

# **SPECIFICATIONS**

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# **GENERALITES**

#### 1. Objective

Leave requests at IML are paper-based. An employee must fill out a request form which is validated by managers at several levels.

The objective of GCM is to computerize the entire process of the leave management procedure at Infomil Mauritius Ltd.

# 2. Audience

Anyone technically and functionally related to the process.

# 3. Abbreviations et acronyms

IML - Infomil Mauritius Ltd

HMI - Human Machine Interaction

GCM - Gestion des Congés IML

CP - Congé payé (paid leave)

M - Congé maladie (sick leave)

CNP - Congé Non Payé (unpaid leave)

CF - Leave Carry forward

JNO - Jour Non Ouvré (non working days)

# 4. Other specificities

An employee refers to a person working at IML.

Database refers to an XML file.

A manager refers to the person who is next in the hierarchical level and who validates the leave request of an employee.

# 5. Technologies

Web site ASP.Net, C#

Bootstrap

Back End: XML

#### 6. References

Maquette: \\IML-N902\(D)\_Unite\Srv\_010\_(Documents)\Documents\_techniques\Dev IML\UOM Stage\Gestion des conges\Specs\01\_IHM.pdf

 $\label{local_control$ 

XML Schema: \\IML-N902\(D) Unite\Srv 010 (Documents)\Documents techniques\Dev IML\UOM Stage\Gestion des conges\Specs\02 Schema.png

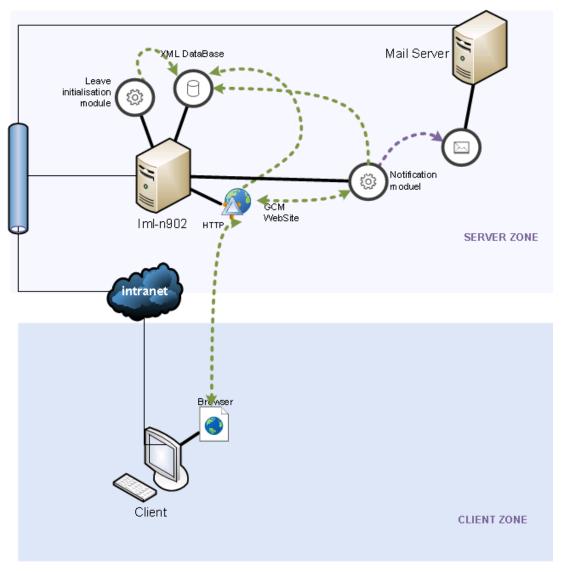
 $\begin{tabular}{ll} XSD\ Model: $$\ML-N902\C) & Unite\Srv\ 010\ (Documents)\Documents\ techniques\Dev\ IML\UOM\ Stage\Gestion\ des\ conges\Specs\04\ ModeleDonees\Xsd.xsd \\ \end{tabular}$ 

XML Example: \\IML-N902\(D) Unite\Srv 010 (Documents)\Documents techniques\Dev IML\UOM Stage\Gestion des conges\Specs\05 FichierExampleXml.xml

# **APPLICATION**

# 1. Architecture

# 1.1. GCM global architecture



Client:

Employees log on to an ASP.NET web site via Intranet to apply for a leave.

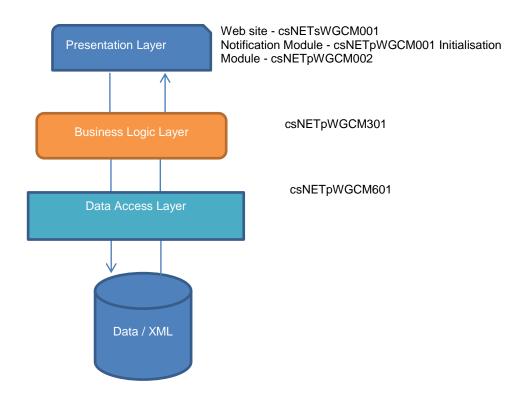
Server:

The web site is hosted on a server.

Data is stored in an XML file.

