

Project-Management with Gantt-Charts OpenOffice.org 2.0 Calc

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(Initial Writer contact(s): <u>serge.le_louarne@tiscali.fr</u>.

Contributor(s): DIETMAR HILLER

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(Contributor contact(s): <u>hillerd@tiscali.de</u>.

Contributor(s): G. Roderick Singleton.

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(Contributor contact(s):grsingleton@openoffice.org.

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Feedback

Please direct any comments or suggestions about this document to: grsingleton@openoffice.org

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I wish to thank every member of the German and French Native Language Communities who are not mentioned but contributed to my being able to provide a translation.

To S. Schneider for fixing my errors and grammar.

Modifications and updates

Version	Date	Description of Change
[1.0]	[2005-11-09]	[grs: Initial edition issued for comment]
[1.1]	[2005-11-12]	[ss: Proofed edition issued for publication]

Overview

Gantt Charts are a way to graphically show progress of a project. Management of a project is made easier if it is viewed as small manageable items where the dependencies are visually illustrated, parallel processes are discovered, the overall processing time determined and progress tracked. The tasks of a project can be quite complex and dependent on each other. With a project management tool, such as a Gantt chart, all subtasks of a task can be viewed graphically.

In this document a relocation-process to another city is used for all examples and is based upon the accompanying Calc template, .pjm_template_english.ots which may be downloaded from http://documentation.openoffice.org/HOW_TO/



Illustration 1: The finished example

In illustration 1, the subtasks of the relocation-process appear on the y-axis, and the time line on the x-axis. The bars show when a task should start and when it will be finished. Blue bars show tasks which have been completed. Yellow bars show work which still must be done.

Starting the Process

To chart a project, all the sub-tasks must first be collected in a spreadsheet. In this simple example there is the name of the task, the start-date and the duration in calendar days:

	A	В	С	
1	Task	Start	Duration	
2	Task 1	01.01.2005	0	
3	Task 2	01.01.2005	59	
4	Task 3	01.01.2005	59	
5	Task 4	01.01.2005	181	
6	Task 5	01.01.2005	243	
7	Task 6	01.03.2005	396	
8	Task 7	01.05.2005	488	
9	Task 8	01.12.2005	396	
10				

Illustration 2: Task list

This simplified project consists of eight subtasks "Task 1" to "Task 8".

Next, begin creating the chart by selecting Insert—Chart:

	Α	В	С	D	E	F	G	Н	I	J
1	Task	Start	Duration							
2	Task 1	01/01/05	0							
3	Task 2 👔	01/01/05	50		AutoFor	nat Chart				_ ×
4	Task 3	Selection —			Adtoron					القال
5	Task 4	Range	\$Shee	t3.\$A\$1:\$C\$	9					
6	Task 5	First ro			-	Cha	art results in <u>v</u>	vorksheet		
7	Task 6		lumn as labe	1			eet3	-	:	-
8	Task 7									
9	Task 8	If the selecte	ed cells do no	t contain the	desired data	, select the d	ata range nov	w.		
10		Include the c	ells containin	a column an	d row labels if	vou want th	em to be inclu	ided in vour d	hart	
11 12		include the e	cho concanini	ig column and		you want th		aca in your (indici.	
12										
14										
15										
16										
17		Help		Cancel		<< <u>B</u> ack	Next	>>	<u>C</u> reate	
18		P								
19 20	-									
		1 2 2 .	 .1 1 .				1			

Illustration 3: Create the chart

From the dialogue "AutoFormat Chart" define the selection range. Neither the first row (containing the column label) nor the first column (containing the task name) should be included as data.

Click "Next >>", and choose the Chart type:

2	AutoFor	mat Chart		_ ×
	Choo <u>s</u> e a chart	type		
			Å	₽ars ••••••
		E	Bars	
□ Sh <u>o</u> w text elements in preview	Data series in:	_ <u>R</u> ows	● <u>C</u> olumns	
Help Cancel		<< <u>B</u> ack	<u>N</u> ext >>	Cre <u>a</u> te

Illustration 4: Choose chart type

Choose the horizontal bar-chart and click "Columns" to indicate that the data are arranged in columnar form.

Note: This changes the assignment of the axis in OpenOffice.org Calc. Now the horizontal axis is called "Y" and the vertical axis is called "X".

