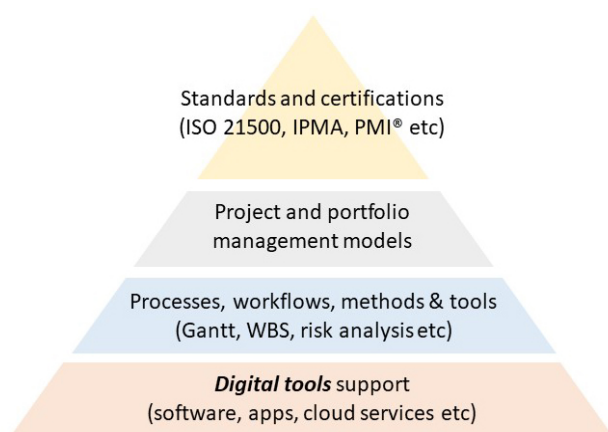# Digital project management tools – what you need to know

What is best digital tool for project management? Of course, that depends on the needs, but how should I understand them? What's on the market? And what are the trends? This article will tell you what you need to know.

Various frameworks for project management such as ISO 21500, *PMBOK® Guide* (PMI®), PPS, Wenell, SCRUM, PRINCE 2 and others, describe many processes, methods and tools. The list is long and includes tools like Requirements and Change Management, Gantt Schemes, WBS, Risk Analysis, Monitoring, Reporting, etc. The tools can be used by hand, i.e. with pen and paper - or perhaps a whiteboard and sticky notes - and simple calculations. It works great - especially in early phases before structures and working methods have taken shape. In small projects where everyone is often gathered in the same place, it can even work for the entire journey from idea to delivery. But in larger projects and organizations, one should carefully consider using a digital tool, especially if the project team is scattered.

Standards and certifications
(ISO 21500, IPMA, PMI® etc)

Project and portfolio
management models

Processes, workflows, methods & tools
(Gantt, WBS, risk analysis etc)

Digital tools support
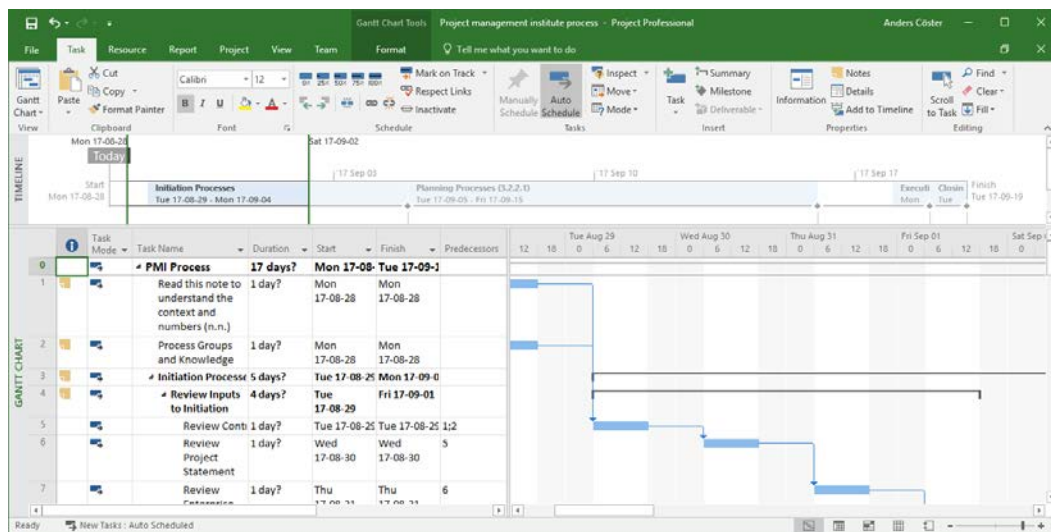(software, apps, cloud services etc)

It's about communication and transparency; about what happens in a project affects other projects; about dependencies between projects and other parts of the organization that deal with economics, staff, shared resources etc. Sometimes there are standards and legal requirements (e.g. traceability) that must be taken into account. In addition, there are often demands for efficiency improvements to keep costs down. All these factors are accelerating digitization and automation within project management.

