Jobs-to-be-Done Oriented Requirements Engineering: a Method for Defining Job Stories

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Job Stories

User Stories: popular format for software requirements.

- ***As a*** *[role],* ***I want to*** *[action], (****so that,*** *[benefit])*
- Criticized: lack of contextual information which can lead to incorrect assumptions.

2013: Alan Klement introduces Job Stories as an alternative or replacement to User Stories.

- ***When*** *[situation],* ***I want (to)*** *[motivation],* ***so that (I can)*** *[expected outcome]*
- Emphasize the motivational and situational context that drives customer behavior.

*"**When** I am configuring a radiator and I am trying to produce a specific amount of heating power**,***
I want to *quickly determine what configuration of radiators will produce the required heat,* ***so that*** *I won't have to waste time looking for the optimal configuration."*

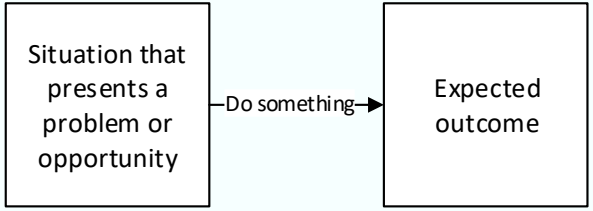
Scientific contributions - outline

1. Positioning of Jobs-to-be-Done and Job Stories literature
2. Conceptualization of the notion of job story based on syntax and semantics of 131 job stories from public sources
3. Integrated Job Story Method as a reconciliation of JTBD and job story literature
4. Evaluation of the method applicability in a case study

Take home message

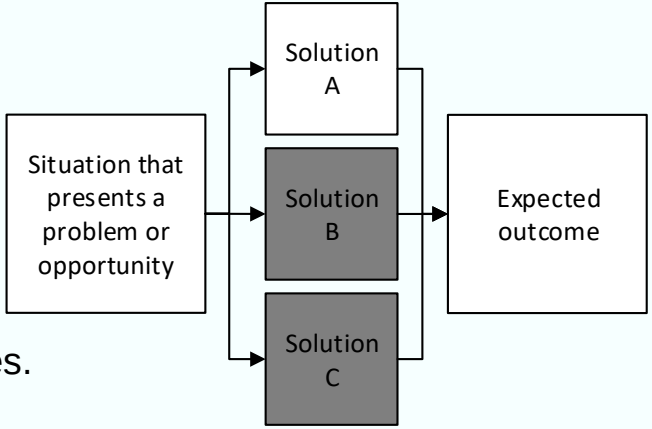
- Job Stories are an effective way to describe high-level product features and roadmap themes
- The integrated method helps to implement job-stories in software companies
- Job-stories should be used as a front-end to user story formulation and agile development

What are Jobs-to-be-Done?



- Dr. Clayton Christensen: Disruptive Innovation Theory

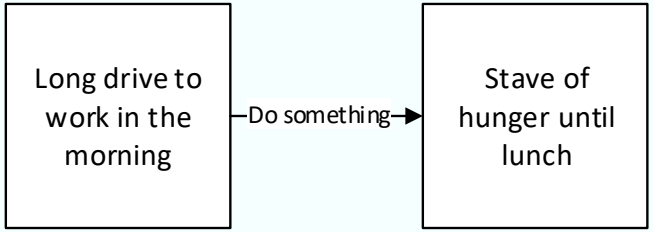
  "When people find themselves needing to get a job done, they essentially hire products to do that job for them"

