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software review 198

Circa

Steve Cotterell takes a long look at the latest version of a software development estimating, planning and tracking tool that's been around for about 12 years.

Circa, from Tassc, is estimating, planning and tracking software designed specifically for the software development industry. You tell it what you want to develop and Circa then estimates how much time and how many resources will be needed and what it will cost.

Circa's forerunner has been around for about 12 years. More recently, the user interface has been completely re-designed, says Tassc, to make it more user-friendly and to give a new look and feel to an already mature system.

Tassc recommends that you should do your estimates as early as possible and then re-estimate at each iteration and project phase. As more information is entered, so the estimates become more accurate.

When you log in, you see five windows on the screen, all of which can be re-sized, moved around, opened and closed, to present whatever view of the project you want. If you're using a two-screen system, you can extend your desktop to the second screen, which Windows sees as a separate screen with an independent resolution. With this set-up, you can maximise Circa on the primary display and any floating windows (charts, estimate dialogs, etc) can be dragged onto the second screen.

In the central screen area is the 'Navigator', which contains a guide to Circa's capabilities. Clicking on links lets you explore it in detail and links to the product's main features are embedded so that you can be guided through the product's process.

The 'Getting Started' option offers you a 'Quick Tour' tutorial, a choice of sample projects and a link to Tassc's website. In addition to the tutorial, Circa contains a comprehensive help system. As well as help on using the tool, there's an explanation of the concepts of estimation and how the calculations work.

How does it work?

Circa uses a system called 'ObjectMetrix', Tassc's own technique, which takes an object-oriented approach to estimation and can scale for both large and small projects.

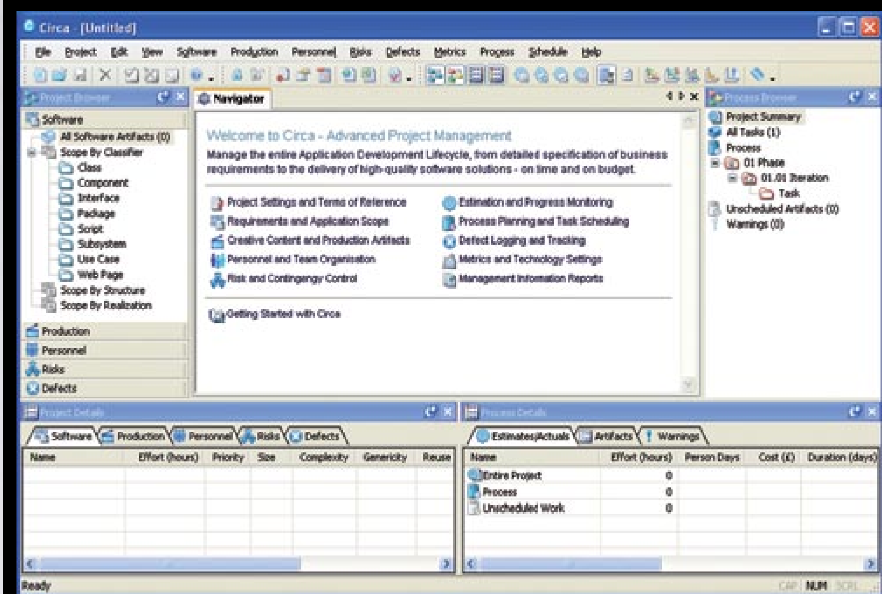
Before you start a new project, you need to populate the system with details of the software modules that have already been designed, typically using a UML (Unified Modelling Language) CASE (Computer Aided Software Engineering) tool. Software artifacts can be exported from the CASE tool using XMI into an XML file, which can then be imported into Circa. Failing that, the 'software artifacts', can be manually created within Circa, using a form provided to help you capture details about their size, complexity, genericity (re-usability) and whether they re-use existing software information.

You can later return to the form to update and refine the information entered to improve the quality of the estimates based on it.