This article is not a complete market overview as it's not really possible to keep one fully up to date or even made relevant (depending on how to draw the boundaries). This is rather a guide to what to consider before deployment.

What is a project management tool?

What can easily lead to confusion is different conceptions of concepts like tools, functions, apps, software and IT systems. In the analogue world, tools for project management generally refer to a method, such as how to conduct a risk analysis. One works with pen and paper, whiteboards, etc. A tool in the digital world usually means a software, such as a planning tool, whose various functions (create schedule, allocate resources, calculate costs ...) support planning, but not the method of planning itself (although the method can largely be affected by the software's design).
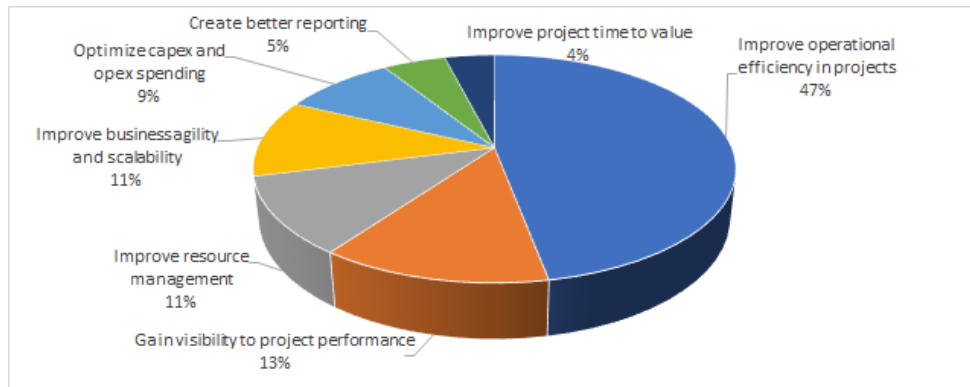

Microsoft Project 2016

Digital project management tools have been around for a long time. Microsoft Project and Oracle Primavera appeared more than 30 years ago, and have developed since then. With its more than 20 million users, Microsoft Project is somethings of a standard in many industries.

But the technological development has steadily accelerated. New forms of project management methodology have also evolved while new technology and the internet have dramatically reduced the threshold (and cost) to create and launch a new product in the market. And of course, social media have also influenced the development. Today there are uncountable amounts of alternatives to choose from - ranging from extensive and expensive systems to lightweight and free apps.

How can digital tools support projects?

According to a (Microsoft sponsored) survey conducted by Forrester Research in 2015, efficiency is the primary driving force for introducing digital project management tools. Increased visibility and better resource management are other strong driving forces, as well as creating a smoother and more scalable way of working. For many organizations, there are of course other driving forces.

It's surprisingly common that projects don't meet their objectives, exceed their time and cost frames or experience other difficulties. There have been many studies about why projects don't work out as planned, but - without going into details – the problems are often similar:
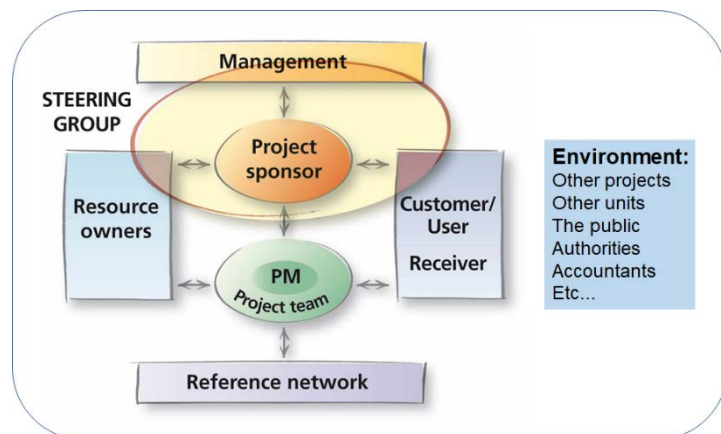
Inadequate (often unrealistic) planning	None, or too short, pre-study	Unclear or poorly managed objectives and requirements	Insufficient stakeholder anchoring
Poor leadership or insufficient skills in project group	Lack of communication	Unclear or inefficient methodology	Insufficient funding or staffing