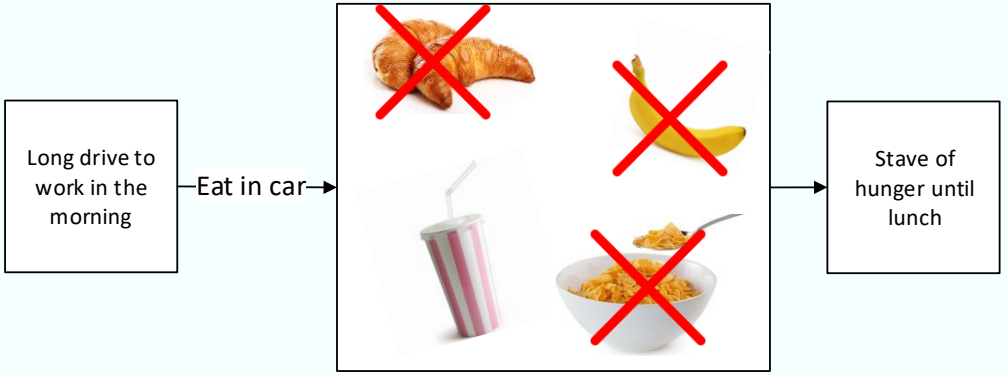


- Jobs-to-be-Done is a collection of principles that helps to discover and understand interactions between *customers*, their *motivations* and the *products* they use. (2016)

- Alan Klement introduces Job Stories as an alternative to User Stories. (2013)

The ‘Job’ of an early morning milkshake





Research project

Main research question:

- `*What is the value of Job Stories and Jobs-to-be-Done in the context of requirements engineering for software products?'*

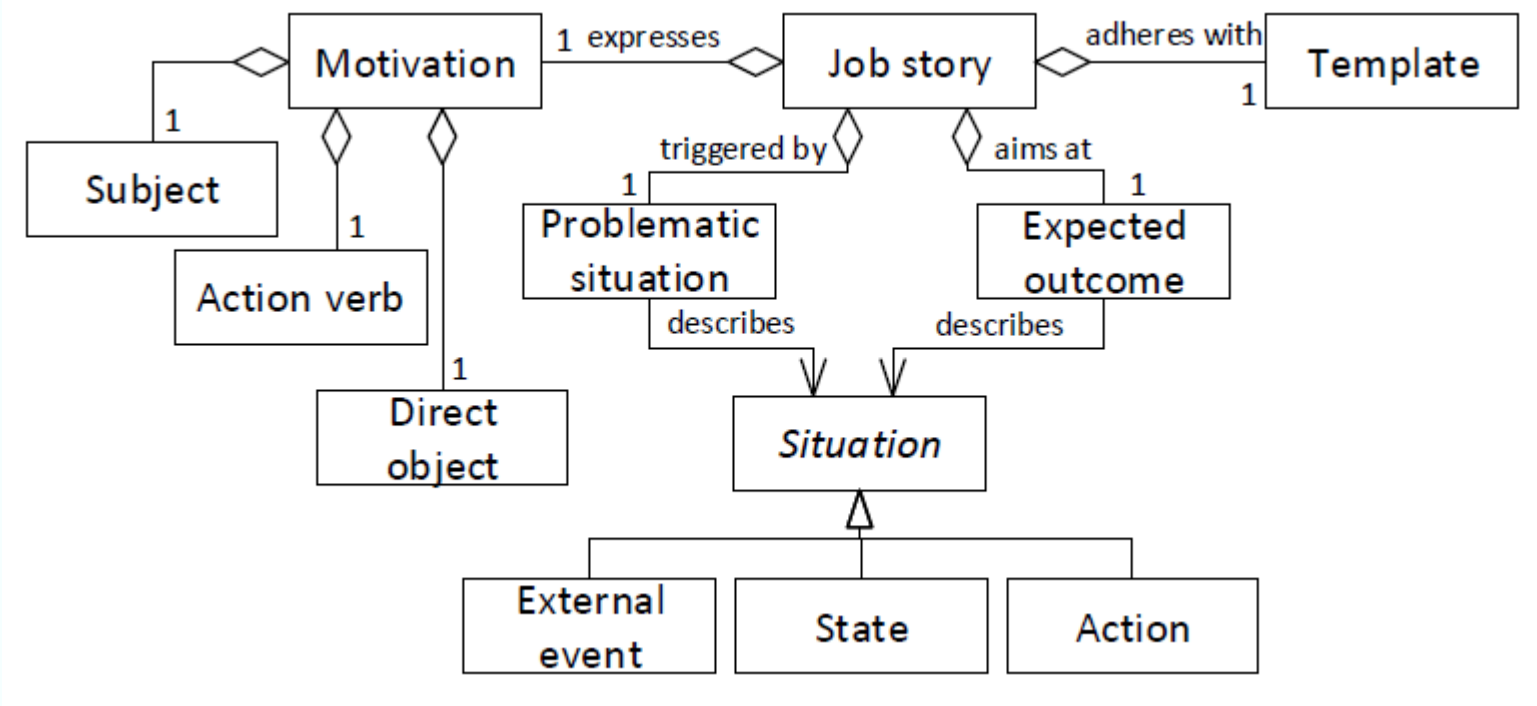
Exploratory study:

- What is this new technique exactly?
- How does it relate to existing techniques used in the software industry?
- What is a method for its application in the context of software products?
- Apply and evaluate the proposed method.

