Implementation
Configuration Management System
for
AP1000 Nuclear Power Plant

2017. 8

HANVIT Power Inc.

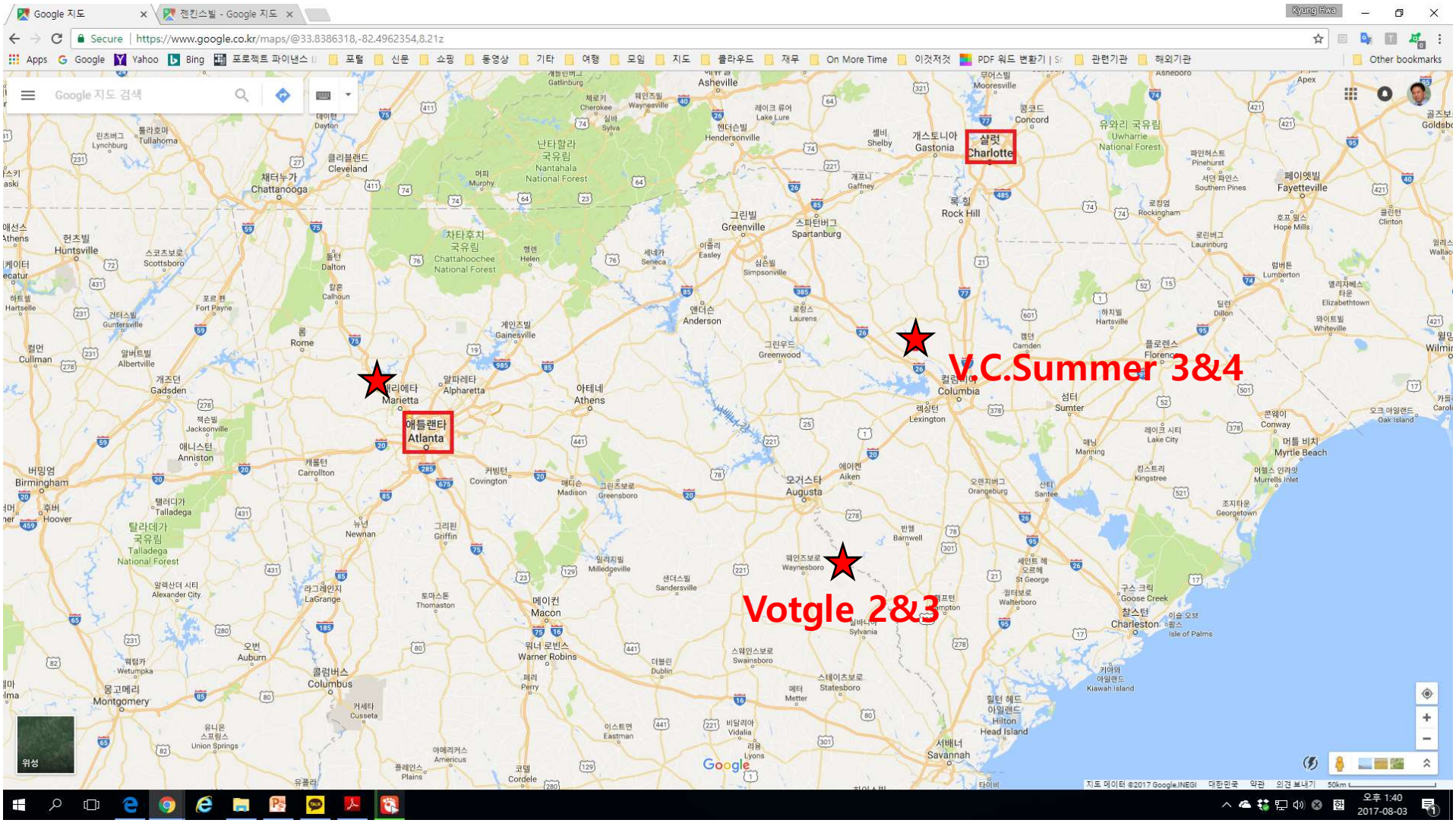
Withus Group

Agenda

- AP1000 Status
- CM Taxonomy
- Approach for APR1400 Project
- V.C. Summer Project Execution Strategy

AP1000 Status

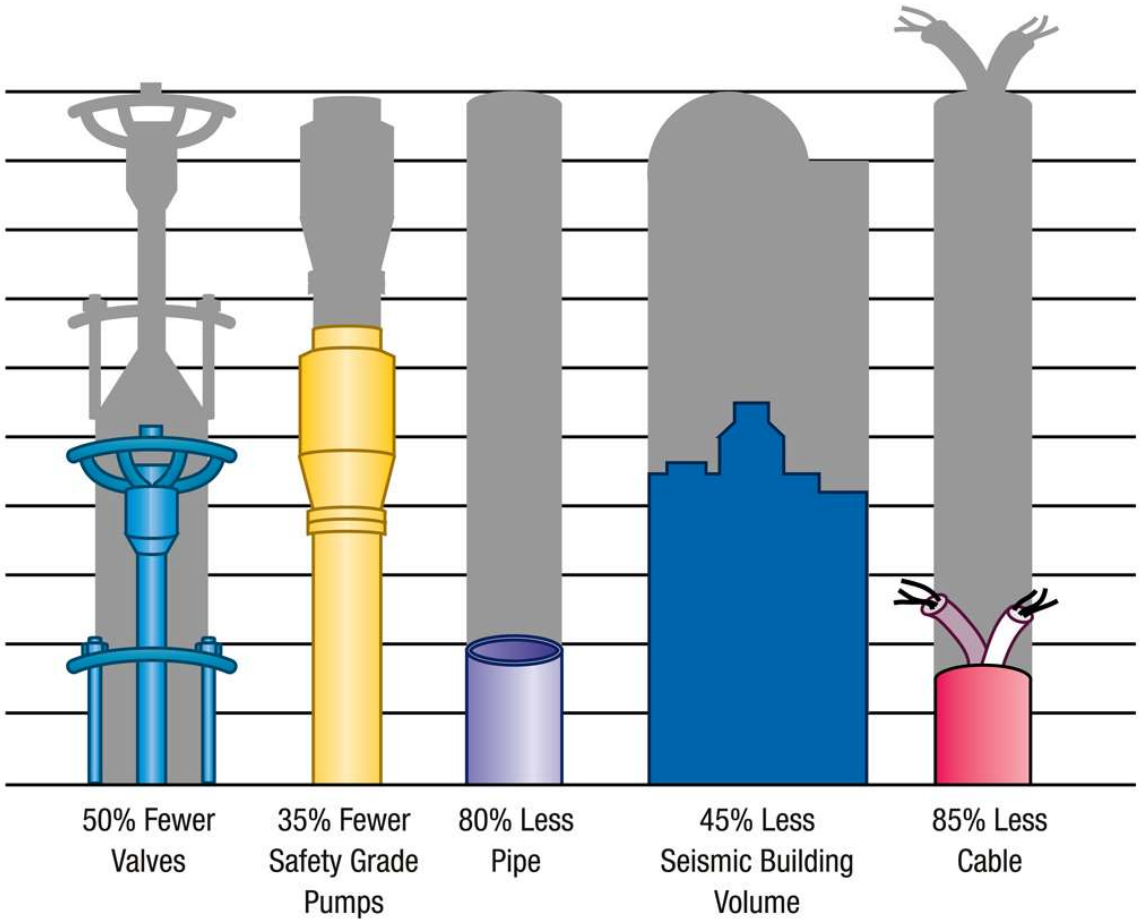
Plant Construction Location



What is AP1000 ?

- **Westinghouse Electric Company once again sets a new industry standard with the AP1000 plant design.**
- **The AP1000 is the safest and most economical nuclear power plant available in the worldwide commercial marketplace, and is the only Generation III+ reactor to receive Design Certification from the U.S. Nuclear Regulatory Commission (NRC).**
- **The AP1000 features proven technology, innovative passive safety systems and offers:**
  - Unequaled safety
  - Economic competitiveness
  - Improved and more efficient operations

What is AP1000 ? *(Cont.)*

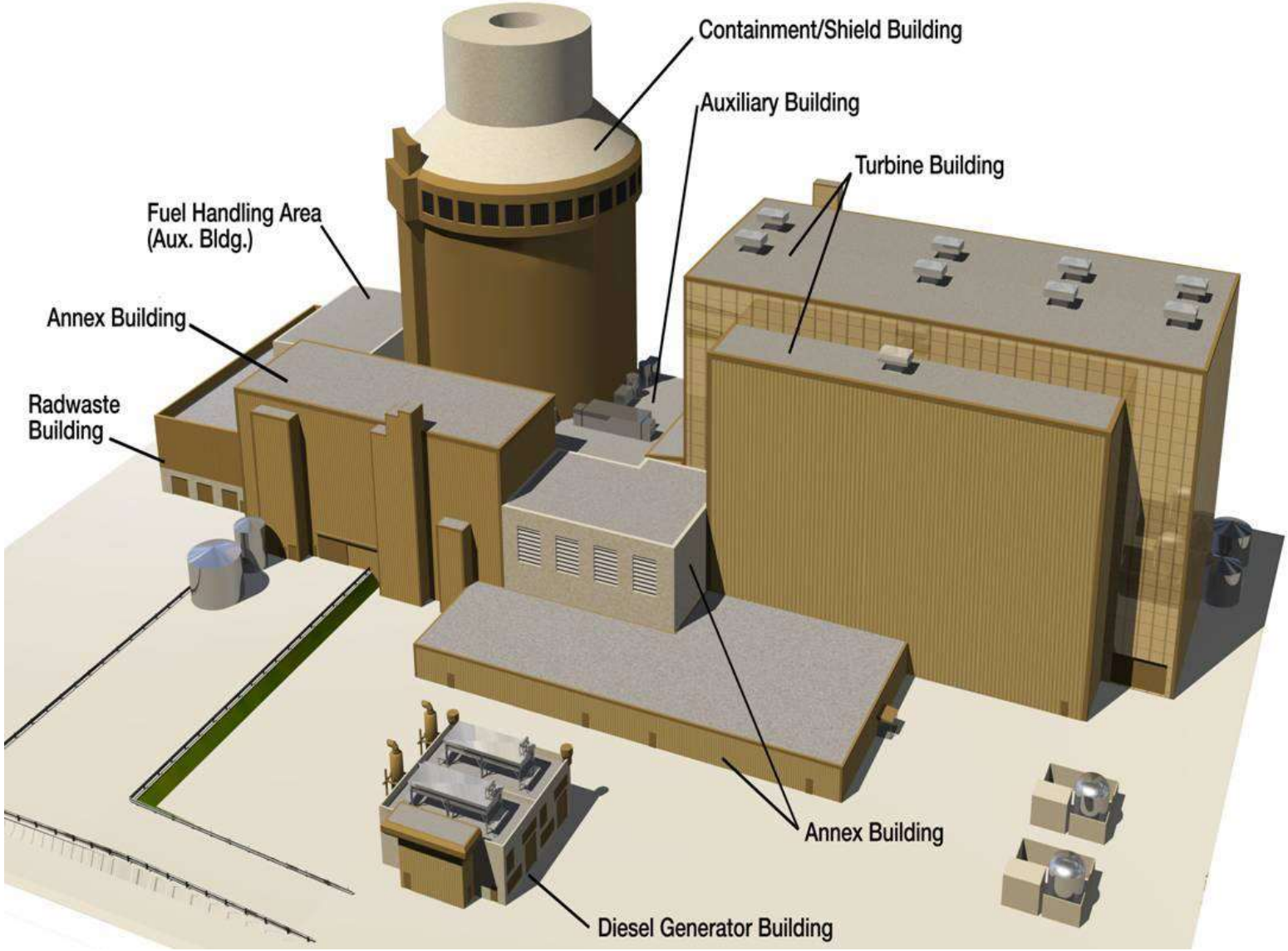


Simplification was a major design objective for the AP1000™.

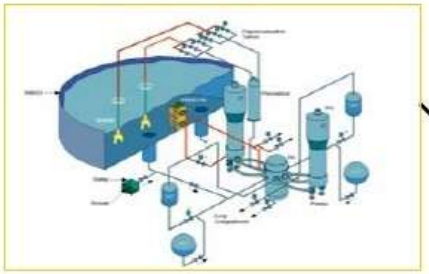
The result is a plant that is easier and less expensive to build, operate and maintain.

The AP1000™ design saves money and time with an accelerated construction time period of approx. 36 months, from pouring of first concrete to loading of fuel assemblies.

