How to Spice Up Gantt Charts With Intelligent Colors

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What Spices And Colors Have in Common

We all know the huge impact that spices and their skillful mixture can make to any meal we cook and eat. Sometimes it is less than a milligram of a certain spice that finally makes the difference between a delicious and a tasteless or a too hot meal. Often, it is spices that decide if a meal becomes a pure joy, or is just food.

For somebody who never cooked a meal, this might even be surprising. He might be tempted to "measure" the impact of spices by their quantifiable contribution to the meal. Hence, he would put their weight in relation of the other ingredients' weights.

Well, we all know that this approach would be completely misleading. And … it is not only with respect to meals, that subtle ingredients can make the difference.

> " *The purest and most thoughtful minds are those which love color the most.*
> *- John Ruskin* "

We have been developing Gantt chart software for more than 20 years. When working with customers, we often discuss issues like

- performance,
- grouping, sorting and filtering,
- data binding,
- drag & drop interactions,
- linking of tasks,
- printing

and other typical Gantt chart features with them.

What is often overlooked is the impact that colors can have for a Gantt chart application. Colors seem so trivial, that they are only rarely discussed. However, our experience from dealing with Gantt charts for more than 20 years tells us that colors are the spices for your Gantt charts.

Hence, the purpose of this Ebook is to provide
you with ideas and best practices of
how to spice up your Gantt charts.

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The „Spice Shelf" Of Colors In Gantt Charts

Different spices not only have different tastes, but sometimes even more important: they play different roles for the meal. Some of them never get recognized when you eat the meal. However, you would definitively "miss something" if they would not be used. Other sorts of spices are very dominant for the meal and you immediately taste them with the first bite … or even smell them when the meal is served. Also, there are spices which are not that dominant, but still round up the taste experience.

Well, similar like spices can play a hidden, a dominant or a complementary role, there are also different functions that colors can take in a Gantt chart.
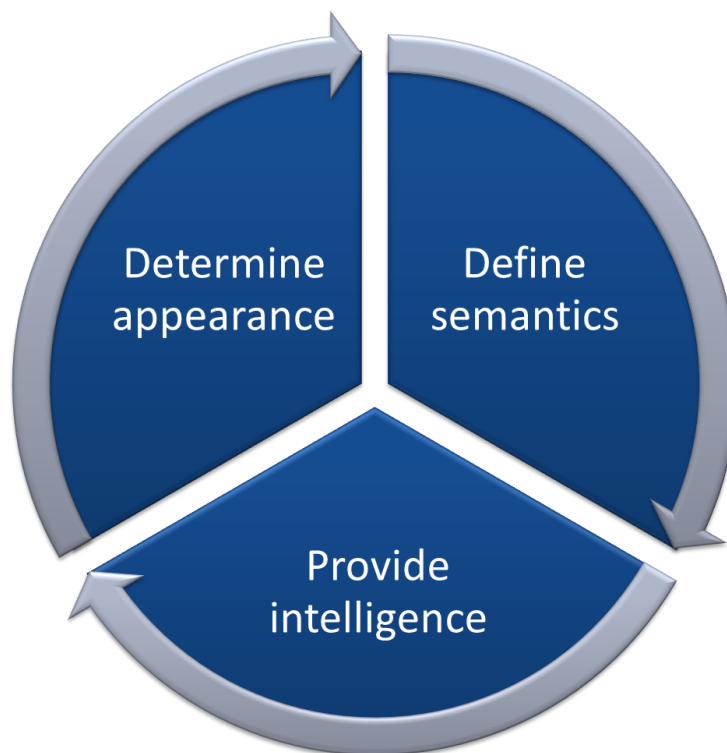
THE ROLE OF COLORS IN A GANTT CHART

We have found, that colors can play three roles in a Gantt chart … and that they **have** to play all three roles to make a Gantt chart meaningful to its users.

1. Of course, the first role is that colors determine the appearance of the Gantt chart. That's a no-brainer.
2. Colors also can be used to define the semantics of a Gantt chart. As such, they help the users to faster understand the complete and often complex reality that a Gantt chart presents.
3. Last but not least, colors can also provide intelligence to a Gantt chart and hence enable the users to make crucial decisions faster.

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How To Use Colors For The Appearance

Tip 1: Useful tools to create beautiful Gantt charts

One practical tip first!

It goes without a saying that you should pay attention to achieve an esthetic look of your Gantt chart. This will definitively help increasing the user's acceptance of your Gantt charts. Virtually nobody likes to work with something that he perceives as ugly.

Please: make your Gantt charts beautiful!

OK. We sense your objection. "I am not a graphic designer and just have no artistic talents to make things beautiful. Honestly, I do not care about beauty. The Gantt chart just have to work."

Do not think the latter! Think of your users. They do not care that you do not care. They want something appealing. The great news is that there are tools available which make your life easy. These tools help you to find a set of harmonizing colors.

Here are two of them which we recommend to have a look at:

- Color Scheme Designer (http://colorschemedesigner.com/)

- Adobe Kuler (https://kuler.adobe.com/create/color-wheel/)

Both tools will allow you to find color schemes by using different rules of chromatics.

We recommend to use the resulting color sets to tint all main diagram elements – in particular the table header and body, the timescale, and the bars.

Give it a try! You will love it.

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Tip 2: Contrast is king

Although it seems trivial, we have seen many Gantt charts where we wished somebody would have remembered this triviality.

MAKE SURE THAT YOUR USERS CAN READ ALL TEXTS EASILY.