Click "Next >>" and choose the variant "Stacked":

2	AutoFor	nat Chart		_ ×
	Choose a <u>v</u> arian	t		
			cked	
) Crid lines	Sta	скеа	
	Grid lines ———	✓ Y axis	□ <u>Z</u> axis	
Sh <u>o</u> w text elements in preview	Data series in:	○ <u>R</u> ows	● <u>C</u> olumns	
Help Cance		<< <u>B</u> ack	<u>N</u> ext >>	Cre <u>a</u> te

Illustration 5: Create chart with stacked bars

2	AutoForma	t Chart	LX
	Display		
	✔ Chart <u>t</u> itle	GANTT chart	
	√ <u>L</u> egend		
	Axis titles		
	✓ X axis	Task	
	✓ Y axis	Time	
	□ <u>Z</u> axis	Z axis title	
□ Sh <u>o</u> w text elements in preview	Data series in:	○ <u>R</u> ows	
<u>H</u> elp Cano	el <<	< <u>Back</u> <u>N</u> ext >> C	re <u>a</u> te

Click "Next >>" once again and enter chart and axis titles:

Illustration 6: Adapt chart labeling

The first Gantt Chart appears as follows:



Illustration 7: Bar chart

The task names are on the vertical axis ("Task 1" to "Task 8") and the time line is on the horizontal axis.

Converting the simple bar-chart into a Gantt chart

In order to edit the properties of an element in the diagram, double-click the chart to select it. Next, right-click to open the context menu and gain access to the chart properties:

Unt	Untitled 1 - OpenOffice.org Calc										
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	Α	В	С	D	E	F	G	Н	- 1	J	K 🔺
1	Info		Activity	Start	Duration	End	Progress	Done	Undone	Predecessor	Upd
2	0		House-hunting	01/03/05			20%	36.6	146.4		
3			Cancel apartment DD	25/05/05		28/05/05	100%	3	0		
4			Cancel banking's order		3	02/01/00	100%	3	0	200	
5			New leasing contract	31/08/05		07/09/05		0	7	100	
6			Organise relocation	07/09/05				0	14	400 200	
7			Send out new address	21/09/05		26/09/05		0	5	400 500	
8			Forwarding request	21/09/05		28/09/05		0	7	400 500	_
9			Relocation	21/09/05		26/09/05		0	5	400 500	
10			Registration office	07/09/05		08/09/05		0	1	400	
11			Furnish the flat	26/09/05		01/10/05		0	5	700	
12			Reregister car	21/09/05		23/09/05		0	2	800 500	
13			Open an account	07/09/05		12/09/05		0	5	400	
14		1200	Move bank account	26/09/05		29/09/05		0	3	700 1100	
15		9999	Relocation completed	01/10/05	1	02/10/05		0	1	900 1000 1200	
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Note: Ensure that no element in the diagram is selected, because otherwise the axis-properties can not be edited

Select the y-axis, which now is the horizontal time line. (One could also select the horizontal axis using a left-click then right-click to open the context menu and finally choose **Object Properties** ... to format this axis.)

Set the **Minimum** to the real start-date, In this example this is 01/01/05. Furthermore the axis should get the start date, so check the checkbox "Automatic" in the line "Axis at":

P	7				Y Axis				
	Line	Characters	Font Effects	Scale	Numbers	Label]		
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	м	la <u>x</u> imum:		00	6/07/09		🖌 Au <u>t</u> omatic		
	м	lajor <u>i</u> nterval:		50	0.000		🖌 <u>A</u> utomatic		
	м	li <u>n</u> or interval:		25	500.0		🖌 <u>A</u> utomatic		
	<u>A</u>	xis at:		3(0/12/99		✓ Automatic		
		Logarithmic	<u>s</u> cale						
	Maj	or interval ma	arks						_
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		i <u>n</u> ner		🗌 o <u>u</u> t	er				
					(ОК	Cancel	<u>H</u> elp <u>R</u> e	set

Illustration 9: Adjust the time line

This produces a chart as follows:



Illustration 10: Gantt chart

The orange bar symbolizes the time up to the start of the task. This bar should be made invisible. For this select the orange bar with a left-click, and then open its **Object Properties** after a right click.

Under the tab "Borders" choose Style – Invisible, and under the tab "Area" choose Fill – None. Now the chart presents itself as follows:



Illustration 11: The completed Gantt chart

Using the chart as a graphic in other applications

To use the Gantt-chart as a picture in another application, save the whole Calc document as HTML. This generates not only the HTML-file, but also a jpeg-file containing the chart which can then be included in other documents, such as anOpenOffice.org impress presentation.

