

Strategies, Benefits And Challenges Of App Store-inspired Requirements Elicitation

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背景

- ・要件の収集
 - ・ステークホルダーから引き出すには様々な手法がある^[1]
 - ・モバイルアプリケーション市場の成長により新たな手法が提供^{[2]~[10]}
- ・アプリストアからの情報
 - ・開発者が日常的に使用
 - ・機能の優先順位付け
 - ・既存市場の理解
 - ・競合製品の調査

アプリストアの利用

- ・ Al-Subaihinらの調査[11]
 - ・ 開発者は自身のアプリケーションドメインに関連するアプリの探索, 機能予測に利用
 - ・ app store-inspired elicitation (以下ASE)という手法
 - ・ 要件分析者や開発者の間で一般的に利用
- ・ 競合製品から特徴を抽出して比較できるツールを開発^{[12]~[14]}

本研究の目的

- ・ 様々な情報が限定的
 - ・ 具体的な採用理由
 - ・ 他手法と比べた，ASEの利点と難点

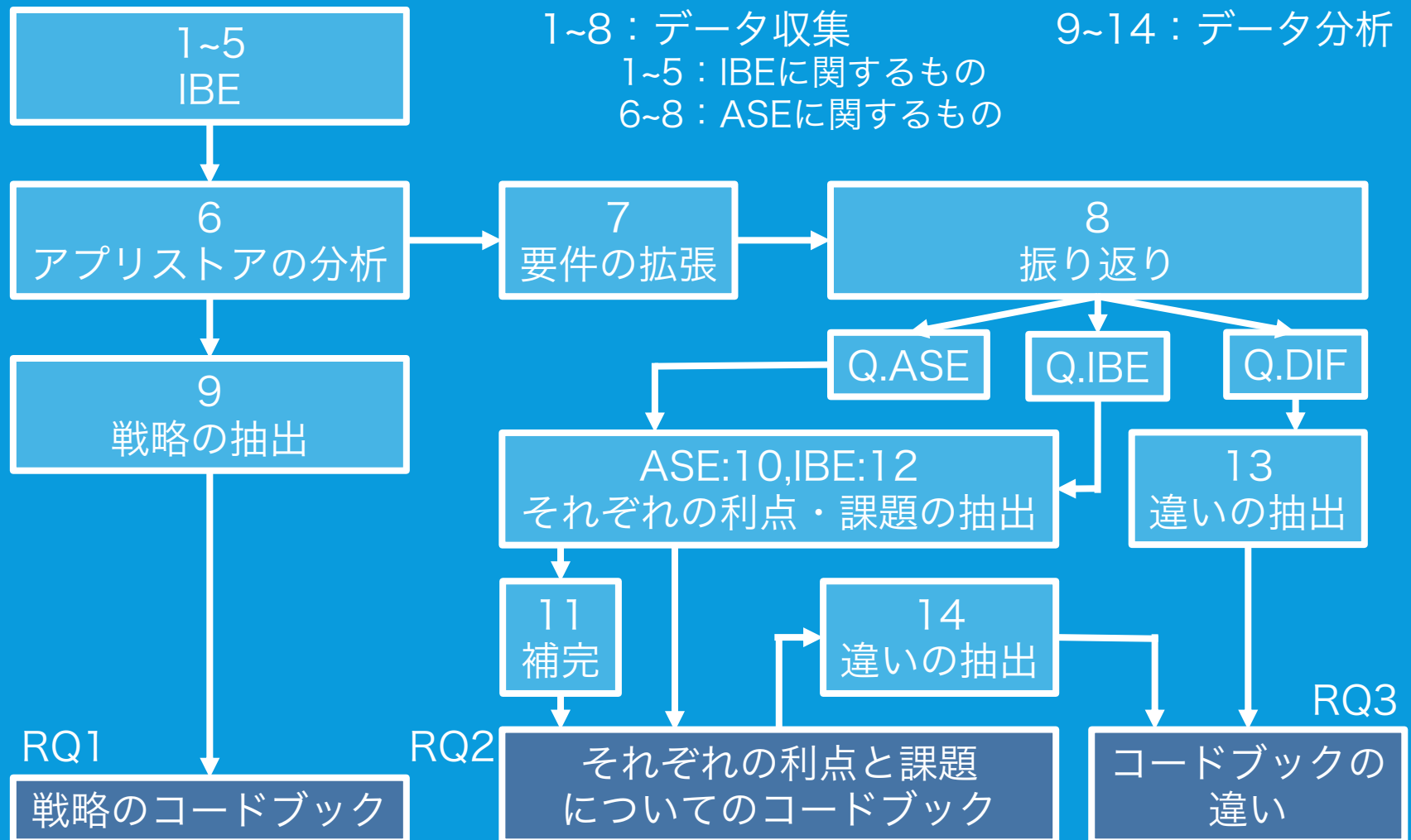


- ・ ASEの戦略・利点・課題を研究し，伝統的な手法のinterview-based elicitation (以下IBE)と比較

調査方法

- ・ Debnathらの実験デザイン^[30]に基づき、要件分析者の自然な行動を評価
 - ・ インタビューに関する他研究^{[31]~[34]}にて採用
 - ・ 詳細な分析、人間的側面の考慮が可能
- ・ 計14のタスクで構成
 - 1~8：データ収集
 - 1~5：IBEに関するもの
 - 6~8：ASEに関するもの
 - 9~14：データ分析

調査方法



Research Questions

- *RQ1*
 - 要件を引き出すきっかけとなるアプリを選択するために使われている戦略は何か
- RQ2
 - ASEの利点と課題は何か
- RQ3
 - ASEとIBEの違いは何か

RQ2 : ASEの利点と課題

利点

- ・ コンセプトのひらめきの源
- ・ 視野の拡大, 新機能特定
- ・ ドメイン知識不足の解消
- ・ 問題の特定が容易
- ・ 実地評価が可能
- ・ 適応性のある製品の創出
- ・ 市場ニーズの把握

課題

- ・ 創造性の限界
 - ・ 製品のコピーリスク
- ・ ステークホルダーの高い目標の理解には繋がらない
- ・ アプリストアの不足
 - ・ カテゴリーが静的な為
- ・ レビューに関する課題
- ・ 要求の妥当性の確認が困難

RQ3 : ASEとIBEの違い

ASE

- ・ 解決策に焦点
 - ・ 開発後期段階に適切
- ・ ユーザーフィードバックの分析に依存
 - ・ 詳細情報は付随的
- ・ 創造的なプロセス
 - ・ 時間的制約は無い
- ・ 要件実装の実践的評価
 - ・ 実現可能性の評価が可能

