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Why do developers take breaks from contributing to OSS projects?

A preliminary analysis



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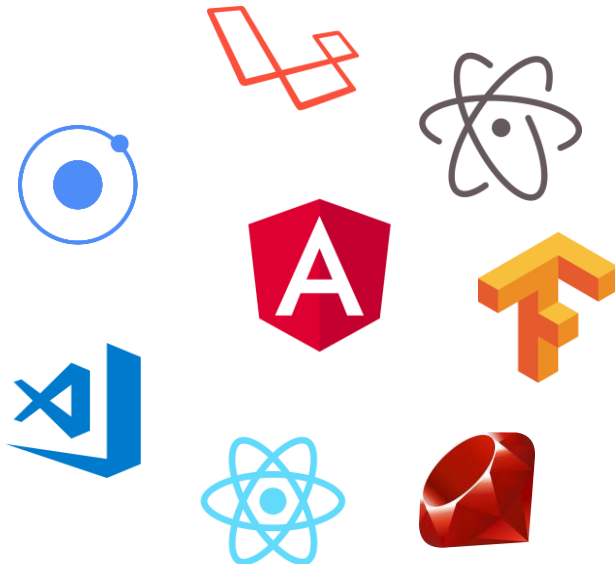


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Context



- Open Source Software is spreading more and more
- Contributions are mostly voluntary
- More cohesive communities build higher quality software
- Loosing developers may damage the community or the knowledge base