Conceptualization

- Small community of practice in Job Stories
- Klement template: When … I want to … so that … .
- Identified 131 JSs in public domain; 113 according to template
- Created Conceptual Model of Job Stories
- When <problematic situation> I want to <motivation> so that <expected outcome>
- Problematic situations & Expected outcome are either: Action, State, or External Events
- Varying statistics on the 113 JSs. (see section 3.2-3.4)

Conceptual model of Job Stories

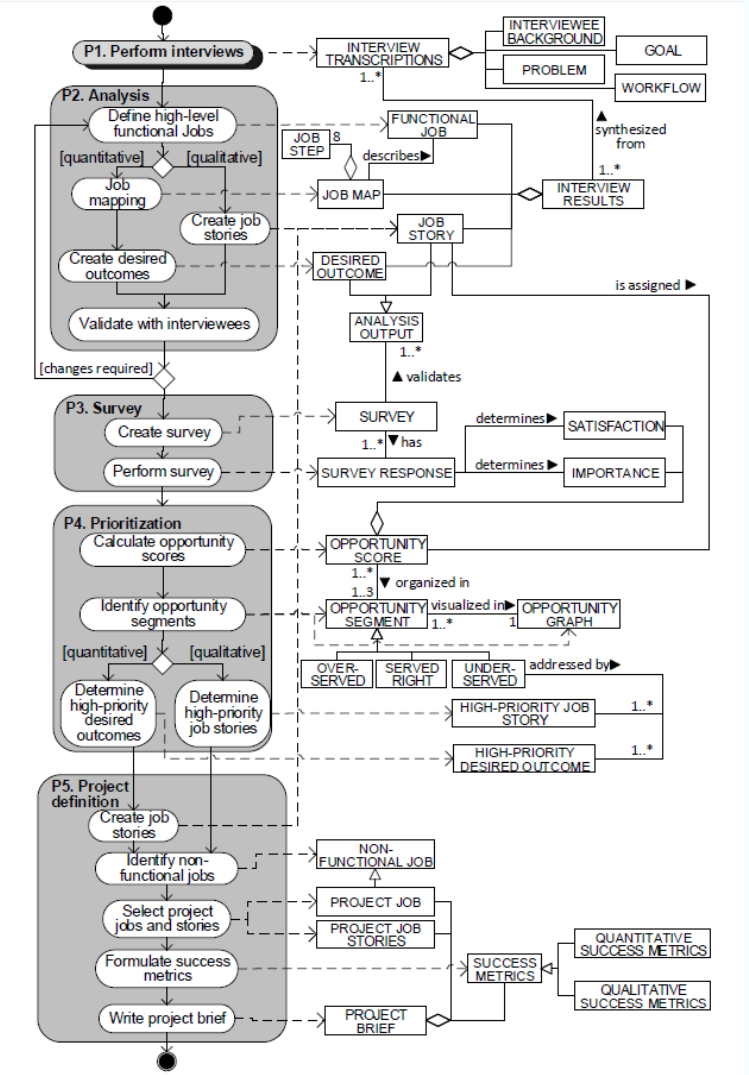


Integrated Job Story method

Combination of existing approaches, used to define high-level requirements for a development project.