For example avoid using dark colors for texts, if they are placed in front of dark backgrounds. Contrast is king as contrast makes sure that your users can read what you want them to read. We are writing this Ebook with black color on a white background. Not sure, why so many Gantt charts show dark texts on dark bars ...
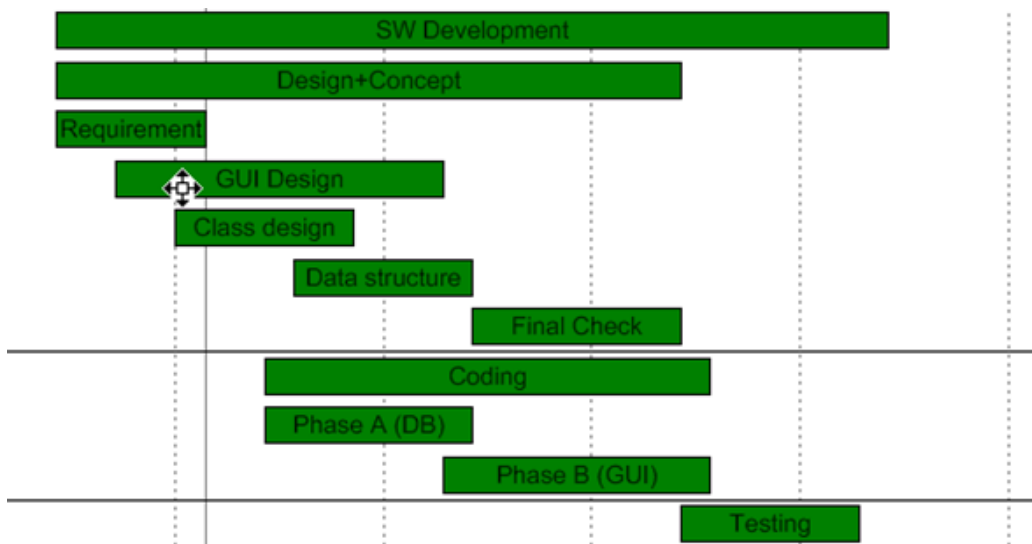
A DON'T' DO: LOW CONTRAST
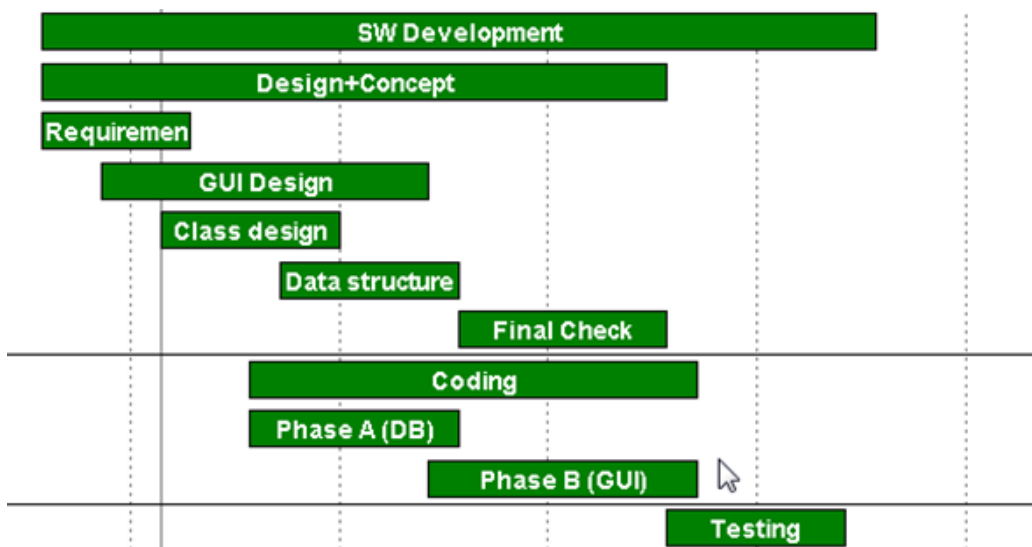
RECOMMENDED: HIGH CONTRAST

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# Tip 3: Use color gradients like chili—make it hot, but not unenjoyably

Honestly: Our Gantt chart control offers full horse-power to work with color gradients. Sometimes, we feel that this is a powerful feature but like chili. If you use it too much, the Gantt chart becomes really unenjoyably.

Please be careful with the usage of color gradients. Keep in mind that if many objects inside a chart are colored by gradients it can result in an unclear look and distract from the main aspects of the chart. Also, keep in mind that your users are influenced by what is happening on their mobile devices: the current trend is flat tiled buttons and icons. Hence, only use color gradients in a very selective way.

If the gradient blends from light over dark and again back to light this gives the impression of a concave surface. In contrast, using gradients from dark over light to dark will result in a convex surface. Mostly it is the convex look which appears to be suitable.

*A DON'T DO: CONCAVE APPEARANCE*   *RECOMMENDED: CONVEX APPEARANCE*
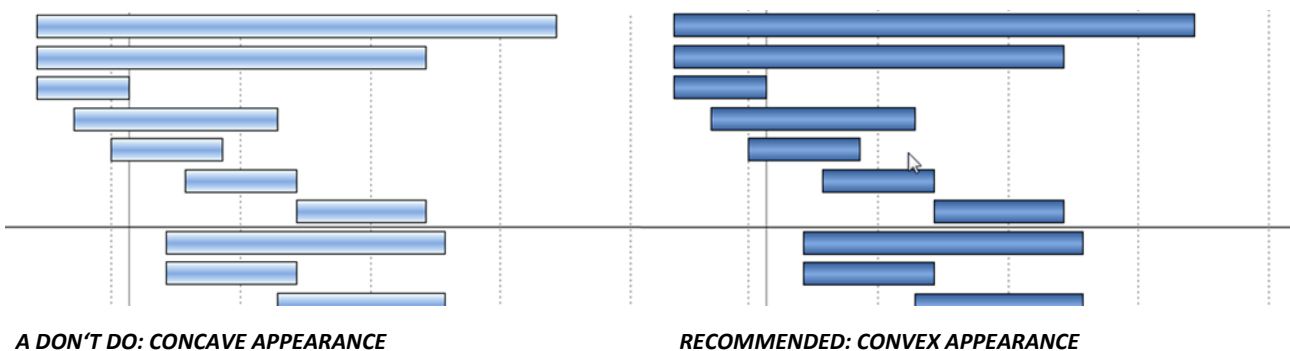
Also: beware of unnatural looks. It is a daily user experience that objects are lighted from the top (think about the sunlight or the lighting in your office). Therefore, vertical gradients from dark to bright may appear in some way wrong or confusing. In any case do not mix both variants.

A DON'T DO: BOTTOM-LIGHTED   *RECOMMENDED: TOP-LIGHTED*

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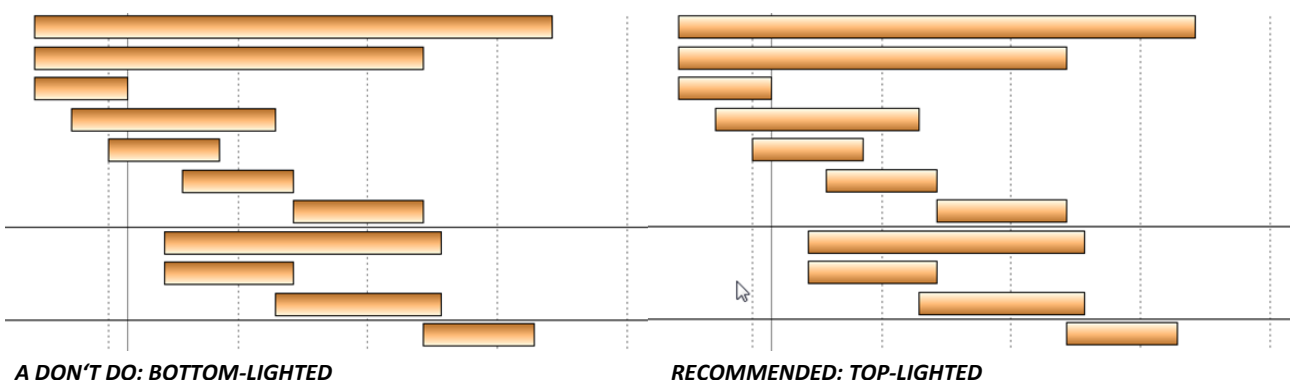
Tip 4: Row backgrounds lead the user's eyes