AP1000

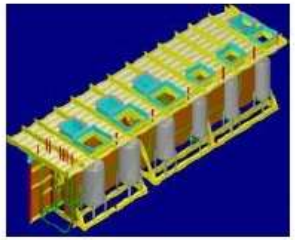


An Advanced Technology



Passive Safety Systems

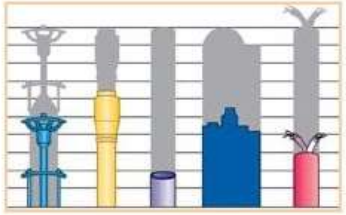
URD Requirements



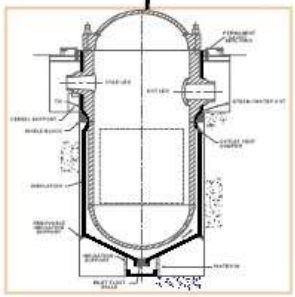
Modular Construction

US Licensing Approval

Advanced Features Testing



Reduced Components & Commodity Quantities



Severe Accidents Mitigation Features

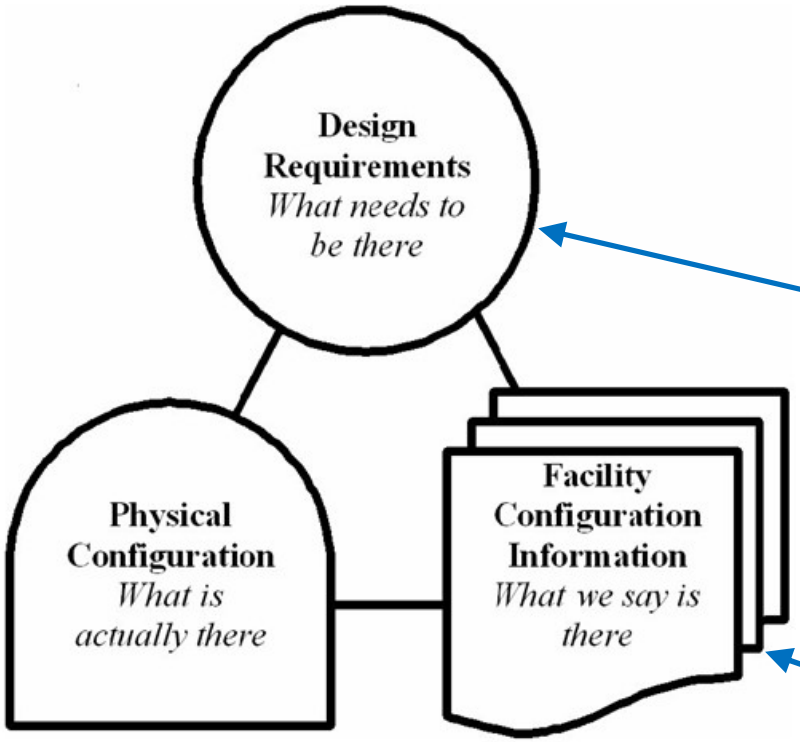
Short Engineering and Construction Schedule

Ref: The AP1000 Reactor Nuclear Renaissance Option, Dr. Regis A. Matzie, September 26, 2003

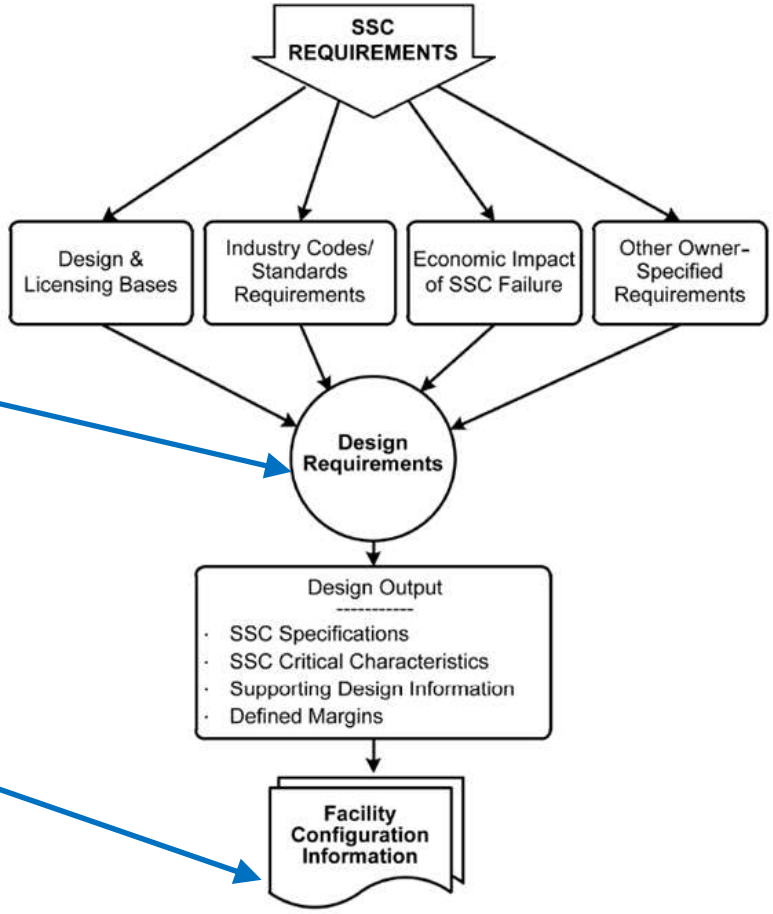
CM Taxonomy

Relation between CM and RM

Configuration Management (INPO AP-929)



Requirement Management



Ref: Elements of Pre-Operational and Operational CM for a New Nuclear Facility, EPRI TR-1022684, April, 2011

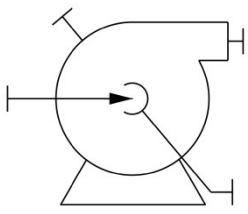
Brief Real Concept of 3 Ball

DR

- Law Reg. Guide Etc.
- GDC, SDC, Topical Report
- Code & Stand.

