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Testing in Software Implementation, Integration and Acceptance

About agile activity



Agility is today's name of the game. This presentation is about general issues regarding agility. Also, some reflections of the principles to agile testing are included.

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Agility as a phenomena

- Agility has become a phenomena that is utilized in
 - Business
 - Product development
 - Software development
 - Etc...
- One must understand the general issues about agility
 - So that its potential can be realized and
 - To find a harmonic position among other paradigms.
- No single pattern of thought is sufficient in a complex world
- Agility is not a silver bullet that solves everything

Example of agile activity: Tarzan



How Tarzan acts 1/2

- The total goal is always known – the mission is to save the princess
- Situation in control all the time
 - Knows the environment
 - Very strong competence
 - Knows his own skills, what he can do
- Movement one step at a time
 - Yet long enough steps – must not fall in the river.
 - Next checkpoint is known. Always a new situation check.
 - Dynamical planning of movement.
 - A mental model of all future events
 - Agility to change the rhythm between planning and action

How Tarzan acts 2/2

- A "risk analysis" is always made for the next step
 - Risks are known and he has an ability control them
 - An understanding of all alternatives
- Good basic tools – a knife
- A supporting team – monkeys, elephant
- Experience

Reflections to agile testing?

- Clear mission for testing
- Understanding the context and the product architecture and functionality
- Consider regression (is the lion still a friend?) and other changes
- Generic, efficient test tools that can be taken to use immediately
- A lean approach – just the necessary tools
- Mental models and procedures for all situations
- Analysis of the situation before taking action
 - Testability, risks, the path to most test benefit
- A team of experts with complementary skills

Applying ready-made agile models

- There are many agile models for many kinds of projects and processes.
- They have the same problems as any other process models developed by individual experts.
 - They don't take into consideration all necessary things – because there hasn't been wide enough expertise participating in the development of the context and at time of development didn't require more from the process.
- More than ideals, the models are philosophical simplifications.
- The models need to be supplemented when taken into use in an organization.
 - One must for example ensure that an agile software development model includes sufficient testing and adequate user studies.

Reflections to agile testing?

- All necessary things must be added to Scrum or any process to make it sufficient to the process requirements
- While agile development is developer driven, testing experts must be strong in bringing in their viewpoints and expertise
- Testing experts understand more about testing than developers and experts of Scrum do!

Agile activity is characterized by for example the following things 1/3

- Time related:
 - Short term goals
 - Rhythm of action
 - Speed of decision making
 - Cyclic processes
 - Recognition of the right moment.
- Context related:
 - Reality wins over theory
 - Living in the moment
 - Living in the context
 - Choosing of methods based on the situation.

Agile action is characterized by for example the following things 2/3

- People related:
 - Belief in people
 - Individual competence
 - Interaction
 - Empowerment of individuals
 - Giving room to act
 - Dynamic roles.

Agile action is characterized by for example the following things 3/3

- Related to the object of action:
 - Shared ownership
 - Customer-orientation.
- Related to the style of acting:
 - Goal-orientation
 - Creativity
 - Planning at the time of doing
 - Incrementality
 - Risk-taking
 - Experimentation.

Agile activity is fast and creative

- One is always psychologically ready for change and change is welcome.
- The activity is guided based on goals without too much trusting previously made long term plans.
- The basic premise is that the world cannot be predicted very far ahead and change is always inevitable. This is pragmatic realism.

Agility and freedom

- The idea of freedom is associated with agility.
- This is partly true, partly a myth.
- For example, agile software development is based on a very strict process.
 - It is agile on the level of decision making and implementation
 - The tightly controlled process keeps the whole disciplined.
 - The main freedom is that the actors have not hung themselves on decisions and thinking that are no longer valid.

Reflections to agile testing?

- The processes that guide the agile activity should be systematic
- Old process thinking is still valid, it just needs to be updated to support agility
 - Master test plan and quality assurance plan are still good ideas – as are their old contents
 - Synchronisation and timing of activities gives new restrictions to freedom
 - Procedures and guiding principles for agile testing should be developed
 - Process of agile testing that aims in understanding the system,
 - Agile testing that continues from where systematic testing leaves off
 - Etc...

Agility and sociality

- It is often thought that agile activity is also very communal or social.
- Many basic elements of agility are found in social action systems (social media, internet communities, social development, Web 2.0).
- Shared characteristics include:
 - Situation awareness
 - Speed of change
 - Emphasis on psychological factors
 - Trust in people and empowerment of others – when people are given room to work, they will do good things.

Reflections to agile testing?

- Team dynamics must be understood in
 - Project team
 - Test team
 - Collaboration
- A service mentality
 - Empowering the developers
 - Egoless testing
- Continuous process development
 - Agile development and testing are new; we must learn about them every day
 - Rhythm of process improvements

Agility's relation to reality

- If there is a difference between reality and theory, reality wins
- If there is a difference between plans and reality, reality wins
- The world cannot be predicted far ahead, so it is not worth to try it
- No one thing, its requirements or optimal implementation, is not understood well enough in advance
- Change is inevitable
- When new elements are brought to an old activity, it becomes unpredictable and can only be controlled with agility
- One must all the time be ready to whatever change
- One must all the time be ready to do anything in any way

Reflections to agile testing?

