

Activities of Building Commissioning in Japan

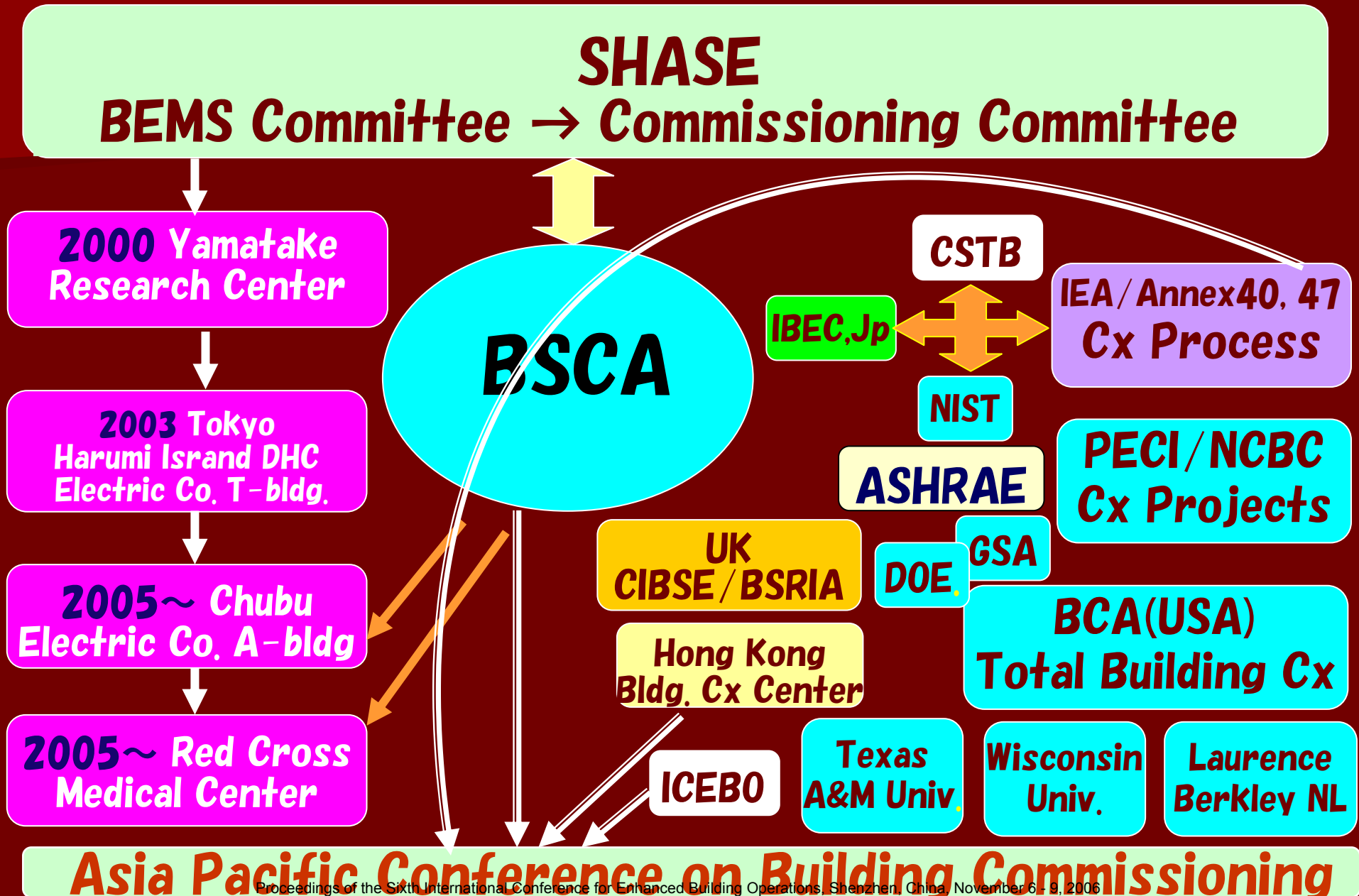
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- **Introduction and Background**
- **Activities of Building Cx in Japan**
 - *IBEC Activity for IEA/Annex40,47*
 - *SHASE Activity for Commissioning Guideline*
 - *BSCA Activity for Promoting Commissioning Business*
 - *Actual Project*
 - *Harumi Islands District Heating and Cooling*
 - *Tepco Tachikawa Building*
 - *Yamatake Research Center*
 - *Red Cross Medical Center*

Commissioning Map, Japan and World



Social Backgrounds

- Vain nostalgia for virtuous way of thinking
- Immature social recognition on Cx
- No monetary incentive for Cx implementation
- Strongest vested rights of A&E license
 - First class architectural engineer (A&E), different from international trend on A&E licensing system
- Unclear definition of TAB or TAS
 - No specified occupation for TAB works as in USA
- Owners' lack of understanding / neglect on O&M's role and operating energy / cost at program phase

SHASE* Activity for Commissioning Guideline

* The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan

- Cx WG, BEMS Committee, 1997
- Commissioning Committee, 1999~
- SHASE Guideline<SHASE-G-0006-2004>

[The Commissioning Process of
Building Services Systems]

SHASE Guideline Content

- 1. Object of the guideline
- 2. Scope
- 3. Definition of terminology
- 4. Various Cx process and applications
- 5. Organization and role sharing
- 6. Cx points at program and design phases
- 7. Cx points at elaboration phase
- 8. Cx points at construction phase
- 9. Cx points at post-acceptance step
- 10. Cx points at operation phase