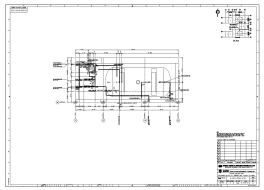
FCI

A/E Design



P&ID

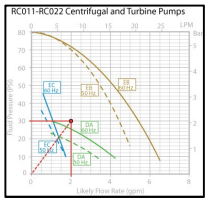
Procurement Specification



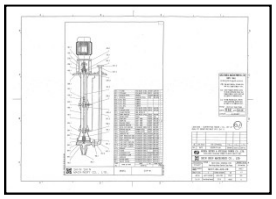
Layout Design

Datasheet

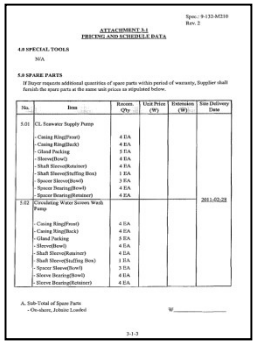
Manufacturer Design



Calculation



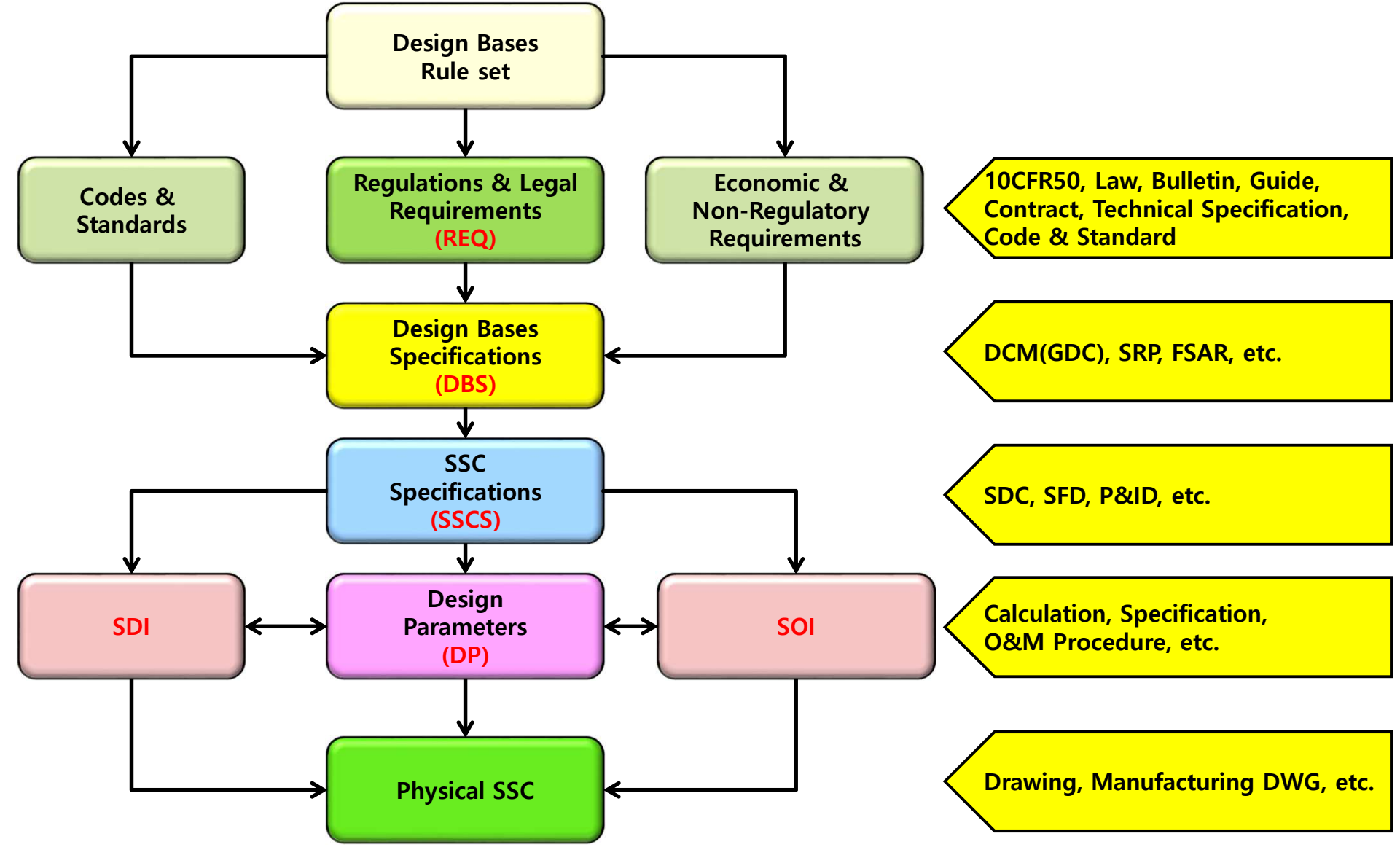
Drawing



Spare Part List

PC

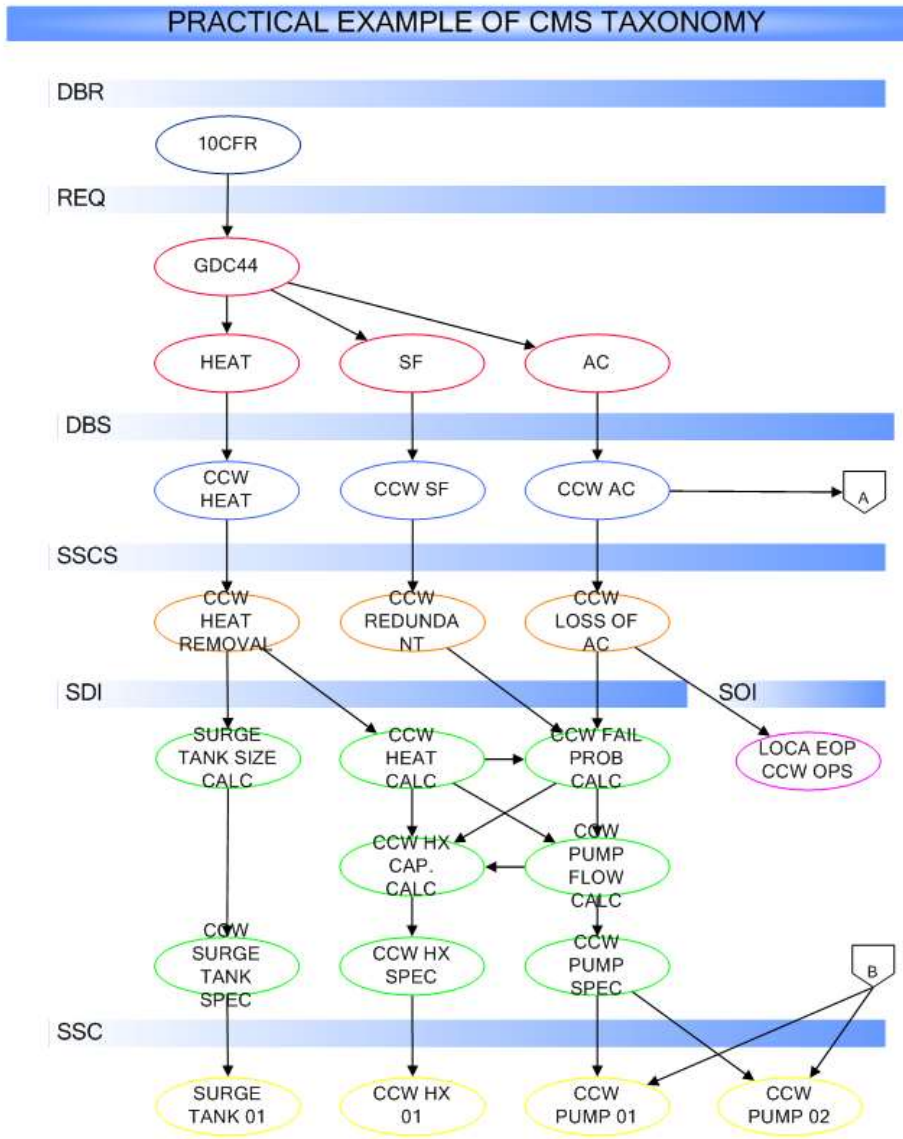
CM Taxonomy Structure

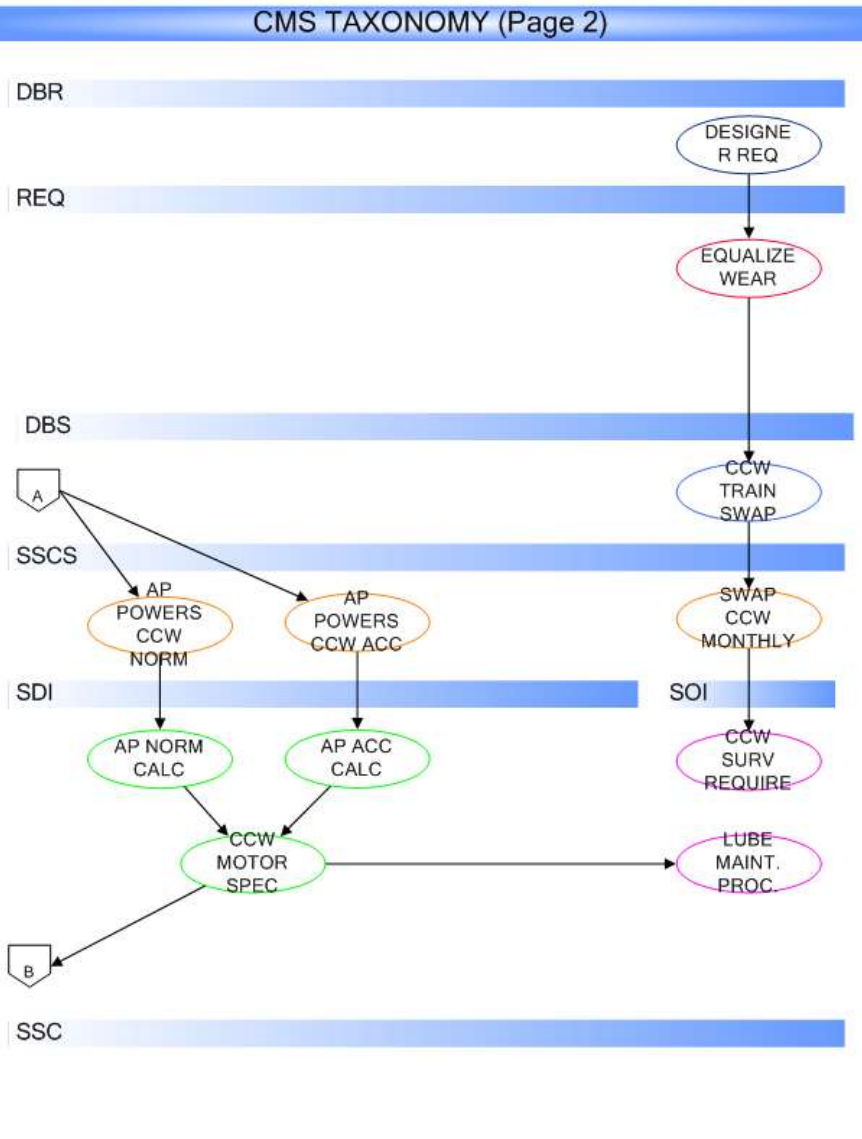


Definition of Taxonomy

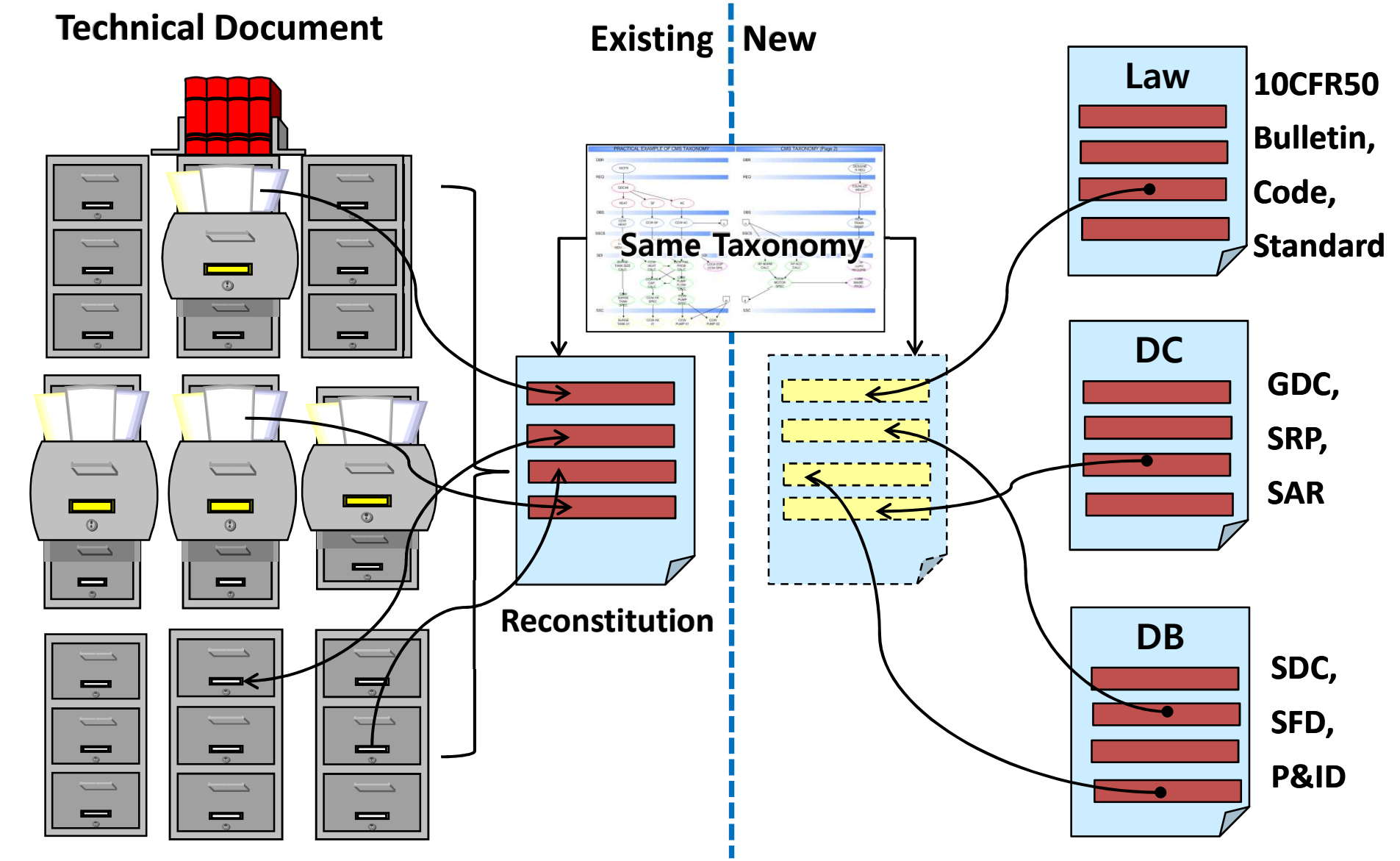
순번	Level	정의	대상 문서 사례
1	REQ	발전소의 건설과 운전을 위해 반드시 충족해야 하는 최상위설계요건(Top-Tier Design Requirements) (가장 상위에 위치하는 문서로서 프로젝트 단위에서 사업자 혹은 계약자가 임의로 규정할 수 없는 문서)	○ 규제 및 법적 요건, 국내원자력법규, 10CFR, 운영허가기준, 규제기관 행정명령, GL 등 ○ 비 규제 요건(사업주 요건), 계약서, KURD 등 ○ 규격 및 표준, ASME(Code Case 포함), IEEE 등 ○ 국내원자력법규, 미국 규제 및 지침(10CFR, 등), 규격 및 표준, 계약서, NSSS 설계기준
2	DBS	일반적, 포괄적으로 기술된 REQ를 충족하기 위해 특정 발전소의 설계 정의되었는지에 대한 구체적인 설계기준 사양(Design Bases Specification) REQ 문서에 따라 사업자가 REQ에 기술된 요건을 이행하는 프로젝트 단위의 가장 상위 문서 요건	○ SRP, FSAR, GDC, Site Plot Plan, ○ NSSS SR(계통설계요건), SD(계통설명서), IR(연계요건) ※ NSSS 자료는 SSCS의 system 요건에도 해당됨
3	SSCS	DBS 충족하기 위한 특정 SSC설계기능(Functions) 및 기준 (Criteria) 요건과 각종 기기의 시험 및 보수요건을 포함하고, 해당SSC의 설계기능 및 기준을 지원하기 위해 직접적 필요한 연계계통(Supporting Systems)의 기능적 요건, DBS 기술 요건을 실제적인 상세설계 단위의 SSC에 적용하는 구체적인 설계 요건을 기술	○ SDC, SFD, GA, DBD, ○ P&ID, C&ID, CLD, SLD, PSDS, ○ DR(기기설계요건), ○ DD(안전해석 및 성능해석자료)
4	DP	설계요건(REQ, DBS)과 설계기능 및 기준(SSCS)을 달성하기 위해 특정SSC의 정상운전범위, 운전한계, 설계한계, 경보 및 트립 설정치 등을 포함한 특정 설계 값	○ SSC Calculation, ○ Seismic Analysis ○ 안전해석, ○ 성능해석, ○ DBE 열 수력
5	SDI	설계요건과 연계된 문서 및 도면정보	SSC별 상기 언급된 연계문서 종합
6	SOI	특정 SSC계통기능을 수행하기 위한 운전 절차서, 보수/감시절차서 및 기타 운전 또는 보수를 위해 필요한 문서정보	○ 운전절차서, ○ 시험절차서, ○ TR/OR(시험 및 운전요건), ○ TG/OG(시험 및 운전절차서)
7	PSSCD	SSC에 대한 현장 실체를 구축하기 위한 요건	○ 종합설계결과물 (상세설계), ○ 구매요건서, ○ 공급자 제공문서, 등

CM Taxonomy (Sample Case for Cooling Water)

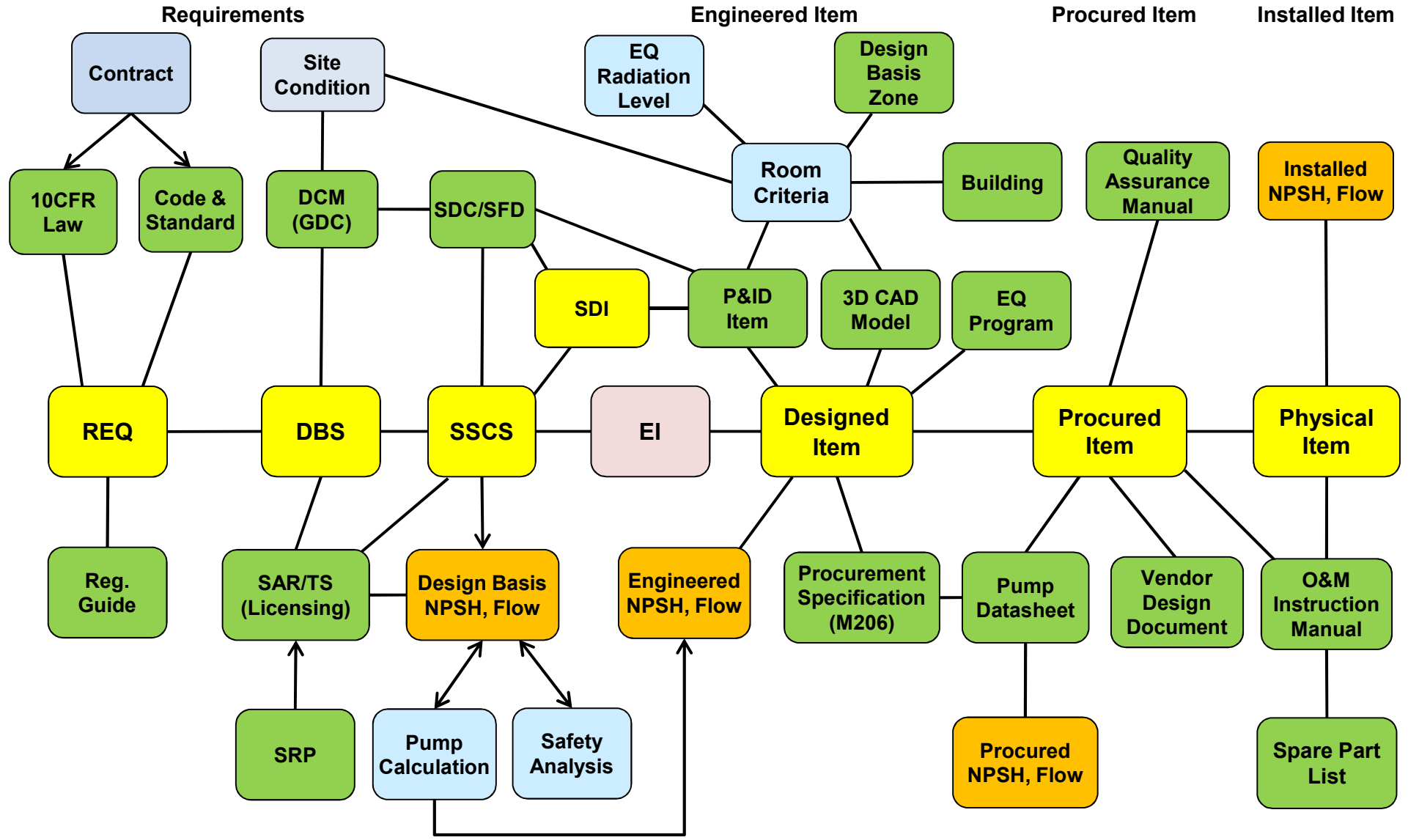




Same Taxonomy for Existing & New NPP



Lifecycle of CM for NPP



Development Process (INPO AP-932)

- Determine the Scope of CM Applications
- Determine the Scope of Information to be included in the CM
- Establish Electronic Platform and Standard Format
- Consider Network Interface of Related Information
- Obtain and Enter Information into Database
- Produce Information for Construction Activities
- Ensure Physical Plant and Designs are in accordance
- Check out if Design Change Required?
- Check out if Construction Design Change
- Restore Physical Plant to Comply with the Design
- Turn Over Database and Physical Plant to COL Holder

