준화 그룹



04. ISO/TC 268 (Sustainable cities and communities)



04. IEC SyC Smart Cities



04. ITU-T SG 20 (IoT and smart cities and communities)



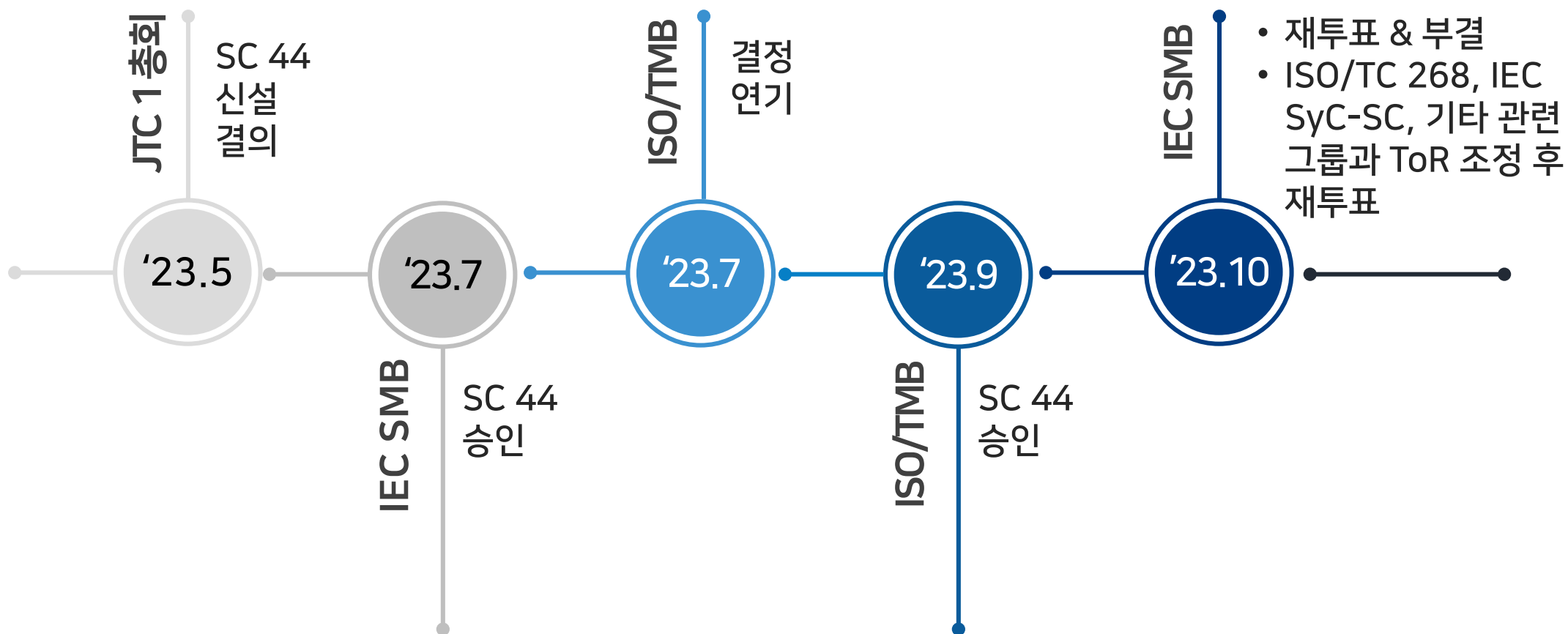
04. ISO/IEC JTC 1/WG 11 (Smart cities), SC 44 ('24.?)

JTC 1
(Information
technology)

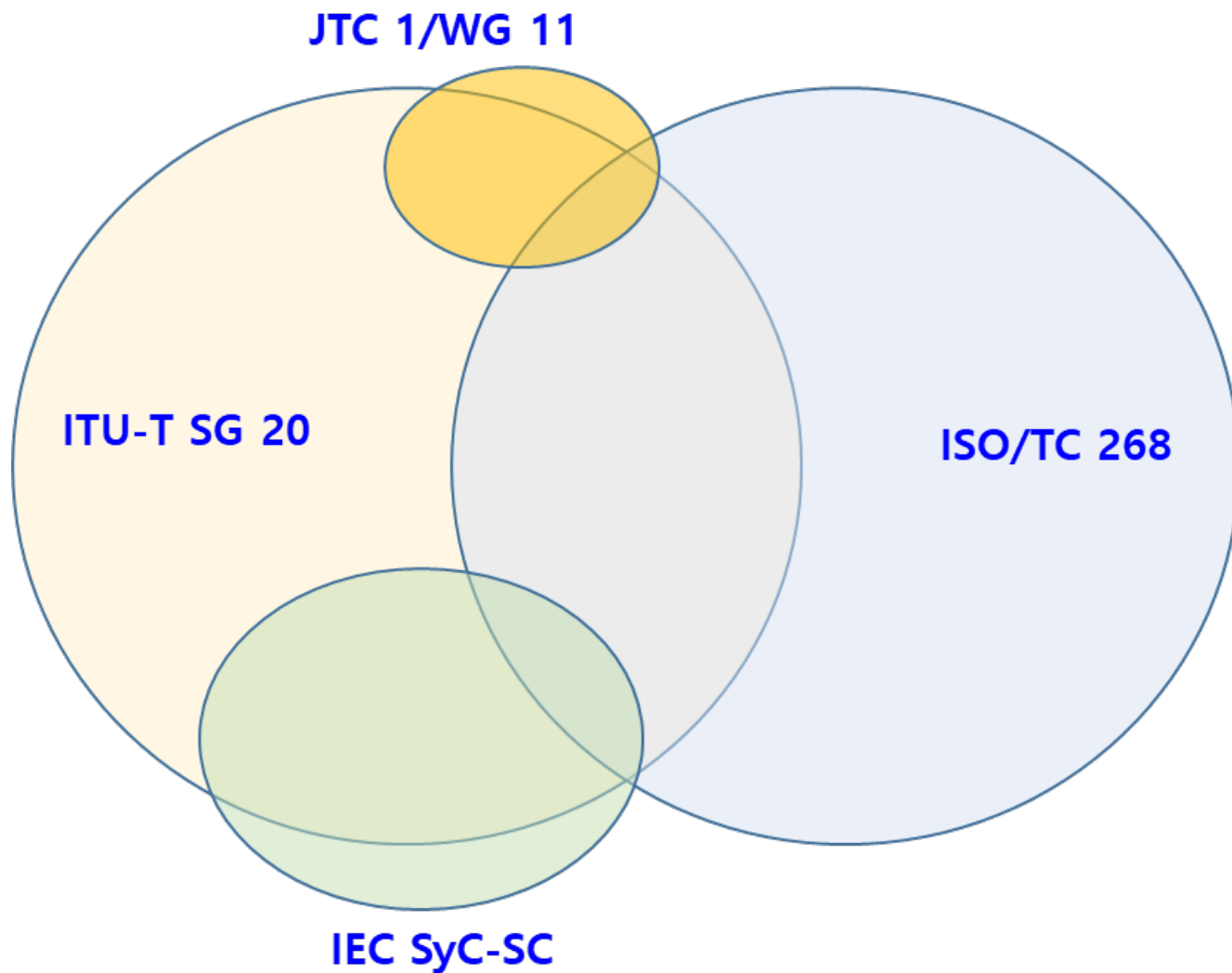
WG 11

No.	Name	Convenor(s)	Status for now
JAHG 3	Joint ad-hoc group (JAHG) with IEC SyC Smart Cities (IEC/SyCSmC/JAHG5: Interdependencies between ICT and Electrotechnology in Smart Cities)	Howard Choe (SyC SmC), Heng Qian (JTC 1/WG 11)	Inactive
AHG 9	ad hoc group (AHG) on Unified Digital Infrastructure — ICT Reference Architecture	TBC	Inactive
AHG 10	ad hoc group (AHG) on City Knowledge Trustworthiness Evaluation	Yongchao Gao (CN), Junfeng Zhao (CN)	Active
AHG 12	ad hoc group (AHG) on City Digital Twin and Operating System	Mark Fox (CA), Yun Li (CN)	Active
AHG 14	ad hoc group (AHG) on Data Use in Smart City	Xiaomi An (CN)	Active
AHG 15	ad-hoc group (AHG) on Promoting Utilization of ISO/IEC 24039	Yun Li (CN)	Active
AHG 16	ad-hoc group (AHG) on Terminology-Ontology in Smart City System	Mark Fox (CA)	Active
AHG 17	ad-hoc group (AHG) on Developing Guidelines for Management Issues in JTC 1/WG 11	Heng Qian (CN) Hongwei Zhang (CN)	Active
AHG 18	IEC/ISO Smart programme	Kai Guo(CN)	Active

04. ISO/IEC JTC 1/WG 11 (Smart cities), SC 44 ('24.?)



05. 그룹별 국제표준화 추진 범위



- 면적은 발간/개발 표준의 수와 주제 다양성을 뜻함
- 위치 중첩은 연관성, 유사성, 중복성을 뜻함

05. 그룹별 국제표준화 추진 범위

	ISO/TC 268	IEC SyC-SC	JTC 1/WG 11	ITU-T SG 20
평가지표	○	X	○	○
참조모델	○	○	○	○
구축·운영	○	X	X	○
데이터 공유·교환	○	○	○	○
교통	○	X	X	○
에너지	○	○	X	○
재난안전	○	○	X	○
공중보건	○	○	○	○