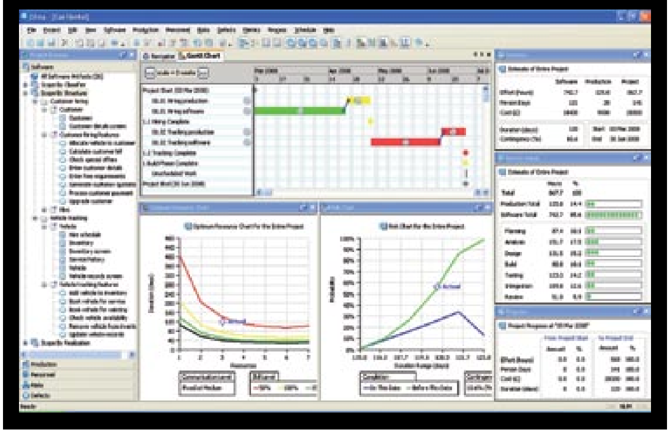
All of the UML concepts of classes, components, interfaces, use cases, etc, are imported via the XML file and the whole structure is then presented, as an Explorer-type tree, in a 'Project Browser' window. This window can display trees of software, resources, production, risks and defects. The 'Project Details' window will display a detailed view of whatever object is highlighted in the Browser window.

Project Browser terms are based on those used by UML, which is the widely used industry standard graphical notation for software design. It may be useful to explain a few of these terms. A 'classifier' is a type or category of software element such as 'components' or 'interfaces'. A 'class' is a collection of objects with similar responsibilities and/or behaviours – such as customers' attributes or invoice details. A 'use case' is a set of scenarios

Circa's opening screen displaying its default layout



> An estimating, planning and tracking software application designed specifically for managing software development projects.



Circa's Gantt chart along with its Optimum Resource and Risk charts

that describe an interaction between a user and a system – in other words, the system's individual features.

If the UML system is not being used, you can set up your software classifiers.

Once the tool's been populated with the classes and use cases, an estimate can be produced immediately. Open the 'Summary Estimate' window and you'll see that the system has calculated an 'hours of effort' figure. Opening the 'Activity Detail' window displays a breakdown of the estimated effort in each of the project's life-cycle stages.

The system uses two built-in sets of metrics (concept and concrete) and applies them to the imported classes and use cases to calculate the estimates. Concept metrics are applied at the early analysis stage of the project. Concrete metrics are used at the later stages, when you have more detailed information about the work to be done. These built-in metrics were calculated following a five-year period of research and analysis and Tassc provides them so that Circa can be used straight out of the box – but they can be edited and configured by experienced users if necessary.

When designing a classifier, you allocate a 'base productivity metric' hours of effort figure and show what percentage of effort is used by each of the life-cycle stages (planning, analysis, design, build, testing, integration and review). These default figures are then applied to all the software artifacts of that type.

The default base productivity metric for each object can then be customised by completing a modification form to amend the figures used.

Resourcing

The next step is to define the project resources. You can import the names in your resource pool using a previously created template, or individual resource details can be entered manually. You use a set of sliders to define each person's skill profile. Skill levels can be set from 50% to 200% (ie, novice to expert). I heard that one of Tassc's customers wanted to define skill levels of below 50%! Evil as I am, I think I'd enjoy reviewing their software!

You also enter the hourly rates of pay (standard and overtime) and the standard and total number of hours people may work in a day. Default availability and pay rates can be created to apply to everyone when their record is created, which can be overwritten if necessary.

Project and individual working calendars can be created, defining default and individual working days and holidays. You can change the project calendar and apply these changes to all of the personal calendars.

The 'Optimum Resource Chart' displays, using a set of curves, the ideal number of people, at varying skill levels, required to complete the project in the shortest period of time. You can also see the cost: benefit ratio of adding each additional person to the job, up to and beyond the point of negative benefit.

Resource names can be highlighted in the project Details window, where unassigned resources are indicated with an icon of a man. Resources can be assigned by dragging them on to the project teams. Once assigned, the icon's arms are raised. Icons indicate the status of most objects listed in the various windows.