Leave requests or requests that have been escalated are notified by mail via a notification module. The module is launched by a task scheduler every X minutes (X is configurable). The leave initialization module is launched by a task scheduler on the first day of each year to initialize the number of leaves of each employee.

# 1.2. Global architecture of the solution



The solution follows a three-tier architecture model.

Presentation Layer

csNETsWGCM001 is an ASP.NET web site that interacts with the user. It represents the presentation layer described in <u>section IHM</u>.

Business Logic Layer

csNETpWGCM301 contains all the logic of the application and implements the functionalities described in <u>section fonctionnalités</u>.

Data-Access Layer

csNETpWGCM601 contains the classes to access data in the XML file. Further details are given in section Structure des données.

Data / XML

Data stored in XML format

# 1.3. Description

The purpose of GCM is to manage leave requests of employees at IML. GCM consist of the following:

#### Main application:

A website that allows the following operations:

- An employee can apply for a leave and view his leave details
- The Manager can approve, escalate or reject the leave request of employees
- The Manager can apply for a leave on behalf of an employee in his team
- The Manager can view employee leave requests in a graphical chart (HighChart)

# Mail Notification module:

- notifies approval / rejection or escalation of leaves.
- alerts if there are urgent requests to be processed.
- runs every X minutes (X is configurable in app.config).
- sends a reminder to the manager if a leave request is reaching its due date and has not yet been processed.
- escalates leave requests if necessary (e.g. if the manager responsible for validating the request is not available).

#### Leave initialization module

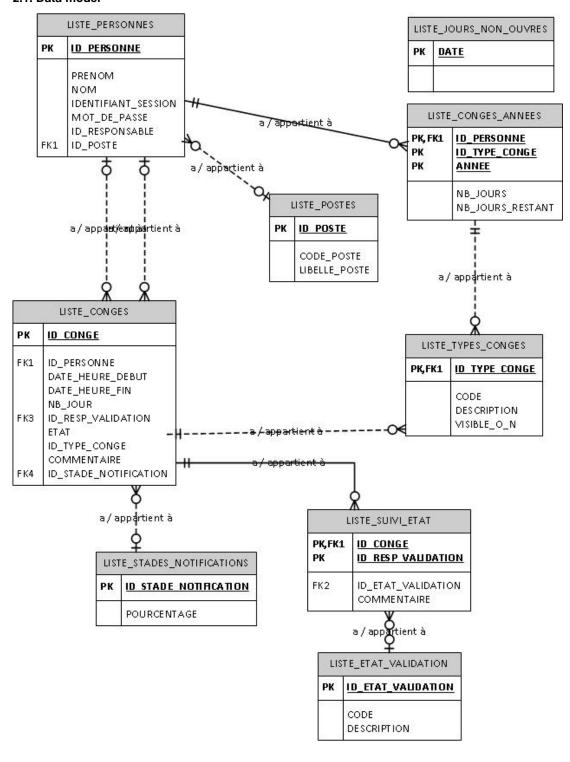
- initializes the number of leaves for each employee at the beginning of the year.
- carries forward the remaining leaves from the previous year to the current year.

# 1.4. Naming conventions et Namespaces

Assemblies	Namespaces
csNETsWGCM001 (web site)	Infomil.PSTG.WGCM
csNETpWGCM301 (BLL)	Infomil.PSTG.WGCM.BLL
csNETpWGCM601 (DLL)	Infomil.PSTG.WGCM.DLL
csNETpWGCM001 (Leave initialization module)	Infomil.PSTG.WGCM.Tools
csNETpWGCM002 (Mail Notification module)	Infomil.PSTG.WGCM.Tools
csNETpWGCM003 (Leave extraction module)	Infomil.PSTG.WGCM.Tools

# 2. Data structure

# 2.1. Data model

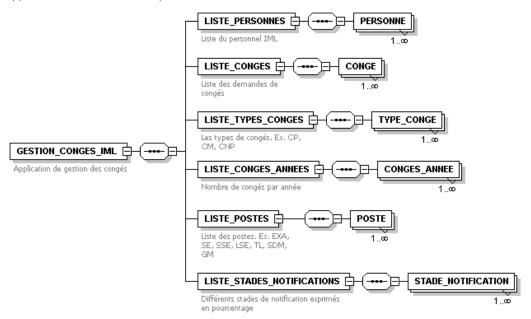


The data model consists of the following entities:

- 1. LISTE\_SALARIES Contains employee details
- LISTE\_POSTES Contains details of positions at IML. Ex: Code = SE, Label: Software Engineer.
- 3. LISTE\_TYPES\_CONGES Contains the list of types of leave. Example: Code = CP, Description = "Congé payé". VISIBILE\_O\_N indicates whether the type of leave is visible in the drop-down lists in the HMI.
- 4. LISTE\_CONGES\_ANNEES Contains leave details for employees. Each employee will have a row for each type of leave indicating the balance for the year.
  - NB\_JOURS The number of days off at the start of the year
  - NB\_JOURS\_RESTANT The number of days of vacation remaining
- LISTE\_JOUR\_NON\_OUVRES Contains the list of non-working days (public holidays or weekends for example)
- 6. LISTE\_CONGES Contains leave requests.
  - · the start and end date of the leave request
  - the number of days off
  - ID\_RESP\_VALIDATION indicating the id of the manager who must validate the request.
  - Etat indicates the final status of the leave Validated or rejected
  - Id type congé the type of leave
  - Commentaire Comment/notes for validation or rejection
- 7. LISTE\_STADES\_NOTIFICATIONS Different points in time where a notification is to be sent (expressed as a percentage)
  - E.g. 0, 25, 50, 75, 100

# 2.2. XML data schema

The xml schema of the data presents a global view of what is expected in the xml file of the GCM application. More details are provided in the XSD model file Références



Generated with XMLSpy Schema Editor www.xmlspy.com

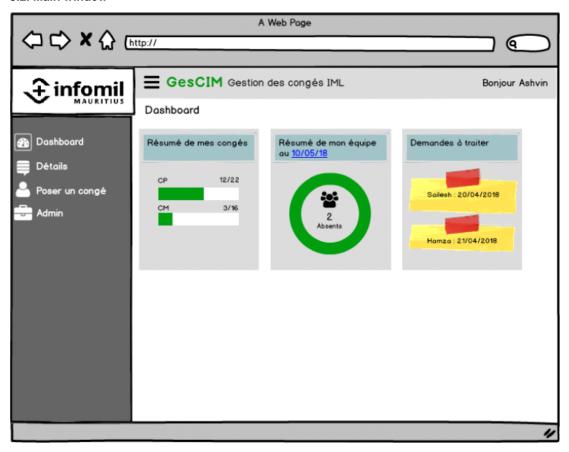
# 3. Front end (Web site)

# 3.1. Login screen

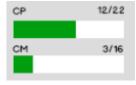


- This window allows to authenticate a user.
- The user enters a session ID (eg. adowlutrao) and a password.
- The two fields are mandatory.
- The button "Valider" authenticates the user and gives him access to the main page of the application.
- Otherwise, a popup message alerts for insufficient rights
- cf.<u>log on</u>

# 3.2. Main window



- The main window (dashboard) displays a summary of information on leave requests.
- Section "Résumé de mes congés"



- Is displayed for all users.
- $\circ\quad$  Shows the number of leave taken by the connected user.
- In the example: The employee is entitled to 22 CP and 16 CM per year and he has already taken 12 CP and 3 CM during the year.
- The bar chart depicts the leave taken during the year. In green, the number of leave taken and in white the number of remaining leave.

Section "Résumé de mon équipe..."