06. 스마트시티 표준 맵

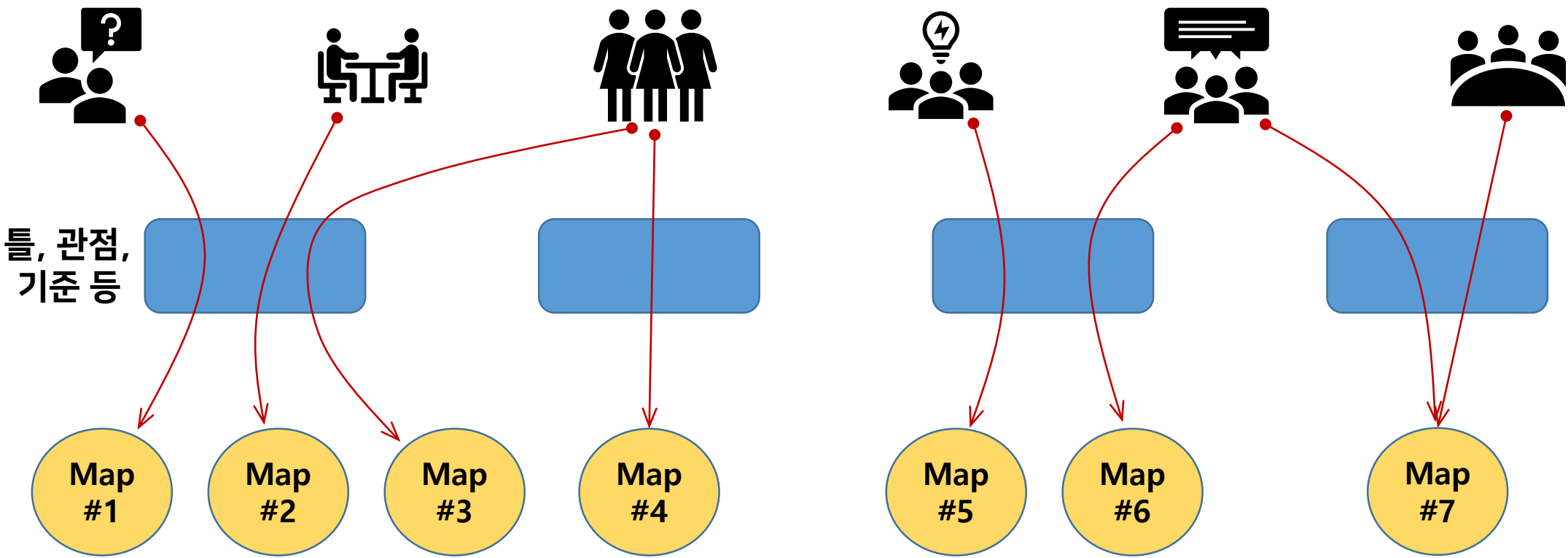
- 표준 맵 목적

- 어떤 복잡계를 어떤 틀, 관점, 기준으로 해석할 것인가, 또는
어떤 틀, 관점, 기준으로 구성 요소들의 관계를 설명할 것인가의 문제를 풀어내어 도식화

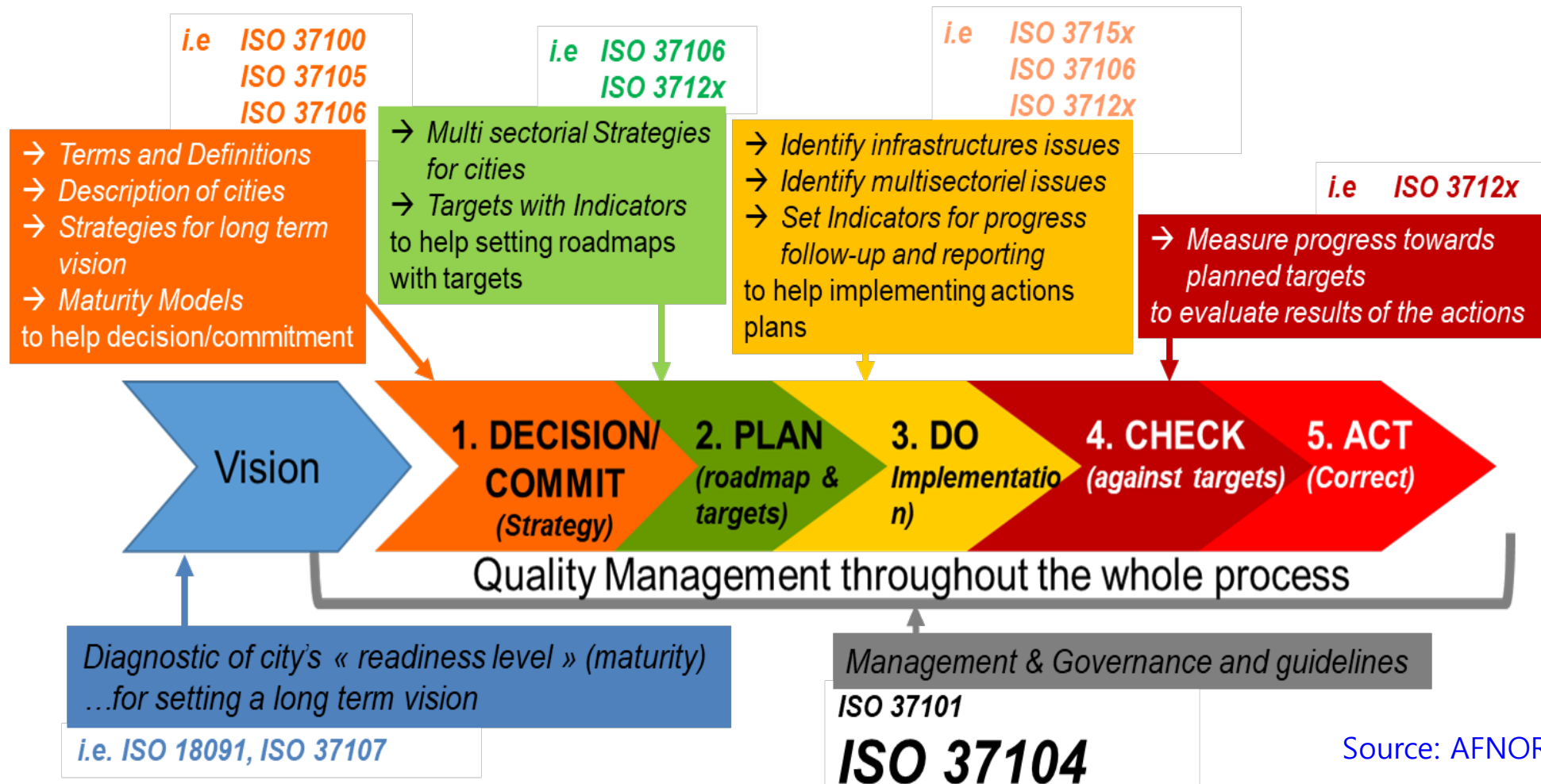
- 설계 방식

- 맵 사용자를 설정하고,
- 맵 사용자가 자신의 문제 도메인을 어떻게 인식하고 풀어가는지 도메인 이해당사자들의 의사소통 특성을 이해하고,
- 맵 사용자에게 의사소통 특성에 맞게 어떤 틀, 관점, 기준으로 설명하는 것이 대상 복잡계를 효과적으로 이해시킬지 설계하여,
- 대상 복잡계에 대한 해석 및 설명의 틀, 관점, 기준을 맵 형식으로 도식화