Even the best possible digital tools can't solve all the problems because they are basically "human errors". It doesn't matter if a project management tool is applied with pen and paper or with some software, the needs to really understand the tool and see the big picture are the same. What, on the other hand, digitization (automation) really can contribute to is streamlining. In particular, repetitive tasks or handling large amounts of data can be speeded up. But anyone who has suffered from an insufficiently thought-out or poorly implemented introduction of a new IT system knows that efficiency is not given. It's important to ask questions beforehand: What do we want to achieve and for whom? Where do things move slowly and where are the bottlenecks? Where can a digitization really add something? And what are the disadvantages?

Stakeholder and needs analysis

Who are really a project's stakeholders and how do we find out their needs and expectations? To map, in a structured way, who are interested in a project - and how they are interested - is important. At Wenell, we often use this image.

Steve Jobs (co-founder of Apple) said " A lot of times, people don't know what they want until you show it to them" and that's very
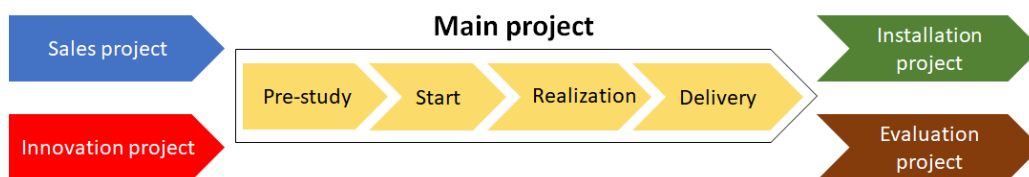
true. Trying to guess the needs of different stakeholders is a bad tactic. Invite to meetings or workshops instead. Ask questions, discuss needs and look at different digital tools together.

Sticky notes and a whiteboard, or maybe an Excel sheet, are excellent for testing "prototypes" for both tools and working methods. If it doesn't work well, it's quick and easy to change and try again.

In many cases, it's actually enough with something very simple. At the same time, a well-chosen tool with useful features can be of great support to projects and organizations in general. In larger projects or in environments with many parallel projects, especially when stakeholders are not in the same place, or even in the same time zone, it's generally necessary with some kind of digital tool.

Program and portfolio management

A project is rarely something isolated, things happen both before and after. Perhaps the main project is preceded by a sales or innovation project. And maybe later by an installation or evaluation project.

The projects can have different characteristics; big, small, long, short, different priorities etc. The needs are very different in a construction project compared to a pharmaceutical project. Many digital tools are created to be as universal as possible, others are highly specialized. Some organizations have so special (and clear!) requirements that they choose to develop completely custom tools.
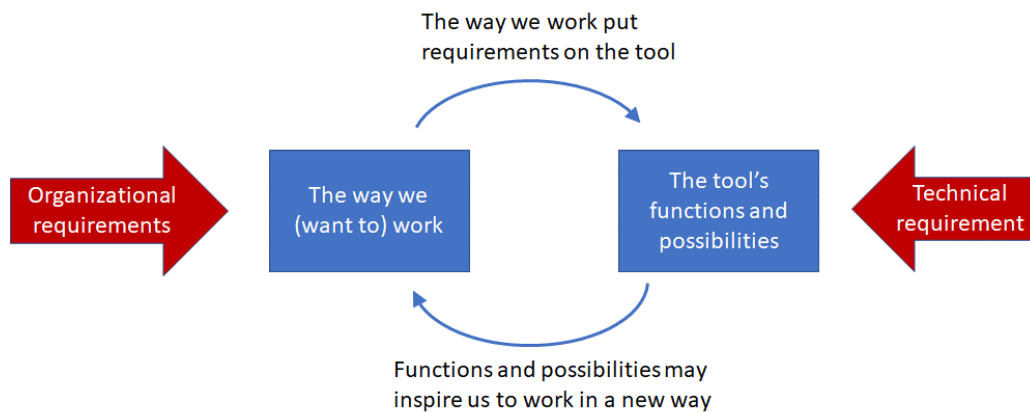

Example of project portfolio in Antura.