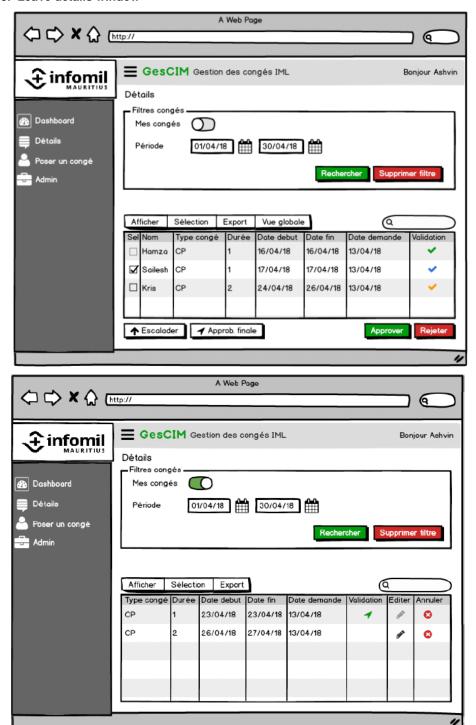
- o Displayed only if the connected user is a manager.
- o Displays the number of employees absent in the team on the current date.
- The pie chart shows the employees present (green) and absent (red) on the current date.
- Clicking on the hyperlink opens a calendar dates. On selecting a new date, the chart is updated for the selected date.
- A click on the pie chart opens a popup with the list of employees absent on the selected day

# - Section "Demandes à traiter"



- o Displayed only if the connected user is a manager.
- Displays leave requests that have not already been treated by the manager.
- Only requests that are nearing the effective start date are displayed. Cf.
   Récupérer demandes de congés qui arrivent à échéance
- Clicking on a post-it launches the Details window with focus on the leave request to be treated
- Example: A click on Sailesh launches Details window with the corresponding line ticked.
- o Cf. Récupérer demandes de congés à traiter

# 3.3. Leave details window



# – Section "Filtres congés":

- o Button "Mes congés" displays leave requests for the manager or his team.
- If the connected employee is not a manager, this button is disabled and the grid displays only leave requests of the connected employee.
- o Control "Période" lets you enter a search period for leave requests.
- o Button "Rechercher" filters out leave requests and display the result in the grid.
- o Button "Remove filter" resets the interface.

#### - Grid:

o "Afficher": The number of lines to display on one page in the grid.



- o "Sélection": The columns to display.
- o "Export": Exports grid data in CSV or XLS format.
- "Vue globale": Pop-up a Gantt Chart / highchart to graphically display selected employees' leave requests.
- If "Mes congés" button is activated: Display the leave requests of the connected employee else the leave requests of the team.
- o Edit Column: cf. Edit a leave request
- Clicking on the icon "Editer" opens the editing window of the leave request.
- o Cancel Column: cf. Cancel leave
- A click on icon "Annuler" displays a confirmation message to cancel the leave request.
- Checkbox column: Select leave requests to be processed
- If no row is checked, the buttons Escalader/Approbation finale/Approuver/Rejeter throw a warning message: "Merci de sélectionner au moins une demande au préalable."
- "Validation" column displays icons and tooltips to give an indication of the status of a request.

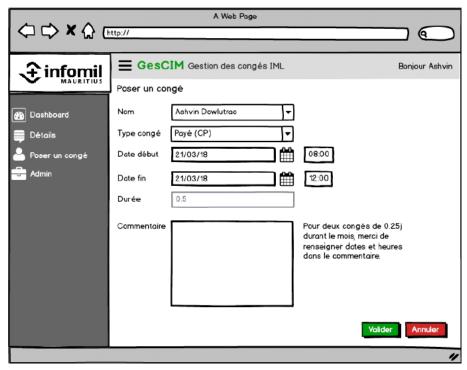
Icons	Description
1	Request approved by the GM (or by a manager via the button Approbation finale)
~	Request approved by the TL (pending validation of SDM)
<b>~</b>	Request approved by the SDM (pending validation of GM)

×	Request disapproved by TL
×	Request disapproved by the SDM
×	Request disapproved by GM
<b>1</b>	Request escalated by TL
1	Request escalated by SDM

