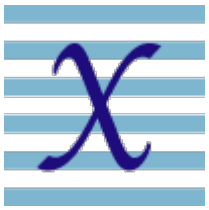


On the wrong usage of S.curves

Summary

A recap on the s.curves and their central role in the dynamic tracking of projects is given in other sources.
See:
A short introduction
S.curves basics
Tracking 1 and Tracking 2
A paper on project processes

Wrong reading or wrong usage of S.curves can be:

1. Using the static information only
2. Having a hidden agenda
3. Using a false schedule
4. Shooting the messenger

For recollection, the right usages are

- creating early warnings
- getting feedback
- analyse and decide on actions, implement and / or re-baseline

S.curves are not useful for passive contemplation of developing problems.

Error 1: To use the static information only

Static, absolute progress values are mostly meaningless

A common beginners error is to look only at the static information, i.e. the instantaneous progress value. To be entirely honest, this instantaneous value is most of the time quite meaningless.
This can come as a surprise: is the information that a project or some part of it has reached say 48% completion really meaningless?
Well yes, and one needs to dive into the deeper mechanisms used for calculating such values, to understand why this is often the case.
The reason lays in the fact that most of the time (this is real world experience), inconsistent metrics are used throughout the set of project tasks.
We need to clarify this a bit further.

In our system, Dynamic Project Control, we strongly emphasise the use of the physical progress as driving force to compute aggregated progresses (i.e. over a given set of tasks). This is not the source of the problem. The aggregated progress is always calculated using a mathematical formalism in this shape:

$$p_S(t) = \frac{\sum_{i \in S} p_i(t)\, wf_i}{\sum_{i \in S} wf_i}$$

The key elements here are p_i , the % of physical completion (remember: physics prevail), and wf_i the weight factors of every task. The weight factors express, well the weight of every tasks in the buildup of physical progress.

The cause of the "irrelevance" of the aggregated progress value lays here.
These weight factors are seldom coherent. They are so only in rare occasions (again this is real world experience):

a/ when every tasks is weighted by its $ value
b/ when every tasks is weighted by its labor content, say man hour content.

In case a/ we read the aggregates % value as follows:

as per status date, x % of the allocated $ value of the set of tasks has been achieved (has been "earned" in EVM speak) through the observed physical progress.

This does **NOT** mean that x% of the scheduled costs have been incurred. This figure might be totally different because of the productivity of the monitored process that might be substantially different than 100% (in both directions).

In case b/ we read the aggregated % value as:

> *as per status date, x% of the total allocated labor has been "consumed" ("earned" in EVM speak).*

Again, this is not the same as the actual amount of consumed labor, which, also due to productivity differences, can be a vastly different figure.

It is thus only in cases a/ and b/ that we can produce aggregated % completion values that have some meaning.
In all other cases, where incoherent weight factors are used, we must conclude that the aggregated % complete values are **meaningless**.

In most of the practical cases the weight factors are taken as the tasks duration. The % complete then reads as:

> *% aggregated duration ("earned schedule" in EVM speak)*.

In the rare occasions where all tasks are o*f the same nature* (say same discipline, e.g. piping, cable pulling, and the likes), then will the aggregated % value have some meaning. But when aggregation is performed over all kinds of tasks (e. g. combine steel structure erection with concrete slab casting), then the meaning of the absolute value is lost.

Relative progress values are meaningful

This was a long introduction to come to this conclusion: it is much more meaningful and safer to **stick to the relative values**

What is meaningful is the relative value at any given time: the ratio of the actual progress % value over the scheduled % value.
This tells you precisely this:

> *of the scheduled progress x (the contract so to speak) we realised part y, which in the ratio y/x gives z% percent of the "contract".*

Knowing that we may stay within certain bandwidths (expressed in terms of fractions or percentages of the scheduled progress) it becomes very easy to analyse and draw conclusions.
The information contained in the relative value can be made relevant by combining it with "allowed" bandwidths.