IBE

- ・ 目標に焦点
 - ・ 開発初期段階に適切
- ・ ステークホルダーとの直接対話に依存
 - ・ 詳細情報の収集が可能
- ・ 構造的なプロセス
 - ・ 時間管理が必要
- ・ 明示的に要件の検証が可能
 - ・ 実現可能性の評価は不可

まとめ

- ・ 開発プロセスにおいてIBEはASEを補完できる
 - ・ 研究者はASEのガイドラインを定義する必要がある
- ・ ASE固有の利点を考慮した開発を行う必要がある
 - ・ 一部機能の実現可能性評価
 - ・ 知識不足の克服
 - ・ 様々な役割における「ひらめき」の源

RQ2 : 資料

Benefits	Challenges
CONCEPT	
Concept Inspiration inspiration for ideas broaden vision	Product Concept limitation of creativity loss of original purpose no support for initial idea risk to copy products
REQUIREMENTS	
Requirements Inspiration identify novel features expanding requirements narrowing requirements identify unknown requirements overcoming the lack of domain knowledge	Requirements and Features Definition difficult to understand goals irrelevant requirements relevant/key feature selection difficult adaptation of features risk to miss relevant requirements identification of demographic preferences*
PRODUCT	
Implementation Inspiration issue identification leverage developers knowledge hands-on evaluation inspiration for implementation enhancing product create adaptable product identify irrelevant elements	Product Search and Evaluation difficult to identify relevant products too many similar products insufficiency of the app store static categorisation* need to log-in to evaluate products need to purchase app functions problems with ads* repackaged apps*

