Nicolas COUILLAU

Automatic Cx Tool for Electrical Buildin

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Plan of the presentation

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2. **Methodology**
3. **Structure of the Cx tool**
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    2. Manual commissioning
    3. Commissioning of the BEMS
    4. Optimization of the building performance
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4. **Main feedback**
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Context of the Project

Requirement of thermal regulation are highest and highest

New buildings use more and more complex HVAC systems

Energy performance of building doesn't always meet the requirement

Malfunctioning decrease the whole performance of the building

Need to identify key points of the process to check effective performance of building

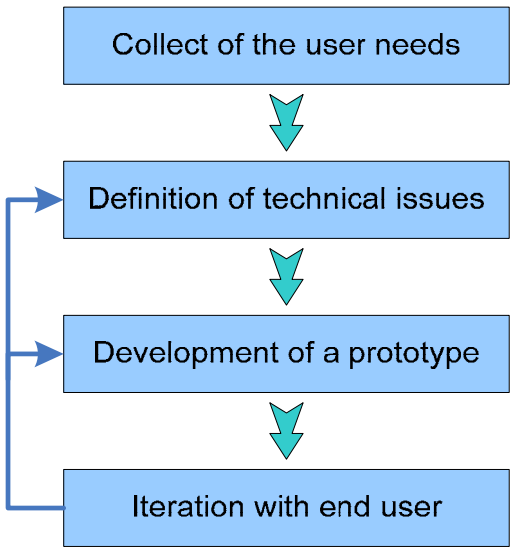
Methodology

Objective: Cx tool for Initial Cx and Continuous Cx to check the effective energy performance of electrical building

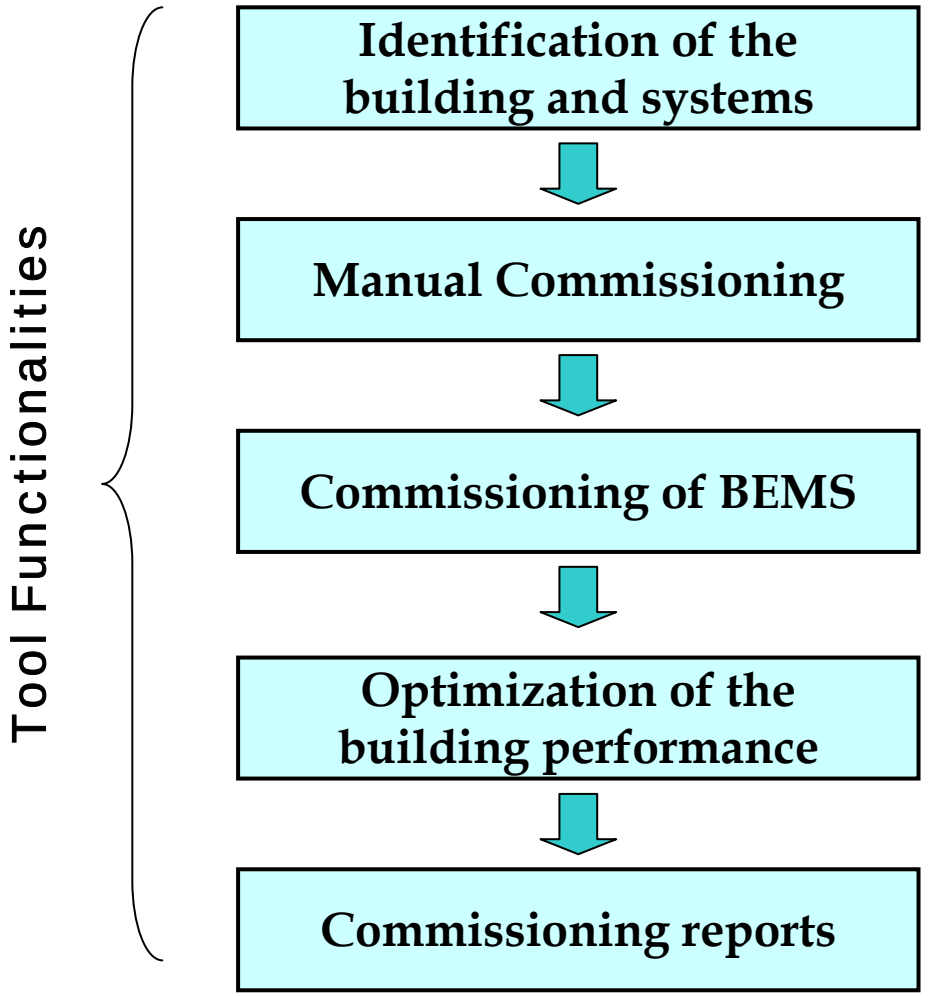
This tool has been developed by CSTB & EDF

The selected site was a nursery school located in Crèvecoeur-le-Grand near Paris in France.