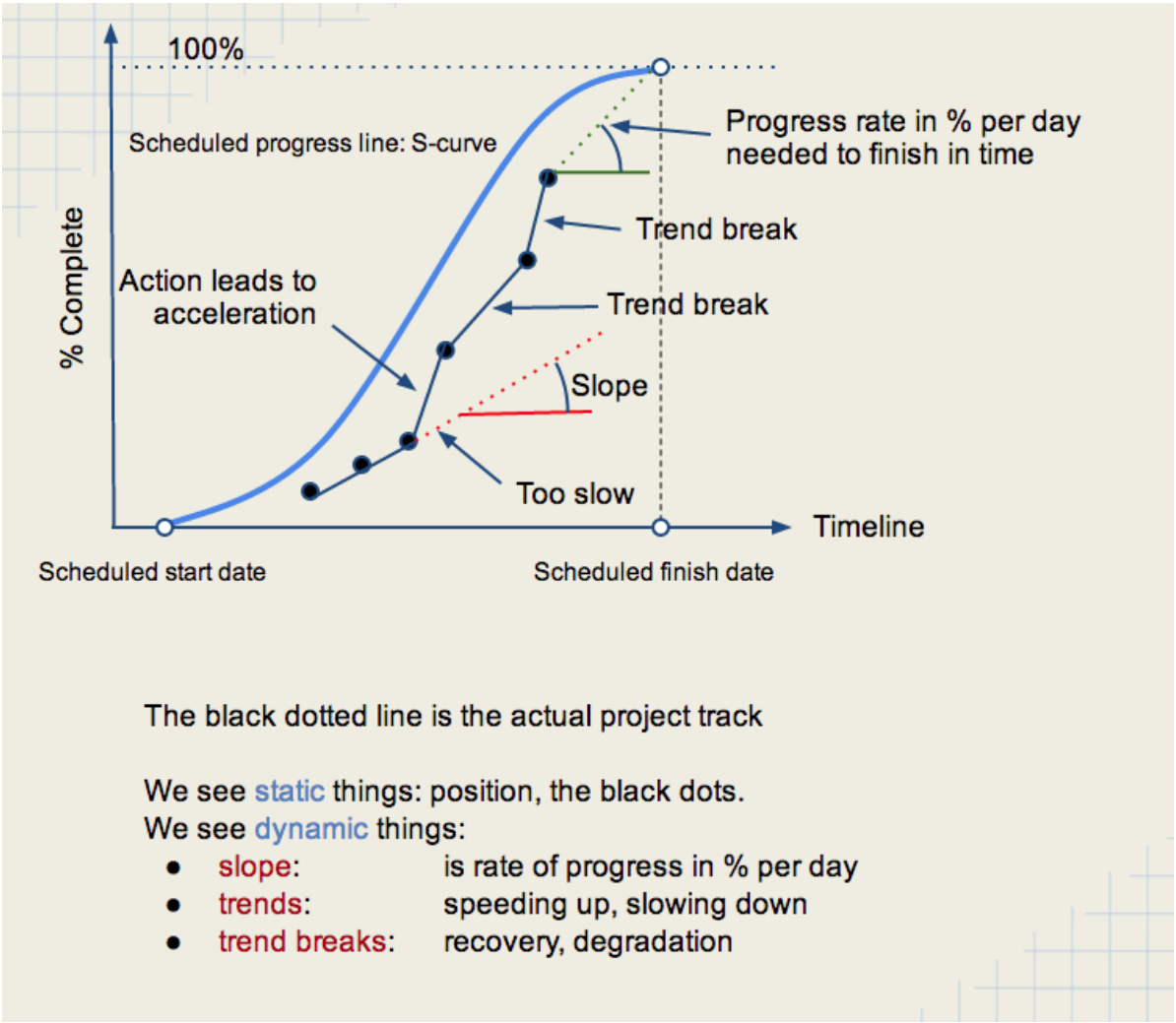
Example:
This statement is meaningless: this part of the project containing all kinds of tasks is at 43% completion.
This statement is meaningful: the progress of previous group of tasks lays in the 15% difference band (which is very safe).

