Guidelines for

Evidence-Based Timeline for Project Retrospectives

including evaluation method material

This guide describes how to perform evidence-based timeline project retrospectives (Bjarnason 2012) and is intended to be used by the facilitators of such retrospective meetings. The document contains guidelines for the actual meeting and for the tasks to perform before and after the meeting. In addition, the appendices contain an example invitation letter and an evaluation questionnaire. The meeting set-up is partly based on the timeline and seismograph exercises described by Kerth (2001). The method may also be used as an empirical research method, which is indicated by the specifically marked instructions below, i.e. [Research].

1 Preparations

- The meeting organiser contacts team representatives to introduce purpose and plan. Agree on scope and timeframe for the retrospective and discuss who to invite.
  Suggestion: A good group size is 4-8 team members + 2 facilitators (meeting organiser/moderator + co-moderator).
- The meeting organiser contacts everyone that is to be invited to the retrospective and shares the purpose and requirements of the retrospective (Appendix I contains an example invitation letter), and books a suitable timeslot for retrospective meeting.
  Suggestion: Book people for 1,5 h. Book room for extra 0,5 h before and 0,5 h after meeting to allow for delays and gathering of artefacts after the meeting.
- One of the moderators prepares the evidence-based timeline.
  Suggestions:
  - A brief walk-through and review of the prepared timeline with a team representative prior to the meeting can provide a quick sanity check of the extracted evidence, thereby improving it before exposing it to the whole team.
  - Distribute the timeline to the participants before the meeting.
    Note: Consider what instructions & explanations are needed for this to be helpful, rather than confusing and de-motivating.
- Materials for meeting organiser to bring to the retrospective meeting
  - Prepared evidence-based timeline for pasting on the walls. (These need to be large enough for whole group to gather around and add information on, e.g. four A3 sheets per aspect. The tile function of PDF generators is very useful for achieving this.)
  - Butcher paper for additional swim-lane for seismograph exercise (put on wall together with timeline).
  - Cello tape etc for attaching papers to the walls
  - Post-it notes & pens
  - Flip charts & marker pens (or whiteboard space)
  - Audio/Video recorder (optional)

2 Retrospective Meeting

The main purpose of the meeting is to analyze how different events and actions influence each other with the aim of identifying practices that work well or that need improving. This is stimulated by combining the evidence provided in the (prepared) timeline with the experience of the participants. By analysing and discussing sequences of events in the group the intention is to jointly identify issues, good practices etc.

The moderator leading the meeting (supported by the co-moderator) plays a vital role in creating an environment conductive to productive discussions where all participants actively participate and get to share their experiences. The moderator initiates and guides an open discussion by using the focus questions below as a checklist. Depending on the group dynamics the participants might need to be actively encouraged to listen while inviting others to share their views and experiences. One technique is to pose a question and ask everyone to write down their views on post-it notes while silently considering it or discussing it in pairs. Thereafter each participant or pair shares their views and post-it notes with the rest of the group.

The co-moderator is responsible for taking notes (as a basis for meeting summary) and ensuring that the discussions focus on the topics within the goals and time period defined for the retrospective. For example, if a discussion goes astray (either topic or time wise) the co-moderator should support the moderator in capturing the thread and bringing it back to the defined topics alternatively suggest progressing to the next point. In addition, the co-moderator is responsible for ensuring that relevant information mentioned by the participants is added to the timeline and that findings (gold, see Section 2.2) are captured on the flip-charts.

2.1 Introduction & Timeline intro – 10 minutes

As people come in to the meeting room (prior to starting time) greet them, find out who they are and make them feel welcome and comfortable. Encourage seating in a semi-circle around the timeline.

Open the meeting by welcoming everyone and thanking for their participation in meeting and [for Research] in study. Briefly present the purpose and outline for the meeting, and what happens after the meeting, i.e. written summary (including timeline & concluded findings) and [for Research] questionnaire. Offer presentation of final results, for specific project or summary.

[For research] Describe confidentiality and how the data will be used and by whom. Give contact information to meeting organiser & moderator and encourage contact if additional information is found after the meeting, or if not comfortable with sharing at meeting.

Set the mood. Emphasize the purpose to learn, not blame. Big ears! It is ok, and even good, to have different perspectives. Multiple viewpoints enable us to get a more complete picture. If needed, **break the ice** and encourage interaction, ask the participants to briefly present themselves and share their expectations for the meeting. Make notes of expectations on board or flip chart (to enable follow-up at end of meeting).

Introduce the timeline. Describe the aspects and the data sources shown in the timeline posted on the wall. Give a very brief and high-level walk-through of the timeline by pointing to specific events in different swim-lanes. Note, this is just to orient not to give full picture. Avoid getting stuck in details at this point.