Work Process for development of CM

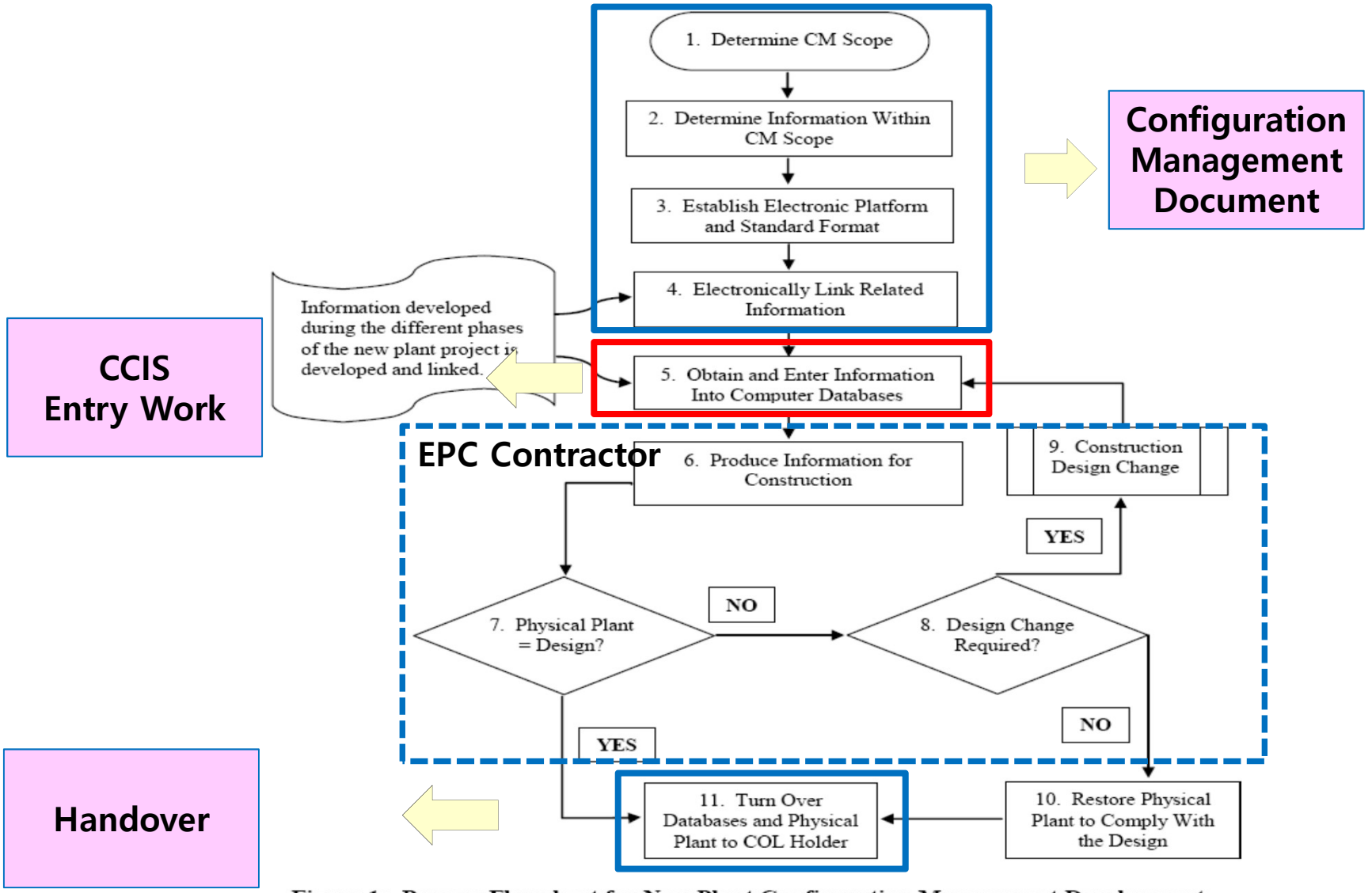


Figure 1: Process Flowchart for New Plant Configuration Management Development and Implementation

Approach for APR1400 Project

10CFR50 §50.2 Definition

- ***Design bases*** **means that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design.**

- **These values may be**

  (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or

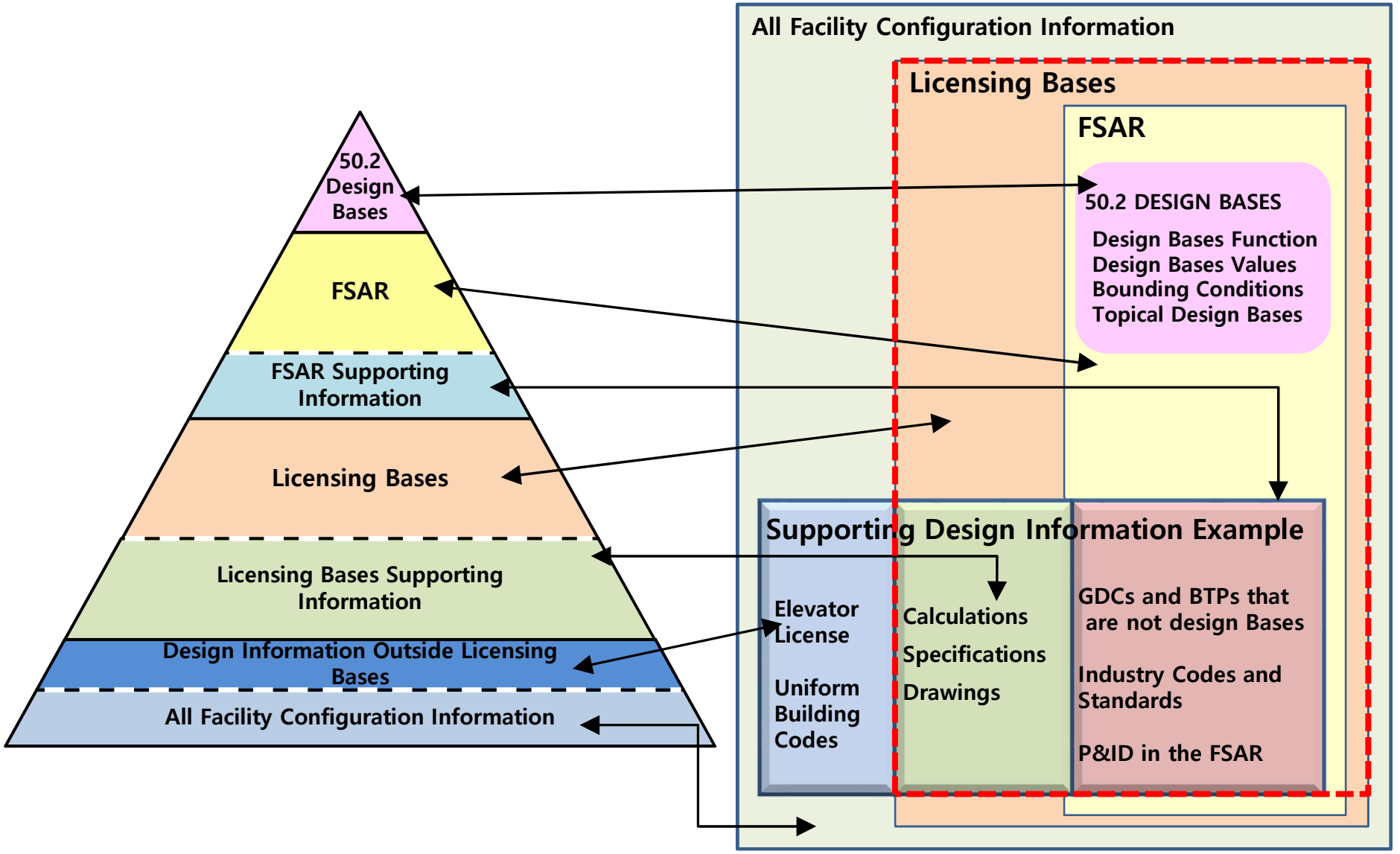
  (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals.

Scope of CM

Scope for CM SSC

Class	Definition		Scope
1	● SSC applied Safety Function design bases – Protect human from Radioactive and miscellaneous Hazard ● SSC applied Environmental Protection function – Protect Environment from Severe Disaster – Support function for licensing and Environment Protection	Safety Class 1,2,3 Seismic Category I Electrical Safety Class 1E Q Class	Apply
2	SSC supporting mission based functions (those functions necessary to avoid substantial interruptions of the facility mission or severe cost impacts)	NNS + Seismic Cat. I, II + (Non-1E) + T	Option
3	Miscellaneous SSC	NNS + Seismic Cat. III + (Non-1E) + T, R, S	Option

Scope of RM



CM Scope in System

No	Category	Title	No	Category	Title
1	Structure	Containment Building	25	System	In-Containment Water Storage System (IW)
2	Structure	Auxiliary Building	26	System	Alarm System(AN)
3	System	Auxiliary Feedwater System (AF)	27	System	CEDM Control (CE)
4	System	Auxiliary Feedwater Pump Turbine System (AT)	28	System	Containment Monitoring System (CM)
5	System	Auxiliary Feedwater Storage and Transfer System (AX)	29	System	Engineered Safety Feature Actuation System (EF)
6	System	Component Cooling Water System (CC)	30	System	Incore Instrumentation (IC)
7	System	Containment Spray System (CS)	31	System	Engineered Safety Feature-Component Control System (PE)
8	System	Chemical and Volume Control System (CV)	32	System	Main Control Room System (PM)
9	System	AAC Diesel Generator (DA)	33	System	Process Sampling System (PS)
10	System	Radioactive Drain System (DE)	34	System	Qualified Indication and Alarm System-P (QP)
11	System	Emergency Diesel Generator System (DG)	35	System	Reactor Protection System (RP)
12	System	Diesel Fuel Oil Transfer System (DO)	36	System	Remote Shutdown Room System (RS)
13	System	Feedwater System (FW)	37	System	DC Distribution System (DC)
14	System	Gaseous Radwaste System (GW)	38	System	4.16kVClass1E System(PF)
15	System	Main Steam System (MS)	39	System	480V Load Center Class 1E System (PG)
16	System	Reactor Coolant System (RC)	40	System	480V MCC & Low Voltage Class 1E System (PH)
17	System	Shutdown Cooling System(SC)	41	Topical	ENVIRONMENTAL QUALIFICATION
18	System	Safety Injection System (SI)	42	Topical	FIRE PROTECTION / APPENDIX R
19	System	Essential Service Water System (SX)	43	Topical	HAZARDS
20	System	Control Room HVAC (VC)	44	Topical	PLANT PIPING TOPIC
21	System	Emergency Diesel Generator Area HVAC (VD)	45	Topical	SEISMIC REQUIREMENTS TOPIC
22	System	Electrical and I&C Equipment Area HVAC (VE)	46	Topical	STATION BLACKOUT TOPIC
23	System	Reactor Containment Building Purge System (VQ)	47	Topical	CONTAINMENT ISOLATION
24	System	Essential Chilled Water System (WO)			

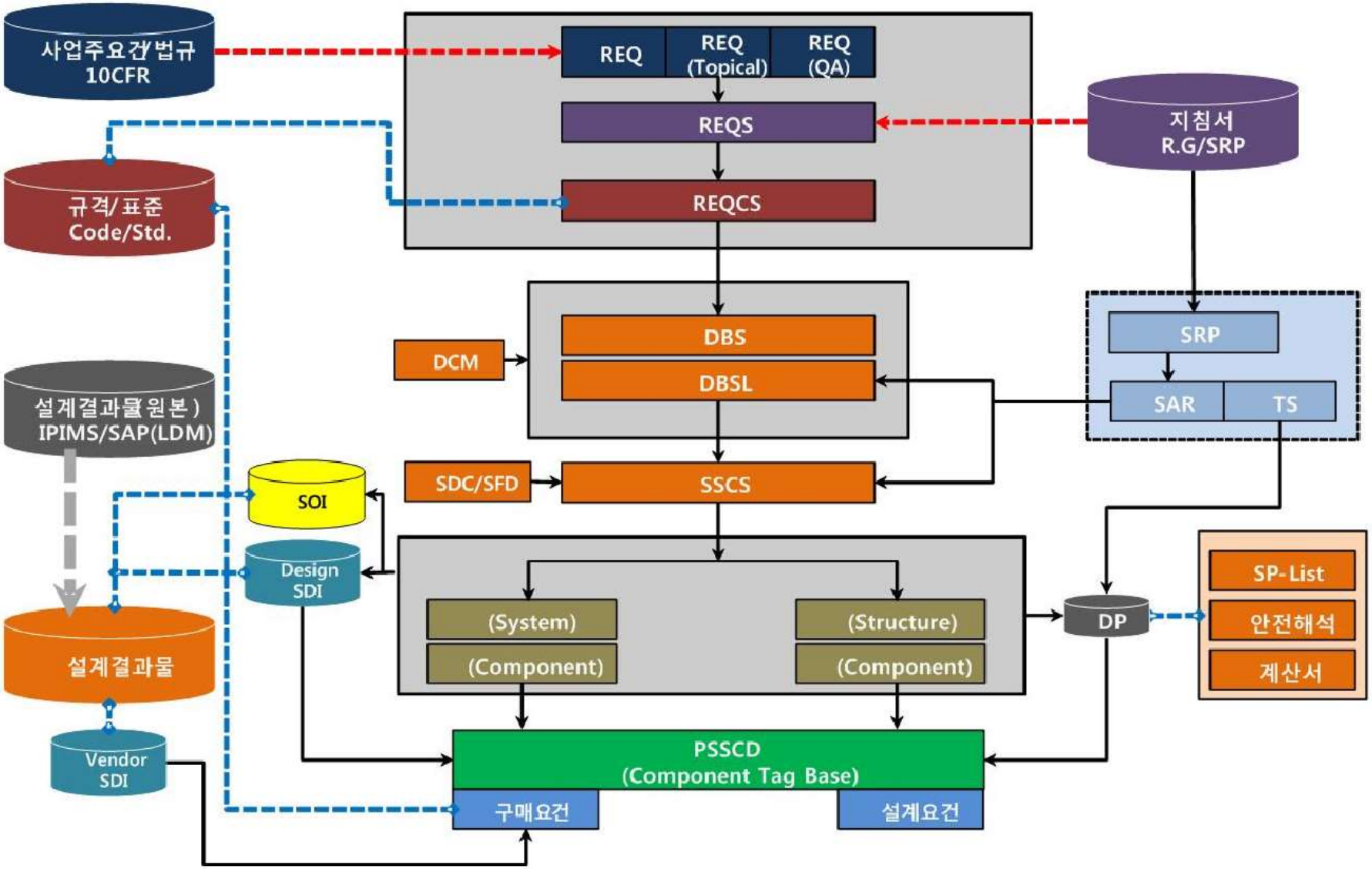
CM Scope in RM Documents

No.	Type of Document	Level	Kind	Pages	Remark
1	10CFR	REQ	4	522	
2	Regulatory Guide	DBS	135	2,147	
3	General Letter	REQ	105	581	
4	Bulletins	REQ	20	105	
5	Topical Issue, Regulatory Issue	REQ			
6	SRP (Standard Review Plan)	DBS	19	4,481	
7	Code & Standard	REQ	83		
8	Contract Documents	REQ	1	499	
9	KURD	REQ	1	2,759	
10	SAR (PSAR, FSAR)	DBS	1	17,725	
11	GDC (General Design Criteria)	DBS	14	759	
12	SDC (System Design Criteria)	SSCS	112	1,850	
13	SFD (System Functional Description)	SSCS	107	2,367	
14	DCM (Design Criteria Manual)	DBS	1	39	
15	CP (Construction Package)	DP			
16	Licensing Regulatory Study	DBS	2	222	
17	Law, Bulletin, Notice, etc.	REQ	44	4,248	
Total			649	38,784	

