INCOSE International Symposium
Philadelphia, PA
June 24-27, 2013

Design Reviews: A Process Perspective for Improved Efficiency and Effectiveness

Madalein Young
Council for Scientific and Industrial Research (CSIR)
South Africa

Generic Internal Design Review Process

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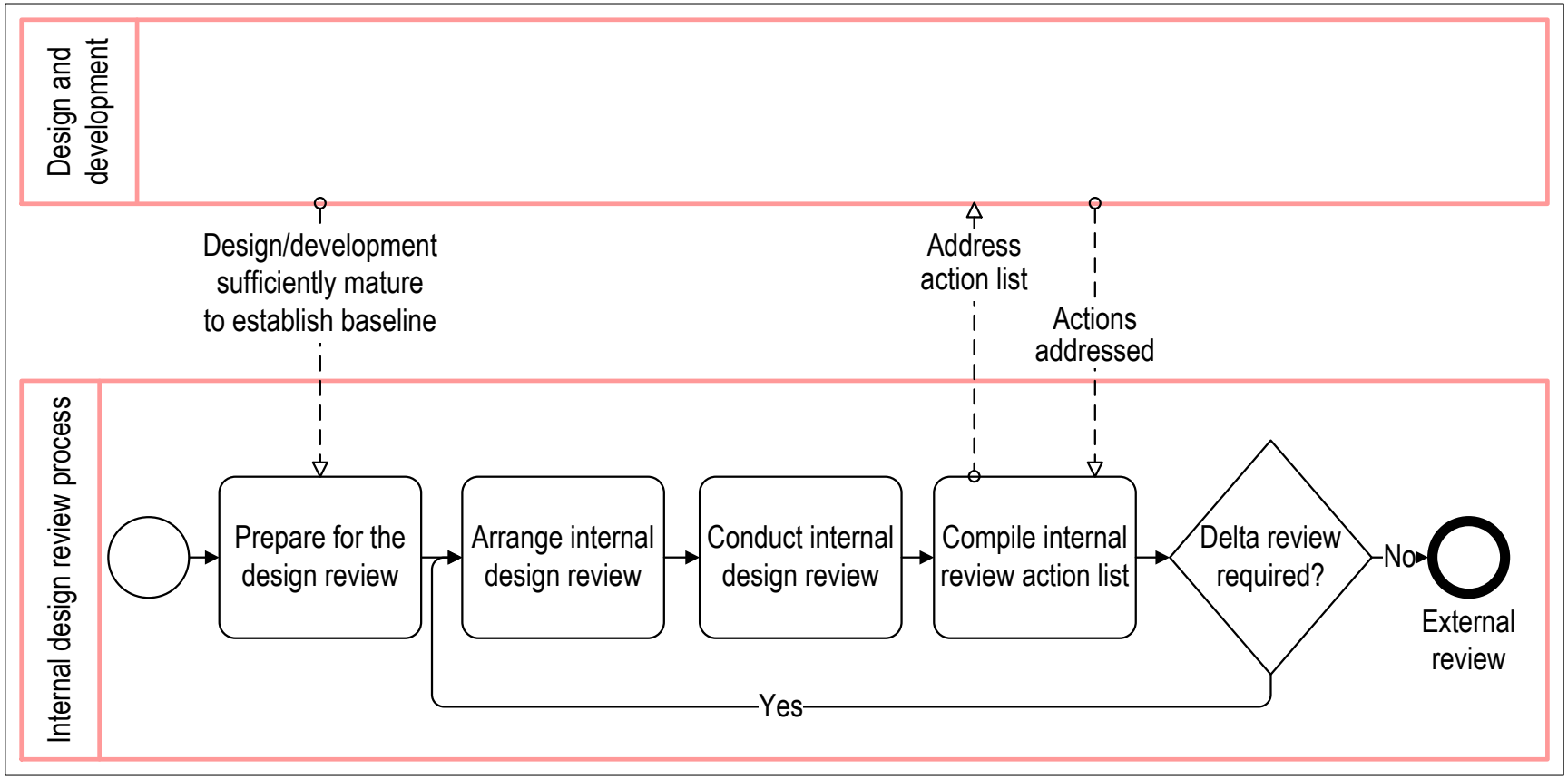