Five phases:

- **P.1** Interview phase
- **P2.** Analysis phase
- **P3.** Survey phase
- **P4.** Prioritization phase
- **P5.** Project definition phase



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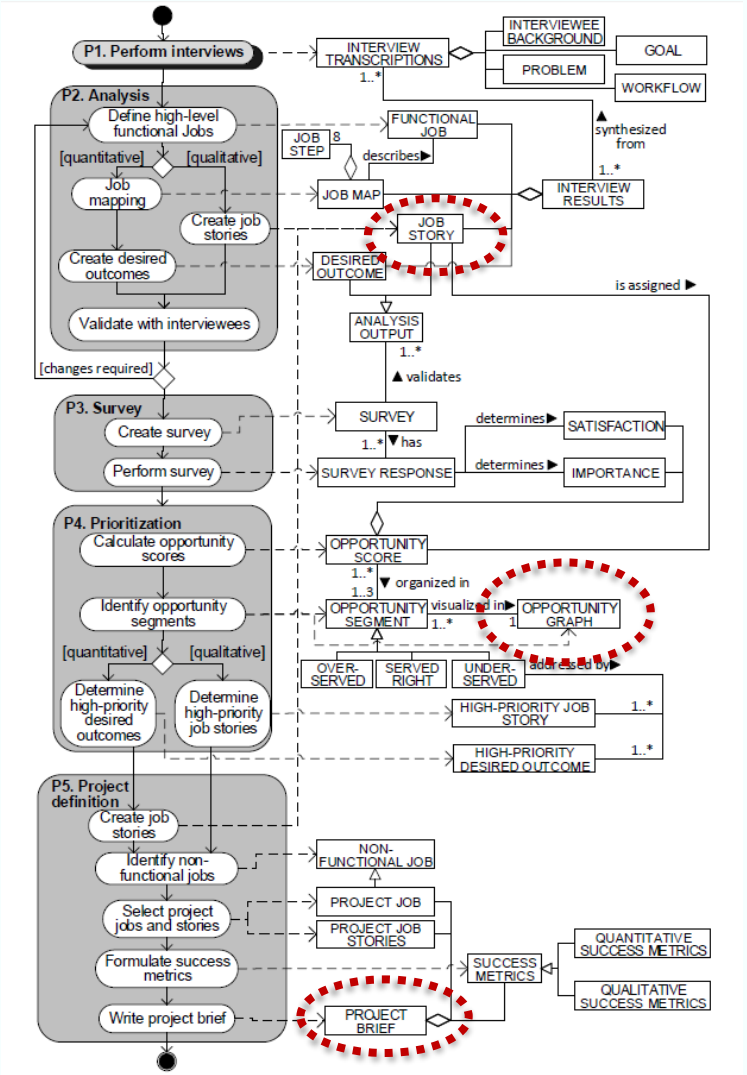
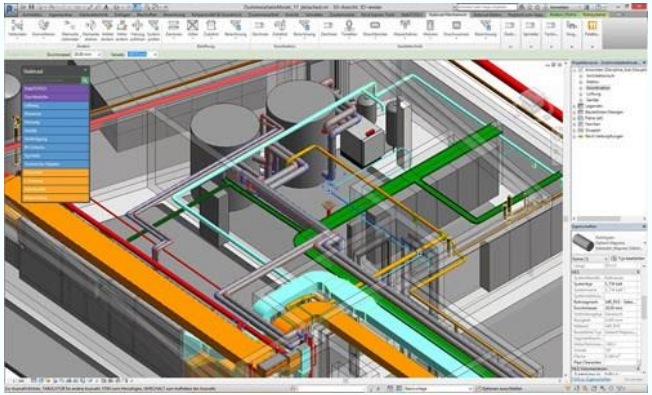
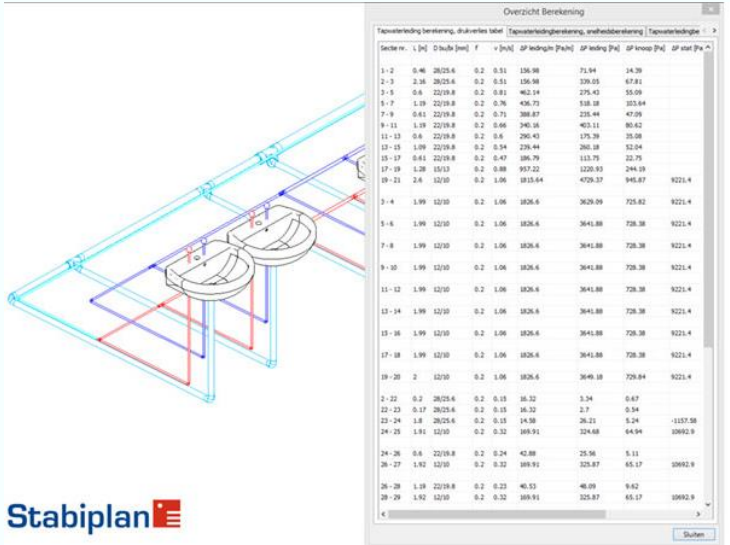


Case Study: Stabiplan (ModelComp)

Computer Aided Design (CAD) software for the modeling installations for mechanics, electronics and plumbing (MEP).