SHASE Guideline Content(continued)

- References
- Annexes:
 - Annex-1 Division of Cx process phases and steps, marking event at the division, principal procedures and kinds of commissioning process
 - Annex-2 Detailed explanations of standard flowchart of procedures for Cx process
 - Annex-3 Organization for Cx process
 - Annex-4 Model quality control matrix, MQC
 - Annex-5 Responsibility of CA and CRP
 - Annex-6 Relationship among documentations for Cx process
 - Annex-7 Model document of RFP on Cx process
 - Annex-8 Model document of Cx plan
 - Annex-9 Division and responsibility among TAS and FPT
 - Annex-10 Definition and explanation of terminology
 - Referencing documents (28 model documents and templates)

BSCA, Japan

Building Services Commissioning Association, NPO

- Established in August, 2004, as NPO.
 - Corporate (supporting) members: 18 and
 - Individual members: 96, in October, 2006
- Main Activities
 - Establish practical guidelines, model documents and templates contracting provision, fee standard, etc.
 - Development of practical Cx tools
 - Social enlightenment through lectures and literatures
 - Propose/establish qualification and certification
 - Education and training for Cx engineers
- Contracting research and/or actual Cx projects, in order to take advantage for establishing technical infrastructures as above

SHASE and BSCA, Work Sharing

- SHASE Cx Committee proposed the board of directors that further activity for commissioning should be viewed as the society.
- SHASE board of directors admitted the proposal after studying possible work sharing and scope of cooperation.
- Basically the same term would be used but SHASE stands on academic stance and BSCA stands on practical business stance.
- Thus SHASE and BSCA will make effort to bring up commissioning business and provide either standards and tools to the market.
- It should be noted that both government aid and social recognition are very poor, but that practical engineers' minds desperately welcome the idea.

An idea for qualification system

- BSCA is viewing to initiate Cx qualification activities in fiscal 2006.
- Three stages of licensing is considered in my brain.
 - CxAC Candidate, who is the candidate for CA when selected as an independent Cx manager for a specific project
 - CxPE, who is the candidate for CxAC after fulfilling required experience, and expert for Cx technology together with a certain level of managing capability
 - CxTE, Who will be the candidate for CxPE, but rather the field technician working under CxPE
- It should be noted that no specialized TAB engineers ever exist in Japan in contrast to USA.

Actual Project of Cx in Japan

Stages		Bldgs	Size	CA
Forerunning Stage		Harumi Islands Dist. Heating & Cooling 1989-2003	Dist. Heating & Cooling Supply Area:6.1 ha Floor Space:43.8 ha	Nakahara TEC staff Ibamoto
Testing & Research		Tachikawa Bldg. Tokyo Elec. Co. 2002-2005	Newly Built Air Conditioning 70,000 m ² *	Matsunawa
Practical Stage	NES-TEC	Yamatake Research Center 2000-2002	Newly Built Cx Air Conditioning 1,700 m ²	Nakahara
	BSCA	Chubu Elec. Co. Atsuta Office. 2005-2007 expd.	Retro Cx Thermal Storage, Air Conditioning. 9,400 m ²	Matsuda
		Kansai Elec. Co. Dist. Heating & Cooling continuing	Retro Cx, Operation Research 1,600 RT	Yoshida
		Japan Red Cross Medical Center. 2006-2010 expd.	Newly Built Cx Thermal Concentration, Air Conditioning82,000 m ²	Nakahara

Actual Projects of Initial Cx Process

■ Harumi Island DHC

- Large scale DHC(District Heating and Cooling) introduced the heat pump and thermal storage system with the aim of achieving minimum energy consumption, minimum environmental load, and maximum economical efficiency.
- Begins at construction phase and continued for three years after completion.
- It started operating in 2001, achieving high efficiency and a large amount of reduction of greenhouse gas emission, as well as low heat-charge.



Actual Projects of Initial Cx Process

■ Tepco Tachikawa Building

- Based on research activity for establishing in-house Cx procedures for Power company
- Large but limited floor HVAC and energy system was targeted.
- Begins at construction phase and continued for two years after completion.
- Created model documents and templates for implementing Cx process.
- Three levels of quality in Cx process was classified.
- Each procedures was discussed among research committee.



Actual Projects of Initial Cx Process

■ Yamatake Research Center

- The first approach
- Small and short term construct, but complicated systems
- Begins at construction phase and continued continuous Cx three years after completion.
- Obtained knowledge and data were sent to SHASE committee for establishing guideline.
- Recognized importance of Cx of Program and Design phases.
- Actual amount of Cx works was analyzed.
- CA first experienced FPT.



Actual Projects of Initial Cx Process

■ Red Cross Medical Center

- First and complete HVAC and energy system Cx., by BSCA.
- Large and complex medical facilities
- Begins at program phase and now at the design development stage
- Optimal energy system selection was also asked to propose and commission as a specialized task in addition to performing normal Cx process.
- Design professional had been already determined when Cx was asked to take charge.
- Documenting Owner's program and OPR was the first work to set.



Thanks for Your Attention!

- Join us BSCA membership, if you are interested in Asian Cx market, though poor now, but prospective in the future.
- Let us enhance international cooperation, exchange information and technologies on building commissioning.