Studies on developers' lifecycle

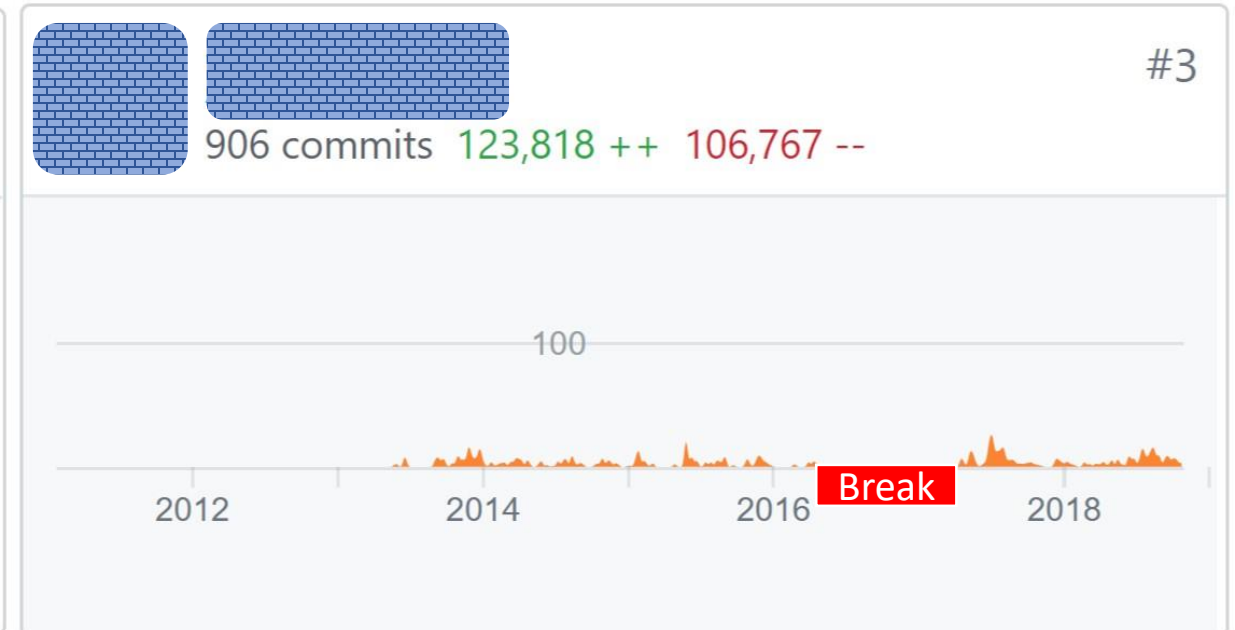


- I. Steinmacher, M. A. Graciotto Silva, M. A. Gerosa, and D. F. Redmiles, "A systematic literature review on the barriers faced by newcomers to open source software projects"
- Q. Hong, S. Kim, S. C. Cheung, and C. Bird, "Understanding a developer social network and its evolution"
- M. Zhou and A. Mockus, "What Make Long Term Contributors: Willingness and Opportunity in OSS Community"
- B. Lin, G. Robles, and A. Serebrenik, "Developer Turnover in Global, Industrial Open Source Projects: Insights from Applying Survival Analysis"
- A. Schilling, "What Do We Know about FLOSS Developers' Attraction, Retention, and Commitment? A Literature Review"
- M. Foucault, M. Palyart, X. Blanc, G. C. Murphy, and J.-R. Falleri, "Impact of developer turnover on quality in open-source software"

Observation



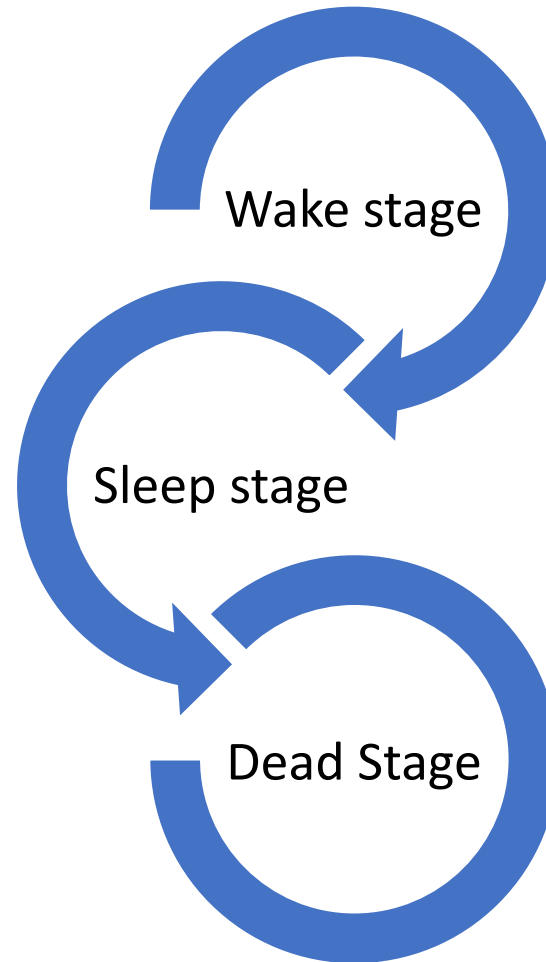
Developers take breaks from contributing



Our Idea: re-define the **leaving** stage



- **Wakeful**: intense brain activity
- **Sleeping**: largely reduced brain activity; other life signals still present
- **Dead**: life signs decline, culminating with no signals



- Developers **contributing** code
- Developers **pause commit** activity; still provide other signals of presence
- Developers' **inactivity** increases until the complete lack of signals

Interviews



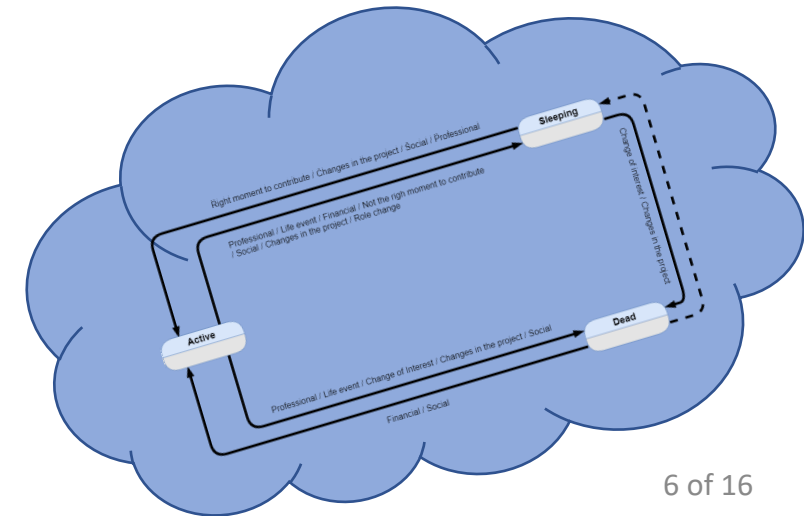
- 6 Developers
 - 5 Male, 1 Female
 - 5 have been maintainers or core members
 - 1 works in a company that owns different projects