- Expands Autodesk AutoCAD and Revit products.
- 170 employees (65 in R&D)
- 3800 customers





Case Study: Stabiplan

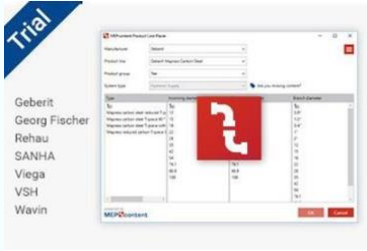
StabiCad: Large monolithic desktop product

Company strategic goal: Expand to the global market via a portfolio of *apps.*

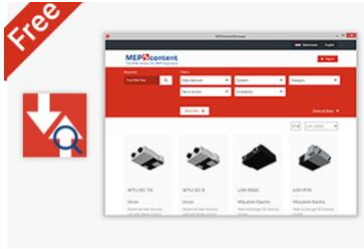
- Independent products with limited functionality.

`*What functionality should be included in the apps to incite users to adopt it?'*

- The apps should address customers' Jobs-to-be-Done?
- Focus on app related to radiators



MEPCONTENT PRODUCT LINE PLACER (PLIP) FOR PIPING



MEPCONTENT BROWSER

SANHA PRODUCT LINE PLACER

P2. Analysis phase:
Analyze the workflow, context and motivations of the interviewees to formulate initial Jobs and Job Stories.

Case:

- In the interviewees' workflow we identified four functional Jobs:

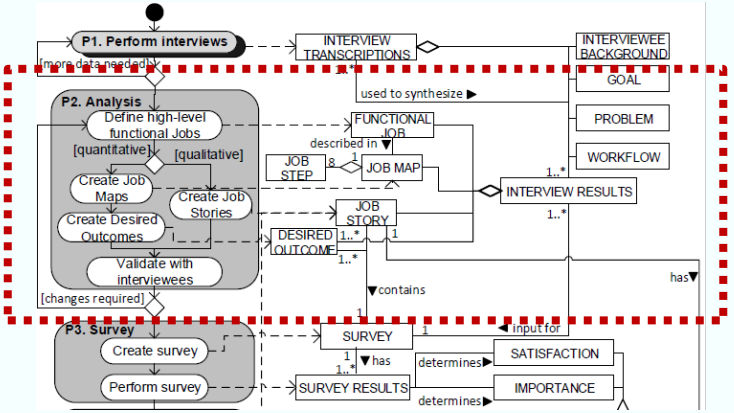
  J1: Help me configure radiators

  J2: Help me place radiators

  J3: Help me model piping systems

  J4: Help me create bills of materials

- We created Job Stories that highlight different parts of each Job, based on contextual information obtained in the interviews.



Help me model piping systems

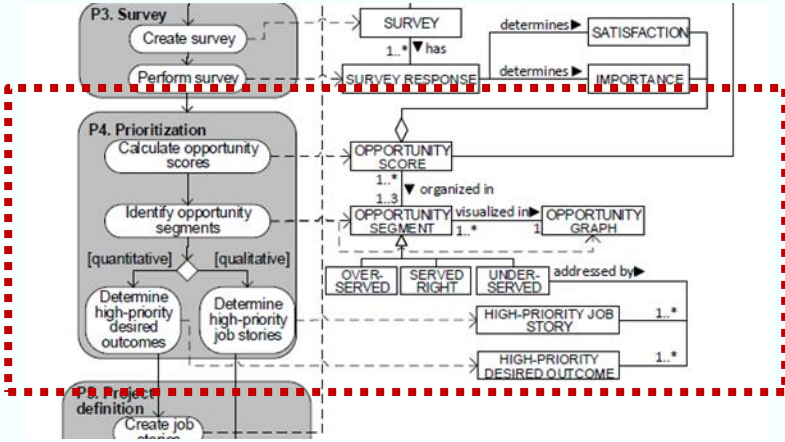
When I have modeled a piping system and something changes in the project that forces me to make changes to the piping system, **I want** to be able to change the pipe system easily, **so that** I won't have to model the whole system again.