06. 스마트시티 표준 맵

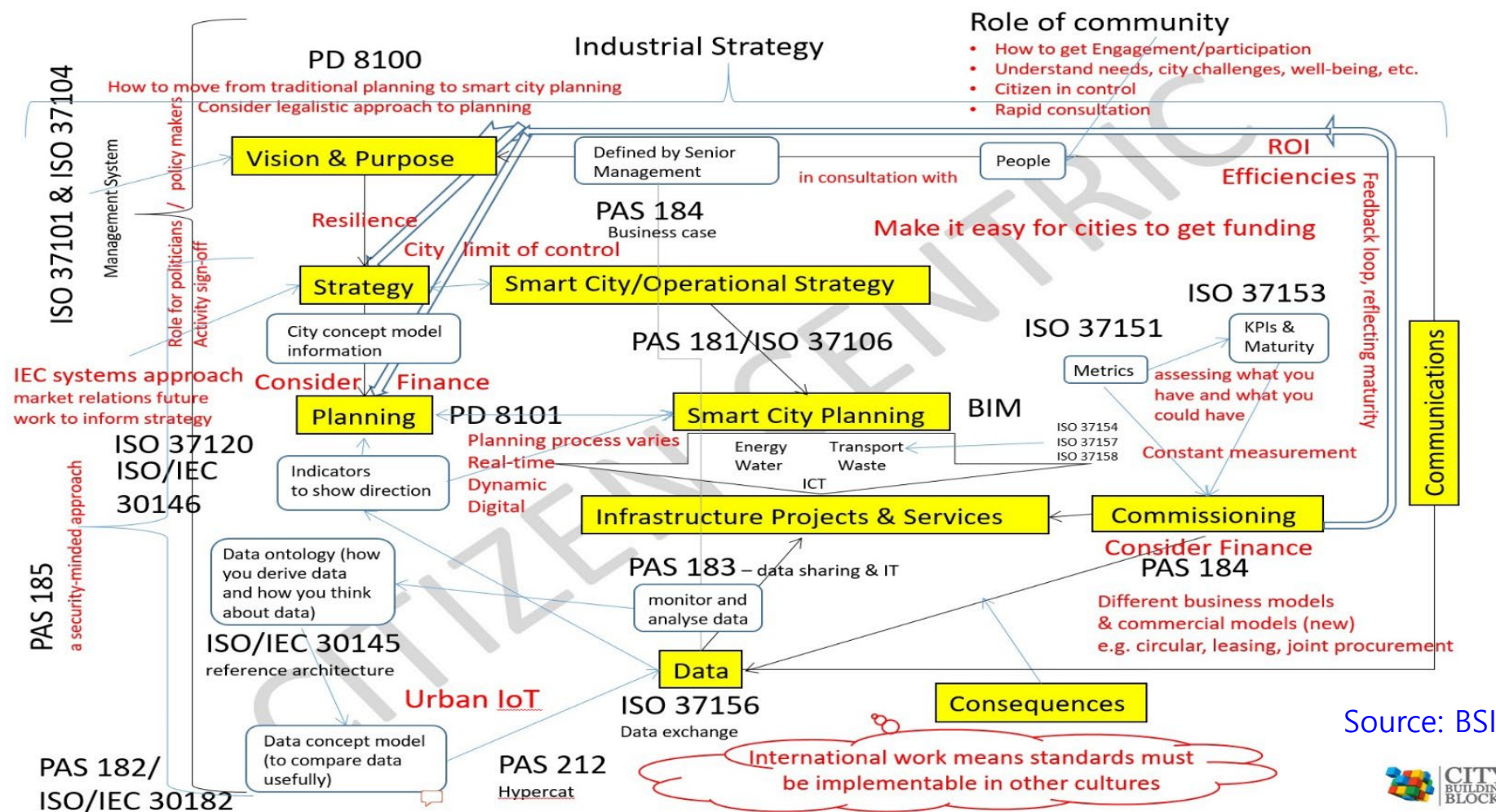


06. 스마트시티 표준 맵

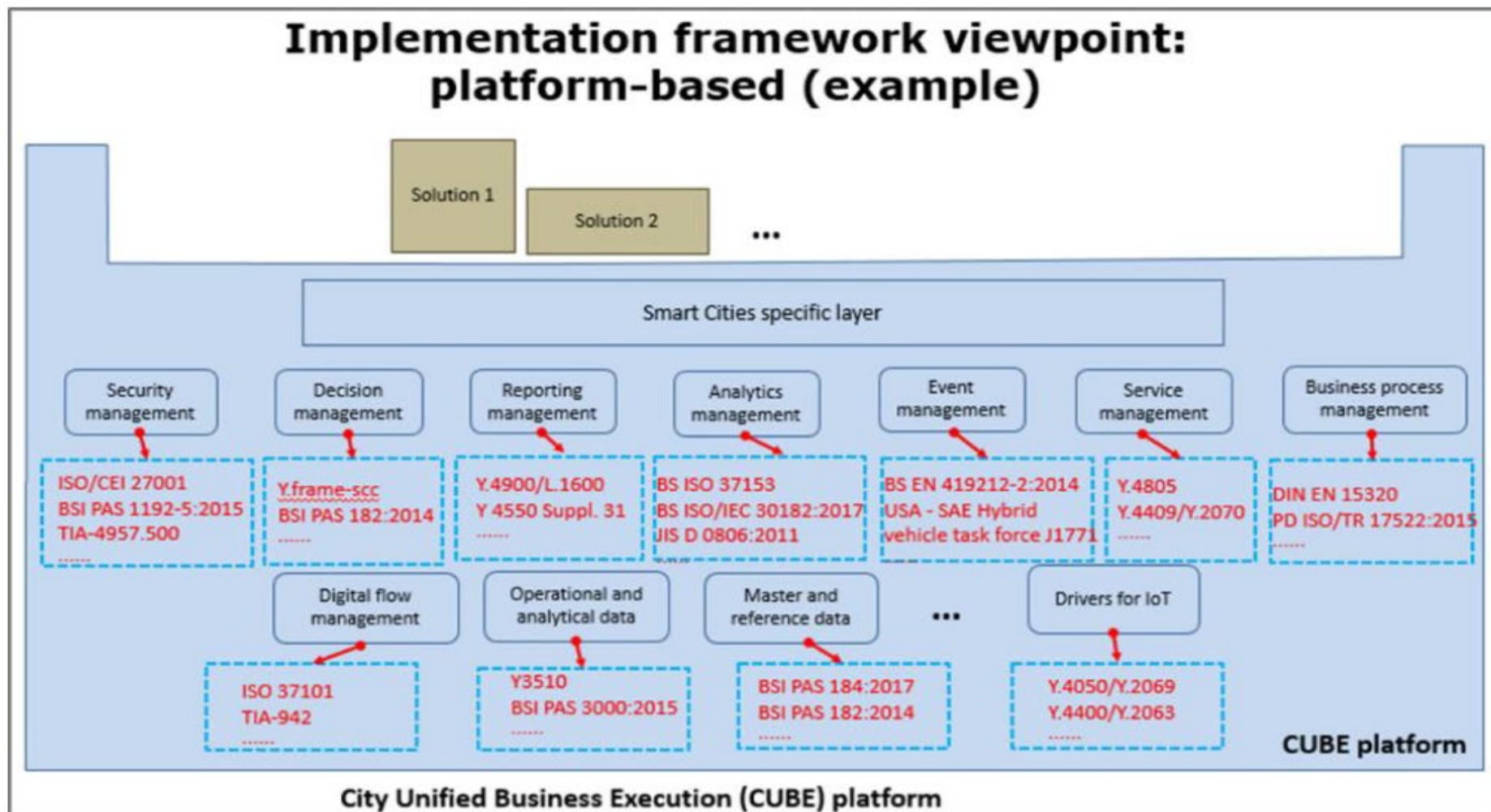


Source: AFNOR

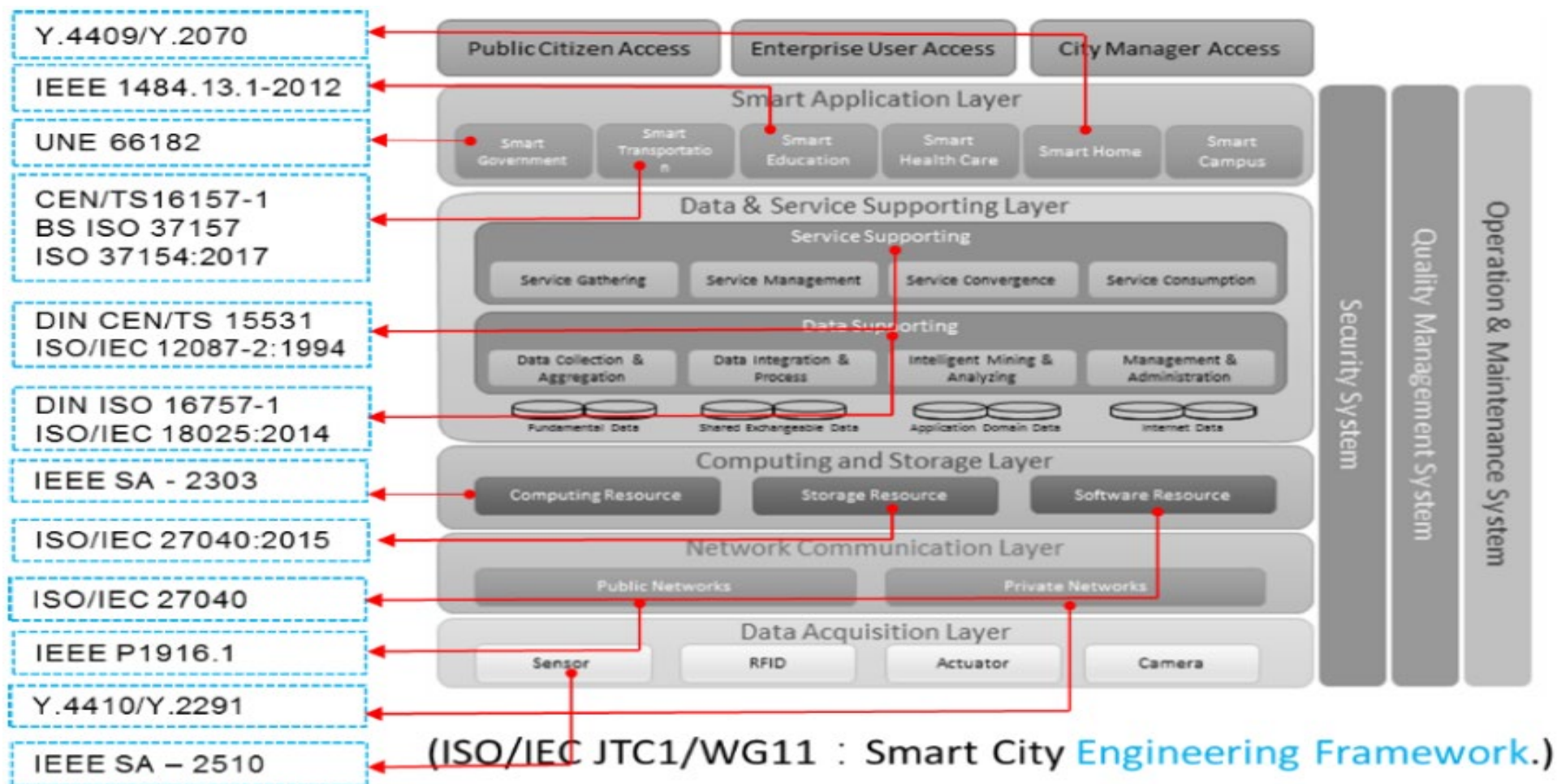
06. 스마트시티 표준 맵



06. 스마트시티 표준 맵

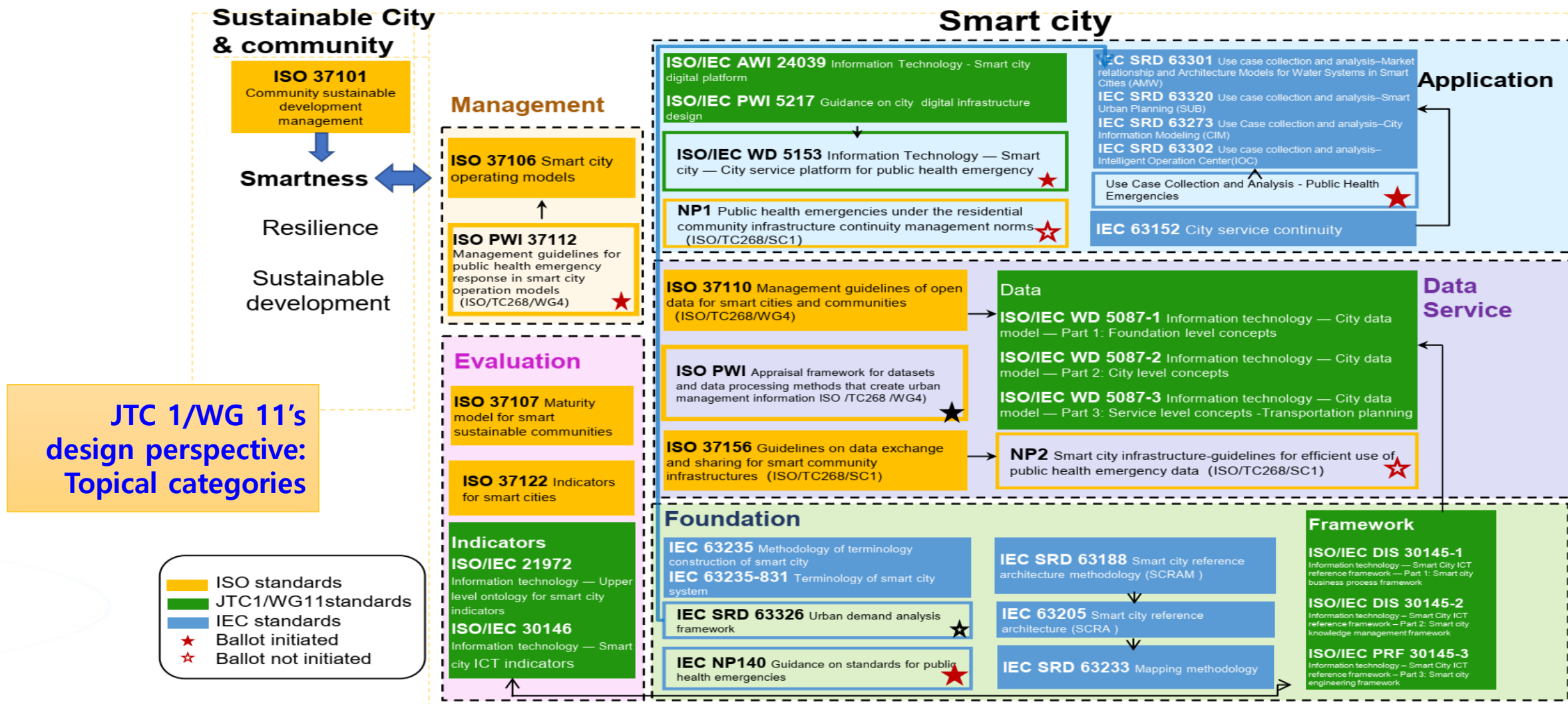


06. 스마트시티 표준 맵

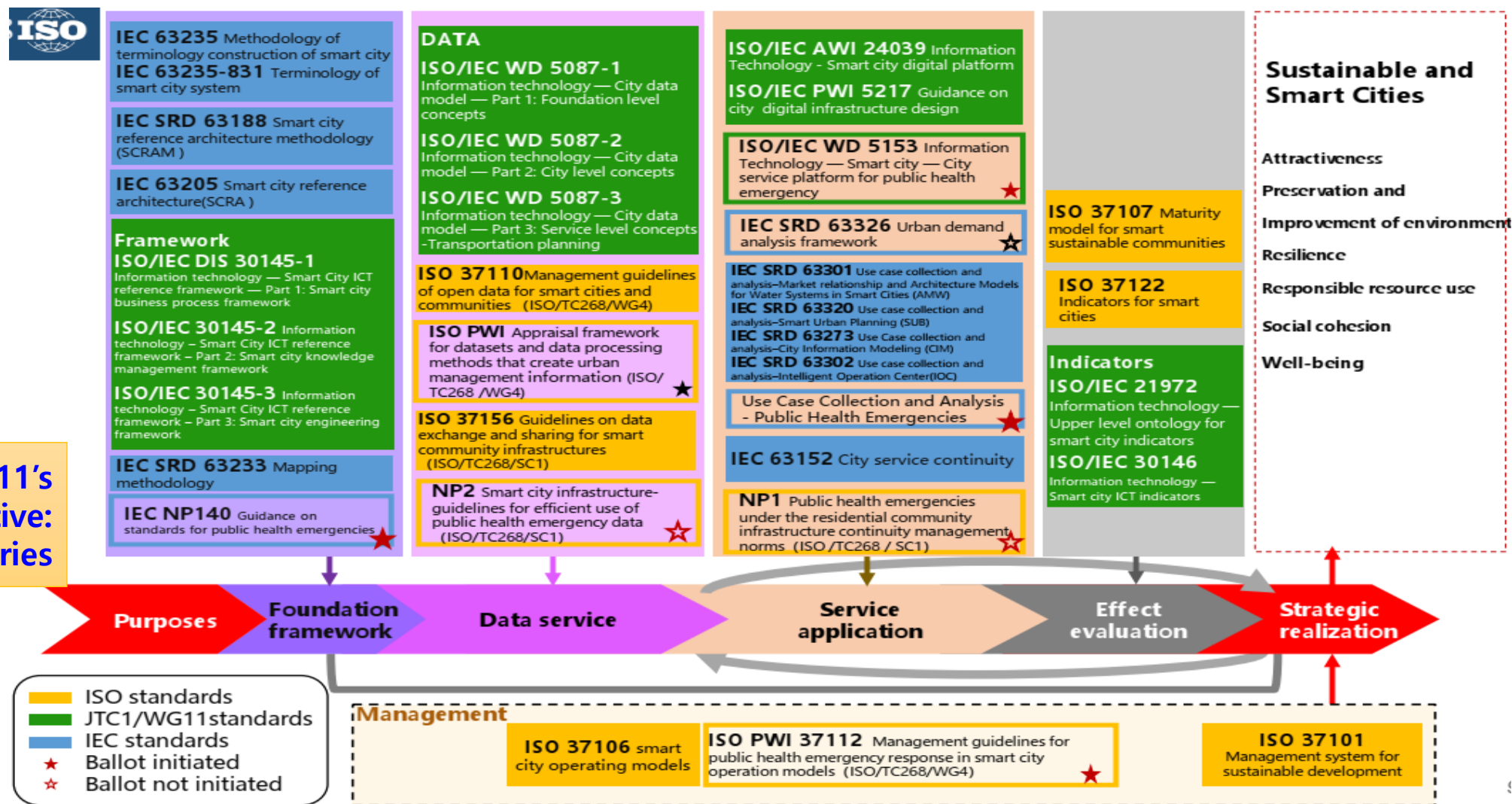


Design perspective: Platform functionality perspective

06. 스마트시티 표준 맵



06. 스마트시티 표준 맵



06. 스마트시티 표준 맵

Design perspectives
Project development process (수행 프로세스 중심)
Project development process (수행 프로세스 중심)
Process, functional interoperability, and application domains (수행 프로세스, 기술적 기능 연계성, 및 사용 도메인 중심)
Platform functionality perspective (플랫폼 기능 중심)
Platform functionality perspective (플랫폼 기능 중심)
Topical categories (주제 분야 중심)