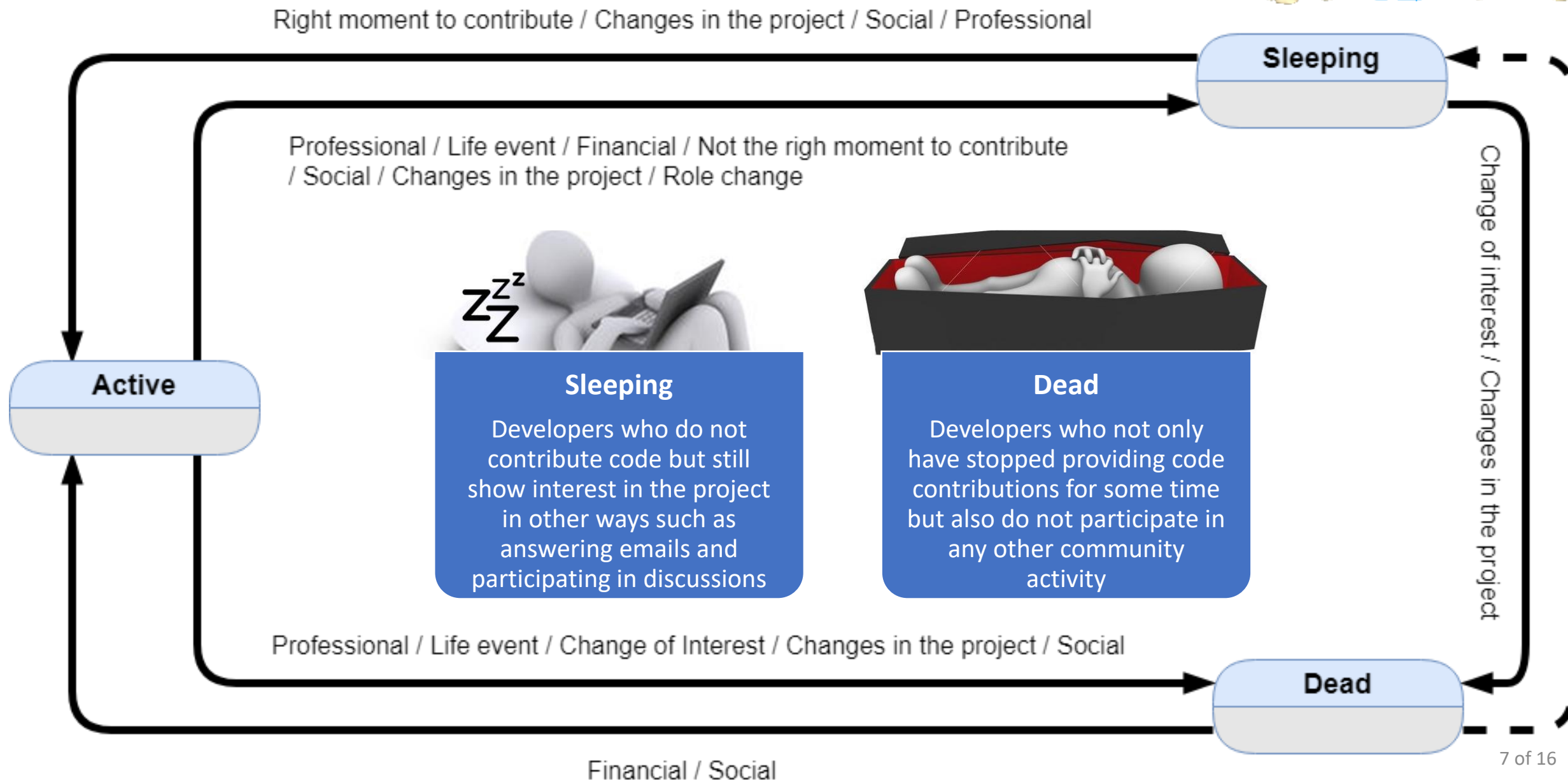
- Chat interviews lasted 60 – 90 minutes