Only few Gantt charts suffer from a lack of data ;-). The more data you have to display in a Gantt chart, the harder it gets for the user to relate the bar in the graphic part of the Gantt chart to the respective information in the table part. A good way to cope with this is to introduce alternating row background colors.
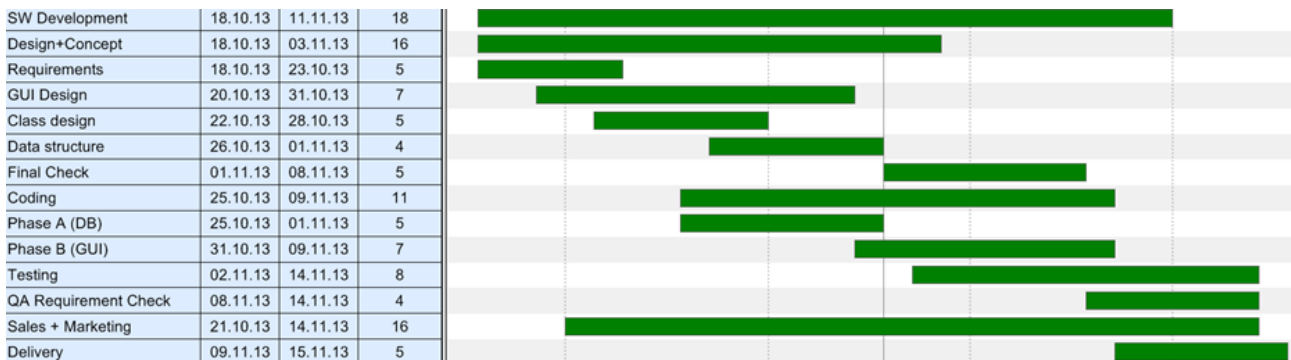
ALTERNATING ROW BACKGROUND COLORS

As an alternative, you can also define that only the rows of the selected nodes are dynamically colored. This is a standard feature of our Gantt chart controls.

ROWS WITH SELECTED NODES ARE AUTOMATICALLY HIGHLIGHTED

# How To Use Colors To Define The Semantics

Tip 5: Do not try to overrule day-to-day semantics

Let's start with something obvious again.

Keep in mind that in our day-to-day life some colors are bound to a very distinct meaning. For example, think about traffic lights or control panels.

- Red usually means alert, danger or stop.

- Yellow stands for warning.

- Green indicates OK, go ahead.

Hence, use these colors if you want to express corresponding semantics. And this is why it makes no sense to display for example a critical path of a project by green bars and green links.

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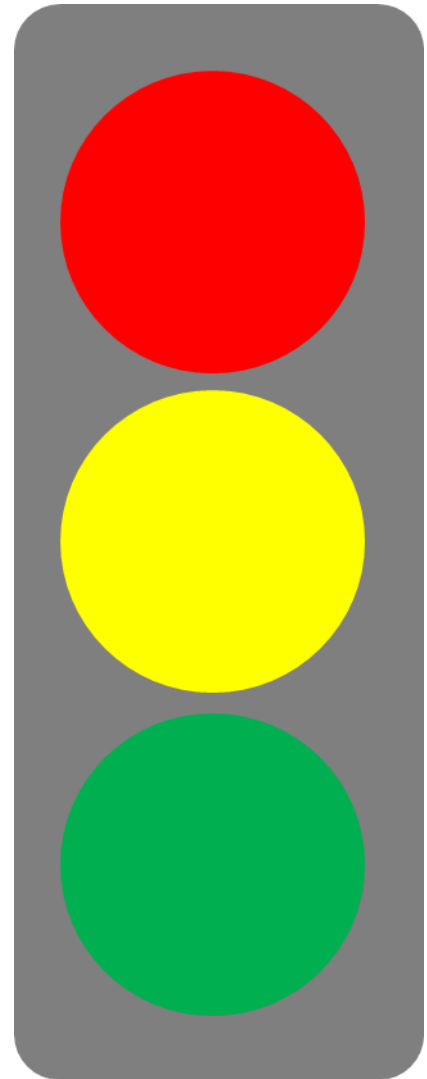
Tip 6: Use same colors for similar activities

You want to enable your users to comprehend the situation shown in the Gantt chart at one glance. A good means to achieve this is using the same colors for similar activities or for grouped objects.

For example, to display grouped tasks use the same color tint for all bars of each group and for the corresponding table area as well.
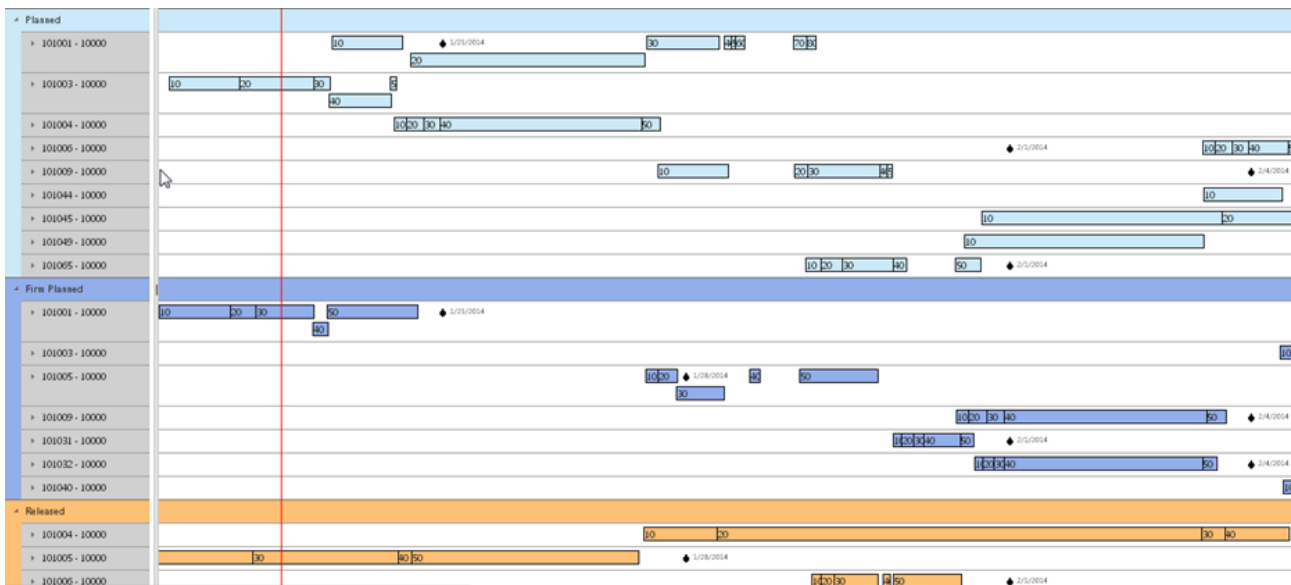

SAME COLOR TINT INSIDE THE TABLE AREA AND FOR THE BARS FOR EACH GROUP

Tip 7: The color hierarchy should represent the information hierarchy

Very often, we notice diagrams where colors tell a different story than the actual information in the Gantt chart tell. This feels like eating a desert for which the cook used salt instead of sugar.

Make sure that your color hierarchy represents the information hierarchy. Don't guide your users' attention to the less important things by using bold colors for them.