Immediately you add people to your project team, the system calculates what effect this has on the project duration and, in the Summary window, now produces person days and cost figures, the project duration and start and end dates. On the Optimum Resource Chart, a little target symbol now appears, indicating the calculated duration.

Opening the Gantt chart at this point shows that all the work is unscheduled. By using the Process Browser tree you can now start to schedule the work. The Browser shows the project tasks and the order in which they'll be done.

The tasks are ordered into iterations, which can be divided into phases. You can 'Auto Populate' the process structure, defining how many iterations there are in each phase and how many tasks in each iteration.

Within the tree is an 'Unscheduled Artifacts' heading and below this are all the software artifacts that were imported, or created manually, and these can be listed in the 'Process Details' window. You can drag artifacts from this list and drop them onto the tasks in the different iterations in the schedule.

On the Gantt chart, warning symbols appear against the tasks, telling you that no one's been assigned to them. No durations have yet been calculated. Resources can now be dragged and dropped on to the tasks. Once you do this, each task's duration is calculated and the Gantt bar drawn.

Should you assign the same people to parallel tasks, you're warned that they've been over-assigned. By opening the colour-coded 'Resource Usage' chart you can examine each individual's loading in turn. You can then manually change the resource allocations until you're happy with the situation. Alternatively, you can create dependencies between parallel tasks so that they're performed in sequence.

Status

The Gantt bars of tasks on the critical path are marked with a clock and colour coded to show their status (planned, in progress or complete).

When you mark a task complete, you can enter the actuals and the project is re-calculated. At any time, highlighting any part of the project process in the Process Browser causes the Summary and Detail estimate windows to display that object's figures.

Having entered a task's actuals, by opening the 'Variances' window, you can compare the estimates and actuals by value and percentage variance. You may then want to consider adjusting the metrics the tool uses for that object.

If you use MS Project, you can, before resourcing the project in Circa, import your MS Project resources into Circa, thus eliminating any problems that might be caused by differences in the presentation or spelling of their names. Once you have a schedule, its tasks, milestones and resource allocations can be exported to MS Project.

Risk

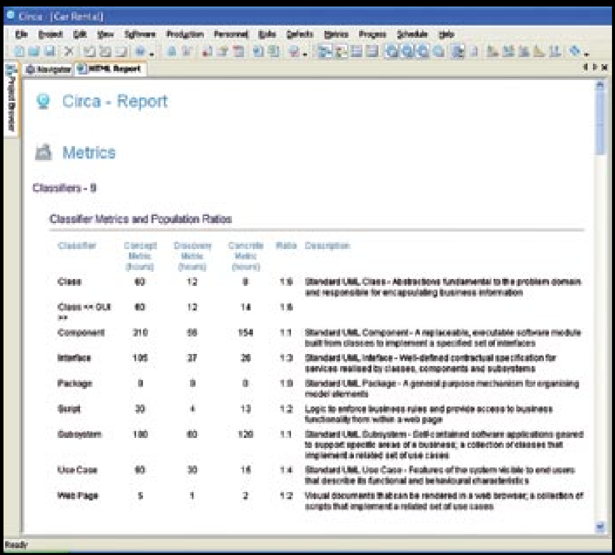
While setting the project up, a risk analysis should be carried out. Tassc recommends that companies create a template containing the typical risks that might affect their projects. This can be imported or risk details can be entered manually.

The risks are listed in the 'Risk' section of the Project Browser window and can be sorted into folders containing separate categories of risk. Risks, once imported, may be modified, changing the probability and impact, and any risk not applicable to this project can be excluded. Risk priorities are calculated by the system (based on probability and impact) but these figures can be manually over-written. If you wish, you can enter text detailing your contingency plan.

Opening the 'Risk Estimation' chart now displays a range of estimated durations for the project, from most optimistic to most pessimistic, along with a target symbol showing the currently estimated most likely date for completion (confusing, because it's labelled 'Actual'). You can set which date to use – optimistic/realistic/cautious/pessimistic, etc, in the project properties window and can manually override the contingency calculations.