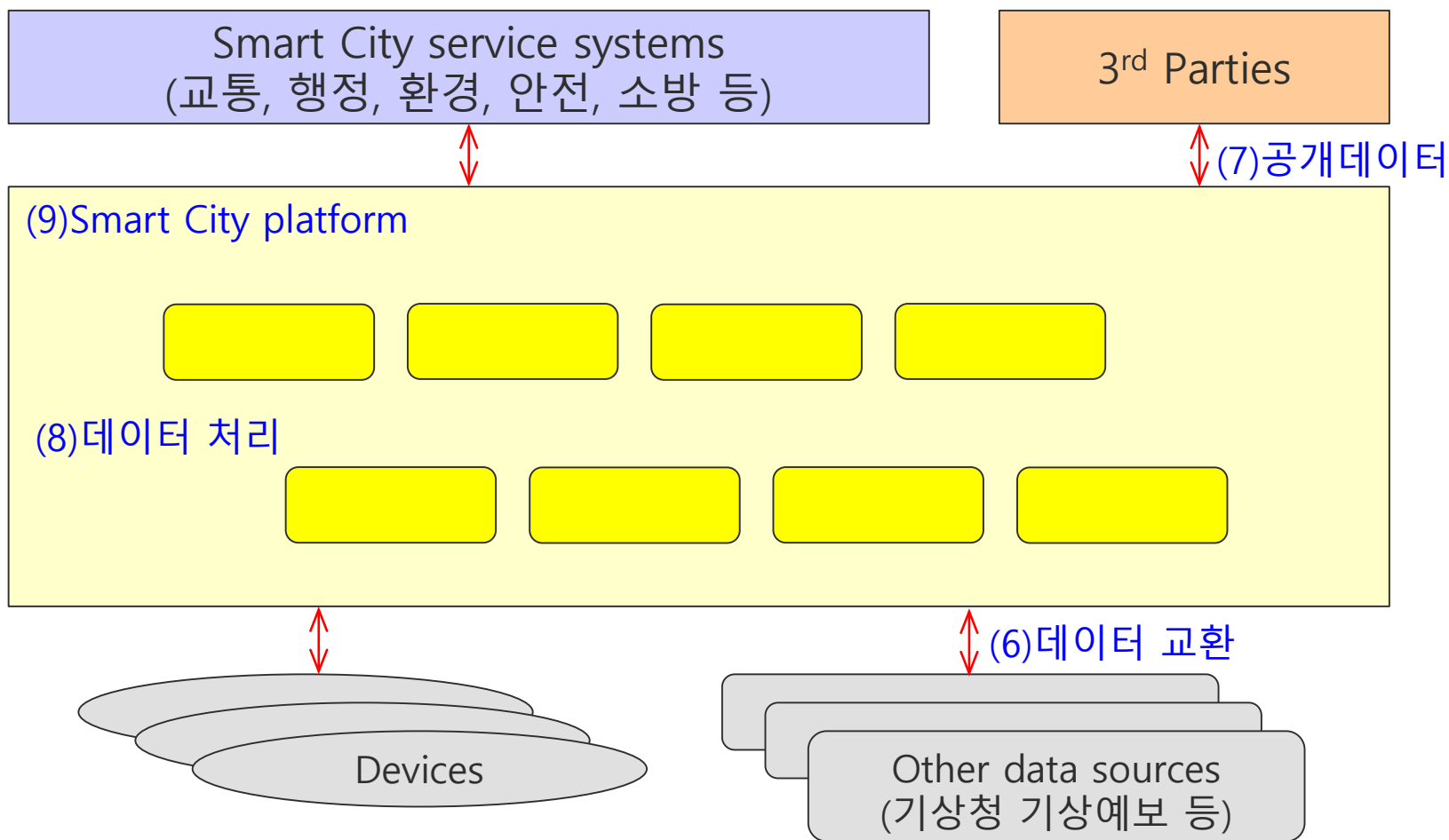
설계 관점

- 수행 프로세스
- 기능 상호운용성
- 응용 분야

06. 스마트시티 표준 맵



06. 스마트시티 표준 맵



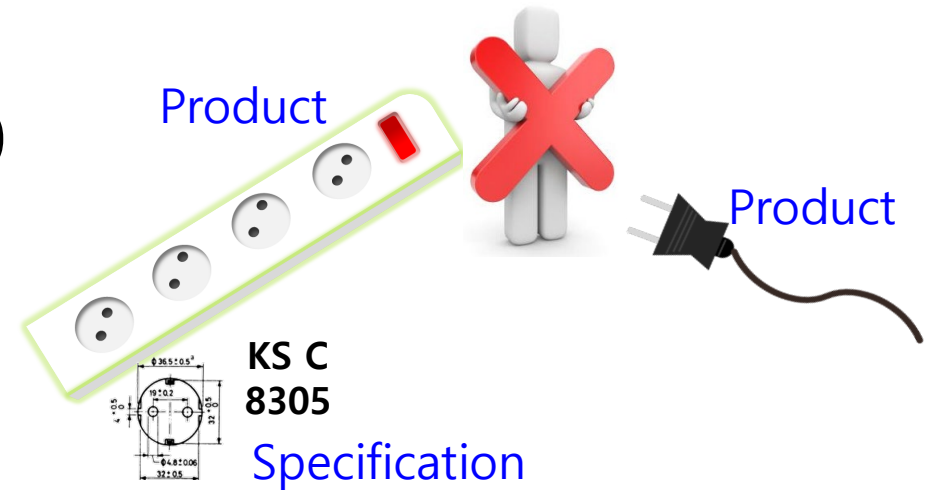
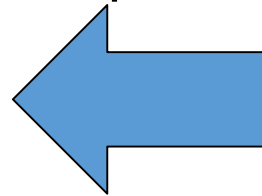
07. 스마트시티 주요 표준 현황

- 표준 활용 전략 (“이미 만들어 놓았는데 어쩌라고 ...”)

- Specifications vs. Guidelines

- Specifications에 대한 대응: **재개발**(Re-development)

- 1) 경쟁력 확보 재개발
- 2) 甲의 요구 재개발
- 3) 사장님의 지시 재개발



- Guidelines에 대한 대응

- 1) **참고/적용** (Reference, Adaptation, Addition, Update, etc.)

- 2) **포장** (Re-organization)

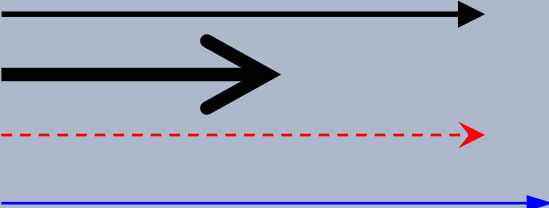


VS.



07. 스마트시티 주요 표준 현황

- 표준 활용 전략 (“이미 만들어 놓았는데 어찌라고 ...”)
 - Specifications vs. Guidelines

	가이드라인/지침	규격
요구사항	왼쪽에서 시작해서 오른쪽 방향으로 가리키는 화살표	왼쪽에서 오른쪽으로, 실선, 두께 2.5pt, 길이 3cm, 검정색, 열린 화살표
구현		

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(1) 스마트시티 기반, 구축 및 사업 수행	용어	ISO/TC 268	ISO 37100	Sustainable cities and communities - Vocabulary
		IEC SyC-SC	IEC 60050-831	International Electrotechnical Vocabulary (IEV) - Part 831: Smart city systems
	개념 설계	ISO/TC 268	ISO 37105	Sustainable development in communities - Descriptive framework for cities and communities
		IEC SyC-SC	IEC SRD 63235	Smart city system - Methodology for concepts building
			IEC SRD/CD 63320	Use case collection and analysis: Smart urban planning for smart cities
	사업 수행	ISO/TC 268	ISO 37101	Sustainable development in communities - Management system for sustainable development - Requirements with guidance for use
			ISO 37104	Sustainable development in communities - Transforming our cities - Guidance for practical local implementation of ISO 37101
			ISO 37108	Sustainable cities and communities - Business districts - Guidance for practical local implementation of ISO 37101
			ISO 37109	Sustainable development and communities - Recommendations and requirements for project developers - Meeting ISO 37101 framework principles
			ISO/DIS 37111	Sustainable cities and communities - Urban settlements — Guidance for a flexible approach to phased implementation of ISO 37101
		IEC SyC-SC	IEC SRD/CD 63326	City needs analysis framework

주요 약어

WD: Working Draft
TR: Technical Report
PWI: Preliminary Work Item

CD: Committee Draft
TS: Technical Specification
AWI: Approved Work Item

DIS: Draft International Standard
SRD: Systems Reference Deliverable
SDO: Standards Development Organization

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(1) 스마트시티 기반, 구축 및 수행	현황 및 맵	IEC SyC-SC	IEC SRD 63233-1	Smart city standards inventory and mapping- Part 1: Methodology
			IEC SRD 63233-2	Smart city standards inventory and mapping- Part 2: Standards inventory
			IEC SRD/CD 63233-4	Smart city standards inventory and mapping- Part 4: Guidance on standards for public health emergencies
		JTC 1/WG 11	ISO/IEC TR/AWI 20169	Information technology - Overview of smart city standardization
	구현 사례	ISO/TC 268	ISO/TR 37171	Report of pilot testing on the application of ISO smart community infrastructures standards
	인프라 통합 연동 전략 및 설계	ISO/TC 268	ISO/TR 37152	Smart community infrastructures - Common framework for development and operation
			ISO 37155-1	Framework for integration and operation of smart community infrastructures - Part 1: Recommendations for considering opportunities and challenges from interactions in smart community infrastructures from relevant aspects through the life cycle
			ISO 37155-2	Framework for integration and operation of smart community infrastructures - Part 2: Holistic approach and the strategy for development, operation and maintenance of smart community infrastructures
			ISO/WD 37190	Guidance for practical implementation of ISO 37155 series for supervising at each life cycle phase of smart community infrastructures

