Agile Architecture

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What is agile architecture?

Agile architecture is a set of values, practices and collaborations that support the active evolutionary design and architecture of a system.

This approach allows the architecture of a system to evolve continuously over time while supporting the need of current users.

Its scope is variable, can go from a single application to a family of applications such an ERP or for an infrastructure as extent as the Internet.

Some characteristics

To support the continuous flow of the development, Agile architecture:

- Evolves over time while supporting needs of current users.
- Avoids overhead delays associated with waterfall processes.
- Ensures that the system always runs
- Finds a balance between emergent design and intentionality.

Roles and Hierarchies

Roles

We can identify several roles in agile architecture:

- Development Team
- Stakeholders: users, customers, governance, investors...
- Product Owner: gives direction aiming to maximize value for stakeholders, acts as a shield and gateway for the team ensuring mutual understanding with stakeholders
- Team lead / Scrum master when applicable: remove roadblocks, overseer the agile process...
- "Supporting cast: Technical experts, Domain experts, Independent testers...

Hierarchies

Agile development lends itself to flatter structures allowing less bureaucracy hindering fast reaction to changes in the requirement of the project.

"The best architectures, requirements, and designs emerge from self-organizing teams" is one of the twelve principles of agile.

Decision making should be at the hands of the team and not external entities far removed from the developing process. The product owner is the one who has in mind the maximization of value and is close to the team and the product, and as such, the one who should be in charge of directing change ("Steering the wheel").

How to be a good agile architect?

➢ Agile architects are active members of development teams, developing software where appropriate and acting as architectural consultants to the team.
➢ Agile architects should design their project as well as they can in terms of adaptability to possible future changes, although future is unpredictable.
➢ You evolve your architecture incrementally and iteratively, allowing it to emerge over time, instead of making it in a hurry.
➢ Travel light and focus on navigation diagrams that overview your architecture, documenting just enough to communicate to your intended audience. It is not convenient to over document it if it is clear enough with less content.
➢ Architecture model(s) are displayed publicly, even when they are a work in progress, to promote feedback from others

Agile teams

Like every other architecture, agile architecture needs architects that can be a part of the team or not. In the case of agile architecture, we have agile teams:

- The architect may not be part of team and just manages and decides what the team is doing.
- The architect could be part of the team, still organizing the team but also being part of it and working with the rest of the members.
- There is no need to have one single architect, there can be several and they can be part of the team, with the team being self-managed and organized.

But there must be always at least one architect to make decisions, the team should not work on his own.

Then, depending on the project to develop, the work can be done in several approaches, these are two of them:

- Architecture-driven approach: With this strategy, the architect or architects must identify every sub system or component of the architecture. Once this is done, the whole team will be divided in several sub teams, each one focusing on one single subsystem of the architecture. That is why it is very important to identify the subsystems before the teams start to work. This approach works well when the architecture is of high quality, when it is highly cohesive and very low coupled.
- Feature-driven approach: Unlike the previous approach, this is an incremental method and works well when the architecture presents a lot of coupling. In this approach, each sub team implements one feature of the project at a time. In this case it is very important to have a great coordination with the other sub teams because collisions may happen between several implementations, as every sub team is working in parallel.

Agile architecture process

1. Envision the initial architecture. At least the architecture owner team is the responsible of this envisioning and then presenting it to the sub teams for feedback. In bigger projects this step is done by more team members, included the product owner and even key project stake holders.
   This process can take from several days to various weeks.
2. Working with the development teams. Depending on the magnitude of the problem the architecture owner team can take active roles on other sub teams or simply as consultants.
3. Communicating the architecture to the architectural stakeholders. It is an exchange of information between architectural stakeholders, product owner and rest of development team. The aim is to completely understand the architectural vision.
4. Updating architectural work products. It is done on frequent, short meetings during the project where the members of the different teams discuss changes and improvements for the architecture.