Once the risk calculations have been done, the project duration figure (with the risk contingency applied) is displayed in the Summary window. As the project progresses, you can edit the risks as their likelihood increases or decreases and the figures are recalculated accordingly.

One of Circa's reports, this one showing information about metrics



Dealing with non-software

Beneath the Project Browser's 'Production' heading you capture and manage non-software development activities involved in the production of the product, maybe involving hardware, images, music, etc.

There are a few default categories, such as 'Help Materials', 'Multimedia' and 'Training', and you can add your own. Once you've created the categories, you list your production artifacts beneath their appropriate categories. These can be given ID reference numbers and, if developed internally, you can enter their level of effort. If outsourced, you can enter their cost. These activities can be added to the tasks scheduled on the Gantt chart.

There's a 'Production' column in the 'Summary' window and the production activity is also detailed in the 'Activity Detail' window.

Bug tracker

As you progress through the project, it's likely that you'll discover errors and bugs that need fixing. The Project Browser's 'Defects' area is divided into categories. There are some defaults but, again, you can add your own. You can enter details of both software and production defects, recording the problem and its environment, including its severity level and priority. You can estimate the fix duration and/or its outsourced cost and can track the status of each defect's resolution, the detail of which can also be recorded. You can schedule the resolution of defects on the Gantt.

Reports

The application contains a set of nine pre-defined reports, one for each aspect of the product – personnel, risks, metrics, etc, which can be output in HTML format or exported to Excel. The full report (in tabular format) contains all the project information that the system holds, including details of the metrics and how they've been calculated. You can also create your own reports, choosing from lists of tables, sections and columns for each of the nine sectors. Once you've designed a report, you can name and save it for future use. You can export a report as a template for use in other projects.

The facility exists, within the product, to perform 'what-if' estimates when, for example, trying to reduce delivery time or costs. You can temporarily mark specific tasks for exclusion from the estimate and immediately see the effect this has on your estimates. You can take a 'snapshot' of the project at any stage, or a number of stages and can later accept one of these snapshots as the basis for the continuing project.

You can, when setting the project up, run a 'Project Validation' report. This checks that all your tasks and artifacts have been scheduled and highlights any warnings about outstanding issues and problems in the process structure. It checks whether you're within your budget and deadlines. This narrative report is both a neat idea and useful.

Another common use of the application is to create bids for new work. Using the auto-populate feature, you can quickly build a model of the software and use a set of 'concept' metrics to get a rough estimate of the effort involved. You'd then create fictional resources or add your resources from the template. The software now provides a rough costing and timescales which can be used as the basis for negotiation and 'what-iffing'.

Try it

A free, seven-day trial (which can be extended by 21 days) is available from Tassc's website, as is other information, including some technical papers explaining Tassc's estimating techniques.

Some customers use the system after completing the tutorial. Those who require more training can attend a training webinar or an (on-site) two-day training course.

Right to reply

Circa is more than just an estimation tool – it lets you model, plan, schedule and track your whole project within a dynamic and highly visual environment where estimates are produced in real time. Our customers benefit from Circa's ability to instantly reflect the impact of change, as the estimates immediately update following any additions or reductions in the scope of the project – allowing scope creep to be quantified and sensibly negotiated.

Estimates have always been useful. However, in today's challenging economic climate estimates are no longer 'nice to have', they are essential management information. It is ever more important to ensure that projects deliver value for money and that managers ensure the most efficient use of resources.

The use of independent metrics helps an organisation to have a professional discussion about what is achievable within an agreed budget or time frame. Scope can be progressively increased or decreased until the estimates fit the available time-box. Furthermore, these estimates account for all activities in the development life cycle, building in time for review and testing (activities that are often squeezed when budgets are tight or time is limited). Using Circa helps the development team deliver high quality on time and within budget.

Ian Harrison, Marketing Manager, Tassc

How much does it cost?

For one 'fixed' pc licence, £495. This includes the first year's maintenance, including telephone and email support and updates. Thereafter maintenance costs 20% of the product cost. A 'floating' licence, shared on a network with multiple users – with one person at a time using the product – costs £1,995 per licence. All prices exclude VAT.

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