Remember to give the graphic a more descriptive name than, the the name suggested when the document is exported to HTML so that it can be found easily later

Extending Gantt charting for Project Management

In order to manage a project, still more information is needed. The progress of any task should be tracked as a percentage of the task and displayed in the chart, and the dependencies of the subtasks should also be documented. Furthermore the start-date should be determined automatically based on these dependencies.

To be able to create such a plan easily, a template was made by the German Native Language Community (<u>http://de.openoffice.org/</u>) called pjm template.ots.

Info	No.	Activity	Start	Duration	End	Progress	Done	Undone	Predecessor
	100	House-hunting	01/03/05		31/08/05	20%	0	0	
	200	Cancel apartment DD	25/05/05	3	28/05/05	100%	3	0	
	300	Cancel banking's order		3		100%	3	0	200
	400	New leasing contract		7			0	7	100
	500	Organise relocation		14			0	14	400 200
	600	Send out new address		5			0	5	400 500
	650	Forwarding request		7			0	7	400 500
	700	Relocation		5			0	5	400 500
	800	Registration office		1			0	1	400
	900	Furnish the flat		5			0	5	700
	1000	Reregister car		2			0	2	800 500
	1100	Open an account		5			0	5	400
	1200	Move bank account		3			0	3	700 1100
	9999	Relocation completed		1			0	1	900 1000 1200

Illustration 12: Calc template pjm_template.ots

The current version of Gantt.zip contains the example spreadsheet and the spreadsheet itself can be downloaded from

http://documentation.openoffice.org/HOW_TO/spreadsheet/pjm_template.ots

Note: This template uses macros and upon opening displays a security warning. Therefore, macros must be enabled to use the file.

The file, created from the template, contains the following columns:

- "Info" Information about the progress of the task
- "No." unique number of the task. It is recommended to count in intervals of 100, to be able to add tasks later on
- "Activity" description of the task
- "Start" start-date of the task
- "Duration" planned or actual duration of the task in calendar days
- "End" end-date of the task. This gets calculated based on the start-date and duration.
- "Progress" in percentage
- "Done" Duration * progress
- "Undone" expected time remaining: Duration Done

• "Predecessor" - List of tasks, which have to be completed, before this task can start. Separation is made by spaces.

The column titles in the first row can be labeled freely, but the columns must not change their position.

Some columns have a colored background:

- gray: these columns contain formulas, which are calculated automatically
- light blue: these columns can be edited manually, they can possibly be changed by the macro.

It is recommended to use the last row for the end of the project. Thus new tasks, which are inserted above, are displayed in the chart automatically.

About the macro

The macro is named "**update**" and is written in OpenOffice.org BASIC. The way it works follows this sequence:

- Add duration and end-date, if they are missing
- For each row of the table
 - 1. Where the task has not yet started (Progress ≤ 0)
- Search for rows, whose number corresponds with the value in the column "Predecessor". For those not familiar with project management terms, a predecessor is an activity that must be completed (or be partially completed) before a specified activity can begin.(See <u>http://www.apm.org.uk/page.asp?categoryID=4&subCategoryID=29&pageID=0</u> for definitions.)
 - a) Determine latest possible end-date of these rows
 - b) Set the successor start-date to this end-date
 - Where the task is finished (Progress = 100%)
 - 1. Determine duration from start-date and end-date
 - Illustrate information of task

The meaning of this list of steps is described later on in this document.

The macro expects that the first row contains the headlines, the tasks start in row 2 and the columns are in the same place as in the example. Additional columns (for comments or some other purpose) must be located at the end.

Note: The maximum number of predecessors is limited to 9.

Example: Planning a relocation

This section describes the process of relocating from one city to another city and is based upon the template, <u>pjm_template.ots</u>.

The first step is to create a list with all subtasks:

Α	В	С
Info	No.	Activity
	100	House-hunting
	200	Cancel apartment DD
	300	Cancel banking's order
	400	New leasing contract
	500	Organise relocation
	600	Send out new address
	650	Forwarding request
	700	Relocation
	800	Registration office
	900	Furnish the flat
	1000	Reregister car
	1100	Open an account
	1200	Move bank account
	9999	Relocation completed
		Info No. 100 200 200 300 400 500 600 650 700 800 900 1000 1100 1200

Illustration 13: List of subtasks

In preparing the set of tasks, getting mail forwarded was missed. So we inserted the activity "Forwarding request" in row 8 after the fact. Therefore this activity has the number 650. Inserting a row does not automatically copy any formulae, thus all the formulae must be copied to each cell in the new row manually.