The following screenshots explain this more detailed using the example of calendar grids.
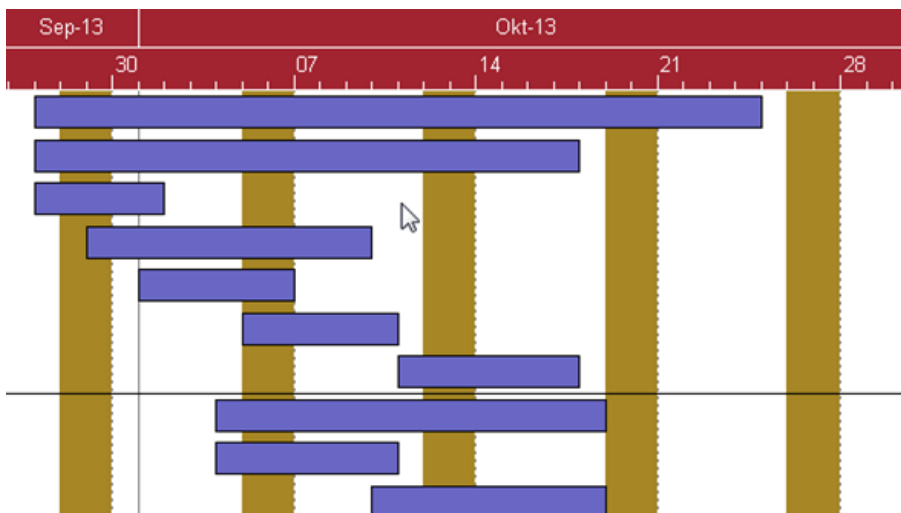
*A DON'T DO: BOLD COLORS FOR LESS IMPORTANT ELEMENTS (HERE: CALENDAR GRIDS)*
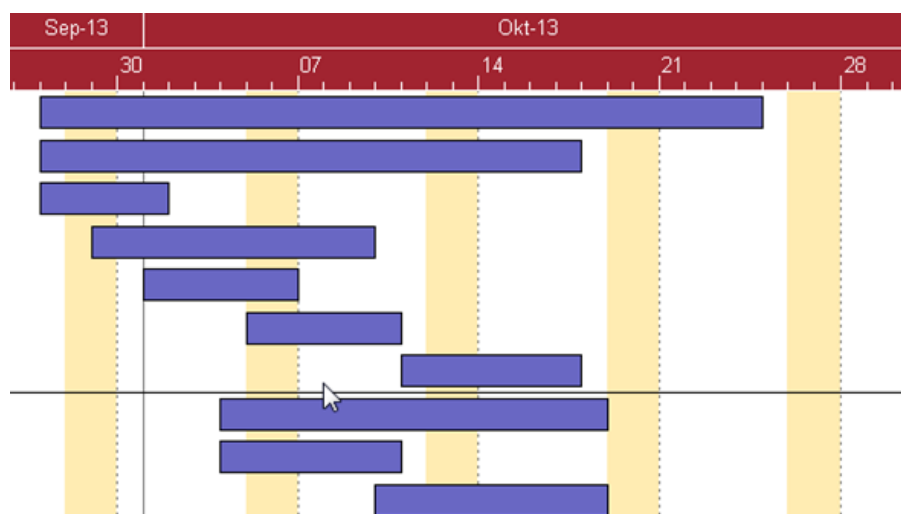
RECOMMENDED: INFORMATION HIERARCHY REPRESENTED BY COLOR HIERARCHY

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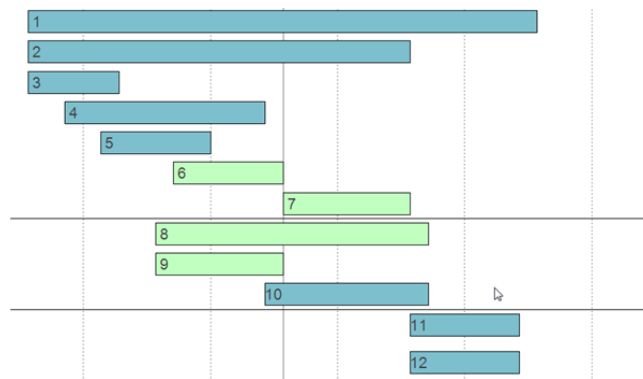# Tip 8: The art of highlighting selected elements

Very often colors are used to highlight elements like nodes or table rows in a Gantt chart to mark them as "current" or "active" elements. This selection then is relevant e.g. for the next user interaction such as deleting all marked nodes.

In that case, it is more than helpful for the user if all selected elements are marked identically. This can be achieved by using a noticeable color to attract the users' attention.

You can achieve this by defining a new layer which is bound to a filter and which will be displayed only when the filter condition applies.
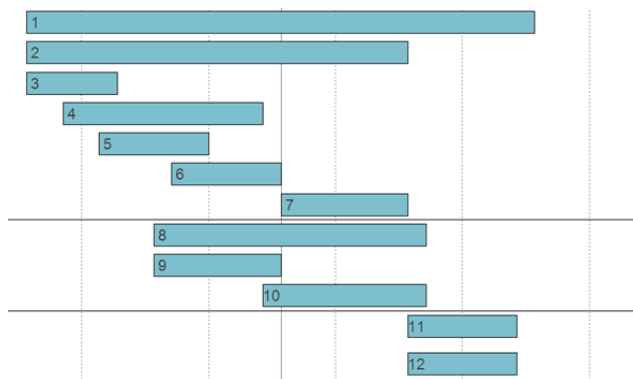
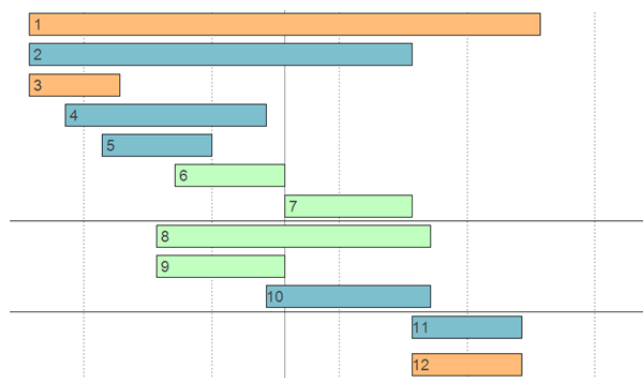*SIMPLE CHART WITH NO SELECTED NODES*   *SAME CHART, NODES 6-9 SELECTED AND MARKED GREEN BY OWN LAYER*

However, in almost any case, a Gantt chart is not as simple as above. Typically, the elements to be marked have own colors to express specific semantics. Then the marking color would hide the "semantics color". Hence the user might lose important information about the marked elements.
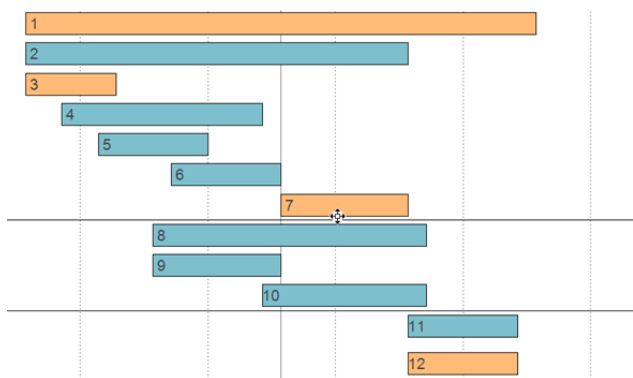
A GANTT CHART WITH NODES COLORED DIFFERENTLY TO EXPRESS DIFFERENT SEMANTICS   *A DON'T DO: THE HIGHLIGHTING OF THE NODES 6 TO 9 HIDES THE "SEMANTICS COLORS" BLUE AND ORANGE*