USER	
Market Satisfaction identify market needs identify market trends create competitive product identify successful solutions	Reviews (Quality) uninformative reviews vague/poor reviews short reviews unstructured reviews* fake reviews*
User Satisfaction improve usability improve accessibility* user feedback assess usability consider large audience satisfy variety of users identify user values	Reviews (Content) polarised reviews limited constructive criticism conflicting reviews partial information* reviews do not comment features Reviews (Quantity) uncategorised reviews* too many reviews insufficient number of reviews filtering reviews
PROCESS	
Process Support limited stress save development time idea validation assess feasibility support decision process	Process Weaknesses time consuming activity unfocused activity difficult to trace stakeholders requirements validation intellectual property issues no follow-up

TABLE I
BENEFITS AND CHALLENGES OF ASE

RQ3 : 資料

Interview-based Elicitation		App Store-inspired Elicitation	
Main focus			
+	Focus on goals (WHY)	Focus on solutions (HOW)	+
+	Focus on asking	Focus on observing	+
+	Focus on future development (forward thinking)	Focus on past development (backward thinking)	+
+	Personalised product oriented so satisfy a customer	General product oriented to satisfy market needs	+
+	Support problem decomposition	Support idea generation	+
+	Appropriate for initial development stage	Appropriate for later development stages	+
Elicitation of needs			
+	Relies on direct stakeholder interaction	Relies on analysis of user feedback	+
+	Explicit questions about details	Collection of details is incidental	-
~	Relies on proper questions	Relies on proper search queries	~
+	Mainly qualitative information	Qualitative and quantitative information from reviews	+
+	Can help to collect stakeholders' goals	Stakeholders' goals are hard to identify	-
+	Explicit questions to stakeholders	Questions to stakeholders not possible	-
Interpretation of needs			
+	Identify what the stakeholder wants	Identify what the stakeholders could need	+
+	Requirements within the project scope	Can lead to out of scope requirements	-
+	Probing/follow-up questions can reduce misinterpretations	Reviews can be misinterpreted	-
+	Explicit answers can remove wrong assumptions	Wrong assumptions can be made about user needs	-
+	Understand product goals and vision	Create product goals and vision	+
~	Need to deal with stakeholders' inconsistencies	Need to deal with user review inconsistencies	~
+	Success depends on agreed criteria	Success also depends on luck factors	-
Relationship with stakeholders			
+	Fosters stakeholders' relationship	Limited relationship with stakeholders	-
+	Can change stakeholders' viewpoint	Does not affect stakeholders' viewpoint	-
+	Can exploit non-verbal cues	No face-to-face interaction	-
+	Allow access to multiple stakeholders	Access only to users	-
Process			
+	Structured process	Unstructured process	-
~	Requires soft skills	Requires technical skills	~
-	Stakeholder-directed process	Creative process	+
-	Stressful activity	Not stressful activity	+
-	Requires preparation	No preparation needed	+
-	Requires time management	No time constraints	+
-	More time consuming	Less time consuming	+
-	Requires active control of the conversation	Inherent control of the analysis process	+
Requirements assessment			
+	Requirements can be validated by the customer	Difficult to validate requirements	-
-	Evaluation possible only with prototypes/mockups	Hands-on evaluation of requirements implementation	+
-	Usability requirements not testable	Can enable the test of usability requirements	+
-	Feasibility cannot be assessed	Can enable assessment of feasibility	+

TABLE II

DIFFERENCES BETWEEN INTERVIEW-BASED AND APP STORE-INSPIRED ELICITATION.