Generic External Design Review Process

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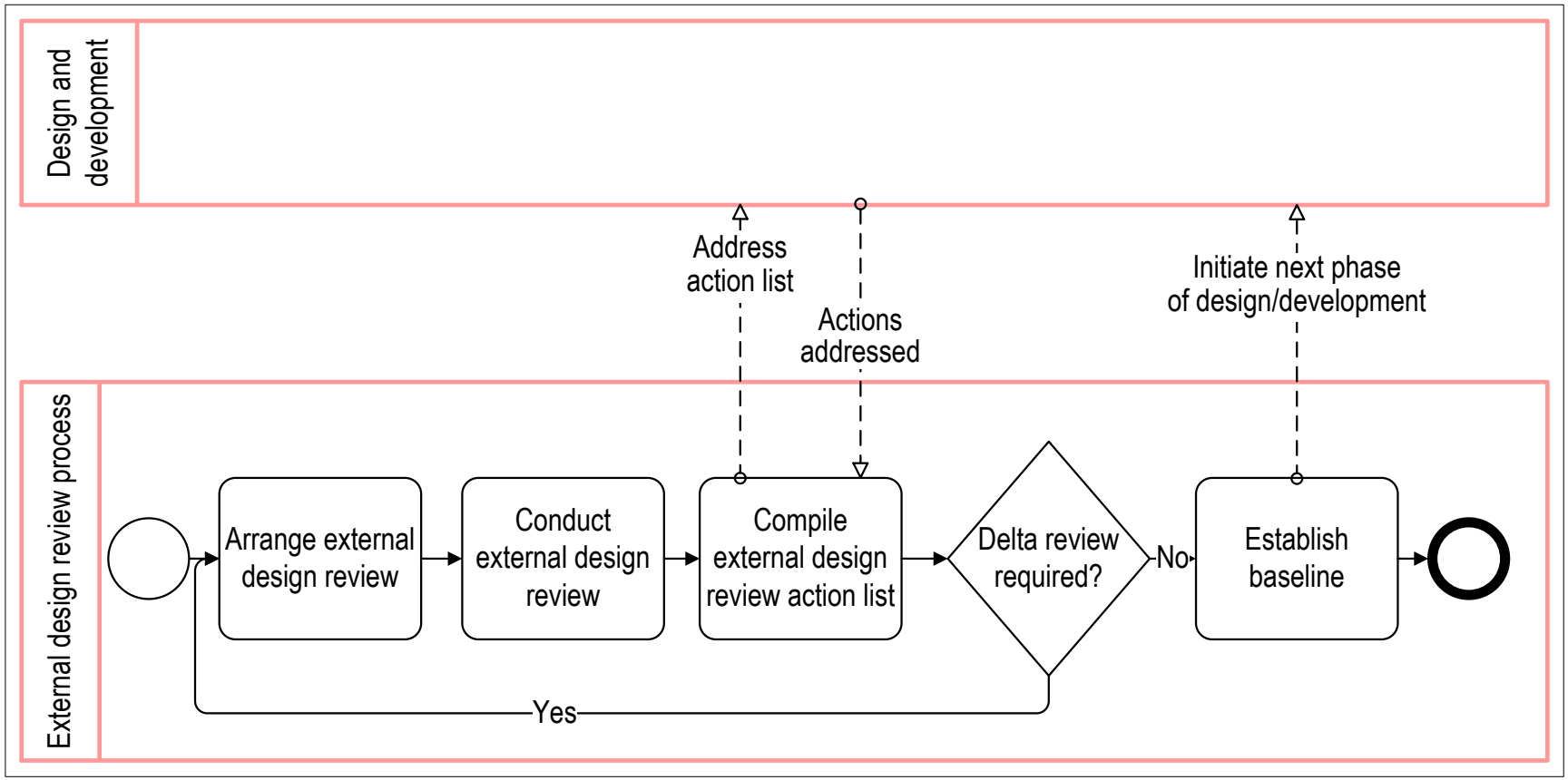

Is the Design / Development Sufficiently Mature?