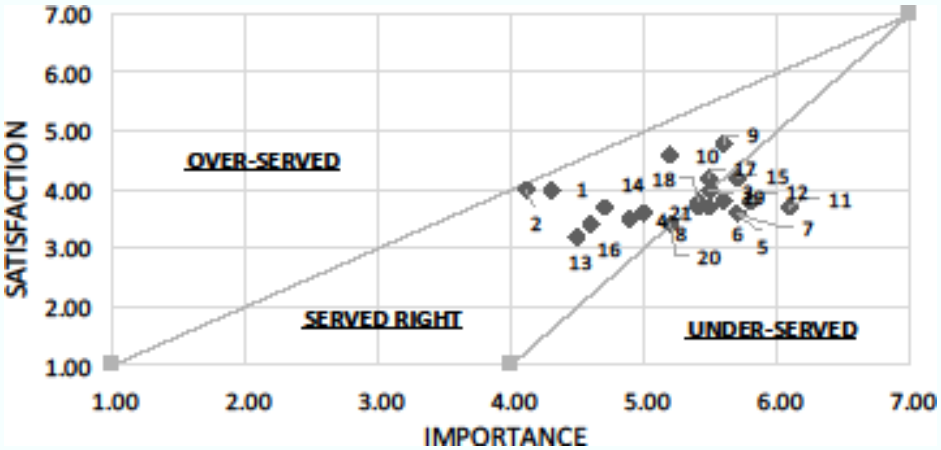
***When** [situation], **I want (to)** [motivation], **so that (I can)** [expected outcome]*

P4. Prioritization phase
Analyze the survey results to determine which Jobs present the largest opportunity for innovation.

Case:
We analyzed the scores for *'importance'* and *'satisfaction'* to identify *under-served* Job Stories.

- Illustrate results using *'Opportunity Graph'*
  - Each point is a Job Story
- Result: 11 high-priority Job Stories





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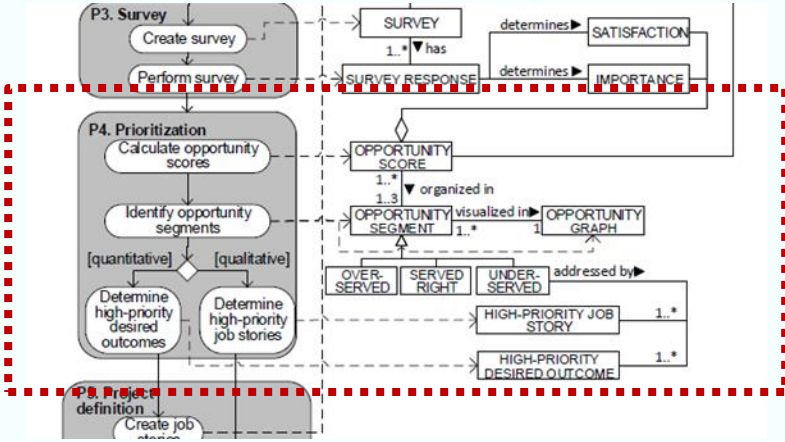
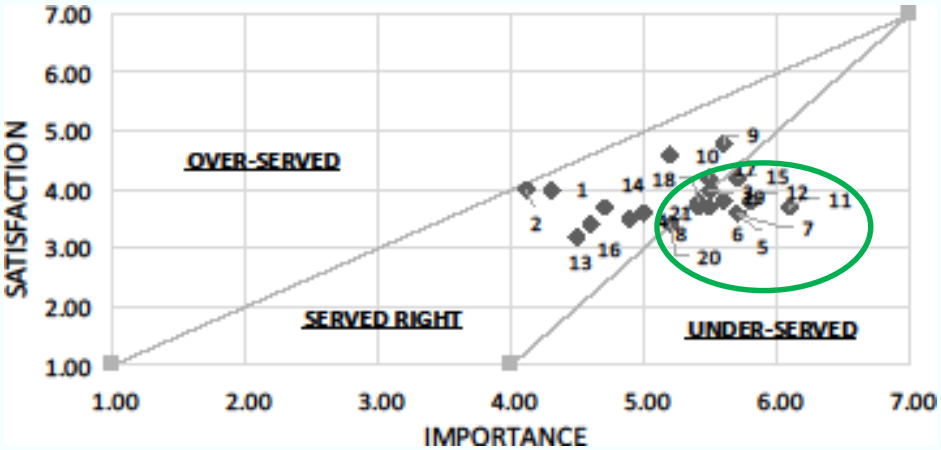