In such a case we recommend to darken or to brighten the selected elements. Our VARCHART XGantt control offers a simple way to do so on its property page (see the "Nodes" tab, "marking types for nodes"). In this case you do not need to define a layer only for highlighting purposes.
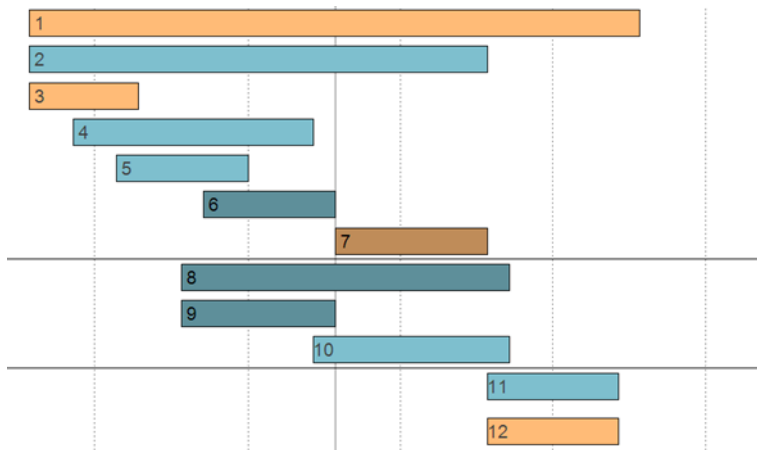
ONE SOLUTION: AUTOMATIC NODE MARKING.
IN THIS CASE: DARKENING OF SELECTED LAYERS

Please note: the default darkening and brightening of VARCHART XGantt is fixed to 25% of the original color lightness. As you seen from the above screenshot, this approach can result in diagrams where the semantics of the marked elements are preserved, but where the marking is no longer clearly visible.

The solution then is to use an own layer for marking. In the following example, we used a black layer with the alpha value (transparency) set to 128. In addition, we changed the font color from dark gray to white. This increases the contrast and thus improves the readability.
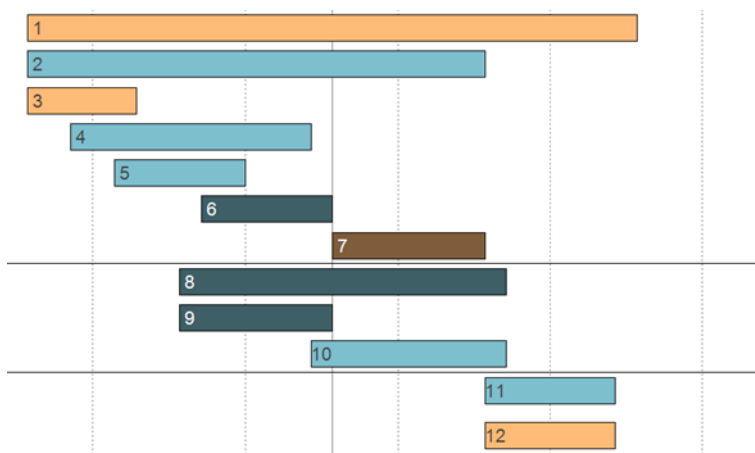

BETTER SOLUTION: MARKING DONE BY A SEPARATE LAYER WITH
BACKGROUND TRANSPARENCY SET TO 128. THIS WAY, YOU DO NOT
LOSE THE COLOR SEMANTICS OF THE NODES.

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Tip 9: Coloring of short and subsequent activities

In these days, we often observe that many activities (sometimes thousands, or even ten thousands) are shown in a Gantt chart. This is regularly the case in a manufacturing environment, where users typically need a "machine view" that shows how busy a machine is during a given timeframe. When production orders or operations are very short (sometimes they only take a few minutes to complete), it gets hard to differentiate them.

A proven best practice is to use different colors for the various production orders, and to not use a black border for the nodes. This helps to create a focus on the single operations and gives a clearer picture on what is happening on the various machines.
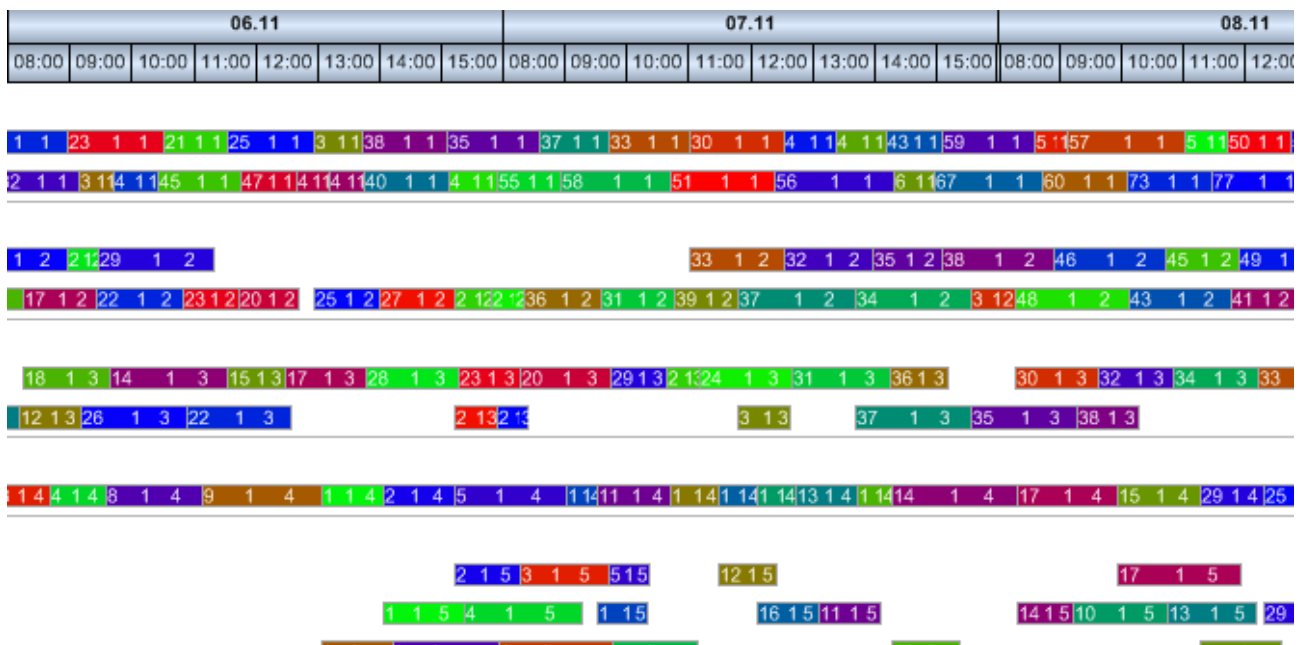
BEST PRACTICE: USING DIFFERENT COLORS FOR DIFFERENT OPERATIONS, WHEN OPERATIONS ARE VERY SHORT

How To Use Colors To Provide Intelligence

Tip 10: Work with bottom-up and top-down visual alerts

If you are using a Gantt chart for controlling purposes, then you might be typically interested in having a clear and precise overview of the current situation. Especially in cases when something seems to get out of control you need to see the issue immediately.