The power of dynamics

The power the S-curves lay in the process dynamics that they display.

- Rate of progress (% points per day)
- Ratio of actual progress rate to the scheduled progress rate
- Needed progress rate for full or partial recover

These values put the *internal dynamics* of every project process or subprocess in full display. This is information where the PM can work with.



The black dotted line is the actual project track

We see static things: position, the black dots.
We see dynamic things:

- slope: is rate of progress in % per day
- trends: speeding up, slowing down
- trend breaks: recovery, degradation

Error 2: The hidden agenda

The hidden agenda consist in using the progress reports, the s-curves, in an attempt to build a case against a contractor.
This is a little subtle because there are situations where the progress reports will indeed play a dominant role in building such case.
Let's clarify.

The bad attitude consists in letting delays pile up upon delays, to reports this through the progress reports, preciously avoiding any attempt to save the day.

The idea behind such behaviour is that the "proven" delays will be used in an attempt to allocate these to a given contractor.
The next step, and the "hidden agenda", is then to try to have this contractor carry all of at least part of penalties incurred as consequence of overall delays.

This is politics, This is a perversion of the system, and should be left to the high-priest of such perversions: the counsellors, barristers and lawyers in general.

When progress reporting systems are used in such a way, they lose all their power to control the project processes. Soon the whole system of project control will come to fail, leading to abandoning project planning and control all together. For the wrong reasons. I rightful punishment to my opinion.

I have witnessed such behaviour. The experience showed that

1. The hidden agenda ultimately fails
2. The companies that behaved is that way ultimately lost their capabilities in sound project scheduling and control
3. A few of them disappeared in the meantime - good riddance, another is well underway.

Error 3: To use a false schedule.

It may sound strange or even "invented", but I solemnly swear that the following is true.

Confronted with progress curves showing substantial delays, a site managers once replied: "Oh, but we are not following this schedule, we are following another one".

He probably thought that in "his" schedule his performance would have been much better. Unfortunately for him, it took us a bit of coding and data manipulations to prove him wrong.

The point is, as trivial as it may sound, that it is utterly useless to track the progress of a project, or any part of it, against the wrong, the "false" schedule.

But there is something else, a situation that is less obvious.
A schedule that is 100% ok at the start, can **decay** as time goes by **into** a "false" schedule.

Indeed , if tasks are never rescheduled , whatever the unrecoverable delays are, (the key word is *unrecoverable*), then the schedule will become more and more irrelevant, and so will the tracking results.
The whole exercise consists of modifying the schedule at the right moment and using the right techniques. This topic will be addressed in a next article.
We can already raise a tip of the veil, those are the referred techniques:

- By decaying consequences
- By productivity.

Error 4: To shoot the messenger

The French anthropologist Emmanuel Todd has devised a nice classification of family types. He links these types to the inherited behaviour of people, in particular to the way they "naturally" handle problems. In particular problems due to "others".
So there are different ways of handling such situations, problems due to "others", and yes our cultural background, in particular our family type, predetermines our behaviour.

Not all behaviours are equal in respect to efficiency in project control, and yes there is a very bad style, that must be avoided by all means.

The very bad style is the *"blaming-punitive"* system. This never works in projects. The cases and stories abound. No need to insist on that.

Translated to the use of progress reports, in particular the S-curve, never engage in the blaming-punishing game , and thus shoot the messenger, but on the contrary take this attitude (when problems start developing)

- We have a problem
- How are we going to solve this
- What do you propose
- What do you think of this alternative
- Let's solve this together.

Which doesn't mean that everything and anything goes: remember the hand of steel in the velvet glove.
Do not shoot the messenger.

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