Target Material - SSC

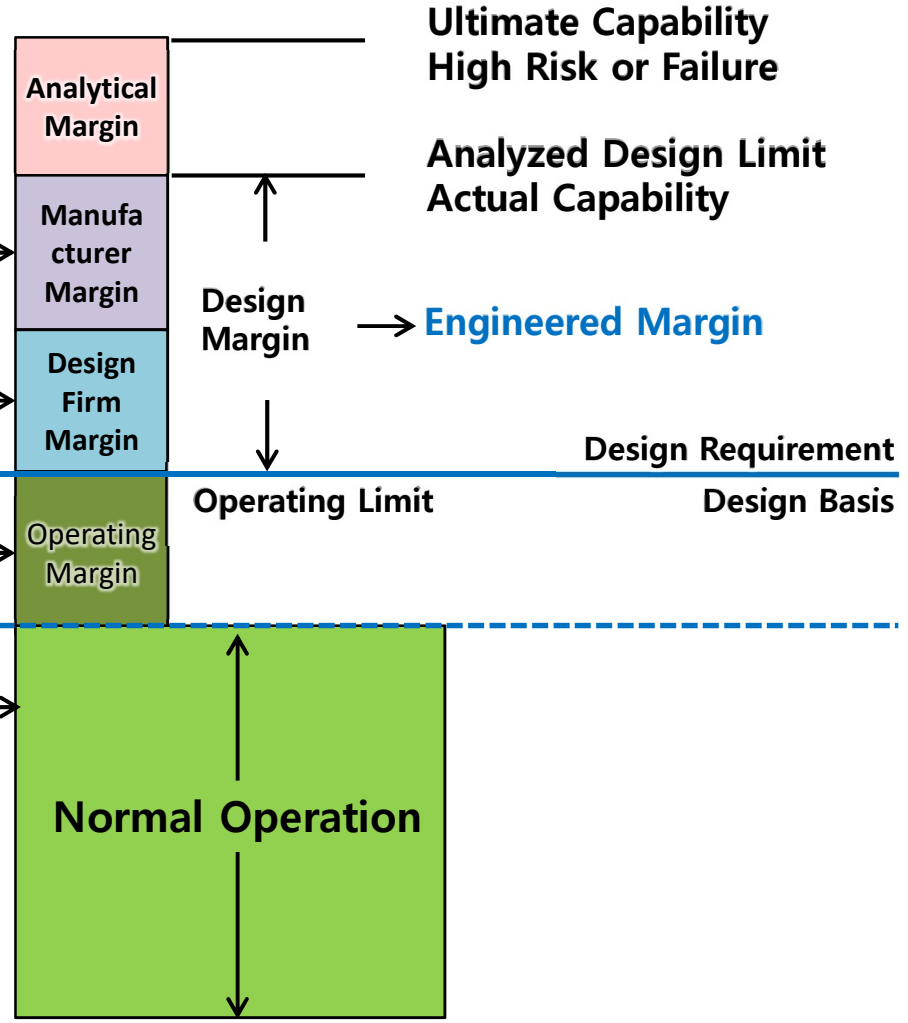
Type	Total	Safety Class				Seismic Category	Electrical Class	Q Class	Total For CM
		1	2	3	Total	I	1E		
Equipment	9,428	28	260	1,274	1,562	1,608	806	1,576	1,711
Instrument	36,522	66	156	6,922	7,144	8,025	6,346	7,444	8,047
Valve	36,065	359	2,955	4,991	8,305	8,911	760	8,329	8,935
Line	28,966	172	1,336	2,552	4,060	4,406	0	8,329	4,406
Damper	4,368	0	0	1,446	1,446	1,523	150	1,446	1,524
Total	115,349	625	4,707	17,185	22,517	24,473	8,062	22,855	24,623

CM Taxonomy



Design Margin

순번	Description	Set by	Sample Data Value
1	ITAAC Verified Value (Physical Configuration)	O&M	14,155
2	Manufacturer Margin	MFG.	14,000
3	A/E Design Margin	Design	13,200
4	Licensing Value	License	12,000
5	Normal Operation	O&M	Actual Operation



Ref: INPO AP-929, EPRI CMBG

Configuration Management Information System
(INPO AP-932)

Definition

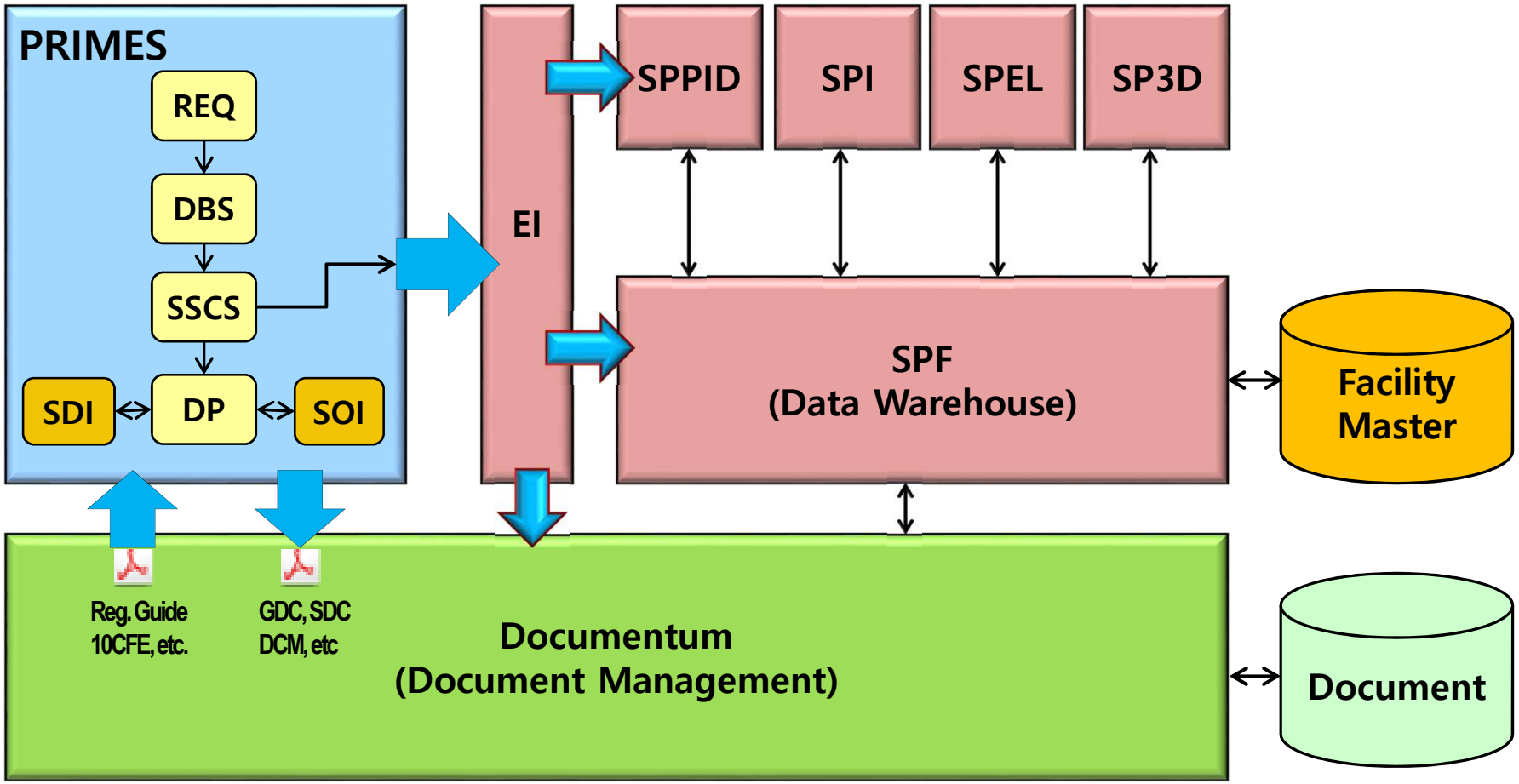
- An information management system captures and maintains accurate, timely information related to SSCs. Computer hardware and software provide the capability for managing information during design, construction, and operation to support CM principle.

The main objectives

- Provide an effective means to control, acquire, store, retrieve, and manipulate information necessary to design, construct, start up, operate, and maintain the plant.
- Provide a secure environment to distribute information on a need-to-know basis and to limit the ability to change information to authorized individuals.
- Use computer-aided design and engineering effectively during plant design, construction, startup, operation, and maintenance.
- Ensure that information needed for construction and operation is readily retrievable.
- Provide necessary records in accordance with record retention policies.

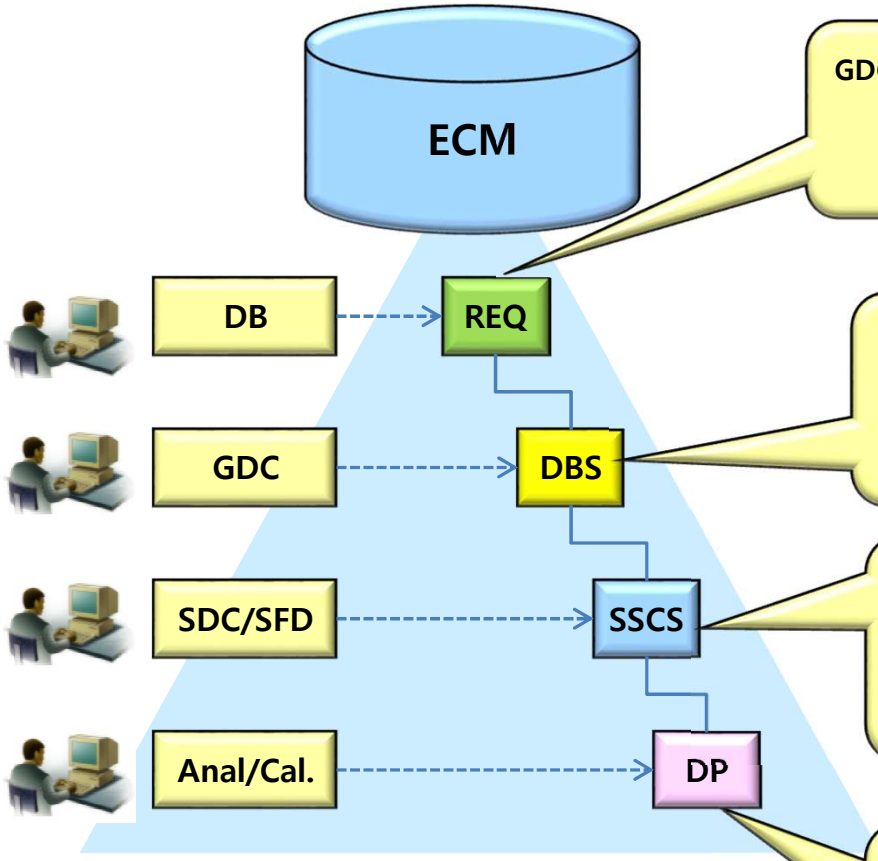
CMIS

Integrate Requirement Management, CAD System



Criterion 34—Residual

Appendix A to Part 50—General Design Criteria for Nuclear Power Plants



GDC34: "Residual heat removal"
- A system to remove residual heat shall be provided
- Suitable redundancy in componenta and features and isolation capabilities shall be provided.

The Auxiliary Feedwater System (AFW), in conjunction with the condensate storage tank, shall automatically provide feedwater to the steam generators to remove residual heat from the reactor core upon loss of main feedwater.

The AFW system shall supply a minimum of XXX gpm of feedwater within xx secs to the intact steam generator(s) against a maximum pressure of YYYY psig.