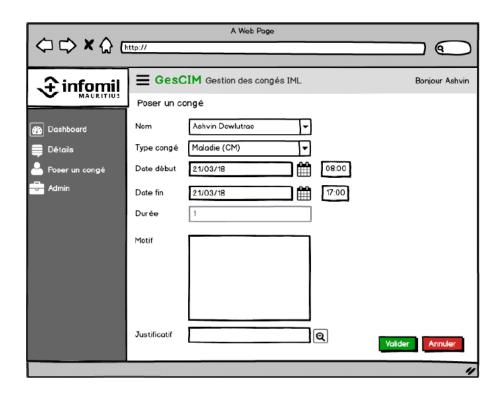
# Bottom most buttons :

- o Visible if the connected employee is a manager.
- o "Escalader": to escalate a request to the next hierarchical manager.
- O "Approbation finale": shortcut for managers to approve a leave request
- o "Valider": Validates the request
- o "Rejeter": Rejects the request

# 3.4. Apply for a leave window



- Combo box "Nom" is editable by managers, otherwise it is disabled but initialized. In enabled mode, it lists the manager and employees in the team.
- The combo "Type conge" contains the following entries:
  - o Payé (CP) <Type sélectionné par défaut>
  - Maladie (CM)
  - o Sans solde (CNP)
- The "Date début" field defines the start date and time of leave
- The "Date fin" field defines the end date and time of a leave
- The time fields are optional
- The "Durée" field displays the number of days based on the start and end dates
  - o cf. Valider plage congé for display rules
- The "Valider" button saves the request and send an email notification via the notification module. cf. Notification
  - In this specific case, the execution of the module will be through command line. A
    mail is sent on validation.

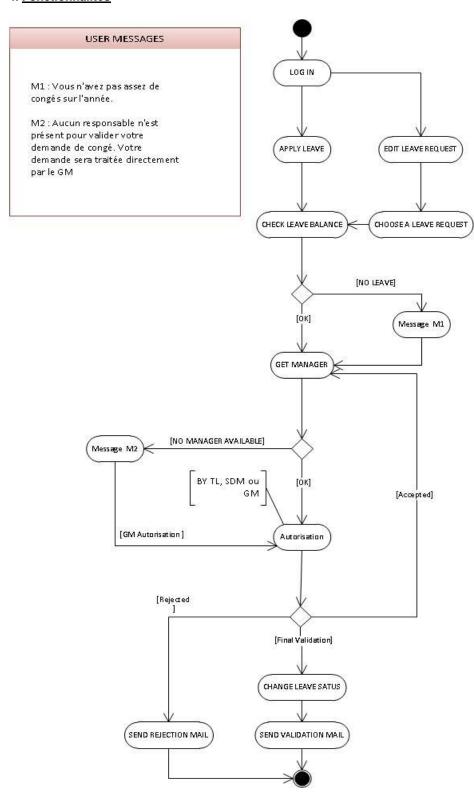


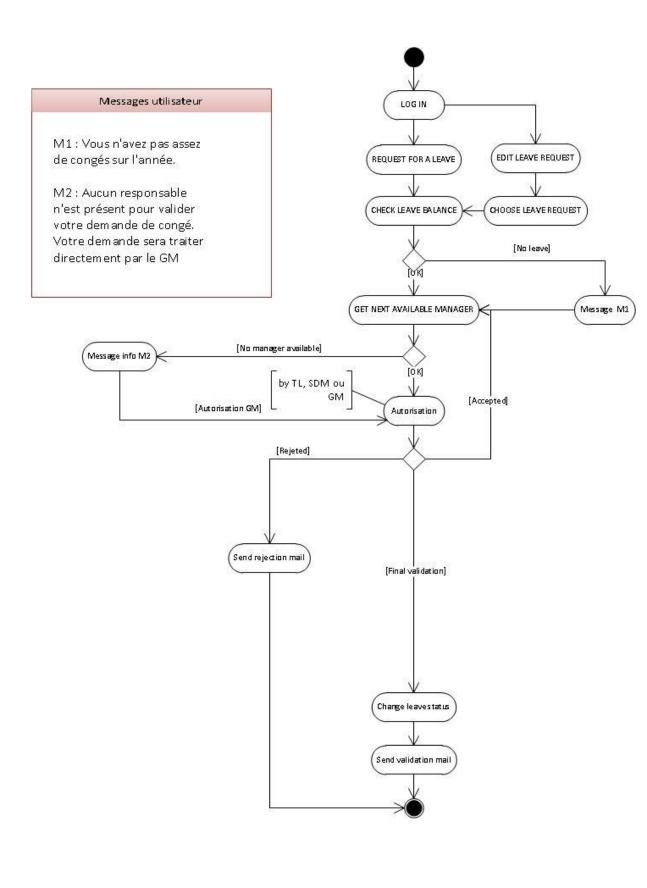
Rules for "Congé Maladie":