In organizations that run several projects more or less in parallel, it is about portfolio and/or program management. Often these projects have a number of dependencies among themselves. It's not just about staff and other common resources, but also reliance on capital flows, suppliers and customer projects, etc. It's complex and quickly becomes difficult to overlook and to control in an optimal way. In these cases, digital tools with portfolio and program management can quickly pay off in terms of clarity and better coordination - and thus higher efficiency. If the tool has functions for scenario planning (a method for companies to make assumption about, and plan for, future changes) you can optimize further.

The chicken or the egg

It may seem obvious that you should choose software for project management based on the way you want to work. Not the other way around, i.e. choosing something that forces projects and organizations into new and unwanted ways of working. But is this really a universal truth? Perhaps it is also true that a good digital tool actually can inspire new and better ways of working?

The way we work put
requirements on the tool

| Organizational requirements | The way we (want to) work | The tool's functions and possibilities | Technical requirement |

Functions and possibilities may
inspire us to work in a new way

Clearly, we have thoughts about how we, as a project team, want to work but there are probably also wishes and demands from the organization in general. It's common, especially in larger organizations, that there are technical requirements and IT policies to consider. For example, should software be installed locally or on a shared server? All this needs to be considered from an overall perspective and it is something of "the chicken or the egg" dilemma - it is not clear where it begins and where it ends. It is important to openly search for the answer in several iterations and consider working methods, implementation and a tool's features.

Features

Digital project management tools can have many different functions. Here are some examples:

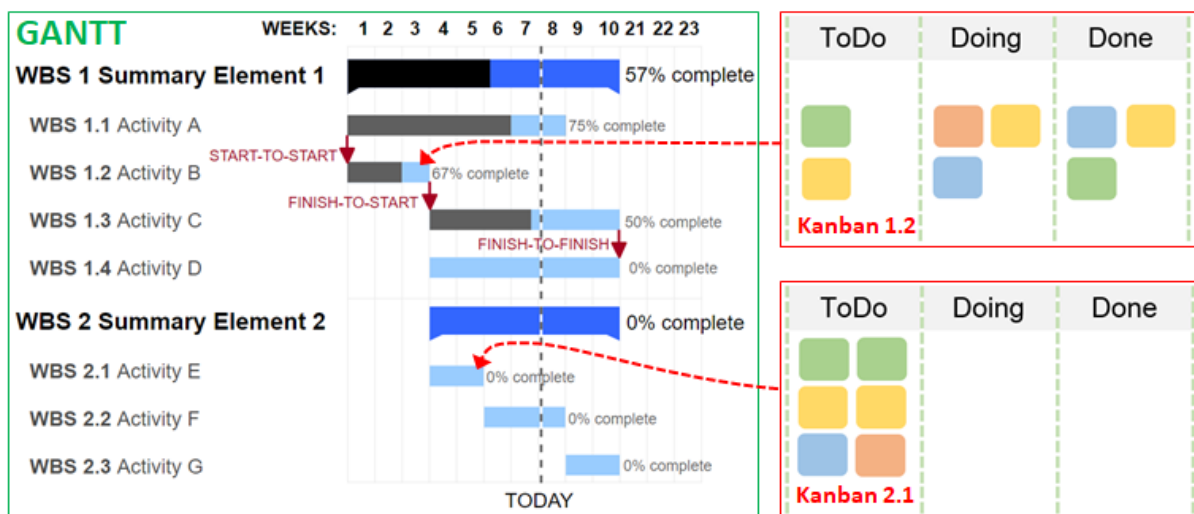| Gantt chart	Kanban / Burndown	Resource management	Budget	Document management
Issue tracking	Portfolio and program mgmt.	Mail, chat, forum and similar	Time reporting and accounting	Billing
Calendar	Risk management	Mind mapping	Network diagram	Earned Value
Requirements mgmt. / backlog	Support for project model	Task board / reporting	Test management	Activity lists
Language support	Quality management	Decision support	Meeting management	Integration / API