P5. Project definition phase

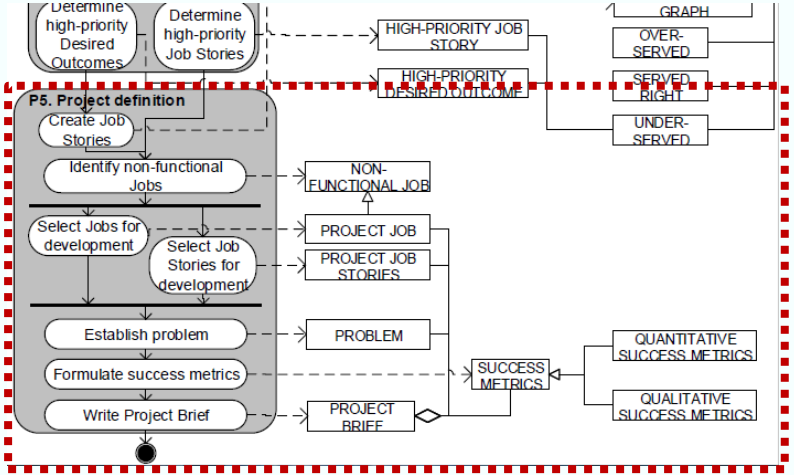
Select the Jobs and Job Stories for development, and create a project brief that can facilitate the follow-up development project.

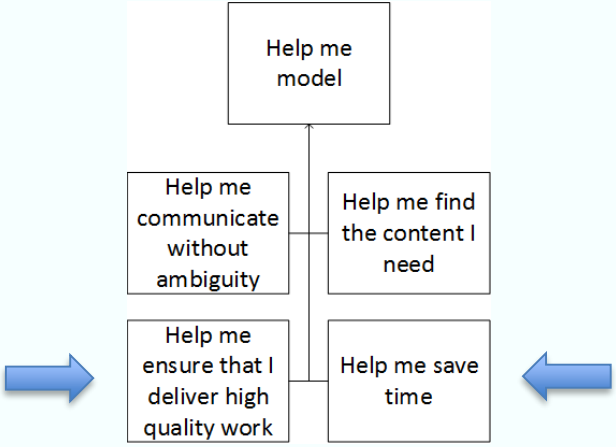
Case:

To help define concrete apps based on the high priority Job Stories, we re-categorized the Job Stories based on *non-functional Jobs,* instead of *functional Jobs.*

Why?

- By getting a functional task done, a customer is looking to achieve a “deeper” benefit → **non-functional Jobs!**





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Case:

We created a *Project Brief* for each app, to serve as input for the design process.

- Single page document, used as a basis for design and development (Intercom).
- Creates a shared understanding of the problem among different stakeholders.

Project Brief – *Help me ensure that I deliver high quality work.*

*"**When** I am working on a complicated model for an important project and I cannot afford to make mistakes, **I want** to be able to identify and fix possible errors, **so that** I can be confident that the work I deliver is of high quality."*

What problem are we solving and why?

When creating a Revit model that includes radiators it is often very important that the radiators exactly reflect the requirements of the project. This for instance means that the radiator should be of the right type, be of the correct size and deliver an appropriate amount of heat.