Each Pump capacity
Analyzed Design Limit : AAA gpm(Run out)
Operating Limit : XXX gpm.(Run out)
Nor. Operating Hi : YYY gpm
Nor. Operating Low : ZZZ

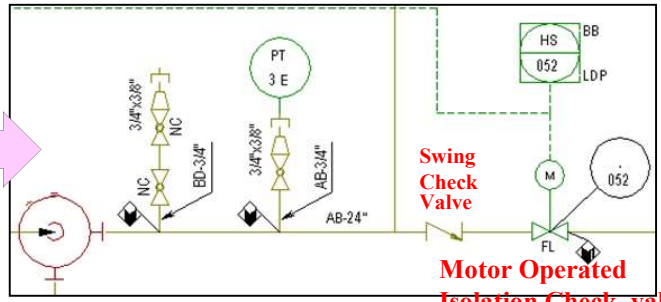
- DB: Design Basis
- DBS: Design Basis Specification
- SSCS: System, Structure, Component Specification
- DP: Design Parameter

Kind of Design Base and Sample Case

PSSCD

System (2D)

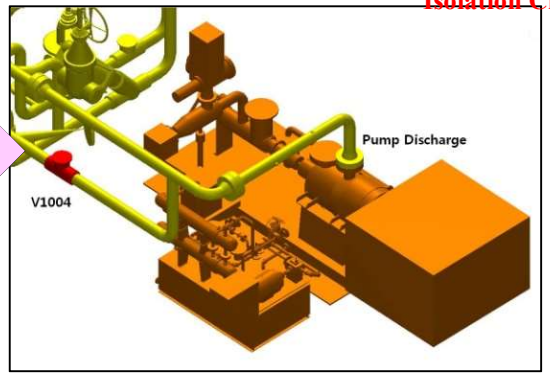
Swing check valve and **motor operated isolation check valve** shall be provided in each feedwtaer/startup **feedwater pump** discharge line. (5.10)



Motor Operated Isolation Check valve

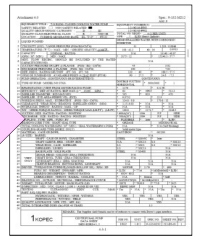
Structure (3D)

The AF System **Check valves should be located 10 pipe diameter upstream** or **down stream from pipe bend, elbow, and pump discharge** to preclude destructive turbulence effects. (5.21)



Component (EDB)

The FW System shall be sized that total system flow shall not exceed 190% of the **system rated flow of 18.13 X 10^6 lb/hr** with three feedwater pumps operating at runout flow condition and both steam generator economizer feedwater control valves **fully open against a steam generator pressure of 700 psia** (5.11)

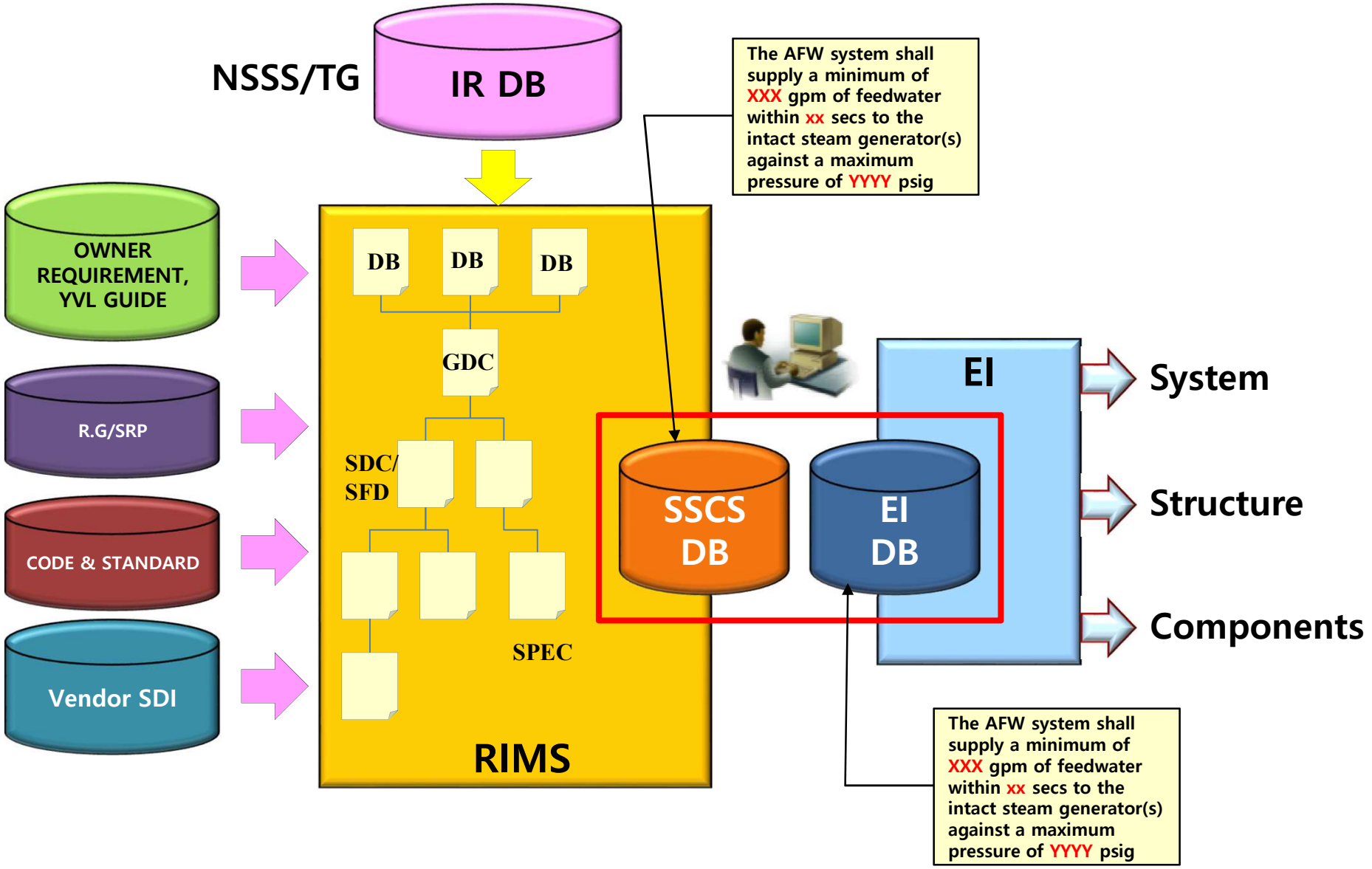


Document

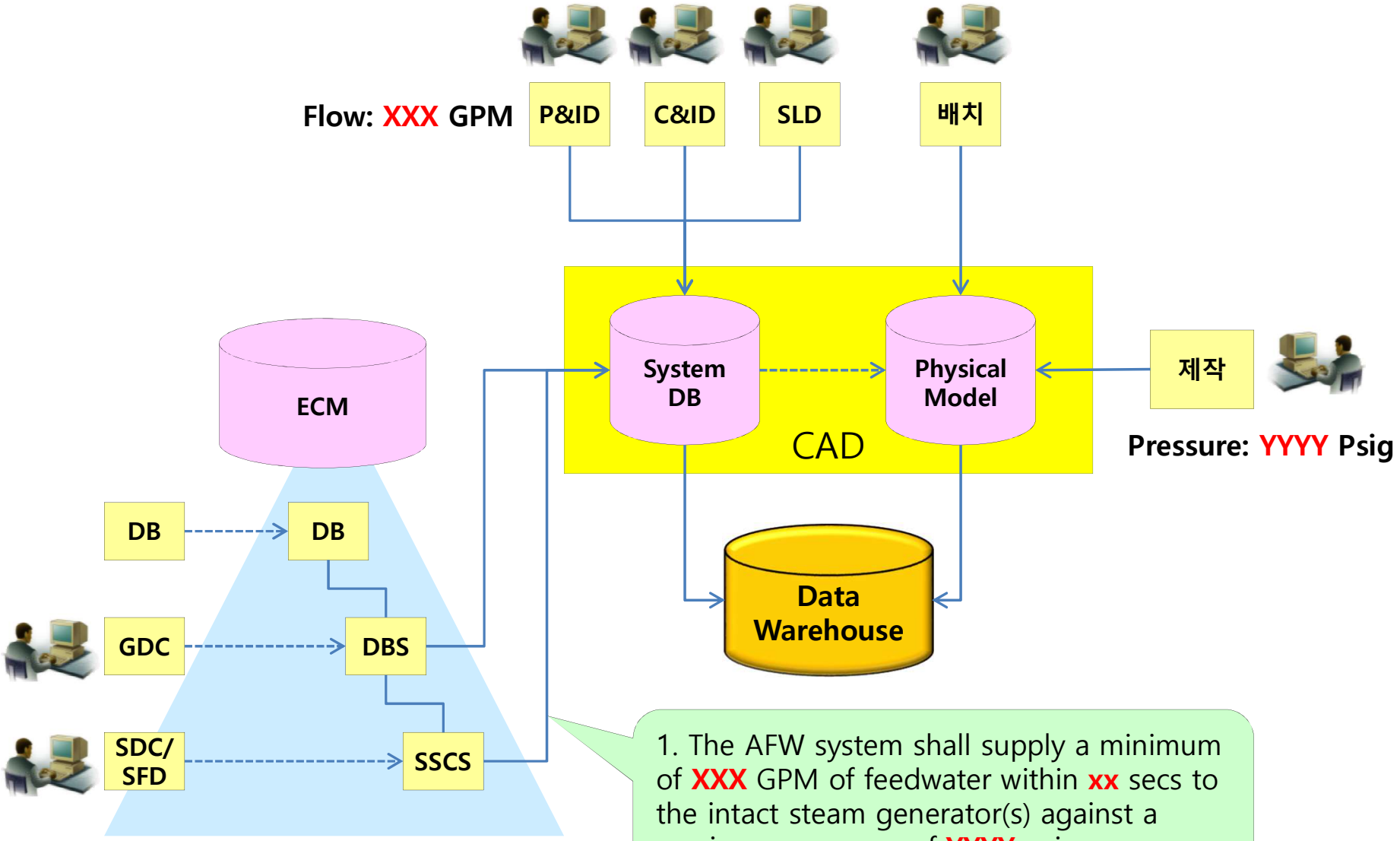
All Design Bases and requirement for **feedwater pump** should related with procurement specification for manufacturer

Descriptive Requirement

Concept between Design Base and SSC



Cooperation between A/E and Supplier in Requirement Management



V.C. Summer
Project Execution Strategy

Strategy for Development Process

- **Basically, INPO AP932 based Development Process will be applied**
  - INPO AP929(Existing) and AP932(New) will be basic guideline
  - EPRI TR-1022684 (‘Elements of Pre-Operational and Operational CM for a New Nuclear Facility”), April, 2011
- **Parsing technology will be applied based on NEI 97-04**
  - Design Bases and Design Requirement related Phrase Level than Document
  - Value in Phrase will be relating with affected item (Phrase and SSC)
- **IT platform will be discussed with client**
  - We have in-house developed pilot system, but, we develop client’s O&M system for future use as COTS.
  - P&ID system will be Installed in SmartPlant P&ID for better design bases and design requirement relation. (Topology technology will used for RM)

Assumption

- **CASe and Hanvit Power work together**
  - Two company will cooperate future project – discuss MOU contract
- **Utilizing system development experience for application to Korean nuclear power plant**
- **CM Content development is absolutely necessary in cooperation with US CASe (or AP1000 designer)**
- **Three Phased Development Work**
  - Phase I: Scope of CM, Taxonomy, Development IT System, Pilot Test Work
  - Phase II: CM Contents Parsing (US Firm), Entry an Relation (Korean Firm)
  - Phase III: Transfer to Client, Training, A/S
- **Hanvit Power will handover as-built DR and FCI during Plant Start-up period by confirming the three ball consistency.**

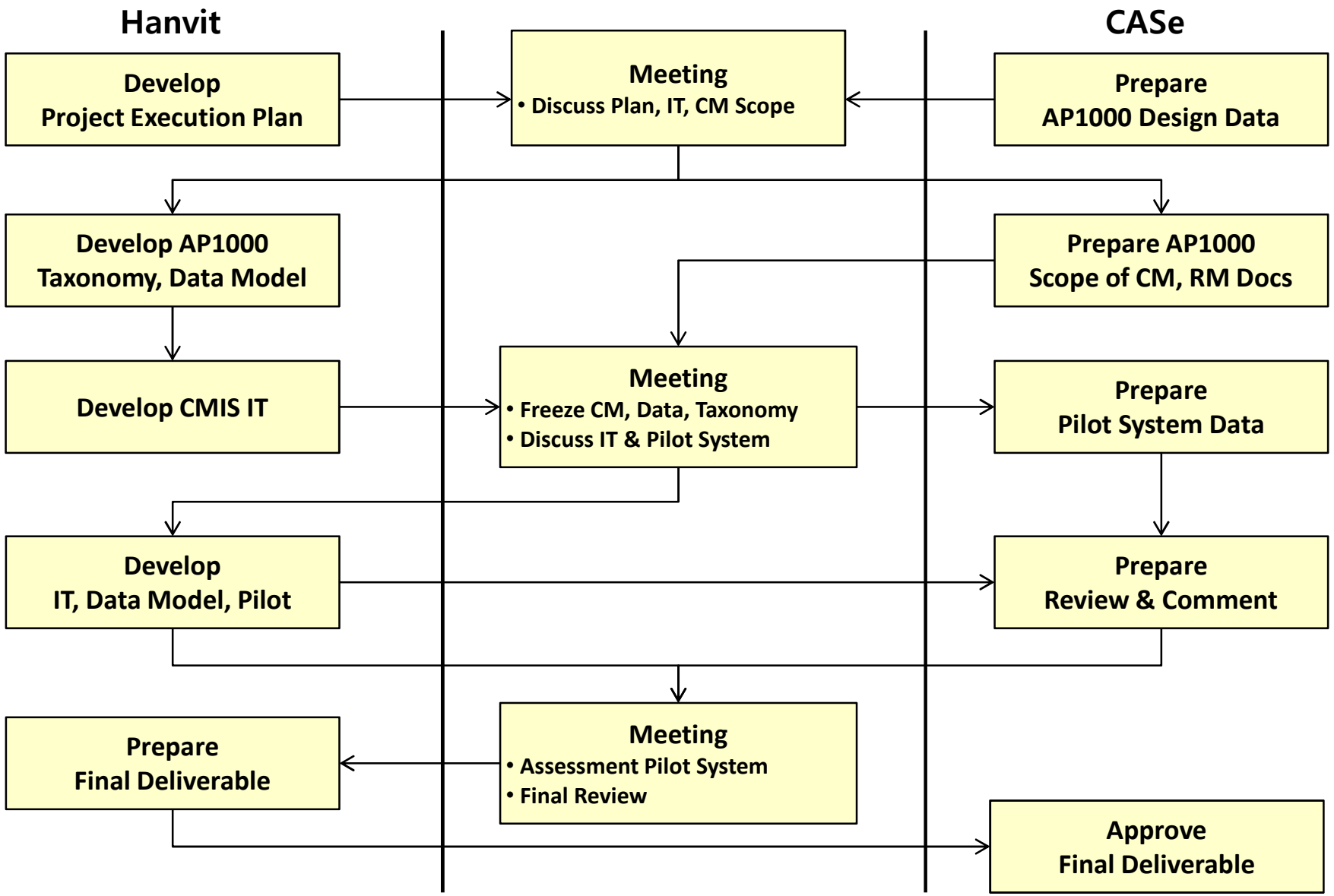
Three Phase of Development Work

- **Phase I**
  - Develop Project Execution Plan. (Within one month after CED)
    - Determine the Scope of CM and Data Model
  - Develop Configuration Management Taxonomy for AP1000 in Parsing method
  - Establish Configuration Control Information System (IT System)
  - Implementation Pilot System and Assessment
    - Define Pilot System Scope of Work
- **Phase II**
  - Develop CAD Interface function
  - Organize CM entry team
  - Establish DBD database and identify relations between Design Bases and SSC.
  - Consistency check between CMIS SSC and physical asset
- **Phase III**
  - Load FSAR and check consistency with every SSC
  - Hand over to Owner

Scope of Work for Phase I

- **Prepare Project Execution Plan (K)**
- **Determine Scope of Work for V.C.Summer (Common)**
  - CM components(SSC), RM Documents (Design Bases, SDI, SOI etc.)
- **Determine Data Model (Attribute) for CM (K)**
  - Data Model will be developed based on APR1400
- **Develop CM Taxonomy (K)**
- **Selection of IT system and Installation (Common)**
- **Parsing for DBD and develop relation each Parse (C)**
- **Develop CMIS for DBD Operation (K)**
- **Develop Pilot System (Common)**
- **Develop Project Deliverables and Assessment**

Development Work Process



Determine CM Scope

Determine the Scope of Design Base Document

- Licensing Document (PSAR, FSAR), Regulation Document
- General Design Criteria, System Design Criteria, etc.
- Operational Manual, Training, Instruction Manual
- Refer INPO 87-006

Determine the Scope of SSC

- Determine the Scope of System (Safety Injection, Main Steam, etc.)
- Determine the Component (Pump, Tank, Valve, etc.)