Next insert the start-date for the not-dependent tasks, as well as duration and expected end-date:

	А	В	С	D	E	F
1	Info	No.	Activity	Start	Duration	End
2		100	House-hunting	01/03/05		31/08/05
3		200	Cancel apartment DD	25/05/05	3	28/05/05
4		300	Cancel banking's order		3	
5		400	New leasing contract		7	
6		500	Organise relocation		14	
7		600	Send out new address		5	
8		650	Forwarding request		7	
9		700	Relocation		5	
10		800	Registration office		1	
11		900	Furnish the flat		5	
12		1000	Reregister car		2	
13		1100	Open an account		5	
14		1200	Move bank account		3	
15		9999	Relocation completed		1	

Illustration 14: Insert start- and end-date

House-hunting starts on 01/03 and should be finished by 31/08. For all the other tasks the duration is given.

Now, define the dependencies of the tasks. The relocation (700) for example can not start before the new leasing contract is signed (400) and the relocation is organized (500). The tasks 300-9999 have no dependencies, thus there are no start-dates for these tasks.

	Α	В	С	D	E	F	G	Н	1	J
1	Info	No.	Activity	Start	Duration	End	Progress	Done	Undone	Predecessor
2		100	House-hunting	01/03/05		31/08/05	20%	0	0	
3		200	Cancel apartment DD	25/05/05	3	28/05/05	100%	3	0	
4		300	Cancel banking's order		3		100%	3	0	200
5		400	New leasing contract		7			0	7	100
6		500	Organise relocation		14			0	14	400 200
7		600	Send out new address		5			0	5	400 500
8		650	Forwarding request		7			0	7	400 500
9		700	Relocation		5			0	5	400 500
10		800	Registration office		1			0	1	400
11		900	Furnish the flat		5			0	5	700
12		1000	Reregister car		2			0	2	800 500
13		1100	Open an account		5			0	5	400
14		1200	Move bank account		3			0	3	700 1100
15		9999	Relocation completed		1			0	1	900 1000 1200

Illustration 15: Define dependencies

Next insert the start-date for the not-dependent tasks, as well as duration and expected enddate:

	А	В	С	D	E	F
1	Info	No.	Activity	Start	Duration	End
2		100	House-hunting	01/03/05		31/08/05
3		200	Cancel apartment DD	25/05/05	3	28/05/05
4		300	Cancel banking's order		3	
5		400	New leasing contract		7	
6		500	Organise relocation		14	
7		600	Send out new address		5	
8		650	Forwarding request		7	
9		700	Relocation		5	
10		800	Registration office		1	
11		900	Furnish the flat		5	
12		1000	Reregister car		2	
13		1100	Open an account		5	
14		1200	Move bank account		3	
15		9999	Relocation completed		1	

Illustration 16: Insert start- and end-date

House-hunting starts on 01/03 and should be finished by 31/08. For all the other tasks the duration is given.

Now define the dependencies of the tasks. For example, relocation (700) can not start before the new leasing contract is signed (400) and relocation is organized (500). The tasks 300-9999 have no dependencies, thus there are no start-dates for these tasks.

	A	В	С	D	E	F	G	н	1	J
1	Info	No.	Activity	Start	Duration	End	Progress	Done	Undone	Predecessor
2		100	House-hunting	01/03/05		31/08/05	20%	0	0	
3		200	Cancel apartment DD	25/05/05	3	28/05/05	100%	3	0	
4		300	Cancel banking's order		3		100%	3	0	200
5		400	New leasing contract		7			0	7	100
6		500	Organise relocation		14			0	14	400 200
7		600	Send out new address		5			0	5	400 500
8		650	Forwarding request		7			0	7	400 500
9		700	Relocation		5			0	5	400 500
10		800	Registration office		1			0	1	400
11		900	Furnish the flat		5			0	5	700
12		1000	Reregister car		2			0	2	800 500
13		1100	Open an account		5			0	5	400
14		1200	Move bank account		3			0	3	700 1100
15		9999	Relocation completed		1			0	1	900 1000 1200

Illustration 17: Define dependencies

As 20% of house-hunting are already done, and the current apartment is already canceled, the progress is 20% and 100% respectively.