- Trust the system more than the specifications
 - Specifications are full of errors anyway
- See testing as learning experience
 - Spread the learned things to others
 - Not just bug reports, but system understanding

Planning in advance improves agility

- Agility can be greatly improved if one has a selection of ready-made models of action for various situations.
- The planning of these models needs to be very systematic.
 - "What if..." analyses are made for every conceivable situation.
 - Recognising of weak signals of new scenarios is a form of proactive agility
- After the models have been made, one can:
 - With situational sensitivity identify the current conditions
 - Rapidly select a suitable model of action
 - Execute it efficiently – because it has already been thoroughly thought out.

Example: Ferrari's F1 team

- It has been thought that the key to its lightning-fast ability to create changes to its tactics as the race situation changes has been due to the ingenious brain of Ross Brawn.
- Brawn has told that the ability to make changes has largely been based on advance planning
- Analysis and simulation beforehand of situations like:
 - What should we do if Häkkinen runs away at the start?
 - What do we do in case of a safety car?
 - What about rain?
 - What is the effect of the number of pit stops and how large is the effect if the strategy is changed during the race?



Photo: Wikipedia

Reflections to agile testing?

- Be prepared to system's changes, in every conceivable scenario
 - Do proper risk analysis
 - Have previously made plans for common situations
 - How to test common features and functions
 - Don't be disappointed if situations change
 - If you get disappointed, you were not prepared well enough
- Respect strategy
- Maximise utilisation of the best brains in the team
- Key persons must be responsive
 - Clear roles
- Have quality goals (in F1 every small part is mission-critical)

Agile organization as a jazz group 1/3

- A jazz group was used during the 1990's as a metaphor for an agile organization. For example, a key issue to Nokia's success was perceived to be its agile mode of operation, which was compared to how a jazz group works
- This is a shortened translation on Matti Vuori's original Web article from 2002 (in Finnish)
<http://www.kotiposti.net/~xmvuori/kehittaminen/jazz/>



Agile organization as a jazz group 2/3

- Main features:
 - Shared goal, vision and understanding of the organization
 - Stable basic structure
 - Clear skill based roles and competence requirements
 - All members have the ability to act independently when needed (as lead player, as a soloist)
 - The bulk of the work is disciplined group work
 - The team has a clear leader that is responsible for steering of the operations and managerial tasks
 - The team works best in a given context – working with its own style, in a given presentation format

Agile organization as a jazz group 3/3

- The group does not renew continuously but by dismantling the group and founding a new one
- A deep reflective understanding of one's own doing, own music
- A purposeful assembly – just enough of instrument, not too many nor too few
- The team does not compose but needs a creative person to write music
- Requires also the management above the team to have an ear to this musical style (record company executives)
- Creative.
- Simple.

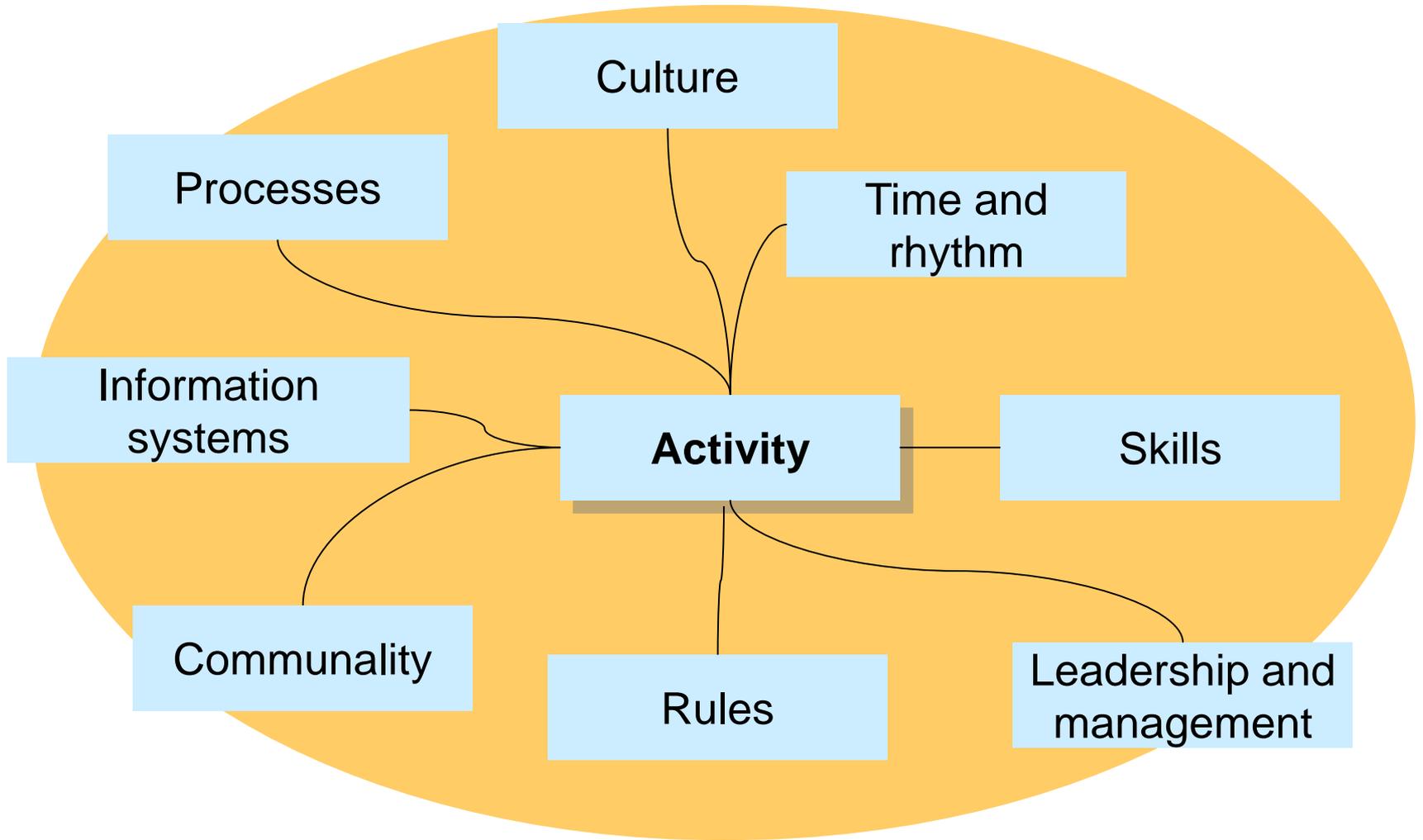
Reflections to agile testing?