This Cx tool is intended for the end user, i.e. the energy manager

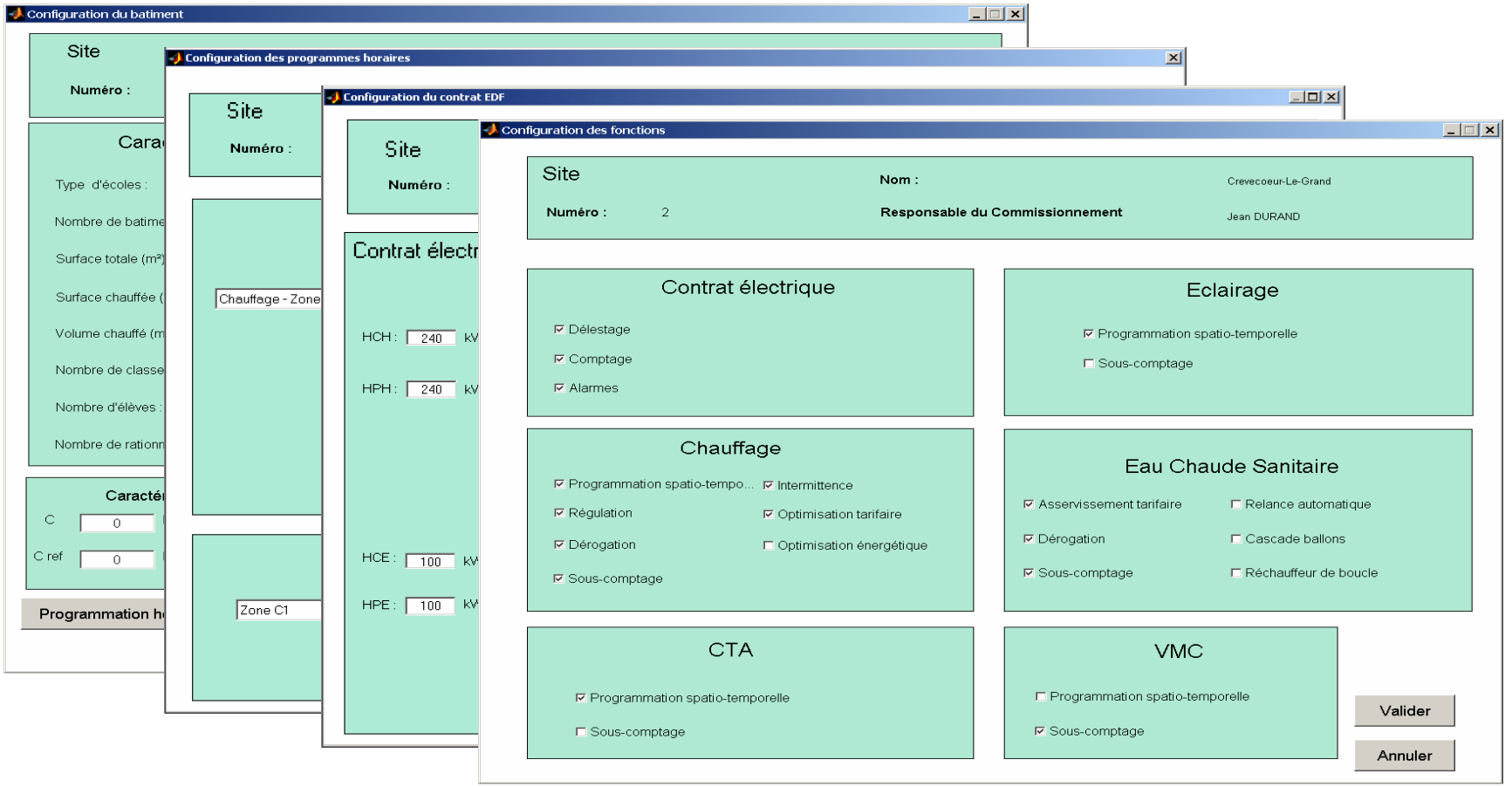


Structure of the Cx tool



Identification of the building