Let's assume you have a Gantt chart displaying nodes which are grouped by resources and each node is representing an operation of a production order. Now it could be that one operation is too late and therefore the corresponding order will not be finished in time. The question is: How can you visualize an alert in such a way that it is easy to notice the risk and to find the operation responsible for the delay?

A first approach could be as follows: If an operation is too late, an additional red layer is displayed to warn about the delay.
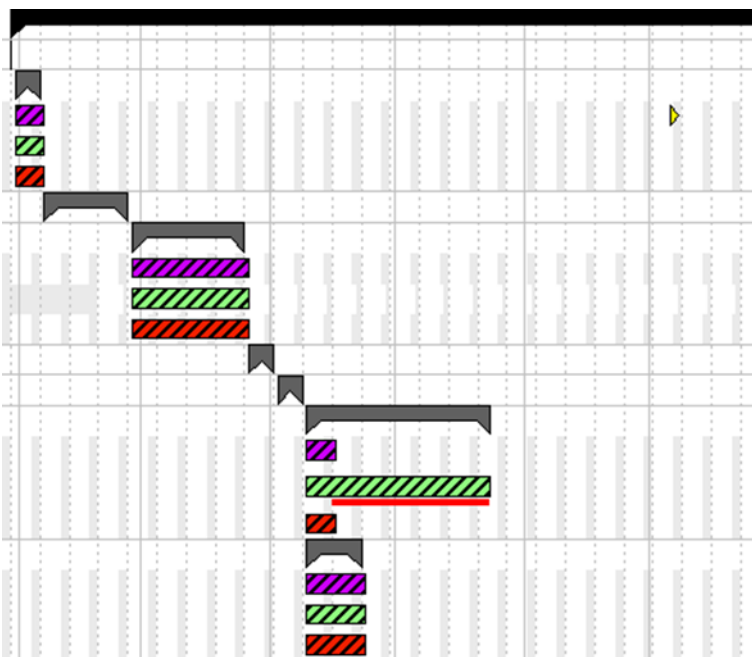

STEP 1: THE DELAY IS MARKED BY A RED LAYER BELOW THE CRITICIAL OPERATION.

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The drawback of this solution is that you have to scroll a lot horizontally and vertically, if the chart consists of many rows and if the chart spans a wide time period. And in case of collapsed groups no alert layer is to be seen at all. So, in a next step you could add an additional red layer at the grouping level on top of the gray summary bar.
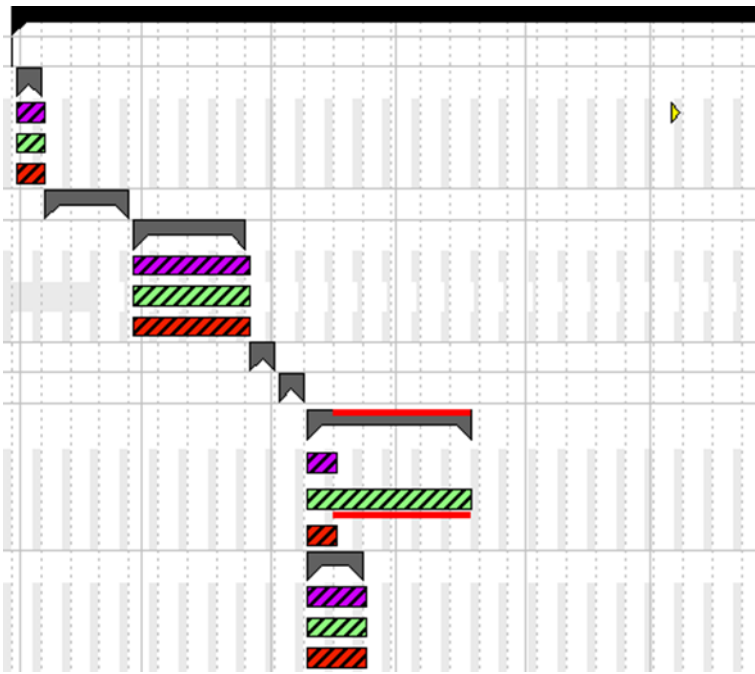

STEP 2: AN ADDITIONAL RED LAYER MARKS THE DELAY AT GROUPING LEVEL

In the same way you could mark a delay by red alert layers at each upper grouping level. In this manner the warning is pushed up to the highest grouping level. That way, you make sure that you see all bottom-up alerts also in your top-down view.
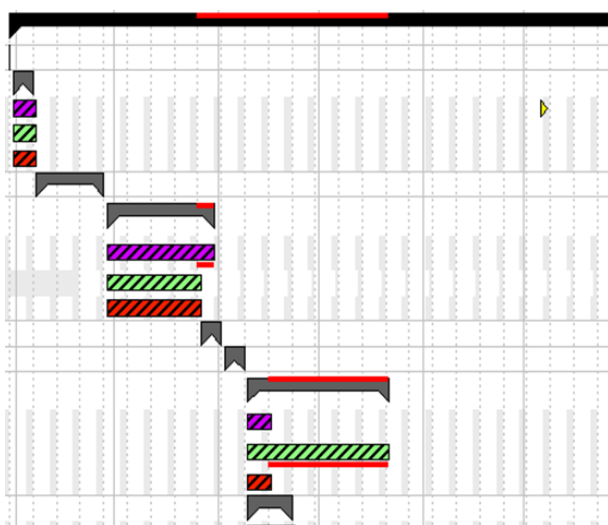
ALL DELAYS ARE PUSHED TO THE UPPER GROUPING LEVELS UP TO THE HIGHEST LEVEL.
IN THIS SAMPLE, THE BLACK SUMMARY BAR AT THE TOP SUMMARIZES ALL DELAYS IN ONE SINGLE LAYER SPREADING THE WHOLE CRITICAL AREA.
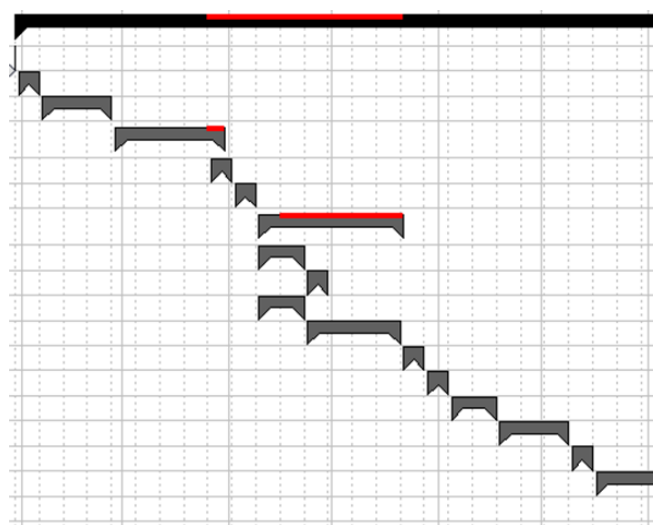
EVEN IN CASE OF ALL GROUPS COLLAPSED THE ALERTS ARE EASY TO BE NOTICED

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# Tip 11: Use context-sensitive node colors and layers

The purpose of a Gantt chart should not just be to visualize data, and especially not to visualize *all* data. However, this is a typical approach which we observe across the board. We believe that a Gantt chart should be built to support the users making business critical decisions faster.