- Open-coding strategy



The Model



Reasons for taking Breaks



| Category | Main Reason | Examples |
|----------|------------------------------------|---|
| Personal | Professional | Courses for students; exams |
| | Life event | Death; Child birth; Sickness |
| | Financial | GSoC; need time to work |
| | Change of interest | Lack of interest; Migration |
| Project | Not the right moment to contribute | Does not feel responsible; Delivered feature; Others taking over |
| | Social | Problems between members; not receiving feedback |
| | Changes in the project | Technical; organization (governance) |
| | Role change | Becoming a project manager |

Reasons for going to **sleep**

| Category | Main Reason | Examples |
|----------|------------------------------------|--|
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Professional

I am currently inactive due to my exams [...] I warned the community, they will expect some commit when they'll be over

Financial

I think it is frequent to have sleeping developers coming back in the summer because the GSoC only pays to work on summer

Not the right moment

[...] my colleague was managing [...] I participated very little, just following some discussions [...]

Role Change

I contributed fixing small bugs, doing small changes in the code. [...] Then, I started to work in the management side and mentoring newcomers.

Reasons for **awakening**



Changes in the project

If I see some changes in the community decisions [...] I would return contributing.

Help needed

My contribution was expected at some point. We had a problem too hard for the internships to solve... I woke up to solve this problem and I came back to sleep

Company interests

Someone was interested in integrating a feature in [project] it was quite active, it disappeared for 4-5 months and then came back [...] from what I understood, his company is interested in using [the project].

Call in action

I think if someone wakes me up, I will return contributing



Reasons for dying

| Category | Main Reason | Examples |
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Social

One of them is very shy and do not communicate too much. He helped a little for some time and stopped contributing

Life event

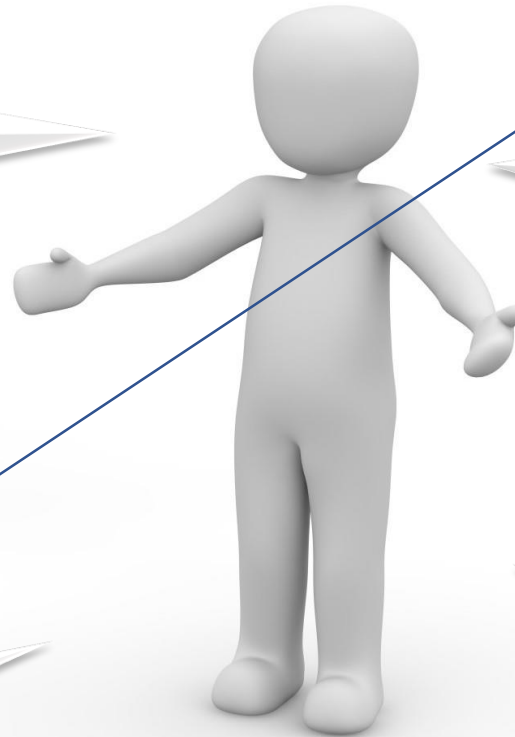
They graduate, they get a job, and they are not using to stay in the software anymore, so they don't contribute anymore

Change of interests

When the developer finds something more interesting to work on, and leaves the previous software

Changes in the project

For lack of time and the management of the project [...] I no longer contributed



Reasons for resurrection



Money

"[someone would return] from the dead mode, maybe just if the developer is hired to work on that"

Help Request

I asked him, and he helped. So, he is the kind of dead contributor that can be resurrected if summoned by me

No Resurrection

In my experience, I don't think there are resurrecting developers. If they decide to move on, they don't really come back

He helped again because his skills could suit, and I asked for help. It's the kind of appeal: 'I know you have more skills than others in this subject, so we need your help.'