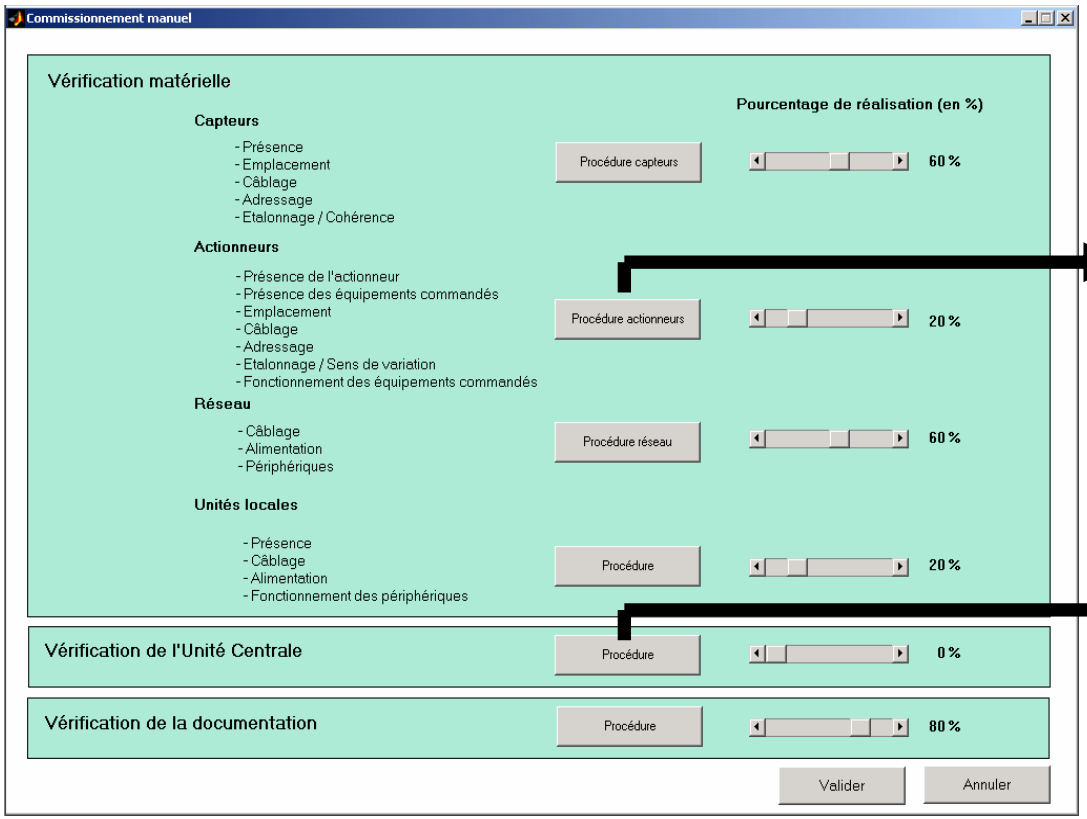
Identify the specific information about the building and its technical description in order to achieve the commissioning FTP.