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(2) 스마트시티 운영 전략	도시 운영	ISO/TC 268	ISO 37106	Sustainable cities and communities - Guidance on establishing smart city operating models for sustainable communities
		IEC SyC	IEC SRD/CD 63302	Use cases collection and analysis: Intelligent operations center for smart cities
	공중보건위험	ISO/TC 268	ISO/DTR 37112	Sustainable cities and communities - Case studies in how smart city operating models support an effective public-health emergency response
			ISO/DIS 37113	Sustainable Cities and Communities - Management guidelines for public health emergency response in smart city operating models
(3) 성숙도 평가	스마트시티 평가	ISO/TC 268	ISO/DIS 37153	Smart community infrastructures - Maturity model for assessment and improvement
			ISO/TS 37107	Sustainable cities and communities - Maturity framework for sustainable and smart-enabled communities
			ISO/DIS 37176	Smart community infrastructure - Responsiveness assessment and maturity model
	ICT 기여도	ITU-T SG 20	ITU-T Y.4904	Smart Sustainable Cities Maturity Model
			ITU-T Y.4905	Smart Sustainable City Impact Assessment
			ITU-T Y.4906	Assessment Framework for Digital Transformation of Sectors in Smart Cities
			ITU-T Y.4910	Maturity model of digital supply chain for smart sustainable cities

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(4) 성능평가	스마트시티 평가	ISO/TC 268	ISO/TR 37150	Smart community infrastructures - Review of existing activities relevant to metrics
			ISO/DIS 37151	Smart community infrastructures - Principles and requirements for performance metrics
			ISO 37120	Sustainable development of communities - Indicators for city services and quality of life
			ISO/TR 37121	Sustainable development in communities - Inventory of existing guidelines and approaches on sustainable development and resilience in cities
			ISO 37122	Sustainable development in communities - Indicators for Smart Cities
			ISO 37123	Sustainable Development in Communities - Indicators for Resilient Cities
			ISO/DIS 37124	Sustainable cities and communities - Guidance on the use of ISO 37120 series of standards for cities - ISO 37120, ISO 37122 and ISO 37123 --> To publication
			ISO/DIS 37125	Sustainable cities and communities – Environmental, social, and governance (ESG) indicators for cities
			ISO/CD 37114	Sustainable cities and communities - Appraisal framework for datasets and data processing methods that create urban management information
			ISO/IEC 17021-8	Conformity assessment - Requirements for bodies providing audit and certification of management systems - Part 8: Competence requirements for auditing and certification of management systems for sustainable development in communities

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(4) 성능평가	ICT 기여도	JTC 1/WG 11	ISO/IEC 21972	An upper level ontology for smart city indicators
			ISO/IEC 30146	Smart City ICT Indicators
		ITU-T SG 20	ITU-T L.4900	Overview of key performance indicators in smart sustainable cities
			ITU-T L.4901	KPIs related to the use of ICT in smart sustainable cities
			ITU-T L.4902	KPIs related to the sustainability impacts of ICT in smart sustainable cities
			ITU-T L.4903	KPIs for smart sustainable cities to assess the achievement of sustainable development goals

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(5) 도시 서비스	스마트 교통	ISO/TC 268	ISO 37154	Smart community infrastructures (SCI) - Best practice guidelines for transportation
			ISO/DTR 16497-1	Sustainable mobility and transportation (SMT) - Sustainable mobility services - Part 1: Use cases
			ISO/AWI 16499-1	SMT - Automated mobility using physical and digital infrastructure - Part 1: Service role architecture
			ISO 37157	SCI - Smart transportation for compact cities
			ISO 37158	SCI - Smart transportation using battery-powered buses for passenger services
			ISO 37159	SCI - Smart transportation for rapid transit in and between large city zones and their surrounding areas
			ISO 37161	SCI - Guidance on smart transportation for energy saving in transportation services
			ISO 37162	SCI - Smart transportation for newly developing areas
			ISO 37163	SCI - Smart transportation for parking lot allocation in cities
			ISO 37164	SCI - Smart transportation using fuel cell light rail transit (FC-LRT)
			ISO 37165	SCI - Guidance on smart transportation with the use of digitally processed payment (d-payment)
			ISO 37167	SCI - Smart transportation for energy saving operation by intentionally driving slowly
			ISO 37168	SCI - Guidance on smart transportation by Electric, Connected and Autonomous Vehicles (eCAVs) and its application to on-demand responsive passenger services with shared vehicles
			ISO 37169	SCI - Smart transportation by run-through train/bus operation in/between cities
			ISO 37180	SCI - Guidance on smart transportation with QR code identification and authentication in transportation and its related or additional services

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(5) 도시 서비스	스마트 교통	ISO/TC 268	ISO 37181	SCI - Guidance on smart transportation by autonomous vehicle on public roads
			ISO 37182	SCI - Smart transportation for fuel efficiency and pollution emission reduction in bus transportation services
			ISO 37183	SCI - Smart transportation by facial recognition payment (f-payment)
			ISO 37184	SMT - Framework for transportation services by providing meshes for 5G communication
		ITU-T SG 20	ITU-T Y.4456	Requirements and functional architecture for smart parking lots in smart cities
			ITU-T Y.4457	Architectural framework for transportation safety services
			ITU-T Y.4458	Requirements and functional architecture of a smart street light service
			ITU-T Y.4471	Functional architecture of network-based driving assistance for autonomous vehicles
			ITU-T Y.4497	Requirements and functional architecture of smart sharing bicycle service
	배달 로봇	ITU-T SG 20	ITU-T Y.4607	Requirements for autonomous urban delivery robots interworking
	스마트 가로등	ITU-T SG 20	ITU-T Y.4458	Requirements and reference architecture of smart street light service
	스마트 항만	ITU-T SG 20	ITU-T Y.4209	Requirements for interoperation of the smart port with the smart city
	스마트 홈	ITU-T SG 20	ITU-T Y.4220	Requirements and capability framework of abnormal event detection system for smart home
	스마트 주거 공동체	ITU-T SG 20	ITU-T Y.4556	Requirements and functional architecture of smart residential community
	스마트 환경	ITU-T SG 20	ITU-T Y.4207	Requirements and capability framework of smart environmental monitoring

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(5) 도시 서비스	스마트 에너지	ISO/TC 268	ISO 37160	Smart community infrastructure - Electric power infrastructure - Measurement methods for the quality of thermal power infrastructure and requirements for plant operations and management
			ISO/PWI 37185	Smart community infrastructures - Requirements for credible supply and use of renewable energy
		ITU-T SG 20	ITU-T Y.4252	Energy saving using smart objects in home networks
		IEC SyC	IEC SRD/CD 63520	Application of IEC SRD 63235 - Concept system building for energy challenge in smart city
	탄소중립	ISO/TC 268	ISO/AWI TR 37115	Sustainable cities and communities — Use Cases on Net Zero Carbon Cities Pathways
	유틸리티 터널	ISO/TC 268	ISO/DIS 37175	Smart community infrastructures - Operation and maintenance of utility tunnels
	스마트 물관리	IEC SyC-SC	IEC SRD/CD 63301	Use case collection and analysis: Water systems in smart cities
	스마트 안전	ITU-T SG 20	ITU-T Y.smart-evacuation	Framework of smart evacuation during emergencies in smart cities and communities
			ITU-T Y.4558	Requirements and functional architecture of smart fire smoke detection service
		ISO/TC 268	ISO 37174	Smart community infrastructures - Disaster risk reduction - Guidelines for implementing seismometer system
	스마트 소방	ITU-T SG 20	ITU-T Y.4490	Framework of monitoring of water system for smart fire protection
		ITU-T SG 20	ITU-T Y.4601	Requirements and capability framework of a digital twin for smart firefighting
		ITU-T SG 20	ITU-T Y.4558	Requirements and functional architecture of smart fire smoke detection service
	스마트 빌딩	ISO/TC 268	ISO 37173	Smart community infrastructures - Guidance for the development of smart building information systems

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(5) 도시 서비스	공중보건위험	IECSyC-SC	IEC SRD/CD 63347	Use case collection and analysis - Management of public health emergencies in smart cities
		JTC 1/WG 11	ISO/IEC FDIS 5153-1	City service platform for public health emergencies - Part 1: Overview and general requirements
			ISO/IEC PWI 5087-4 & 10235-4	City data model - Part 4: Service level concepts for public health emergencies
		ITU-T SG 20	ITU-T Y.4496	Requirements and reference architecture of smart service for public health emergency
	재난재해 회복, 대응, 탄력성	ISO/TC 268	ISO TR 6030	Smart community infrastructures - Disaster risk reduction - Survey results and gap analysis
			ISO 37174	Smart community infrastructures - Disaster risk reduction - Guidelines for implementing seismometer system
			ISO/DIS 37179	Smart community infrastructures - Disaster risk reduction - Basic framework for the implementation of disaster risk reduction
		IECSyC-SC	IEC 63152	Smart cities - City service continuity against disasters - the role of the electrical supply
			IEC SRD 63152-2	Smart cities - City service continuity – Implementation guideline and city service cases

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(6) 데이터 교환	데이터 교환 및 공유	ISO/TC 268	ISO 37156	Smart community infrastructures - Guidelines on data exchange and sharing for smart community infrastructures
			ISO TS 37172	Smart community infrastructures - Data exchange and sharing for community infrastructures based on geographic information
			ISO TR 37178	Smart community infrastructures - Data exchange and sharing for the lamppost network in smart community
		JTC1	ISO/IEC DIS 17917	Smart cities - Guidance to establishing a decision-making framework for sharing data and information services
		ITU-T SG 20	ITU-T Y.4206	Requirements of sensing and data collection system for city infrastructures
			ITU-T Y.4213	Internet of things requirements and capability framework for monitoring physical city assets
			ITU-T Y.4562	Functions and metadata of spatiotemporal information service for smart cities
			ITU-T Y.4605	Information exchange model for digital twin federation in smart cities and communities
(7) 공개 데이터	공개 데이터 관리	ISO/TC 268	ISO 37110	Sustainable cities and communities - Management guidelines of open data for smart cities and communities - Overview and general principles
		ITU-T SG 20	ITU-T Y.4461	Framework of open data in smart cities