- Have defined expert roles
 - Only experts can tackle new situations fast
- Test planning needs expert vision
- Understand what kind of tests should have priority (solos)
 - Find the right time to each activity
- Give team support to others (including agile regression testing)
- Build shared understanding of the product and activity
- Practice before the show
 - Pilot tests
 - Preparation of test tools

Developing of agility

- The development of agility is organizational development.
- It is essential to develop the whole activity system instead of just choosing some suitable agile process and starting to utilize it.
- Some main elements of development are:
 - (Benefits and commitment – why are we doing this)
 - Identification of the main elements of the activity system.
 - Identification of the barriers to agility – starting with the corporate culture.
 - Identification of conflicts brought by agility and the needs of change in all elements.
 - The change into agility activity often succeeds best in a unit or team which is independent and which has no prior non-agile history.

Elements of developing agility



What shall we do in agile way

- Central decisions relate to meta level of activity
- What are the things that will be done in an agile way and what will not?
- How are agile methods complemented with necessary systematic practices?

Balanced agility in an organization

- The big lines – roadmap.
- Long term development of skills
- Strong basic processes that include provisions for choosing practices and tailoring
- Processes have frequent checkpoints
- Procedures for identifying changes in the operational environment
- Comparisons of alternatives
- Trust
- Balance between risk taking and risk control

Reflections to agile testing?

- We must plan for the whole quality assurance system, not just the agile parts of it
- When starting to utilise Scrum or what ever
 - They should be just a framework used to understand essential processes
 - They must be expanded with many other activities and practices, of which many are not agile
 - In many cases systematic pre-planned testing can not be replaced with agile testing, but agile testing can have a role before and after the traditional testing procedures
- Development of mature testing takes time
 - We must always have a balance between traditions and routines and new innovations
 - This is practical business risk management

Going agile

- The relationship between agile and pre-planned activity is demonstrated by the fact that one cannot turn into being agile in an agile way
- For example, implementing an agile process is a project where among others the following are done:
 - Choosing the process, planning and tailoring it
 - Coaching of all parties
 - Piloting
 - Stabilizing the new process and systematic expansion of its use
 - Continuous improvement
- One cannot go agile if the existing activity is immature
 - The result might be a regression to chaos
 - The activity must first be lifted to some maturity level, where all required elements exist

Personal prerequisites of agility

- Generic skills.
- Personal mental "toolbox"
 - Contains various styles and ways of action, methods and techniques
 - Ready made thinking patterns and action patterns.
- Adaptable character.
- Ability to make rapid planning.
- Ability to make rapid decisions.
- Situational awareness.
- Understanding of the line of business and products.
- Versatile utilization of information sources.

Organizational prerequisites of agility

- Communicative culture.
- Rapid decision making.
- Low bureaucracy.
- Empowering, participating and delegating culture.
- Skills and competences are in order.
- Strong quality culture.
- A working risk management process.
- A shared product understanding.
 - More visibility to the goals of development is needed.

Requirements for processes

- A model of the activities is always available, based on which plans can be changed.
- Everyone has a shared, understandable object of development and a mental model of the project / process.
- A shared planning system in which work can be reallocated at any time.
- Real time information systems – a view to the activity and the results.
- Integration of documentation with the processes and tools – there is not time to create documents afterwards.
- Synchronization of parallel processes.
- Processes that consist of modular, compatible practices or methods.
- Frequent checkpoints to keep up with what's happening.
- Short cycles of implementation and evaluation.
- Emphasis on appropriate phase products instead of polished perfection.