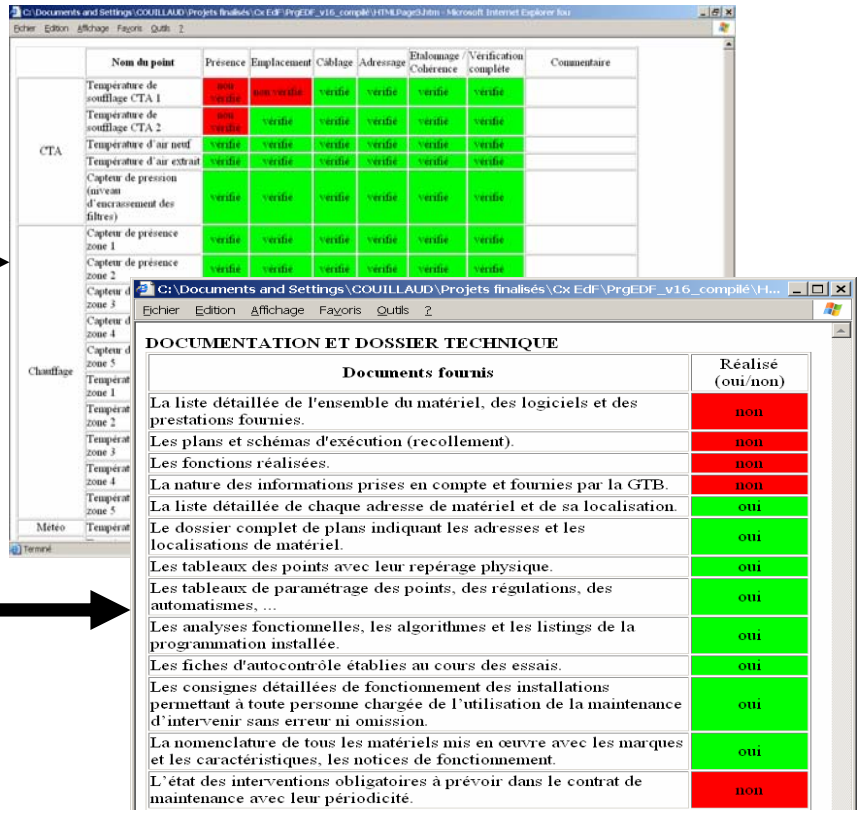


Manual commissioning

Check the technical installations (presence, location, cabling of the sensor and actuators).

Several checklists are available to help the Cx provider to carry out the manual commissioning.





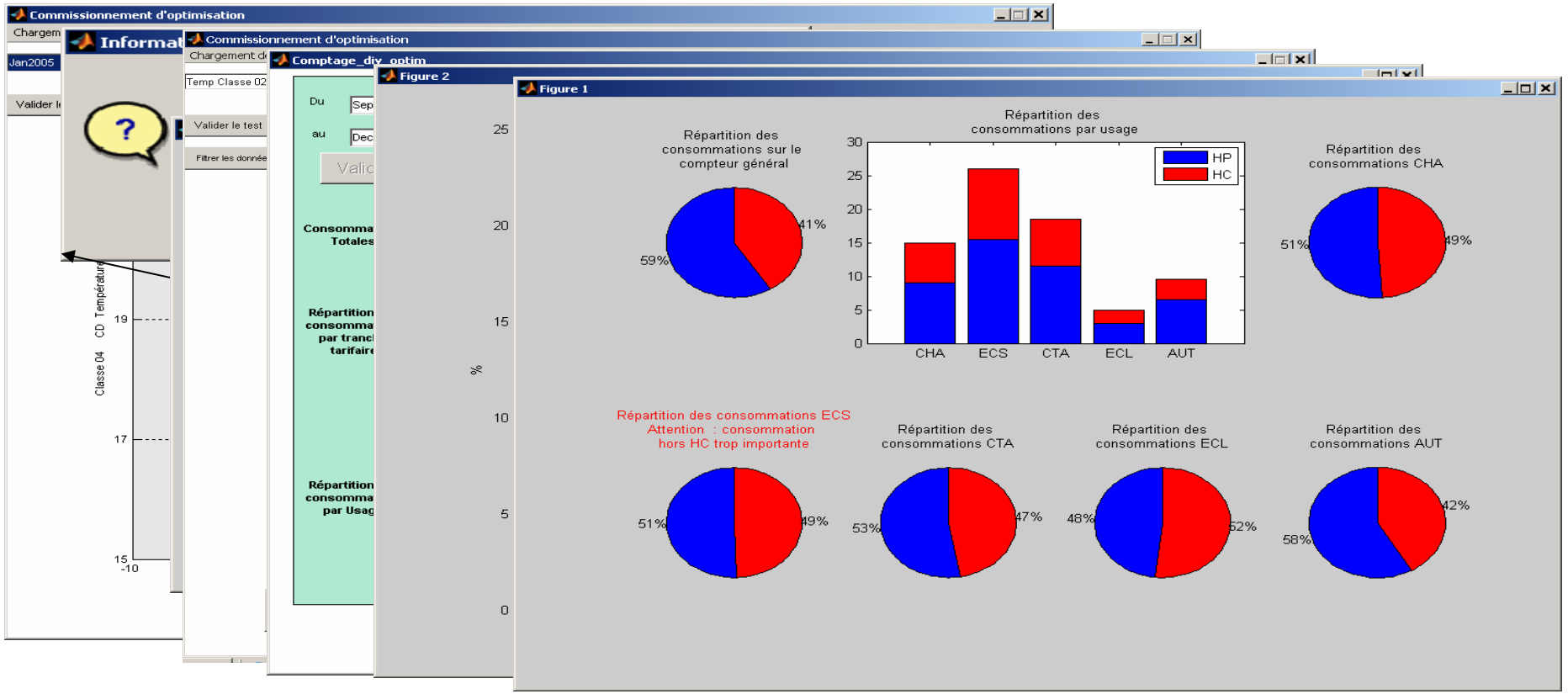
Commissioning of BEMS

Check the compliance of the functions implemented into the BEMS with the building owner requirements and to check that the functions operate according to the book of specification

