From Applications to a Software Ecosystem Platform: An Exploratory Study

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• Introduction
• Background
  • Ecosystems Life Cycle
  • Software Supply Network model
  • Framework ReuseECOS “3+1”
• Related Work
• Modeling DiaDia
  • Application / Improvements
  • SSN Model / Development Process
• Conclusion
Introduction - Background - Related Work - Modeling DiaDia - Conclusion

• Software Ecosystem (SECO) approach emphasizes the externalization of software development, inviting all community actors to take part in the development and evolution of the components [Pettersson et al., 2010]

build extensions / components / se

• Mobile Ecosystems

interaction of external users and the adoption by third party developers is essential for the growth of the ecosystem
**Introduction** - Background - Related Work - Modeling DiaDia - Conclusion

Our objective is to perform an exploratory study on characterizing the emergence of a SECO from an initial application, considering the life cycle of mobile ecosystems

- Some researches consider the evolution of Software Product Lines (SPLs) to SECOs [Bosch, 2009] [Jansen et al., 2013] [Santos, 2013]

- Our focus:

  How to evolve from mobile applications to a SECO?
Ecosystems Life Cycle

[Santos et al., 2013]

1. Initiation
2. Propagation
3. Amplification
4. Termination

Number of actors and artifacts

Time

Phase 1  Phase 2  Phase 3  Phase 4
Software Supply Network (SSN) Model

- SECO modeling perspective based on three levels:

[Boucharas et al., 2009]
Software Supply Network (SSN) Model

- SSN shows the main actors and their relationships within a SECO
- Main Elements:
Software Supply Network (SSN) Model

- SSN shows the main actors and their relationships within a SECO
- Main Elements:
This framework divides the activities that compose the evolution process of an application to an ecosystem through "3+1" dimensions.
Evaluating Architectural Openness in Mobile Software Platforms

• Architectural openness in mobile platforms
• How can openness strategies for SECOs contribute to its growth?

Anvaari & Jansen, 2010

• The adoption of a mobile application by third-party developers and external users is emphasized
• It also contributes for the application to become an ecosystem
• We do not discuss the architectural aspects and policies on how open the platform is
Software Ecosystems: From Software Product Management to Software Platform Management

- Analyze Software Product Management (SPM) for software producing organizations with a SECO approach
- Investigate practices and tools of SPM and what needs to be changed on it in order to use SPM for SECOs

- Management of the expansion of a product to a platform is undoubtedly of great importance
- Example that represents the evolution process of an application to an ecosystem

Jansen et al., 2013
DiaDia Mobile Application

• DiaDia initial version
  • Glucose management system for diabetic patients
  • Provides a simple way to store glucose rates and monitor variations during the user’s treatment
  • Shows the amount of carbohydrates and calories contained in a given meal within the user’s diet
  • Informs the amount of insulin necessary for the patient in a specific meal
DiaDia Mobile Application

- DiaDia initial version
DiaDia Application Improvements

• DiaDia second version
  • Information related to doctors and health plans
  • End user loses the freedom of owning an application free from a third party’s information
DiaDia Application Improvements

- DiaDia second version
DiaDia Application Improvements

• DiaDia third version

  • Original application would be maintained and made directly available for download at Google’s PlayStore for end-users
  
  • Provides a development version for health plans, endocrinologists or companies connected to food

  • The additional information from these intermediaries would appear like plugins for the application
DiaDia Application Improvements

• DiaDia third version
DiaDia Development Process

1. Setup of the development environment in order to enable the reuse of an existing ecosystem, Android, offered by Google

2. Customers’ requests will propitiate the development or evolution of the application, resulting in a new version

3. If the generated application meets the needs expected by the customer, this can be spread among users, i.e., it is sent to PlayStore

4. Since DiaDia application is at the PlayStore, it will be available for interaction with users
5. From the interaction between the user and the application, he/she can improve the application by creating plugins and making them available to other users.

6. Users also can suggest improvements for the organization that owns the application. However, as in other ecosystems (e.g., iOS, SAP), this evolution is controlled in order to maintain the application’s quality.
When does DiaDia cease to be an application and becomes a SECO?

- Since the company responsible for the application has no longer control over who makes the extensions, how it is done and how many they are emerge as important issues.

- The fact that the amount of products generated (or even of intermediary actors) has increased is just an indication of the application evolution towards a SECO.
• We presented an exploratory study to characterize the emergence of a SECO from an initial application
  • **SSN model / BPMN model / DiaDia Example**

• We are executing some additional tests and adjustments of its main features before releasing it to PlayStore

• As future work, we intend to apply and analyze this research approach in other scenarios than mobile applications
Thanks!

Questions?

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