Risk: The participants might get overwhelmed by the amount of data and start questioning it and its source. Instead of going into detailed discussions move on, and list issues brought up by the participants (under flipchart heading *To be discussed*) for addressing later. The pre-information and the opening of the meeting are important in mitigating this risk. The participants should be given a clear but brief description (data sources used, what and how it shows the data) without too much detail on the timeline itself, as well as, on the meeting and meeting agenda (e.g. we will go into details in a little while).

2.2 Mining for Gold – 60 minutes

The intention is to have an open semi-structured discussion around the timeline visualized on the wall. In the group, walk through the timeline period by period, to see what associations, patterns or anomalies can be discovered. When information is missing add it on post-its either explicitly or as a marker for information missing + reference to source from which to obtain the information. Look for ‘gold’, i.e. insights gained from the timeline. (If feasible, considering the team set-up, add these findings to the relevant flip chart as they are uncovered.)

Opening exercise

Emphasize the purpose to fill in missing & incorrect information - ‘colour in’ the picture and to identify patterns and reasons by combining the perspectives of different people and aspects. *To learn together from experienced challenges of the feature’s life – more together than solo, i.e. 1+1 > 2!*

With focus on the people aspect, ask if the shown information is correct. Who is missing? Update the timeline as needed, and encourage participants to write names & roles on post-its and place along the timeline. Walkthrough the appearance/change of all roles, in particular the ones present at the meeting. Do the same for the state aspect.

Main exercise

Lead an open group discussion around the relevant aspects for the retrospective. Connect and incorporate relevant evidence displayed from the timeline into the discussion and encourage the participants to reflect on what could be improved. Use the focus questions defined for the retrospective (see below) to structure and focus the discussion around the defined goals and aspects. The focus questions can be used as a check-list (if the discussion is flowing freely), or as prompts to initiate and/or steer the discussions towards the targeted issues. In addition, a set of prompting questions are available (see below) for reigniting discussions within the group.

The moderator plays a vital role in steering the discussions, while the co-moderator monitors the discussion to ensure that they stay focused on relevant issues, and also that all participants and the viewpoints that they represent are heard and included in the discussions.

Focus questions

The focus questions are divided into topic areas with a number of questions for each area, e.g. the topic area 'Scope' has three prompting questions.

Note: These questions are relevant for the goals and aspects defined for the retrospectives included in our initial research study. For other retrospective goals and aspects, relevant focus questions will need to be defined.

1. Scope
   - S1. Were there any changes to the scope?
   - S2. What prompted scope changes?
   - S3. Did the business value change?
2. Planning
   - P1. When was the development cost first estimated?
   - P2. By whom and based on what information was the development cost estimated?
   - P3. Was development cost updated?
   - P4. By whom & based on what information was the cost updated?
   - P5. In hindsight, how accurate were the estimations?
3. Communication, mainly of scope & decisions
   - C1. How was scope and scope changes communicated?
   - C2. Who mainly communicated, within the project, project - external?
   - C3. How frequent was the communication within the project team, project management team – dev team, project - external?
   - C4. Which channels were used to communicate, e.g. face-to-face, email, documentation, tools?
   - C5. Were there any hand-overs to new people, other roles within and without project?
   - C6. How efficient was the communication, e.g. clear, misunderstandings?
4. Work load (suitable for the Seismograph exercise, see below)
   - W1. Were there any idle waiting times when project was blocked due to external dependencies? Could these have been estimated &/ avoided?
   - W2. What was the work load like, low, feasible, too high?
   - W3. Was there any wasted effort? Could it have been avoided?

Prompting questions

These questions (suggested by Kerth 2001) can be used if/when the discussion gets stuck or fizzle out, and a new direction or topic is needed to reignite the meeting.

- What jump out as the most influential, most impacting factors?
- What surprises or puzzles you?
- What worked really well? Really bad?
- Do you see any connections between events? Causes or consequences?
- Is this topic covered elsewhere in the timeline? Possibly from a different perspective?
- What haven't we discussed yet?

The Seismograph Exercise

On a separate (empty) swim lane get everyone to draw a timeline of their own participation in the project, e.g. 0%-50%-100%, including name and roles, and main activities. Get the group to do the same for non-present team members, e.g. developers, testers, and other for the project influential people. This exercise is suitable to do either in connection with covering focus question 3 on work load, i.e. do the seismograph then ask then discuss work load, waste, efficiency etc. or in closing/summarizing the Mining for Gold exercise. This exercise has been modified compared to the original version described by Kerth (2001).

2.3 Sum up and Close the Meeting – 10 minutes

Summarize the findings for the following sum-up questions (flip-chart headings based on Kerth 2001):

- What worked well that we don't want to forget
- What we learned
- What we should do differently next time
- What still puzzles us
- What we need to discuss in greater details

If time is available, encourage the participants to silently reflect on this for a few minutes and write their thoughts on post-its. Lead a group discussion in collecting the findings. When satisfied, review the findings and ask for the most important insight for each category.