Raised Questions

Hints and directions for future work



Exploring Sleepings and Deads



How common is this phenomenon?

How to identify sleeping and dead developers?

Which signals would be good predictors that developers are going to *sleep* or *die*?

Is the death of a developer preceded by a sleeping period?



Further questions



Death and turnover: good or bad?

How hard is the resurrection for developers?

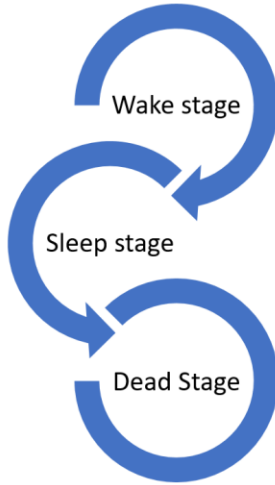
When developers return...

- How does their reputation change after a sleeping period?
- How does their reputation change after a dead period?

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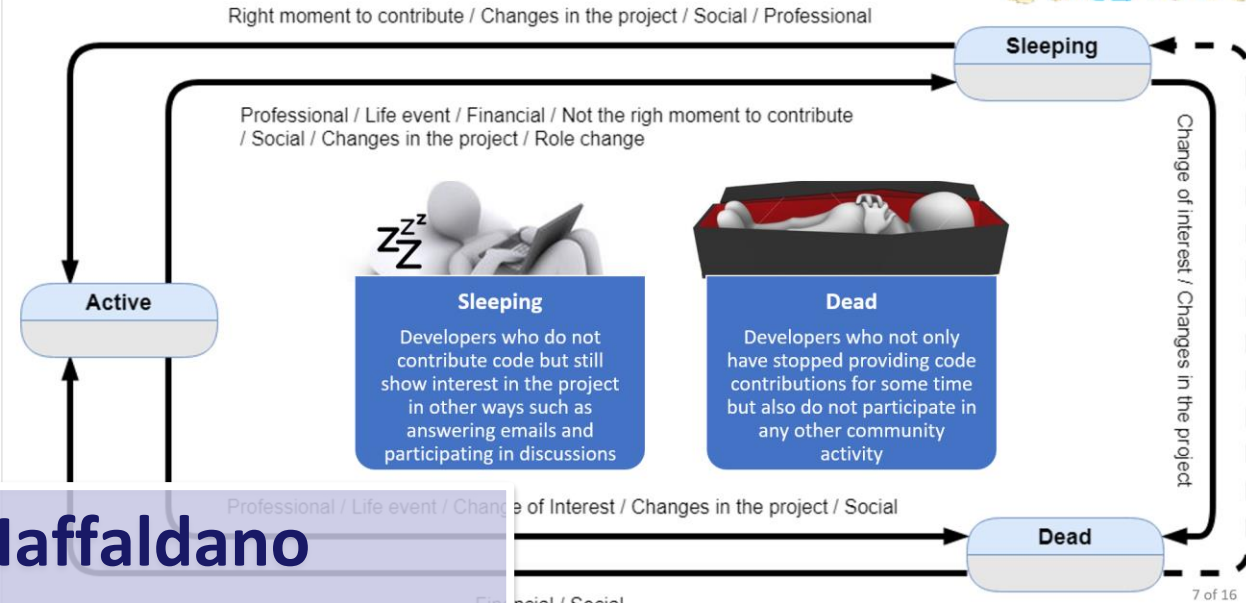
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The Model



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