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(8) 데이터 처리	데이터 모델	JTC 1/WG 11	ISO/IEC 30182	Smart city concept model - Guidance for establishing a model for data interoperability
			ISO/IEC 5087-1	Information technology - City data model - Part 1: Foundation level concepts
			ISO/IEC DIS 5087-2	Information technology - City data model - Part 2: City level concepts
		JTC 1/WG 1	ISO/IEC DIS 5087-3	Information technology - City data model - Part 3: Transportation planning, with ISO/TC 204
		ISO/TC 268	ISO 37166	Smart community infrastructures - Urban data integration framework for smart city planning (SCP)
			ISO 37170	Smart community infrastructures - Data framework for infrastructure governance based on digital technology in smart cities
			ISO/AWI 37187	Smart community infrastructures - Requirements for data framework and functions based on city information modeling platform
		IEC SyC-SC	IEC SRD 63273-1	Use case collection and analysis: City information modeling – Part 1: High-level analysis
			IEC SRD 63273-1	Use Case Collection and Analysis: City information modeling – Part 2: Use Case Analysis
			IEC TR CIM	IEC Technical Report, City information modelling and urban digital twins
			IEC TR Ontology	IEC Technical Report, Ontology standards in smart cities
			IEC SRD/CD 63476	Smart city system ontology
			IEC TS/AWI 63526 & IEC TS/AWI 22629	Gap analysis on standards related to city information modelling and urban digital twins, by JWG with ISO/TC 268/SC 1
		ITU-T SG 20	ITU-T Y.DPM-framework	Data processing and management framework for IoT and smart cities and communities

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(8) 데이터 처리	데이터 활용	JTC 1/WG 11	ISO/IEC PWI 10267-1	Information technology - Data use in smart cities - Part 1: Framework
			ISO/IEC PWI 10267-2	Information technology - Data use in smart cities - Part 2: Use case analysis and derived requirements
			ISO/IEC PWI TS 10267-3	Information technology - Data use in smart cities - Part 3: Measurement, evaluation and reporting
	데이터 가공	ITU-T SG 20	ITU-T Y.4602	Data processing and management framework for IoT and smart cities and communities
	데이터 신뢰성	JTC 1/WG 11	ISO/IEC PWI 20822	Information technology – Domain knowledge trustworthiness evaluation for smart cities

07. 스마트시티 주요 표준 현황

Subject	Sub-topics	SDOs	Standard No.	Title
(9)플랫폼	참조구조	JTC 1/WG 11	ISO/IEC 30145-1	Smart City ICT reference framework - Part 1: Smart city business process framework
			ISO/IEC 30145-2	Smart City ICT reference framework - Part 2: Smart city knowledge management framework
			ISO/IEC 30145-3	Smart City ICT reference framework - Part 3: Smart city engineering framework
			ISO/IEC PWI 5217	Guidance on smart city digital infrastructure planning – Part 1: Overview
			ISO/IEC 24039	Information Technology - Smart city digital platform reference architecture - Data and service
		IEC SyC-SC	IEC SRD 63188	Smart cities - Smart cities reference architecture methodology (SCRAM)
			IEC/AWI 63205	Smart cities - Smart cities reference architecture (SCRA), by JWG 14 with ISO/TC 268
		ITU-T SG 20	ITU-T Y.4200	Requirements for interoperability of smart city platforms
			ITU-T Y.4201	High-level requirements and reference framework of smart city platforms
			ITU-T Y.4224	Requirements for digital twin federation in smart cities and communities
			ITU-T Y.4489	Reference architecture of digital twin federation in smart cities and communities
			ITU-T Y.4470	Reference architecture of artificial intelligence service exposure for smart sustainable cities
			ITU-T Y.4600	Requirements and capabilities of a digital twin system for smart cities
			ITU-T Y.4481	Framework for data middle platform in Internet of things and smart sustainable cities

07. 스마트시티 주요 표준 현황

• (9)플랫폼 관련 용어

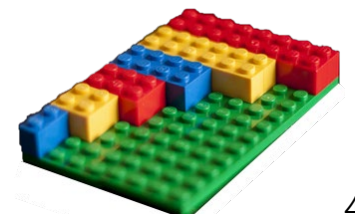
- 모델 (Model)
 - Representation of a thing, structure, domain, etc. [from a certain perspective](#), typically on a smaller scale than the original
 - 어떤 대상에 대해 어떤 관점으로 모습, 속성, 구성 등을 대표적 형상으로 묘사한 것
- 모델링 : 모델화 하는 작업 (예: 사람에 대한 모델링 (형상 모델, 행동 모델, 구조/인체 모델, 성격 모델 (성격심리학 예: Five-Factor Model - 신경성, 외향성, 개방성, 우호성, 성실성), 체질 모델 (동양 예: 태양, 태음, 소양, 소음) 등)
- 참조모델 : 어떤 시스템, 환경 등 분석 대상에 대해 기능, 개념 등 구성 요소들을 정의하고, 이들 간의 종속성, 연계성 등 상호 관계를 구조화 된 형태로 표현한 것
- 구조 (Architecture) : 어떤 원칙, 규정 등에 따라 부분이나 요소를 갖고 어떤 전체를 이루는 짜임새
- 참조구조 : 어떤 대상, 시스템, 도메인 등에 대해 기능 요소, 구성 요소 등을 상호 연결 및 연계시켜 전체적 목적성을 달성할 수 있도록 제공하는 전체 짜임새
- 프레임워크/참조 프레임워크
 - 어떤 대상을 분석(analyze)하고, 규정(define)하고, 구성(compose)하는 틀
 - 관련 용례: frame-setting, agenda-setting, framing

07. 스마트시티 주요 표준 현황

• (9)플랫폼 관련 용어

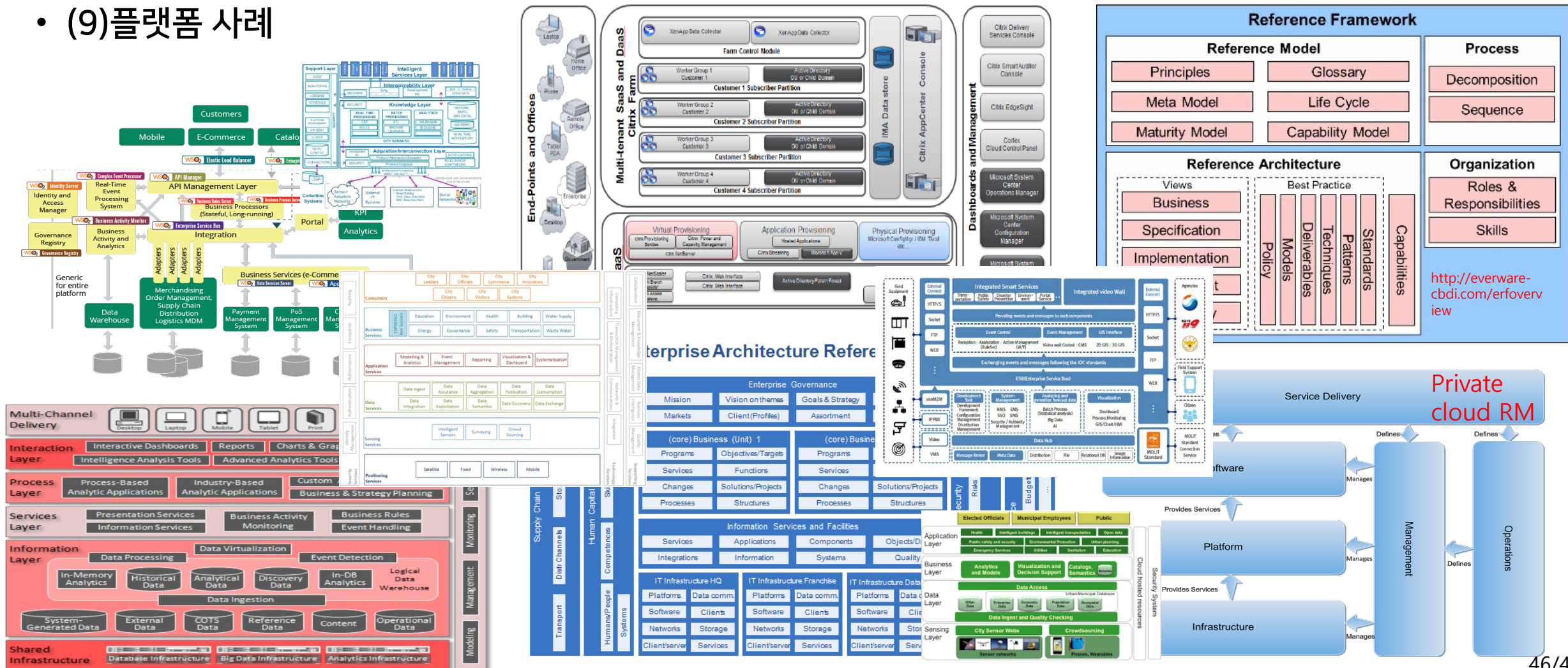
• 플랫폼

- Implementation-oriented and business-perspective term ☒ 표준은 기능을 다루고, 기능의 구현 결과는 여러 가지 형상으로 나타날 수 있어 표준에서는 구현 종속적 용어를 다루지 않음. 그러나, 이것은 이론일 뿐이고, 실제로는 불완전성에 의해 혼용 사례 발생
- a framework on which applications may run
- A platform is a group of technologies that are used as a base upon which other applications, processes or technologies are developed. In personal computing, a platform is the basic hardware (computer) and software (operating system) on which software applications can be run.
- 부분적인 기능 요소들을 레고 블록처럼 넣기도 하고, 빼기도 하여 다양한 응용 사례들을 만들 수 있도록 모든 사례의 기반을 제공하는 틀
- 예: 자동차의 기본 뼈대를 갖고 다른 제품을 만든 사례(현대차 투싼 vs. 기아차 스포티지)
- 예: IBM PC 아키텍처 플랫폼에 비디오, LAN, HDD, SSD 등 많은 부가 장치를 장착
- 참조모델, 참조구조, 참조 프레임워크의 구현 결과가 플랫폼이란 이름으로 종종 불리고 있음