- The label "Commentaire" is renamed "Motif"
- The field "Justificatif" is added to the interface

The field "Justificatif" serves to upload a medical certificate cf. Congé maladie

# 4. Fonctionnalités





# 4.1. Log in

Authenticates the employee before giving him access to the application.

Verifies that session ID and password are correct.

If the employee is in the database / XML, access to the application is based on the employee's hierarchical position cf. Fenêtre principale

#### 4.2. View team summary

The summary of a team consolidates the team absences

Concretely, we must

- Collect employees (LISTE\_PERSONNES) for the team from his line manager. To read from <u>LISTE\_PERSONNES</u> where the line manager = ID\_RESPONSABLE.
- For each employee, get his state (absent / present) for the day. <u>Collect Absence / Presence employee</u>

#### 4.3. Check balance

This feature allows to view the leave balance for a type of leave and a given employee.

The NB\_CONGES\_RESTANT field LISTE\_CONGES\_ANNEE table shows the number of remaining leave for the year.

# 4.4. Get line manager

This feature allows to get the line manager for a given employee. If the manager is on leave, we search for the next available manager in the hierarchy. If all managers are on leave (including GM), we return the GM. To read from LISTE\_PERSONNES.

# 4.5. Get state of an employee (absent/présent)

Returns whether the employee is absent or present for a given day. To read from LISTES\_CONGES, if the employee has an approved leave for the given date.

# 4.6. Validate leave duration

Validates the duration of a leave from datetimes start to end based on the following rules :

- 1. The minimum duration of leave is 0.5 day = 4 hours.
- 2. The maximum duration of leave for a day is 8 hours.
- 3. Minimum Start time: 7:30
- 4. Maximum End Time: 18:30
- 5. Public holidays and weekends are not included in the calculations Table with examples of rules

Date Start	Date end time	State	Normal	Comment
Time			Days	
21/05/2018 07: 30	05/21/2018 11: 30	OK	0.5 Day	
05/21/2018 06: 30	05/21/2018 10: 30	KO	-	Start time before the minimum time (7: 30)
21/05/2018 07: 30	05/21/2018 12: 30	KO	-	Invalid number of hours (> 4 hours)
05/21/2018 16: 30	05/21/2018 19: 30	КО	-	End time after the maximum time (18: 30) and invalid number of hours
21/05/2018 07: 30	05/22/2018 11: 30	OK	1.5 Day	21/05 – 1 day 22/05 - 0.5 day
03/05/2018 07: 30	05/08/2018 16: 30	OK	4 days	03/05 - 1 day 04/05 - 1 day 05/05 - 0 day (Saturday) 06/05 - 0 day (Sunday) 07/05 - 1 day 08/05 - 1 day
04/30/2018 07: 30	02/05/2018 16: 30	OK	2 days	30/04 - 1 day 01/05 - Public Holiday 02/05 - 1 day

# 4.7. Retrieve leave requests to be processed

Used to retrieve leave requests to be processed for a manager. To retrieve from LIST\_CONGES, the requests that are assigned to the manager.

# 4.8. Retrieve expiring leave requests

Used to retrieve leave requests to be processed by a manager whose due date is less than D-X (where D is the start date of the leave and X is a configurable number of days).

Example:

X = 2 days

Today's date: Monday 07/05/18

Iml-xx has a leave scheduled for Tuesday 05/05/18 (1 day from today's date)

Iml-rh has a holiday scheduled for Wednesday 09/05/18 (2 days from today's date)

Iml-aba has a leave scheduled for Thursday 05/05/18 (3 days from today's date)

The function returns only iml-xx and iml-rh.