Many features and high flexibility mean a generic system that does not impose certain working methods. The other side of the coin is higher complexity, which in turn means a steeper learning curve. One must see to the users' IT maturity and motivation. A software feature may also be implemented in a way that doesn't suit the project team. Functions that are difficult to understand, or simply not used, mean costs, not least in terms of frustration among users.

Almost all tool suppliers offer some kind of free, or at least low cost, plan to try before buying. To seriously test several tools is, of course, time consuming but it also creates a better basis for defining requirements and investment decisions. As the introduction of a new tool can affect working methods, it is important to think both long-term and outside the project. Once a choice is made, it can be difficult and expensive to change.

Visualization – Gantt, Kanban or a mix

Probably, a Gantt chart still represents the essence of a project plan for many people. It visualizes the plan, milestones, dependencies between – and status of – activities etc. In many cases, it works very well, but when activities are more process-like, Kanban may work better. Especially the software industry has been successful in using Kanban, but it's not uncommon in other business as well. There are many tools for both ways of working.

In many tools either Gantt or Kanban forms the base, but in some cases, they are combined. Activities in the Gantt schedule can then have their own Kanban boards, and the project team can decide what best suits the current activity.
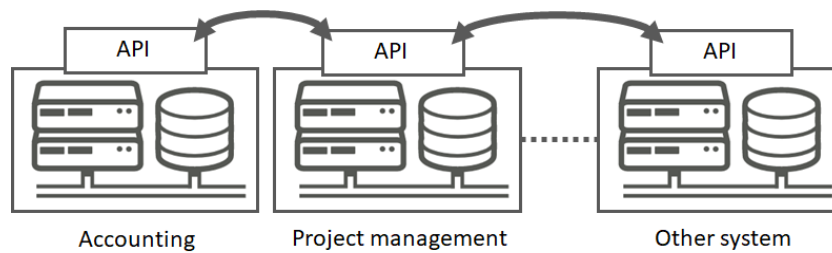
All-in-one tool or integrated system

A relevant question is whether to bet on an all-in-one tool or a system with separate but maybe connected tools. In simpler contexts and in organizations with lower levels of IT maturity, one should probably focus on separate tools; one for requirements management, one for planning, one for finance, one for document management, etc. The problem is that boundaries in organizations are rarely sharp and manually sharing data between different tools becomes ineffective. As long as there are not too many tools in the organization, an all-in-one project management system may work well. An "out of the box" cloud service with the "right" set of features can therefore be a very good solution for organizations that can't - or do not want to - invest in a more complex integrated system.

However, in organizations with high demands on efficiency that have the resources and expertise to integrate systems it's different. It's also quite industry-specific. When projects are the core business, for example in construction, consulting or software companies, it is often necessary to have some form of integrated system.
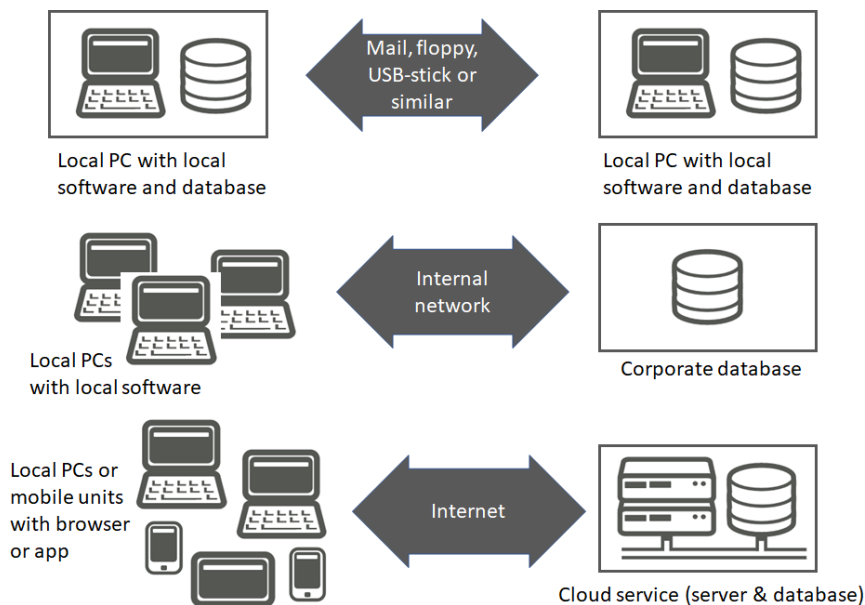
Tools that should be integrated ("talk to each other") need some API (Application Programming Interface). Briefly, it's something that allows sending data and commands between different tools. Systems can be built in a variety of ways and the details go beyond this article. The important thing is

