



# Computerized Maintenance Management System (CMMS)

A CMMS is a software package that centralises maintenance data and streamlines maintenance processes.

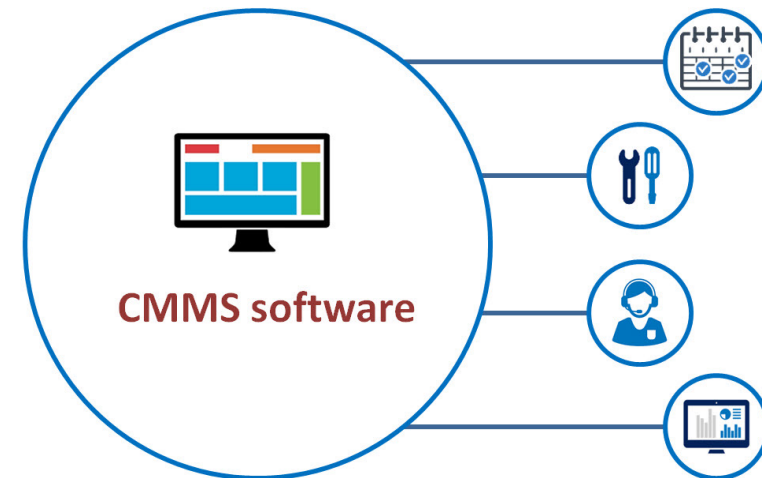
## Core:

- a database of information about the maintenance operations and the equipment, materials and resources to perform it in a certain setting.

## Essential modules:

- the equipment management module
- the equipment maintenance and repair module

A CMMS record usually contains the following information:  
*serial and inventory number, manufacturer, device group and type, operating status, service history, warranty, class of the device, the availability of user, technical, maintenance and installation manuals*





# Why it is important within healthcare facilities?

Supports the daily practices of biomedical and clinical engineers:

- preventative and corrective maintenance
- safeguard the safety and effectiveness of the available medical devices

Among other functions that CMMS can be used for, there are:

- hazard/recall and staff productivity monitoring
- quality assurance
- cost allocation, etc.





# Why is contextual design of CMMS important?

Contextual and user-centred design are essential for CMMS as for medical devices.

- They allow to better tackle the local challenges and improve the resiliency, safety and cost-effectiveness of the solution.
- 70% of the medical devices in Sub-Saharan Africa are donated, and up to 75% of them are broken.
- Many factors contribute to this including the lack of a well-design HTM

CMMS can:

- be the drivers for change in hospitals
- improve the health technology management practices within healthcare locations of LRSs, including donated medical devices





# Challenges

In fact, each context is characterised by its own peculiarities and challenges, which need to be considered for a resilient design:

- Severe problems in the supply chain;
- Lack of funding and expertise;
- Lack of a well-functioning HTM program;
- Limited availability of open-source programs and these open-source programs are often not adequately designed for LRSs;
- Heterogeneous software and devices from different manufacturers;
- Harsh environmental conditions.





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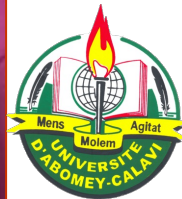
# Computerized Maintenance Management System: GMaint-KM Benin



Seven pen-and-paper registers of the inventory of all medical and medical-technical equipment were obtained for three selected hospitals, namely:

- The Saint Jean de Dieu Zone Hospital of Tanguiéta in northern Benin,
- The Abomey-Calavi/Sô-Ava Hospital & University Center in southern Benin
- The Agonlin Zone Hospital in Central Benin

A total of 2255 medical equipment were inventoried (717, 924 & 614 resp.)



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Medenou D, Fagbemi LA, Houessouvo RC, Jossou TR, Ahouandjinou MH, Piaggio D, Kinnouezan CD, Monteiro GA, Idrissou MA, Iadanza E, Pecchia L. Medical devices in Sub-Saharan Africa: optimal assistance via a computerized maintenance management system (CMMS) in Benin. Health and Technology. 2019:1-4.



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# GMaint-KM Benin tool

GMaint-KM Benin tool includes 35 fields and 69 direct outputs as well as the Global System Mobile Communication (GSM) option, which allows to request for intervention, remind preventative maintenance schedules, receive evaluation reports, and so on.