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Failure Mode	Failure Cause	Failure Effect
The review is conducted when the design is still too immature	The review is initiated at a pre-determined point (schedule driven) to: • Ensure cash flow and/or • Show (artificial) progress	• Increased risk around technical integrity • Decreased chance of identifying technical issues / problems • Negative impact on cost and schedule to implement fixes later • Customer dissatisfaction
The review is initiated when the design is already too mature	The review is initiated at a pre-determined point (schedule driven) to: • Ensure cash flow and/or • Report progress	• It becomes too costly (time and money) to fix identified deficiencies • Customer dissatisfaction • Follow-on work will have commenced / been delayed

Key success factors:

- Focus on *doing the right things right* (efficiency and effectiveness)
- Balance between business- and technical aspects
- Event driven reviews backed by design maturity checklist

Is there Conflict between Agendas?

Failure Mode	Failure Cause	Failure Effect
Project Manager's agenda overrules the Systems Engineer's agenda	• The design review agenda / checklist is established by the Project Manager and the review meeting is chaired by the Project Manager • Measuring performance primarily in terms of cash flow vs. technical integrity	Short term achievement of milestones at the long term cost of technical integrity

Key success factors:

- Foster an organizational culture where both agendas can succeed in balance
- Implement well-structured design review processes and guidelines

Does Organizational Culture Support Efficient and Effective Reviews?

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Failure Mode	Failure Cause	Failure Effect
The design review becomes a box to tick	Organizational culture • Design reviews are viewed as a (painful) gate to pass and/or a waste of time	The review does not identify risk and problem areas
The review deteriorates into a name, shame and blame session where designers have to defend their work	Organizational culture • Designers experience inputs as negative, rather than constructive	The aim of risk identification and design improvement cannot be achieved

Key success factors:

Foster a culture where design reviews become an opportunity to:

- Test the integrity of the design
- Showcase design achievements
- Give and receive constructive inputs

Are you Prepared for the Design Review?

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Failure Mode	Failure Cause	Failure Effect
The review process seems unfocussed, arbitrary or even overwhelming	There are no clear, tailored objectives for the specific review	Purpose of the review may not be achieved
Design flaws are not spotted	• Role players directly involved with the design may loose objectivity • Too little information is shared too late	Critical design flaws and risks may not be identified
The review meeting results in some nasty surprises	The meeting was not properly planned and no “dry run” was held	The design and/or the design team may be exposed to unwarranted criticism
No value adding decisions are made at the review	• Roles and responsibilities are not clarified • Inexperienced design review team	• Decisions cannot be made • Required corrective actions are at risk

Key success factors:

- Set objectives and use tailored checklists / compliance matrixes
- Introduce objectivity into the review team
- Hold a “dry-run” before the review
- Assign roles and responsibilities

Is there Sufficient Discipline to Complete the Process?

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Failure Mode	Failure Cause	Failure Effect
The post-review actions never seem to be completed	• Schedule pressure causing the design team to proceed with subsequent design phases, before the previous design phase is successfully completed • Lack of discipline to complete the process	Subsequent design phases are built on an incorrect, incomplete baseline

Key success factors:

- Actively manage action lists

Guidelines for Design Review Process Improvement

To summarise:

- Ensure a balance between achieving technical, timescale and financial goals
- Foster a culture where the review process becomes an opportunity to showcase designs and gather constructive inputs for improvement
- Publish the purpose and intended outcome(s) of the design review
- Use checklists as an aid to evaluate the integrity of the design
- Focus on achieving the objectives of the review
- Take all reviews seriously
- Develop good design review habits
- Understand and meet the client's expectations
- Document and distribute lessons learned

References

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Survey

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