that a tool without means to communicate with other tools tends to be isolated – which is something that, in turn, affects working methods, organization and efficiency.

Local installation or cloud service

Some years ago, software was something you (mostly) paid for once and then installed locally on a PC. This model is rapidly on its way out to be replaced by client-server solutions and cloud services (or SaaS, Software as a Service) and subscription based business models. The image below illustrates:

Installing a software locally in a PC (Windows, Mac, Linux ...) and saving all data on the hard disk is straightforward for a single user but quickly becomes ineffective when more users need access to the same information. Attaching data to mails or putting data on a USB stick is rarely effective. A better solution is a common database that can be accessed by all users via an internal network. In larger or IT-mature organizations this is a common solution.

Running local software in users' computers has other disadvantages, too. For example, there might be problems when everyone doesn't run the same version. In addition, the software may not be available for all types of computers (Windows, Mac, Linux, etc.) or for mobile devices, which could be required if you have project members in the field.

Today, it is becoming more common to use cloud services instead. It can be done in a few different ways, but typically you use a regular web browser to access an internet-connected server running the project management tool and a database. Alternatively, you use an app that in the same way is just a user interface to the actual tool and database. Thus, everyone uses the same version of the basic tool and a common database. Other organizations (customers of the same tool supplier) use the same

cloud service but their own database. The same system can therefore be used by many (thousands) users and customers.

Thanks to the centralization, cloud services are generally lower cost than locally installed tools. The requirements for customer IT skills also decreases when operations and maintenance de facto are outsourced to the tool supplier.

The difference in deployment and business models sometimes poses problems for organizations that don't have routines and/or structures that are suitable for subscription services. That is, something to find out before a decision.

Security

IT security must be taken seriously - threats are both real and an increasing problem. What does the organization's IT policy look like? A locally installed tool and associated database can be protected by a login function and maybe hard disk encryption. In addition, if your computer is behind proper firewalls it's enough in most cases. But when you (e.g. via a browser) log in to a supplier's server, you need to be aware of increased risks.

It is important to read the fine print. Who is the owner of data that is uploaded to the cloud service; the customer or the supplier? Can you get backups? What happens if the cloud service provider goes bankrupt?

It is fairly common that organizations do not allow sensitive information to be stored in supplier's cloud services (their servers). Many suppliers therefore offer an option (at a cost) to install the tool in the customer's own system. However, such a solution does not only provide ownership and control of the database, it also comes with responsibility for operations, security, updates etc.

Implementation

One can discuss which tactic is best; implement in smaller steps, i.e. start with a pilot - or take a big leap with a wider introduction. The disadvantage with smaller steps is that only parts of the organization implements changes and acquire new knowledge, something that may lead to communication problems. On the other hand, the disadvantage of a bigger step is that it will be harder to correct an unsuccessful implementation.

There are no simple truths but that all stakeholders really understand the purpose of implementing a new tool is crucial. All CHAOS reports from the Standish Group since 1994 have had "involving users" in first or second place as a success factor for IT projects to succeed - it says a lot about how important it is.