Optimization of building performance

Optimize the performance of systems in term of:

- Thermal comfort,
- Energy consumptions per application,
- Operating costs,



Commissioning reports

Report the work of the commissioning provider to the building owner. It allows to follow the commissioning progress and save results

4 commissioning reports are available for:

- **Identification of the building**
- **Manual commissioning**
- **Commissioning of the BEMS**
- **Optimization of the building performance**

Commissioning reports

Commissioning reports are available in:

Light version containing only the appreciation of the test

Rapport de commissionnement de la GTB - Microsoft Internet Explorer fourni par CSTB - Ma...

Fichier Edition Affichage Favoris Outils ?

Rapport de Commissionnement de la GTB :

Site : Crevecoeur-Le-Grand
Responsable du Commissionnement : Jean DURAND

Test	Satisfaisant	Partiellement Satisfaisant	Non Satisfaisant	Non Réalisé
Tint 1 h occ zone C1	-	-	-	X
Tint 1 h occ zone C2	-	-	-	X
Tint 1 h occ zone C3	-	-	-	X
Tint 1 h occ zone C4	-	-	-	X
Tint 1 h occ zone C5	-	-	-	X
Tint 1 j occ zone C1	-	-	-	X
Tint 1 j occ zone C2	-	-	-	X
Tint 1 j occ zone C3	-	-	-	X
Tint 1 j occ zone C4	-	-	X	-
Tint 1 j occ zone C5	-	-	-	X
Tint 1 j occ multi zones	-	X	-	-
Répartition des charges	-	X	-	-
Comptage	-	-	X	-
Comptage divisionnaire	-	X	-	-

Terminé Poste de travail

Full version containing all figures and comments

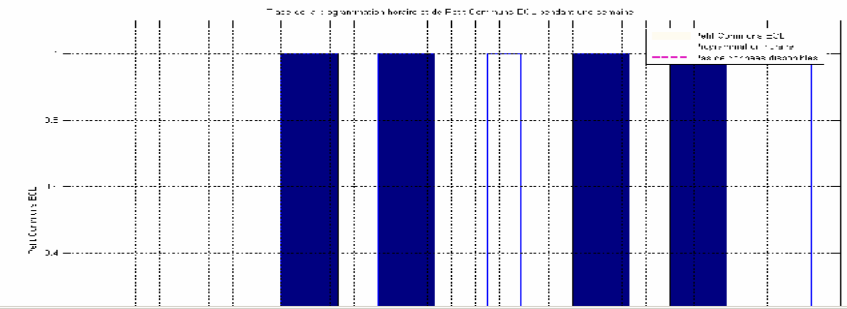
Rapport de commissionnement de la GTB - Microsoft Internet Explorer fourni par CSTB - Marne...

Fichier Edition Affichage Favoris Outils ?

Rapport de Commissionnement de la GTB :

Site : Crevecoeur-Le-Grand
Responsable du Commissionnement : Jean DURAND

Test	Satisfaisant	Partiellement Satisfaisant	Non Satisfaisant	Non Réalisé
Programmation de l'éclairage zone E1	X	-	-	-
Intervenant	**Date du test**	**Date des données**	**Infos sup 1**	**Infos sup 2**
	18-Jan-2007 16:24:46	22-Nov-2003	Infos sup 1	Infos sup 2
Remarque	Le test est correct.			



Terminé Poste de travail

Main feedback of the Cx tool

- The lack of technical information: some documents are missing,
- The lack of labeling in the electrical boxes,
- The discrepancy between BEMS information and ventilation operating,
- Under heating in north zone: the AHU control was not optimal and heating system was undersized.
- Cx providers appreciate technical reports: they help them to better manage their systems and transfer knowledge between actors.

Conclusion & Future works

This Cx tool allows to make:

- Initial Cx with:
  - Manual Cx functionality
  - Cx of BEMS functionality
- Continuous Cx with:
  - Optimization of the building performance
  - Indictors of energy consumptions

Future works consist in:

- Adapting this prototype tool to a generic tool allowing energy managers to use the same tool for all of their building.
- Implementing new functional test procedures to be able to check performance of non-electrical building
- Integrating a protocol of communication to allow to easily manage buildings stocks

Thank you for your attention

DO YOU HAVE ANY QUESTIONS?

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