2.4 [For Research] Method evaluation – 10 minutes

Ask for feedback on the method by asking the participant to reflection on the following evaluation questions:

(i) how well the meeting supported new learning and insights
(ii) how useful was the prepared timeline, and
(iii) improvement suggestions.

3 After the Meeting

After the meeting the moderators are responsible for producing a summary of the meeting based on the co-moderator's notes, the items added to the flipcharts and [for Research] the audio recording. In addition, the moderators are responsible for updating the timeline information added and/or corrected at the meeting. The organiser then sends this information to the participants for review. [For research] the questionnaire is sent out with a request to respond within n days. Furthermore, the organiser contacts the project responsible some time after this information has been sent out to enquire about booking a follow-up meeting with presentation of final results, for specific project or more general summary.

4 References

Bjarnason, E., Regnell. B. (2012) Evidence-Based Timelines for Project Retrospectives – A Method Proposal. In: Proc. Agile Processes in Software Engineering and Extreme Programming (XP 2012), May 2012, pp. 177-184

Kerth, N. (2001) Project Retrospectives A Handbook for Team Reviews. Dorset House Publishing Co, Inc.

Appendix I. Meeting Invitation Letter

[For research] the following text was used to invite to the retrospective meetings:

Welcome to a project retrospective meeting concerning the project x. The meeting is part of a research study into communication & decision making and how this affects development, lead times, software quality etc. and is part of an ongoing research collaboration within software engineering.

At this meeting we will go through the life of this project from when it was requested, through scoping & planning, design, implementation, system testing & maintenance; who has been involved, how the scope and detailed requirements have changed, how was this communicated and what were the effects on development and verification efforts, lead times, wasted efforts, delays etc. The aim is to identify causes & effects, weak points, as well as, good practices by focusing on an actual case. We believe the meeting will be beneficial to the project team, as well as, provide valuable insight into how development works for the involved researchers.

To get the full picture and to be a good project team activity, all the different perspectives such as product manager, project manager, project architect, project sponsor (resource owner/line manager), development & verification are important. Please, let us know if you cannot attend so that we can either find a replacement or reschedule the meeting.

You and your feature project will be anonymous when reporting from this study. The results will be abstracted when presented, both internally and externally. We are interested in how things *really* work, not how they ‘should’ work, and we want you to feel free to share your experiences with us. (Involved researchers are under NDAs.)

WELCOME! And, feel free to contact us if you have any questions. In addition to this meeting, we will send out a short questionnaire a week after the meeting to gauge your experiences of the project retrospective.

Appendix II. Evaluation Questionnaire

1. What role did you mainly have in this feature project? ________________ (free text)
2. How long have you worked in this role and functional area? ______ years (free text)
3. How long is your work experience in total? _________ years (free text)
4. Through the retrospective meeting (incl timeline), to which degree did you gained new learning and insight concerning (scale: not at all, somewhat, fairly much, very much):
    a. work performed by other roles? (select one option)
    not at all *somewhat* *fairly much* *very much*
    b. the big picture, i.e. the overall lifecycle & who does what & when? (select one option)
    not at all *somewhat* *fairly much* *very much*
    c. the importance and context of your role in the overall lifecycle? (select one option)
    not at all *somewhat* *fairly much* *very much*
    d. good work practices? (select one option)
    not at all *somewhat* *fairly much* *very much*
    e. work practices that need improving? (select one option)
    not at all *somewhat* *fairly much* *very much*
5. To which degree did the pre-generated timeline enhance & support the retrospective / lessons learnt meeting? (select one option)
   not at all *somewhat* *fairly much* *very much*
6. To which degree did the pre-generated timeline support the following (scale: not at all, somewhat, fairly much, very much):
    a. remember actual events? (select one option)
    not at all *somewhat* *fairly much* *very much*

    b. prompt memory of specifics about events? (select one option)
    not at all *somewhat* *fairly much* *very much*

    c. agreeing on events? (select on option)
    not at all *somewhat* *fairly much* *very much*

    d. identification of connections between events? (select one option)
    not at all *somewhat* *fairly much* *very much*

    e. a factual discussion at meeting? (select one option)
    not at all *somewhat* *fairly much* *very much*

7. Which amount of timeline data would be beneficial for the retrospective, for the following types of events:
    a. People? (select one option)
    More data *Just right* *Less data*

    b. State(select one option)
    More data *Just right* *Less data*

    c. Decisions(select one option)
    More data *Just right* *Less data*

    d. Cost(select one option)
    More data *Just right* *Less data*

    e. Value(select one option)
    More data *Just right* *Less data*
8. What additional type of data would be beneficial to show in the timeline?

____

9. Any reflections on the meeting set-up (structure, length of time, moderating, participants etc)?

____

10. What can be improved for future project retrospective meetings?

____