07. 스마트시티 주요 표준 현황

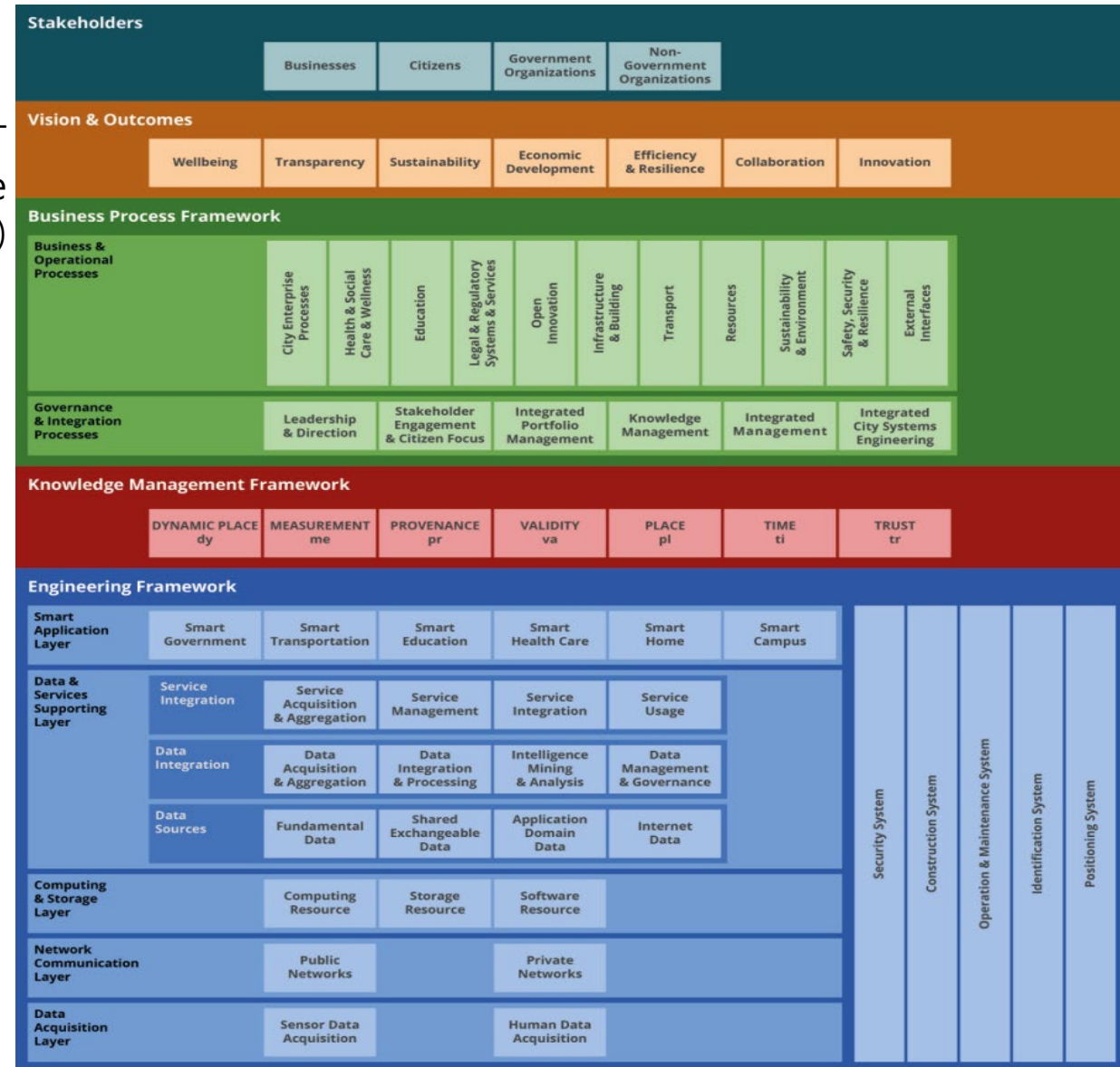
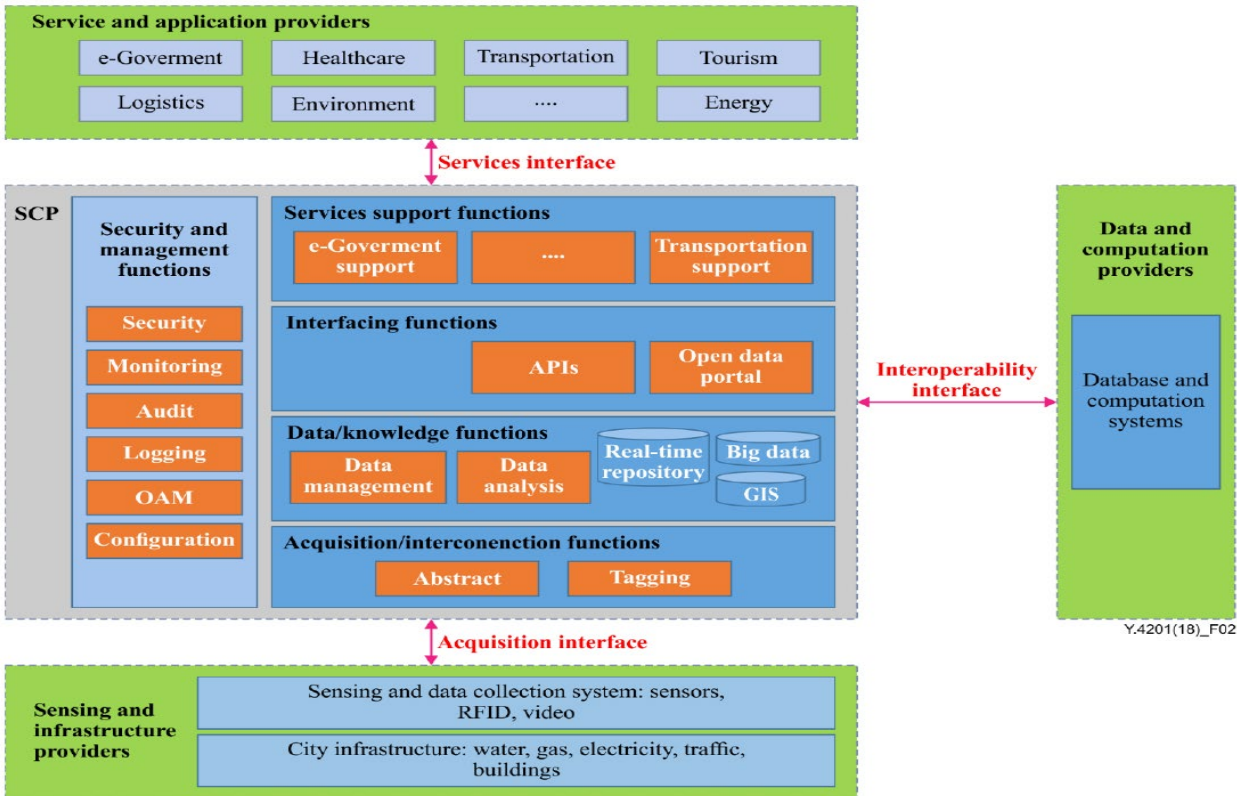
• (9) 플랫폼 사례



07. 스마트시티 주요 표준 현황

• (9)플랫폼 사례

ISO/IEC 30145-1
(Smart City ICT
reference
framework)

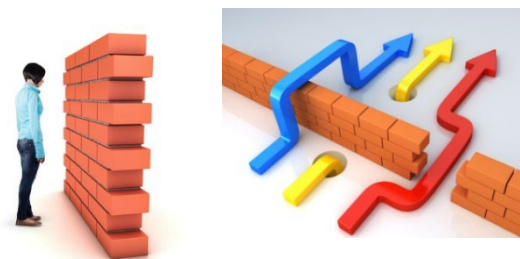


ITU-T Y.4201(High-level requirements and reference framework of smart city platforms)

08. 결론

Standards-compliant
Smart City System

효과



장애물을 놓을 수도,
극복할 수도 있게 함



고품질로 인식시킴



System of
interoperable
systems 솔루션으로
프레임 설정



Market trend에 적응



감사합니다.

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