

Agile Software Measurement

or

'Back to the Future'

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Objective

- To explore how software measurement is changing:
 - Expanding beyond its current, limited application
 - To become a tool used by all engaged in software development and management

Contents

- Agile Software Development
 - what we have learned
- Software Measurement
 - progress to date
- Emerging Opportunities
 - for quick, low cost, pervasive – 'agile' - measurement

Agile Software Development...

- Emerged as a reaction to command and control approaches to s/w management
 - Note: *not* a reaction to 'waterfall' development
- Is widely applicable
 - (more widely than PM models for controlling development or support)
- Is predicated on the *team* delivering *value* – *early*
 - Early, then ongoing validation (and risk reduction)
- Recognizes the design intensive nature of s/w dev / support
 - Cf production, fabrication...

...Agile Software Development

- And, in passing, developed measures for agile development...
 - Stories
 - Storypoints *
 - Ideal days
 - Velocity
 - others?.....
- ...deliberately (wilfully?) undefined (These are local, relative measures)

Software Measurement, to date...

- Was typically implemented in (big, org wide) metrics 'programmes'
...by specialists
- It tends to be centralized
 - to support projects, with data sent to PMO or repository
- Often has a process orientation
 - SPC
 - 'productivity'
- Wide usage of complex/compound, inadvertently undefined measures
...and over use of the 'devil's operator' (/)

...Software Measurement to date...

- With the result:

'In my experience absolutely everyone who does it screws it up. So I think the concept's wrong. And I think it's kind of pointless to think, "Well, if they did it right, it would be OK." They don't do it right. The people who want to do it are inclined to do it wrong.'

...Tom DeMarco

...Software Measurement to date

- It has not delivered on the promise.
- We were warned...

'If Software Metrics leads to something like Taylorian “scientific management” in software development, I for one, will bow my head in shame.'

Gerald M. Weinberg

...writing in the foreword of Tom Gilb's 'Software Metrics', the first s/w metrics book

Can s/w measurement recover from this?...

- Can we rehabilitate s/w measurement?
- Can we make s/w measurement an integral part of s/w development...
- ...valued * by the entire s/w community...
- ...as measurement is in other technical/creative professions?

* ***'useful, usable - and used' - Ed Weller***

...Can s/w measurement recover from this?...

- Yes, things are changing...
 - Growing understanding of s/w dev / support – thanks in part to work of the 'lightweight methodologists'
 - And radical technology changes in knowledge working and design intensive environments
 - Growing recognition within s/w metrics community of emerging opportunities
 - Metronos
 - Abrams

...are giving us another chance to get it right

Growing understanding of s/w dev

- Not just 'projects' – dev is moving to autonomy and decentralization
- It is diverse - s/w dev ranges from challenging 'design intensive' to routine service delivery
 - know what you're dealing with
 - s/w attributes range from 'correct is critical' to 'feature rich'
 - know what you're dealing with
- Teams matter – they are the basic 'unit of production' – not projects
- Teams' delivery characteristics matter – predictable, flexible...
- It's an intimate usually unique mix of people, technology and process

Changing Environments

- s/w dev environments (like other knowledge working environments) are now electronically/digitally mediated, producing, by default, lots of data....
 - Not quite 'big data', maybe 'really quite surprisingly large data' – but certainly 'pervasive data'
 - Leading to a change in emphasis from measurement (design) to (extant data) analysis
 - Noisy, messy, information rich, but info is...
 - Local/tactical value
 - There is a fundamental s/w measurement 'Information Horizon'
 - There is a critical need to recognize data ownership and data privacy issues
 - To avoid dysfunction and (unintentional as well as intentional) misuse

Growing recognition...

- There are no widely recognized reference data or standards - yet
- Good measurement, that delivers valued information is DIY, and directed.
 - Begins with asking 'What do I want to know?'
 - then 'Why?'
- The majority of good measurement tends to be tactical/operational/low level (and often obscure)
 - And is necessarily:
 - Simple - quick to acquire and analyse data
 - Low cost (the data are often already there, waiting to be used, or will accumulate by default)
 - (and not a matter of expensive, centralized, inflexible dashboards, KPIs, etc. and administrative data collection mechanisms)

...Growing recognition

- We need to select or build our own measurement tools that:
 - must be technically correct, and suited to our s/w design work
 - Errors in analysis and presentation are readily detected, even if difficult to pinpoint
 - Simple and quick to use, scalable, progressive, and flexible
- That extract and make accessible information from knowledge working data that is:
 - Messy, idiosyncratic, mixed, undefined, contaminated...
 - Non normal, non linear – power laws are the norm
- Looking beyond s/w community to other measurement using professions it is evident that s/w measurement should be a tool set for all - pervasive use - perhaps made accessible by, but not owned by specialists

Conclusion

- The agile community has revealed (to a certain extent):
 - The character of much of software development
 - How measurement could be more widely integrated into dev work
- s/w measurement has not developed as anticipated – it has stalled and is largely ignored by the wider s/w community
- Developments in digitally mediated software development is delivering a major M&A resource
- Given this, we have the opportunity to rehabilitate s/w measurement as a quick, valued, low cost, and widely applicable tool for the entire software community

...shall we do it?

‘The good news is that you **can** succeed in producing a culture conducive to measurement. There are organizations in which people have given themselves completely to the pursuit of organizational goals... ...organizations in which members hunger for measurement as a tool that helps get the job done... ...To use measurement inappropriately would betray a sacred trust, and no one would consider such a betrayal.’

Robert D. Austin

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