Moreover, it:

- Facilitates and optimises the maintenance management duties.
- Allows for the descriptive statistics of the real data extracted from hospitals.
- More effective than the existing methods (paper-based databases or no database at all)





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Limitar la lista aux choix suivants :

Volet : Biomédical    Famille :    Fonction :    Service :    Salle :    Ref Externe :    N° Inventaire :    Catégorie Nature :    Statut à l'acq. :    Entretien MP :

Manuels d'utilis. :    Manuels Tech. :    Année Acq. :    Année Fab. :    Au Rébus : -1 pour Oui    Raison Acquisition :    Type Acquisition :    Entretien de Routine :    Mobilité :    Financement :

Criticité :    IPMP :    Sous Garantie :    Etat Fonctionnement :

N°	EQUIPEMENT	MARQUE	MODELE	N° SERIE	SERVICE	SALLE	ETAT DE FONCTIONNEMENT	N° INVENTAIRE	Référence
9	NEGATOSCOPE	NEANT	0331057	14879	MATERNITE	Staff/Bibliothèque	Fonctionnel C1: Coût de Maintenance Raisonnable	APPMT00312/OHS.D/2013	NEANT
30	GENERATEUR DE FONCTIONS	ISOTECH	GFG - 2110	901A19662	MAINTENANCE TEC	Bureau C/STM	Fonctionnel C1: Coût de Maintenance Raisonnable	AOUT662/UNIDEA/2010	NEANT
37	NUMERISEUR DE LAMES	HAMAMATSU	C10730-12	640197	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
38	CENTRIFUGEUSE	ALC UFUGE	PK 110	54663	LABORATOIRE	Hall/Couloir	Fonctionnel C1: Coût de Maintenance Raisonnable	APPMT99/OHS.D/2005	NEANT
40	MICROTOME	BIO OPTICA	PPM ROTARY 3004	300321	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
41	BAIN THERMOSTATE (Bac à Eau)	BIO OPTICA	1770	2115021138	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
43	MODULE DE STOCKAGE REFRIGERE (Plaque Refroidissante)	BIO OPTICA	PF 100	411507603	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
44	ENCEINTE THERMOSTATEE (Unité Thermique)	BIO OPTICA	UT 200 L	461514439	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
47	DISTRIBUTEUR DE PARAFFINE	BIO OPTICA	DP 500	231512508	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
48	AUTOMATE DE COLORATION A BAIN (Hydratation/Déshydratation)	BIO OPTICA	STP 120	STP /98	LABORATOIRE	Anatomie-Pathologi	Fonctionnel C1: Coût de Maintenance Raisonnable	NEANT	NEANT
50	HOTTE CHIMIQUE	BIO OPTICA							
51	CENTRIFUGEUSE	HETTICH							
52	MICROSCOPE OPTIQUE (BINOCULAIRE ELECTRIQUE)	NIXON							
54	ONDULEUR	MERCURY							
60	AGITATEUR ELECTRIQUE	MAXI MIXER							
61	MICROSCOPE OPTIQUE (BINOCULAIRE ELECTRIQUE)	ZEISS							
62	CENTRIFUGEUSE	EPENDIOF							
65	MICROSCOPE OPTIQUE (BINOCULAIRE ELECTRIQUE)	MOTIC							
66	AMPLIFICATEUR D'ADN	ABBOT M2000t							
75	MICROSCOPE OPTIQUE (BINOCULAIRE ELECTRIQUE)	LEICA							
76	CENTRIFUGEUSE (à Hematocrite)	HERAEUS							

Résultat >>> 235 Equipements. / 717 Soit

Nous sommes le mercredi 7 mars 2018

Hôpital De Zone Saint Jean de Dieu de Tanguéta

07/03/2018

LOGICIEL GMAO

G

GMaint KM Benin

V1.17.03

Connexion

Setup Liaison

Conception et Réalisation : KM Interface

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For Biomedical Maintenance Services

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Pour la gestion de la  
Maintenance Biomédicale et  
Hospitalière



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# Medical devices in Sub-Saharan Africa: optimal assistance via a computerized maintenance management system (CMMS) in Benin

[Daton Medenou](#), [Latif A. Fagbemi](#), [Roland C. Houessouvo](#), [Thierry R. Jossou](#), [Mêtowanou H. Ahouandjinou](#), [Davide Piaggio](#), [Chams-Deen A. Kinnouezan](#), [Gabriel A. Monteiro](#), [Moubarack A. Y. Idrissou](#), [Ernesto Iadanza](#) & [Leandro Pecchia](#) 

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# Management and maintenance of medical technologies in low-resource settings

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