Determine the Level of Detail

- For document, scope of sentence, data, etc. -> XML
- For SSC, Scope of Data Model for Facility, Part, Spare Part, Oil etc.

CM Scope for AP1000

System Code	System Title	WBS	System Code	System Title	WBS
CCS	Component Cooling Water System	A	VZS	Diesel Generator Building Heating and Ventilation System	H
DFS	Diesel Fuel Offloading System	A	DAS	Diverse Actuation System	J
SSS	Secondary Sampling System	A	IIS	Incore Instrumentation System	J
SWS	Service Water System	A	PMS	Protection and Safety Monitoring System	J
TCS	Turbine Building Closed Cooling Water System	A	CNS	Containment System	N
VUS	Containment Leak Rate Test System	A	CVS	Chemical and Volume Control System	N
VWS	Central Chilled Water System	A	PCS	Passive Containment Cooling System	N
IDS	Class 1E DC and UPS System	E	PSS	Primary Sampling System	N
IDSA *	Class 1E DC and UPS System – Division A	E	PXS	Passive Core Cooling System	N
IDSB *	Class 1E DC and UPS System – Division B	E	RCS	Reactor Coolant System	N
IDSC *	Class 1E DC and UPS System – Division C	E	SFS	Spent Fuel Pool Cooling System	N
IDSD *	Class 1E DC and UPS System – Division D	E	CFS	Turbine Island Chemical Feed System	P
IDSS *	Class 1E DC and UPS System – Spare	E	FWS	Main and Startup Feedwater System	P
VBS	Nuclear Island Nonradioactive Ventilation System	H	MSS	Main Steam System	P
VCS	Containment Recirculation Cooling System	H	RXS	Reactor System	R
VES	Main Control Room Emergency Habitability System	H	WGS	Gaseous Radwaste System	W
VFS	Containment Air Filtration System	H	WRS	Radioactive Waste Drain System	W
VLS	Containment Hydrogen Control System	H	WSS	Solid Radwaste System	W
VRS	Radwaste Building HVAC System	H			

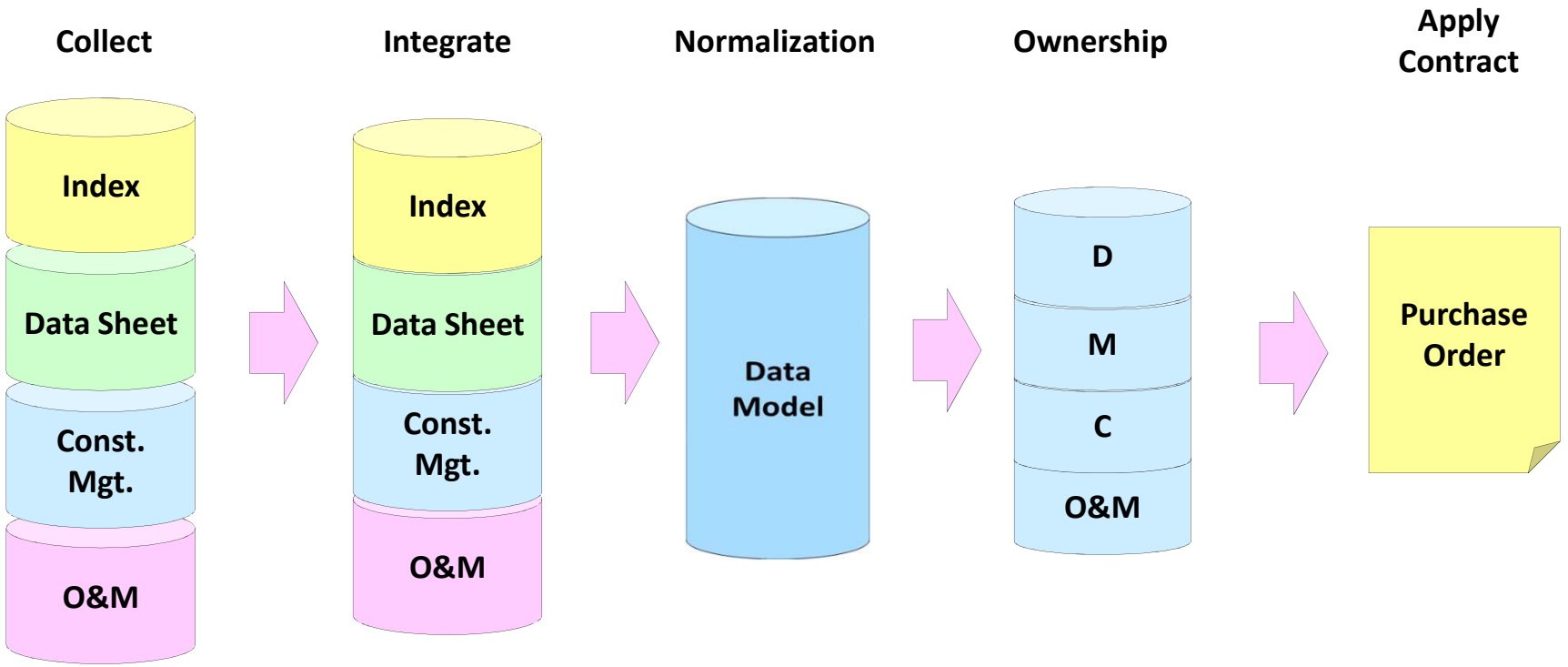
CM Scope in RM Documents

No.	Type of Document	Level	Kind	Pages	Remark
1	10CFR	REQ	4	522	
2	Regulatory Guide	DBS	135	2,147	
3	General Letter	REQ	105	581	
4	Bulletins	REQ	20	105	
5	Topical Issue, Regulatory Issue	REQ			
6	SRP (Standard Review Plan)	DBS	19	4,481	
7	Code & Standard	REQ	83		
8	Contract Documents	REQ	1	499	
9	KURD	REQ	1	2,759	
10	SAR (PSAR, FSAR)	DBS	1	17,725	
11	GDC (General Design Criteria)	DBS	14	759	
12	SDC (System Design Criteria)	SSCS	112	1,850	
13	SFD (System Functional Description)	SSCS	107	2,367	
14	DCM (Design Criteria Manual)	DBS	1	39	
15	CP (Construction Package)	DP			
16	Licensing Regulatory Study	DBS	2	222	
17	Law, Bulletin, Notice, etc.	REQ	44	4,248	
Total			649	38,784	

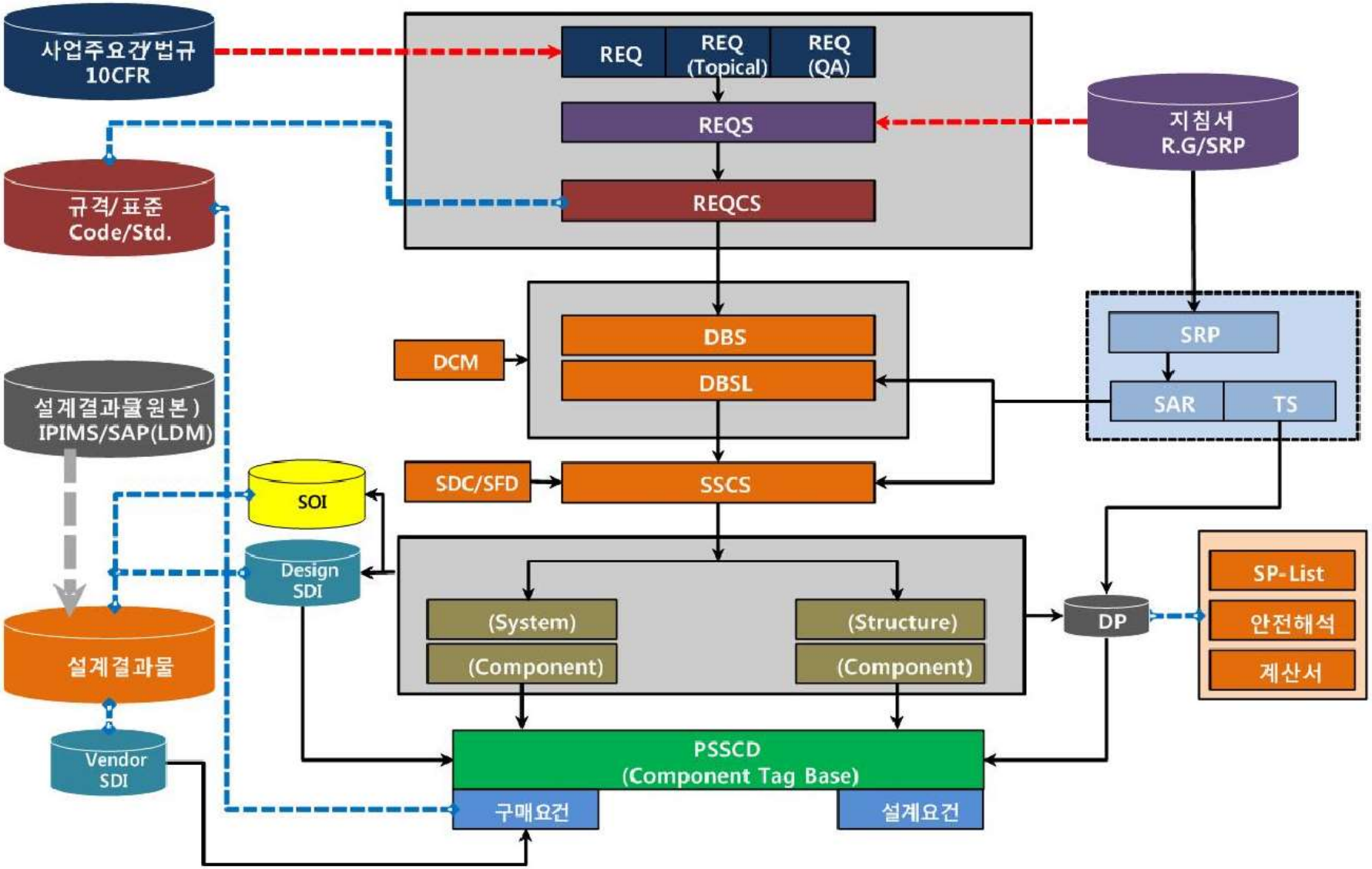
Determine Scope of Information Attribute

Define data model based on deliverables and Owner requirement

- Collect and review Client's facility management procedure or criteria
- EPC contractor's Component list, Data sheet, etc.
- Develop facility's master asset management data model
  - Should identify the responsibility of data entry for each attribute