Hence, it is not only important to present all data to the user, but to direct the user's focus to the decision-relevant information. Ultimately, the user should focus only those activities or tasks which require his attention and for which he has to take corrective actions. Below are some examples of context-sensitive node colors and layers.
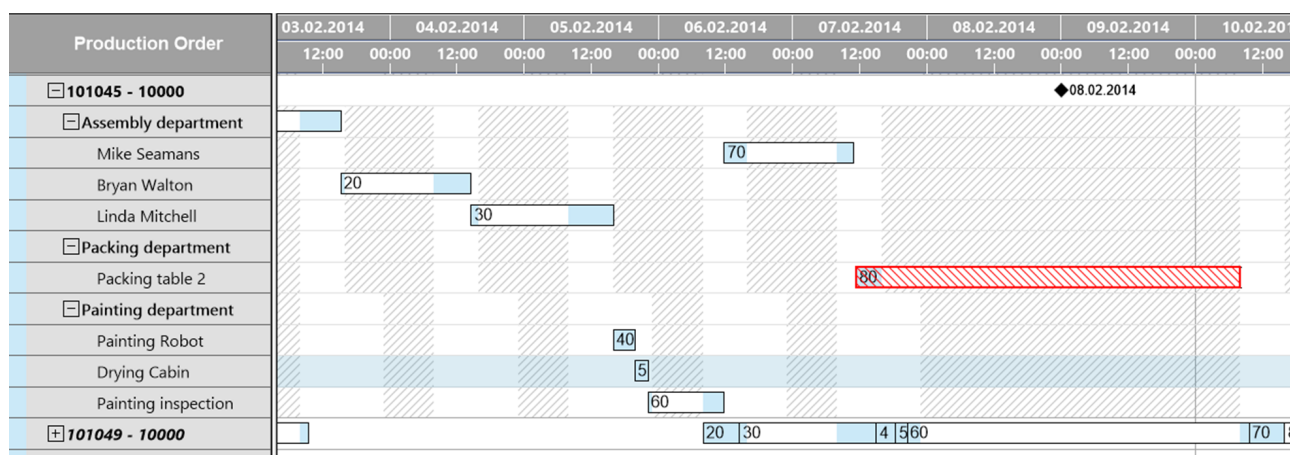
ALL NODES LOOK THE SAME WITH ONE EXCEPTION: THE RED HATCHING INDICATES THAT THE ACTIVITY'S END DATE IS PAST THE DUE DATE.

Instead of changing the color resp. the appearance of the bar, you can also add symbols to the bar which provide you with context-sensitive information.
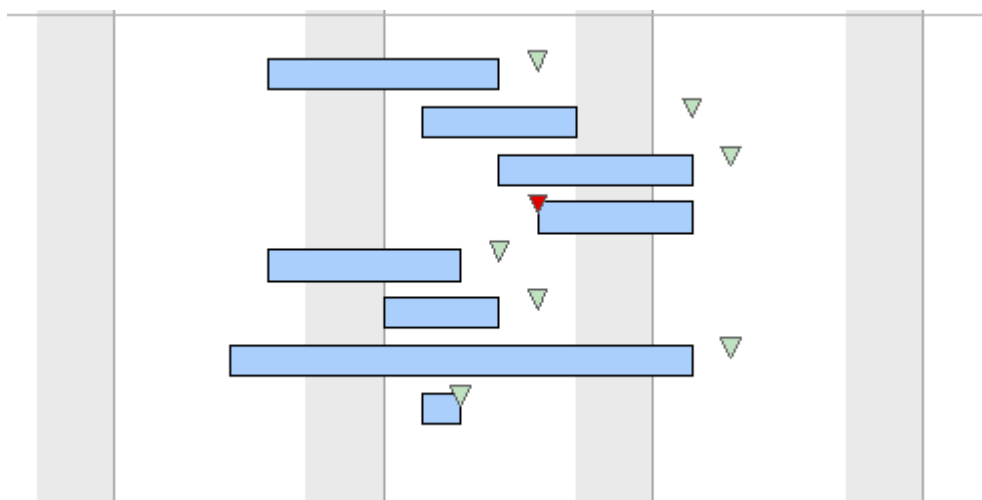
THE TRIANGLE REPRESENTS THE DUE DATE. GREEN = ACTIVITY FINISHED IN TIME. RED = ACTIVITY RUNNING LATE.

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Of course, you are not limited to one form of hatching per Gantt chart, and you can combine hatchings and symbols.

However, we strongly recommend that you limit the number of visual alerts you use. Remember: you want to use them to show the critical exceptions in a schedule and they should indicate the tasks that need your user's immediate feedback. You will not achieve this if every task is marked critical.
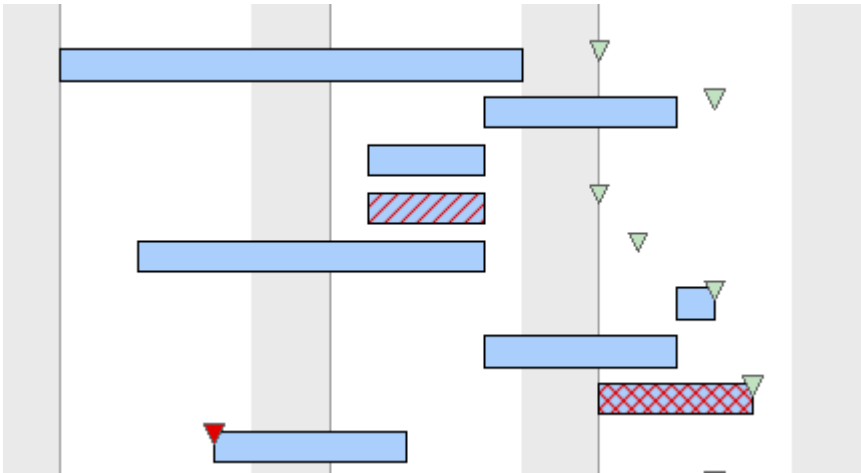

THREE VISUAL ALERTS IN ONE GANTT CHART. THE DIFFERENT HATCHINGS INDICATE THE LACK OF DIFFERENT MATERIAL FOR THIS SPECIFIC PRODUCTION ORDER. THE RED TRIANGLE AGAIN GIVES AN „OPERATION TOO LATE" WARNING,