The implementation can potentially be a technical challenge, but it is important to look beyond this. Things like efficiency, impact, attitude, commitment and satisfied users are more important, but can be difficult to assess. It is worth considering how to measure and follow up these factors before, during and after the implementation.

Other tools

Whether a specific digital tool is a project management tool or not is a subject for discussion, but is the discussion really meaningful? Even tools that are not directly created to support projects can be very useful. Here are some examples (there are many more!) of tools that may be interesting for project management:

- Issue management
  - Jira (https://www.atlassian.com/software/jira)
  - Bugzilla (https://www.bugzilla.org)
  - MantisBT (https://www.mantisbt.org)
- Cooperation and chat
  - Yammer (https://www.yammer.com)
  - Slack (https://slack.com)
  - Samepage (https://www.samepage.io)
- Resource management
  - Silverbucket (http://www.silverbucket.com/en)
  - TimeLog (http://www.timelog.com/en)
  - Ganttic (https://www.ganttic.com)
- Generic databases
  - Wunderlist (https://www.wunderlist.com)
  - Airtable (https://airtable.com)
  - OneNote (https://www.onenote.com)
- Meeting management
  - Mobilimeet (http://mobilimeet.com)
  - Meeteor (http://www.meeteor.com)
  - Web Whiteboard (https://webwhiteboard.com)
- Mind mapping
  - XMind (http://www.xmind.net)
  - FreeMind (http://freemind.sourceforge.net)
  - ConceptDraw (http://www.conceptdraw.com/products/mind-map-software)
- Cloud storage
  - Box (https://www.box.com)
  - OneDrive (https://onedrive.live.com)
  - Dropbox (https://www.dropbox.com)

Cost

It's not surprising that digital tools with many functions have a higher price tag. Suppliers' price and business models are also just as diversified as their products. Comprehensive tools for large organizations can cost 400-2500 USD. In addition, there may be costs for support agreements or consultancy services.

The business model for cloud services is usually some kind of subscription where the cost is linked to the number of users, functionality, speed of support, database size and more. The price usually stays in the range 5-50 USD/user/month.

There are also a number of free tools ("open source") developed by online communities. Examples are Redmine, Dotproject, Planner, ProjectLibre and GanttProject. Several are very popular and have good support for users. However, some free tools may require specific knowledge about installation and operation.

There are free versions of many cloud-based tools. Good for evaluation but free versions should generally be considered as marketing rather than valid options for professional organizations.

In any case, the cost of the tool itself is small in relation to user training and impact on the organization. Changing working methods is surprisingly slow even in organizations that essentially are positive to a digitization agenda. Similarly, a rather small increase in organizational efficiency can justify a significant tool investment.
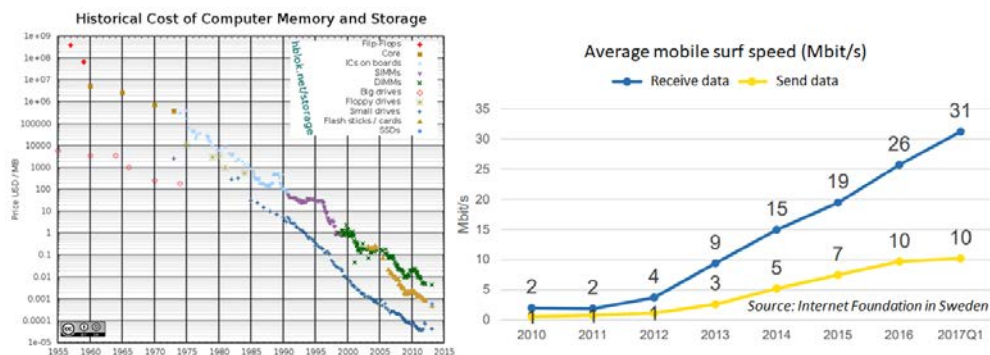
Social media and BYOD

Social media has influenced a lot in our society, something that also applies to project management. Today, it is not special that status reporting in a project is done via social media instead of telephone or mail. Many, but not all, digital project management tools therefore have some kind of API that allows integration with different social media.