Extending Gantt charting for Project Management

	В	С	D	E	F	G	Н		J	к
1	No.	Activity	Start	Duration	End	Progress	Done	Undone	Predecessor	Update
2	100	House-hunting	01/03/05	183	31/08/05	20%	36.6	146.4		
3	200	Cancel apartment DD	25/05/05	3	28/05/05	100%	3	0		
4	300	Cancel banking's order	28/05/05	98	03/09/05		0	98	200	
5	400	New leasing contract	31/08/05	7	07/09/05		0	7	100	
6	500	Organise relocation	07/09/05	14	21/09/05		0	14	400 200	
7	600	Send out new address	21/09/05	5	26/09/05		0	5	400 500	
8	650	Forwarding request	21/09/05	7	28/09/05		0	7	400 500	
9	700	Relocation	21/09/05	5	26/09/05		0	5	400 500	
10	800	Registration office	07/09/05	1	08/09/05		0	1	400	
11	900	Furnish the flat	26/09/05	5	01/10/05		0	5	700	
12	1000	Reregister car	21/09/05	2	23/09/05		0	2	800 500	
13	1100	Open an account	07/09/05	5	12/09/05		0	5	400	
14	1200	Move bank account	26/09/05	3	29/09/05		0	3	700 1100	
15	9999	Relocation completed	01/10/05	1	02/10/05		0	1	900 1000 1200	

Illustration 18: Calculated duration

At this point call the macro by clicking on the button "Update". The duration and end-dates are calculated, and the column start is completed.



Relocation DD to M

Illustration 19: The appropriate chart

The organization of the relocation, the registration at the office and the opening of an account can be done simultaneously. On the other hand the bank account can not be moved immediately, because the current apartment is not yet relocated.

Controlling the Project

During any project, start by implementing several subtasks.

To begin a subtask, insert the start date in the column "Start". Set the progress to a value greater than zero (1% e.g.), so that "**Update**" will no longer change this date.

If a task is completed, insert the real End-date, delete the duration and set the progress to 100%. When calling "**Update**" the next time, the required duration will be calculated.

After each change in the table, invoke the macro "Update" to update the table accordingly.

The "Info" column shows the current status of the project:

Α	В	С	D	E	F	G
Info	No.	Activity	Start	Duration	End	Progress
٠	100	House-hunting	01/03/05	183	31/08/05	90%
~	200	Cancel apartment DD	25/05/05	3	28/05/05	100%
×	300	Cancel banking's order	28/05/05	3	31/05/05	Ĩ
	400	New leasing contract	31/08/05	7	07/09/05	
	500	Organise relocation	07/09/05	14	21/09/05	
	600	Send out new address	21/09/05	5	26/09/05	
	650	Forwarding request	21/09/05	7	28/09/05	
	700	Relocation	21/09/05	5	26/09/05	
	800	Registration office	07/09/05	1	08/09/05	
	900	Furnish the flat	26/09/05	5	01/10/05	
	1000	Reregister car	21/09/05	2	23/09/05	
	1100	Open an account	07/09/05	5	12/09/05	
	1200	Move bank account	26/09/05	3	29/09/05	
	9999	Relocation completed	01/10/05	1	02/10/05	
	Info Info 	Info No. ✓ 100 ✓ 200 ☑ 300 ☑ 300 ☑ 300 ☑ 500 ☑ 600 ☑ 600 ☑ 600 ☑ 900 ☑ 1000 ☑ 1100 ☑ 1200	Info No. Activity ✓ 100 House-hunting ✓ 200 Cancel apartment DD	InfoNo.ActivityStart100House-hunting01/03/05200Cancel apartment DD25/05/05300Cancel banking's order28/05/05400New leasing contract31/08/05500Organise relocation07/09/05600Send out new address21/09/05650Forwarding request21/09/05700Relocation21/09/05900Furnish the flat26/09/051000Reregister car21/09/051100Open an account07/09/051200Move bank account26/09/05	Info No. Activity Start Duration 100 House-hunting 01/03/05 183	Info No. Activity Start Duration End 100 House-hunting 01/03/05 183 31/08/05 200

Illustration 20: Table during project-controlling



The apartment has already been canceled, the task is completed.

House-hunting has begun and is on schedule according to the progress

Cancelling the bank's order is due and not on schedule, this means, that the end-date is prior to the current date.

All the other tasks are not due yet, they are not marked.

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