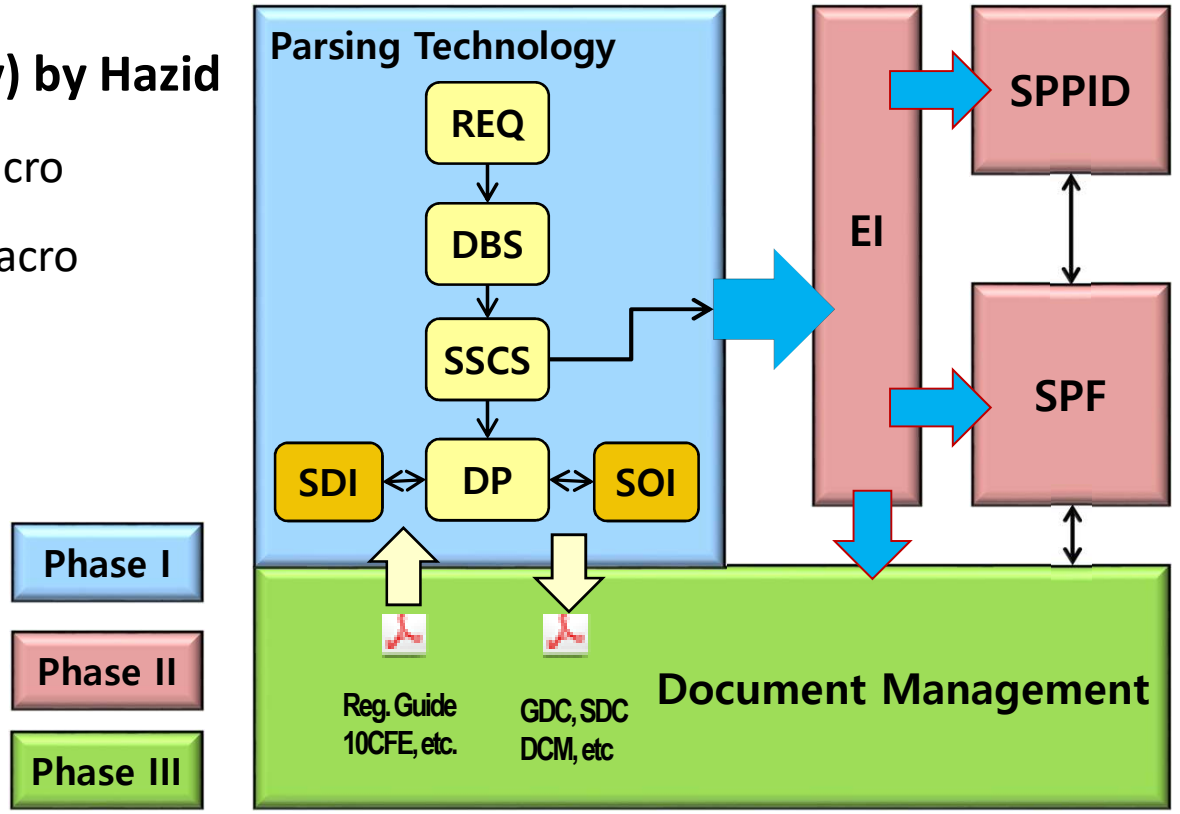


CM Taxonomy

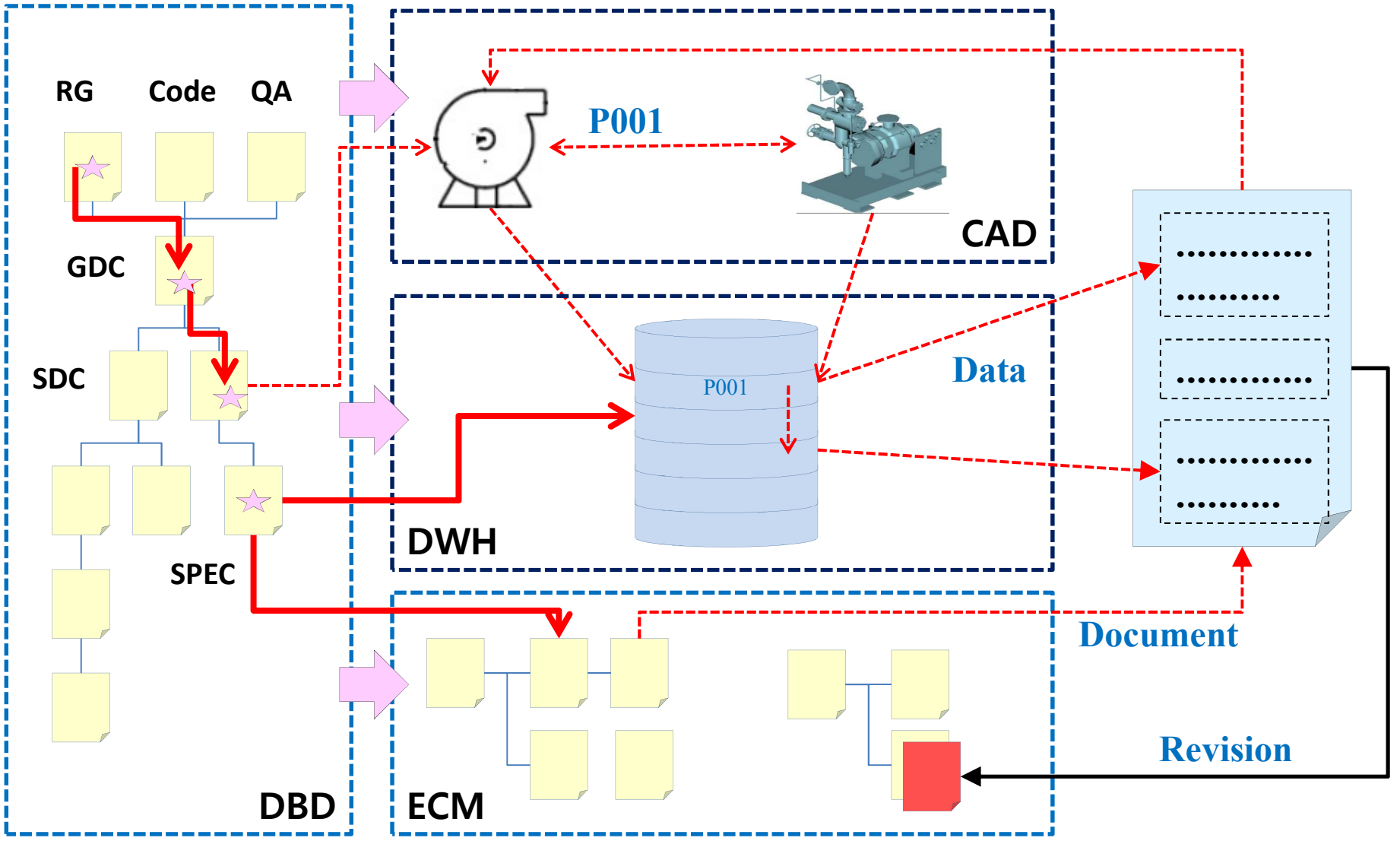


Concept of CMIS

- **Document Management System based on Parsing Technology**
  - Should be discussed with Client's legacy system
- **CAD system by Intergraph**
  - SPPID(P&ID)
- **EI (Engineering Integrity) by Hazid**
  - Translate Phrase to Macro
  - SPF understand this Macro



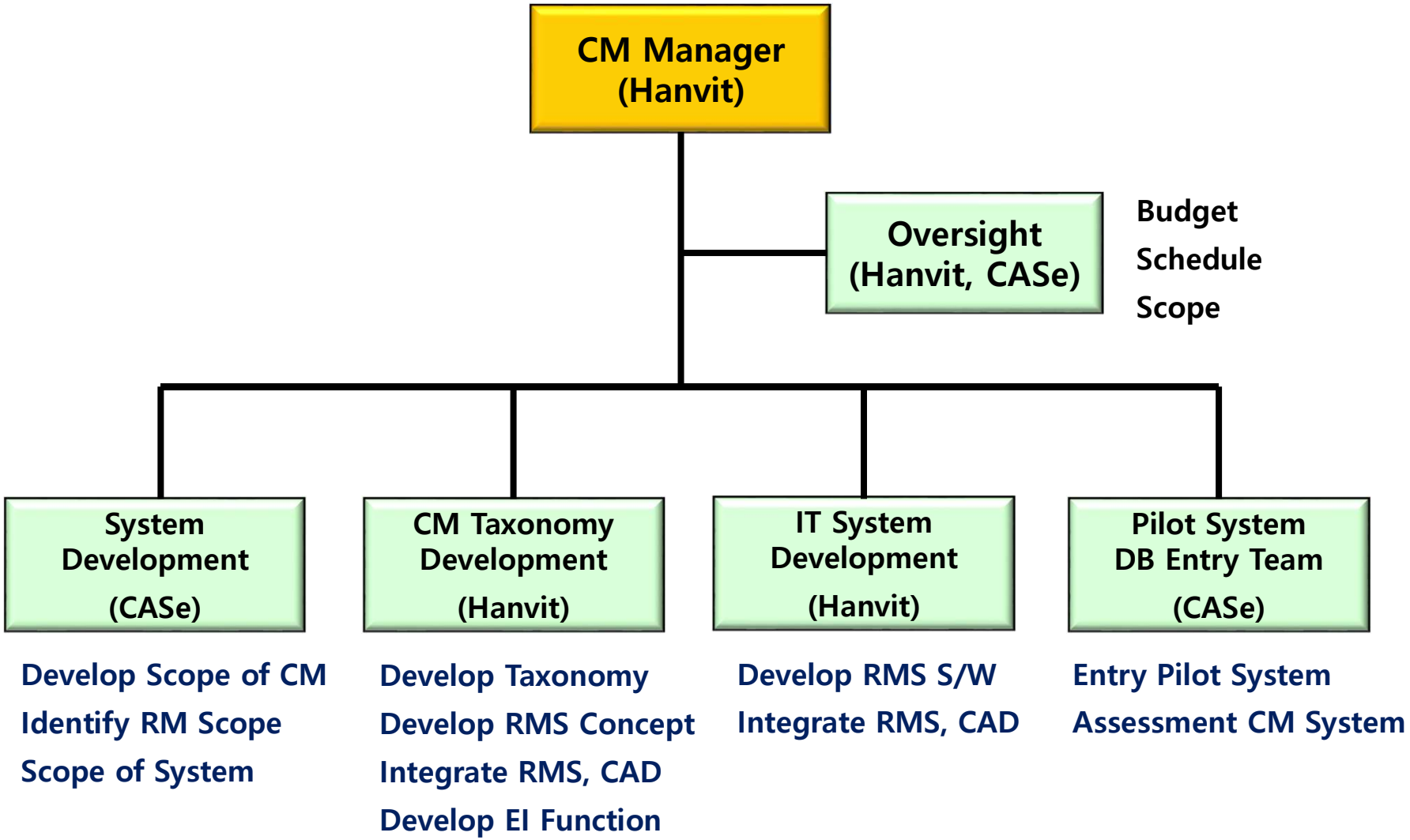
Concept of Pilot Project



Scope of Pilot Project

Implement Demonstration Only, Phase II Scope

Organization



Project Deliverables

- **Configuration Management Plan**
  - Configuration Management SSC Scope
  - Requirement Management Scope of Document
  - Data Model for Configuration Management
  - Functional Requirement for IT System Development
    - Including CAD interface function for phase II work
- **Requirement Management System**
  - Configuration Management Taxonomy
- **Pilot System**
  - IT System
  - Pilot System Database

Schedule and DOR

#	Activity	DOR	1	2	3	4	5	6	7	8	9	10	11	12	Remark
1	Prepare Project Execution Plan	K													
2	Determine Scope of Work for V.C.Summer	U													
3	Determine Data Model (Attribute) for CM	K													
4	Develop CM Taxonomy	K													
5	Selection of IT system and Installation	U													
6	Parsing for DBD and develop relation each Parse	U													
7	Develop CMIS for DBD Operation	K													
8	Develop Pilot System	U													
9	Develop Project Deliverables and Assessment	K													

Budget for Phase I

- **Assumption**
  - Unit Price of Wage assumed based on KENCA (엔지니어링 단가)
  - Currency assumed 1,150 KRW/US$
- **In-direct Cost : $1,337,169 (15.4억원)**
  - Development for CM, Taxonomy and Data Model : $758,801
  - Development for IT System : $456,807
  - Over Head Cost (10%) : $121,561
- **Direct Cost : $152,174**
  - Traveling expenses (5 people x 5 times) : $152,174
  - IT Installation Cost : (Later)
- **Total Project Cost : $1,489,343 (17.1억원)**

Key Personnel

- **Chung, Kyung Hwa**
  - KOPEC (35yr), IPIMS Deployment, KNGR CM Team Leader, NERI, EPRI VRC
- **Kim, Su Won**
  - KOPEC (35yr), I&C, NSSC CM Supervisor,
- **Kim, Kwang Jo, William**
  - KOPEC (20yr), UAE SAR Coordinator,
- **Chung Jong Hwan**
  - KOPEC (25yr), Mechanical System Supervisor,
- **Bae, Young Il**
  - KOPEC (35yr), Civil Department Supervisor
- **Kim, Hwi Tak**
  - KOPEC (30yr), Electrical Supervisor

Risk Analysis

- **Lack of understanding on the current state of development and management of US nuclear power industry**
  - It is very important that participant of CASe to share the information of US nuclear industry including USNRC, AP1000 construction work.
- **Lack of understanding of AP1000 design criteria**
  - The CASe or other design firm who has been working the AP1000 design work
- **Cooperation issue for close cooperation of participating organizations**
  - It is required to offline meeting four times
    - 1st Meeting : Kick-off and explain the Hanvit's Project Execution Plan
    - 2nd Meeting : Discuss Scope of CM, RM and Taxonomy
    - 3rd Meeting : Demonstration CMIS and Discuss Pilot Project implementation
    - 4th Meeting : Final Project Wrap off and discuss future action.

Benefit and Future Action

- After validation and verification of V.C. Summer project, entered US existing nuclear power plant CM market.
- Develop the Global Nuclear Configuration Management Project together, CASe and Hanvit, including England, France, Japan, etc.

Reference Document

ANIS/NIRMA CM 1.0 - 2007	2007	Guidelines for Configuration Management of Nuclear Facilities
ANSI/NQA-1	1994	Quality Assurance Program Requirements for Nuclear Facilities (NQA-1)
10CFR50		Code of Federal Regulations
DOE-STD-1073-93	1993	Standard Guide for Operational Configuration Management Program, Including the Adjunct Programs of Design Reconstitution and Aging Management
TR-1022684	2011	Elements of Pre-Operational and Operational Configuration Management for a New Nuclear Facility
TR-1019221	2009	Advanced Nuclear Technology: New Nuclear Power Plant Information Handover Guide
INPO 87-006	1987	Report on Configuration Management in the Nuclear Utility Industry
AP-929	1998	Configuration Control Process Description
AP-932	2009	New Plant Configuration Management Development and Implementation Process (Preliminary)
PP 02-1994	1994	Configuration Management
PP 03-1992	1992	Implementing CM Enhancement in a Nuclear Facility
TG 19-1996	1996	Configuration Management of Nuclear Facilities
NEI 97-04	1997	Design Bases Program Guidelines
Reg Guide 1.186	2000	Endorses examples in NEI 97-04, Rev 1 Appendix B as acceptable way to illustrate what is meant by Design Basis Information
IAEA-TECDOC-1335	2003	"Configuration Management in Nuclear Power Plants"
IAEA-TECDOC-1651	2010	Information Technology for Nuclear Power Plant Configuration Management