# 4.9. Leave request

This feature allows you to make a leave request according to the following rules :

- 1. An employee can apply for CP / SS / CM leave. To retrieve from LISTE\_TYPES\_CONGES
- 2. A manager may request leave for himself or the employees for whom he is responsible
- 3. The employee cannot ask for a leave request if he has already a request in the current state or validated during this period
- We check the number of leaves remaining for the employee (cf. <u>Récupérer résumé d'une équipe</u>).
- 5. The range entered must be valid (cf. Valider plage congé)
- 6. It is necessary to update the number of leaves remaining in the LIST\_CONGES\_ANNEES

# 4.10. Sick leave

For a CM leave request

- It is compulsory to specify a reason
- If it is more than or equal to 3 days (including holidays and weekends), proof is mandatory

# 4.11. Edit a leave request

The following fields can be modified without generating a new leave request:

For CPs you can modify the comment.

For CMs, you can modify the reason and attatched documents.

If we modify the start or end date or time of the request, we cancel the existing request and we make a new request defined by the <u>Demande de congé</u>.

To do: update LIST\_CONGES and LIST\_CONGES\_ANNEES.

# 4.12. Process a leave request

When a leave request is made, the request goes to the manager of the employee who can process the leave request.

He can:

- Validate the leave with an optional comment and the request goes to the next level manager
- Make a final approval of the request and the request goes to the validated state
- Reject the request with a mandatory comment
- Scale the request to the next level manager (he does not validate it)

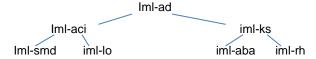
To do: update LISTE\_CONGES and LISTE\_CONGES\_ANNEES.

# 4.13. Cancel a leave request

The following rules are taken into account when cancelling a leave:

- 1. An employee may cancel his leave only if the effective start date is not passed.
- 2. If the effective start date is passed, only the manager can cancel the leave.
- 3. A manager may cancel his own leave.
- 4. The remaining leave is updated

# Exemple:



Iml-ad is responsible for iml-ks and iml-aci.

Iml-ks is responsible for iml-aba and iml-rh.

Scenario:

Date: 05/11/2018

Iml-aba apply for a leave for 05/25/2018

Iml-aba may cancel the leave until 05/25/2018 (Rule 1)

iml-ks and iml-ad may cancel the leave even after 25.05.2018 (Rule 2)

Tables to be updated: LISTE\_CONGES et LISTE\_CONGES\_ANNEES.

#### 4.14. Send mail

Allows to send mails such as acceptance or rejection of leave.

# 4.14.1. Model

The mail follows the following template:

# Notification GCM:

La demande a été {0} par {1}:

- Nom demandeur: {2}
- Type de congé : {3}
- Date de la demande : {4}
- Date début congé : {5}
- Date fin congé : {6}
- Commentaire: {7}
- · Prochaine validation par: {8}

Merci de vous connecter à l'outil GCM pour plus de détails

# Legend:

- {0} Replace by "créée, validée, approuvée, escaladée, rejetée" depending on the status of the application.
- {1} Replace by the full name "First and last names (initials)" of the employee who made the request.

Special case: If a manager applied for a leave on behalf of an employee, a new field "Demande créée par : " is added below the field "Nom demandeur"

- {3} Replace by CP, CM or CNP depending on the type of leave requested.
- {4} Replace by the date of application.
- {5} Replace by the starting date of the leave.
- {6} Replace by the ending date of leave.
- {7} Replace by the user comment.
- {8} Indicates the next manager in the hierarchy who must approve the leave. This field should not be displayed in case the leave is in the state "Approbation finale" or "Rejetée".

### 4.15. Notification

- The notification module is responsible to send all notifications.
- Following a leave request, the manager is notified.
- Following the validation / rejection of a request, the employee is notified.
- Reminders for pending requests are sent to the manager based on notification stages:
  - o A stage is a percentage between request date and effective start date of the leave.
  - A notification is sent at each stage.