Finally, you can also use additional layers to point your users' attention to critical elements of the schedule represented in the Gantt chart. Again, you are not limited to one layer per node, but can apply various layers. But please keep in mind that you should not overload your Gantt chart application with too may visual alerts. Always limit your alerts to these incidences which are crucial for your business.
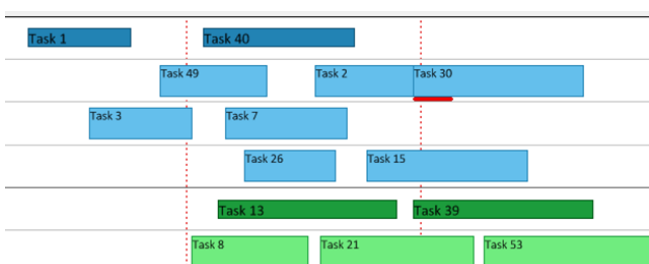
ONE RED LAYER INDICATING AN ISSUE
- E.G. A MACHINE CONFLICT
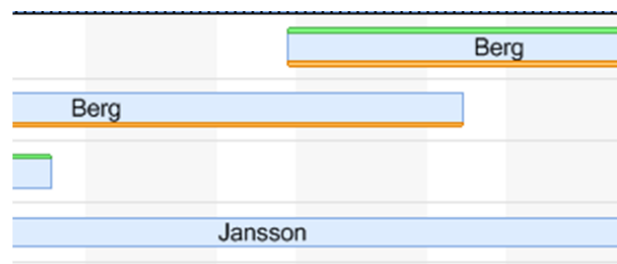
TWO LAYERS INDICATING PROBLEMS OR CONFLICTS;
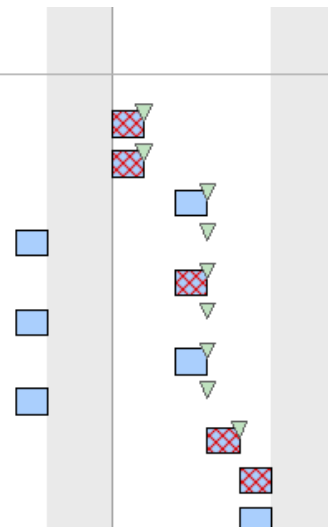*ONE LAYER ON TOP OF BAR AND*
ONE LAYER AT BOTTOM OF BAR

Tip 12: Apply user alerts also to the Gantt chart table

As compelling as warning colors or warning layers are, they face one inherent weakness: they are only visible when the actual bar is visible on the screen. However, sometimes Gantt charts have to master the spread of providing a high level picture and delivering very detailed information.

Hence, many of our customers use their Gantt charts both for a rough-cut planning and the detailed planning. In the rough-cut planning, they look at their e.g. production schedule with multiple weeks or even months timeframe, whereas in the detailed planning they focus days or hours. Of course, in the detailed view, color alerts on the bar-level play an important role.

Well, these information though get lost in the rough-cut planning as the users never see all nodes on one screen. Hence, we highly recommend to include decision-relevant information such as delivery time commitments as indicator fields into the table part of the Gantt chart.

HIGHLY RECOMMENDED: WORKING WITH COLORED USER-ALERTS IN THE GANTT CHART TABLE.
*ESPECIALLY USEFUL FOR ROUGH-CUT PLANNING.*

Tip 13: How to visualize the percentage of completion

Gantt charts always visualize time-related planning data. We regularly observe use cases, in which the percentage of completion of a specific job or task is an important information for the planer.

A recommended best practice to visualize the percentage of completion is to add an "informational" layer on top of the task layer. There are various alternatives which can be chosen as you can see from the below examples. We advise that you decide upon these layers in combination with the design of your "alert layers" so that your Gantt chart highlights especially those information that is relevant for your users.

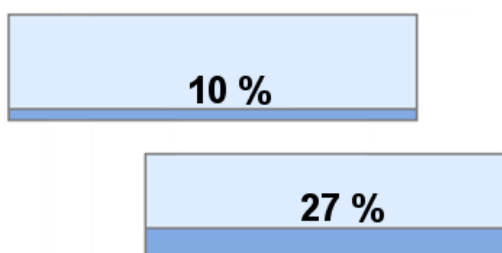*OPTION 1: A TALL PERCENTAGE OF COMPLETION LAYER ON TOP OF THE TASK LAYER*
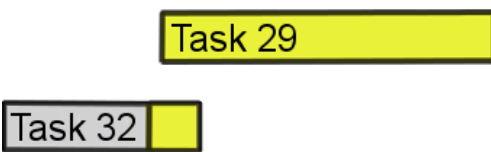
OPTION 2: USE A DIFFERENT „FILL COLOR" OF THE TASK LAYER TO VISUALIZE THE PERCENTAGE OF COMPLETE
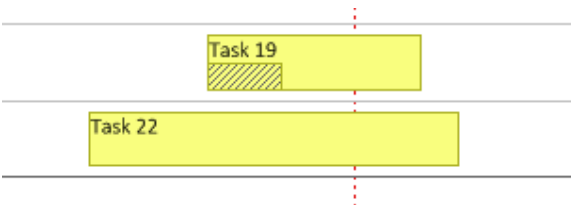
OPTION 3: INDIVIDUALLY DESIGNED PERCENTAGE OF COMPLETION LAYER

If you develop Gantt charts especially for the process industry, these layers may be misleading. Many users in the respective verticals do not think left-right, but they think bottom-up: for them, percentage of completion typically equals a fill level. In these cases, we recommend the following visualization.

OPTION 4: PERCENTAGE OF COMPLETION LAYER INDICATING A FILL LEVEL

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Conclusion And Additional Resources

After reading this Ebook, you now should know both basic and advanced best practices how to make best use of colors in your Gantt chart applications. However, knowing is not enough ...

> **"**
> *Knowing is not enough; we must apply.*
> *Willing is not enough; we must do.* **"**
>
> *- Johann Wolfgang von Goethe*

Hence, we highly recommend that you actually apply your new knowledge. All described best practices are supported by our Gantt chart control VARCHART XGantt. We offer you to test the control for 30 days—for free. Even better: we will provide you with unlimited complementary support.

This is your chance to build hot and spicy Gantt charts.

CLICK HERE TO REQUEST YOUR TRIAL VERSION TODAY.

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NETRONIC—Gantt Charts for Visual Scheduling

The Aachen (Germany) based NETRONIC is provider of Gantt charts for visual scheduling. Interactive Gantt charts bring transparency into production, project and process data and improve planning and scheduling of resources, jobs and workflows. Since decades, the Gantt chart is our core competence – resulting in three business lines:

(1)   With the Gantt chart controls VARCHART XGantt and VARCHART JGantt, we address software vendors who typically develop industry-specific planning and scheduling solutions.

(2)   The Visual Production Scheduler is for partners and customers of Microsoft Dynamics NAV and provides a fully integrated, intuitive graphical visual production scheduling support.

(3)   Based on our Gantt know-how, we also develop custom-made scheduling applications for end customers who want to improve their short-term production scheduling.

For more information,

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