The term "Bring Your Own Device" (BYOD) means in brief that employees use their own phone, tablet or laptop at work. There is much to be said about the phenomenon, but here we just note that BOYD has led to a lot of new apps for project management.

Future development

The Internet Foundation in Sweden (IIS) publishes data for average internet speed each year. The numbers steadily increase. At the same time, computers and mobile devices are performing more in relation to their cost. The combination is powerful and makes digitization a strong global trend.

New digital tools for project management are almost exclusively various cloud services, locally installed tools don't seem to be the future. Even the ever-increasing use of social media is strongly influencing, which is clearly reflected in the development.

Another exciting and powerful trend is the development of what is often called artificial intelligence (AI). Actually, better words are machine learning, advanced pattern recognition, statistics and prediction. It's about algorithms that, based on large amounts of data, can perform analysis, predict and make decisions in a way that has not been possible before. We see AI implemented in the form of image and speech recognition, auto trading, and self-driving cars. AI now also comes to project management as different forms of decision support.

Prediction is very difficult, especially if it's about the future, but one thing is certain: project management will continue to be both influenced and developed by digitization.

Anders Cöster, M.Sc. is senior consultant at Wenell Management and works with project manager trainings, coaching, leadership and process development. The long-standing professional experience includes startup companies as well as major international organizations. Anders always looks for new trends, technological development and innovation, but also has a great interest in people and leadership.

Mob: +46 70 333 60 28   **Email:** anders.coster@wenell.se
LinkedIn: https://www.linkedin.com/in/anderscoster

Examples of digital project management tools

Tool	Link
Antura Projects	https://www.antura.se/
Asana	https://asana.com/
Basecamp	https://basecamp.com/
Binfire	https://www.binfire.com/
Breeze	https://www.breeze.pm/
CANEA Project	https://www.canea.com/It-losningar/canea-project-project-management
Dapulse	https://dapulse.com/
Dotproject	http://dotproject.net/
Eylean Board	http://www.eylean.com/
Favro	https://www.favro.com
Feedcamp	https://freedcamp.com/
GanttProject	http://www.ganttproject.biz/
Hansoft	https://hansoft.com/
JIRA	https://www.atlassian.com/software/jira
Kanban Tool	http://kanbantool.com/
Kanbanflow	https://kanbanflow.com/
Kanbanize	https://kanbanize.com/
LeanKit Kanban	http://leankit.com/
LiquidPlanner	https://www.liquidplanner.com/
Mavenlink	https://www.mavenlink.com/
Microsoft Planner	https://products.office.com/en-us/business/task-management-software
Microsoft Project	https://products.office.com/en-us/project
MindView	https://www.matchware.com/
OmniPLan	https://www.omnigroup.com/omniplan/
OpenProject	https://www.openproject.org/
Oracle Primavera	https://www.oracle.com/applications/primavera
Planner	https://wiki.gnome.org/Apps/Planner
Podio	https://podio.com/
Project 8	http://www.conceptdraw.com/products/project-management-software
ProjectCompanion	http://projectcompanion.se/
ProjectLibre	http://www.projectlibre.com/
Projectplace	https://www.projectplace.se/
Projify	http://www.projify.se/
ProofHub	https://www.proofhub.com/
Redmine	http://www.redmine.org/
ReQtest	http://reqtest.com/
ScrumWorks	https://www.collab.net/products/scrumworks
Smartsheet	https://www.smartsheet.com/
Stratsys	http://www3.stratsys.se/en/
SwiftKanban	http://www.swiftkanban.com/
TeamGantt	https://www.teamgantt.com/

Teamwork	https://www.teamwork.com/project-management-software
Tom's Planner	https://www.tomsplanner.com/
Trello	https://trello.com/
Webforum	http://webforum.com/
VersionOne	https://www.versionone.com/
Wrike	https://www.wrike.com/