Ex.

Request date: Monday 07/05/18 Effective start date: Friday 11/05/18

ID_STADE_NOTIFICATION	POURCENTAGE	Notification date	Comment
1	0	07/05/18	The moment the leave is requested.
2	50	09/05/18	Midway between request date and effective start date
3	100	10/05/18 (D-1)	The eve of effective start date

- When a leave request is created, ID\_STADE\_NOTIFICATION is NULL. It is set to 1 when the first mail is successfully sent by the notification module.
- For subsequent notifications, the logic is as follows:
  - Retrieve all pending requests from LISTE\_CONGES which are not in state "Rejetée" (rejected) or "Approbation finale" (Final validation)
  - For each request, read the current notification stage (LISTE\_CONGES.ID\_STADE\_NOTIFICATION). [ID\_STADE\_NOTIFICATION + 1] gives the next notification stage.
  - Read the associated PERCENTAGE [P] if it exists.
  - Calculate the number of days between the request date and effective start date.[D]
  - Number of days [N] before the next notification: D \* P Days
  - A notification is sent if Today >= EffectiveStartDate N.

# 4.16. Leave request notification

When a leave request is created, the applicant and his manager is notified.

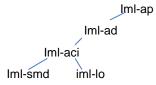
If a manager M validates, escalates or rejects the leave request of employee E , a notification is sent based on the following algorithm :

- Starting from employee E, get all hierarchical managers until M, but excluding M.
- Notify each employee in the list

# Example:

iml-smd apply for a leave.

- As soon as the leave request is created => Mail sent to iml-smd, iml-aci. An entry added to LISTE\_STADES\_NOTIFICATION, POURCENTAGE = 0.
- "Validé/Escaladé/Rejeté" by iml-aci => Mail sent to iml-smd.
- "Validé/Escaladé/Rejeté" by iml-ad => Mail sent to iml-smd, iml-aci.
- "Validé/Escaladé/Rejeté" by iml-ap => Mail sent to iml-smd, iml-aci, iml-ad



# 4.17. Number of yearly leave initialization

Run on the first day of each year to initialize and consolidate the number of leave of each employee

- an employee is entitled to 22 days local leave (CP) and 16 days sick leave (M) every year (configurable in app.config).
- Taking into account the leave balance from the previous year:
  - o If an employee has remaining sick leave from last year, they are added to the balance of the current year up to a maximum of 90.
  - o If an employee has remaining local leave from last year, up to 5 will be added to the current year's balance.
  - o If an employee owes CP from last year, this is taken into consideration :
    - Ex. Iml-hh took 24 days CP in 2019 resulting in a balance of -2 days.
    - After execution of the Leave initialization module, iml-hh will have 20 days
       CP for 2020 year (-2 days + 22 days)

# 5. Scheduled tasks

Two scheduled tasks will aim to launch the following application:

- The tool that will update the leave balances for one year: this process will be carried out once a
  year and will consolidate the leaves for each employee. cf. <u>Initialisation du nombre de congé de
  l'année</u>
  - This application will be launched via a scheduled task on January 1st of the year.
- 2. The tool that checks current requests every 30 minutes cf. Notification
  - Escalate leave requests if necessary (manager on sick leave) (Lot 2)
  - Sending a reminder email to the manager at predefined intervals
  - Ability to launch the exe with command lines. Eg to send an instant notification in the following cases:
    - New request
    - o Validation / rejection of a request by a manager

# 6. Admin

The Admin section will make it possible to update data for employees concerning special leave, for example, paternity leave.

# 7. GCM V2

This section highlights new features for GCM V2.

# 7.1. Switchborad operator

To manage the specificities of Switchboard operators

- Can make a leave request for Saturday, which is recognized as 0.5CP if the employee works on Saturday (depending on his schedule)
- French holidays

# 7.2. Notification

• Escalate leave requests if needed (line manager on sick leave) (GCM V2)

# 7.3. Admin

- Configure number of leave per year.
- Request for special leaves , e.g. paternity