To do this in Revit, a modeler needs to ensure that the parametrical information linked to the radiator is correct. Some tools can help the modeler configure a radiator with the appropriate parametrical information. However, in some cases the modeler might need to add some additional information or feels the need to verify whether it has all been done correctly. In these cases, the documentation from the manufacturer of the radiator is the most reliable source of information that can be used to verify this.
Unfortunately, finding the required documentation and searching for the relevant information can be time consuming.

What value do we deliver to the customer?

- **When** I am configuring a radiator, **I want** the heating power of the radiator to be accurately represented in the flow and return temperatures, **so that** my model will correctly represent the amount of heat that is produced.
- **When** I am configuring a fabrication specific radiator, **I want** that the system to contain accurate information on the values of a radiator (e.g. voltage, heating power) that matches the specification from the manufacturer, **so that** I can be sure that my model is correct.
- **When** I am configuring a radiator, **I want** the system to provide me with all the information I need in that process, **so that** I don't have to look things up in external documentation (e.g. the width of a radiator in the specification from the manufacturer).
- **When** I am configuring a radiator and I am trying to produce a specific amount of heating power, **I want** to quickly determine what configuration of radiators will produce the required heat, **so that** I won't have to waste time looking for the optimal configuration.

How will we measure success?

- The solution helps the modeler feel confident that the radiators are configured correctly.
- The solution helps the modeler feel more satisfied with his ability to add the correct parametrical information to the model.

Evaluation

Goal of the case study was to help determine:

- `*What is the value of Job Stories and Jobs-to-be-Done in the context of requirements engineering for software products?'*

Main question for the evaluation:

- `*In what ways did the method positively or negatively impact business processes at Stabiplan?'*

Evaluation with key stakeholders at Stabiplan:

- Product Management
- Development
- Marketing.

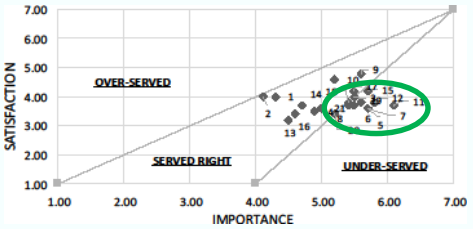
Evaluation: Product Management

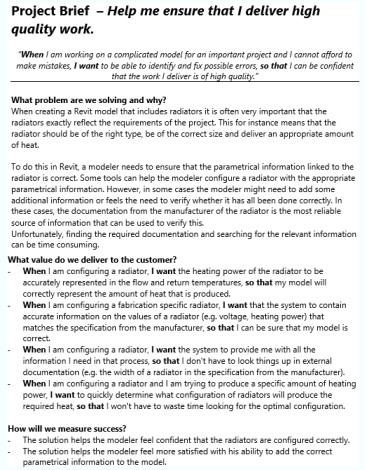
Positives:

- The method emphasizes understanding *why* and *how* customers use products.
- Job Stories deliver no revolutionary insights but help scope a product and communicate with stakeholders.
- The `*Opportunity Prioritization'* technique is very valuable, especially when exploring new market segments.
- Extensively describing a problem in a Project Brief helps promote a creative design process.

Negatives:

- Practical applicability is limited due to reliance on the participation of customers and the time-consuming analyses.





Project Brief – ***Help me ensure that I deliver high quality work.***

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Evaluation: Development and Marketing

Development:
Focus on the *`problem space'* of design makes the method mostly irrelevant for development.

- Job Stories are too high level to be very useful for developers, seem like “open doors”.

Marketing:
Marketeers at Stabiplan found the method very valuable.

- Project Brief is very useful, as it helps create marketing material that conveys why a feature is valuable for the target audience. Greatly preferred over feature lists.

Conclusion

How are Job Stories and Jobs-to-be-Done positioned in the landscape of requirements engineering for software products?

Jobs-to-be-Done differs in three main ways from other RE techniques, such as Goal-oriented RE and User-Centered Design. :

- Its focus is *solely* on the problem side of innovation and should not be used to design solutions.
- The *customer* is the unit of analysis when investigating a problem, not a *system.*
- The input for requirements should come from customers themselves.

Job Stories are not necessarily better or worse than User Stories:

- Both types of stories can be written poorly.
- Job Stories are best used for describing the *problem,* while User Stories are more suitable for designing a *solution*.

Future Work

First exploratory study, more work to be done.

- Well-documented case studies are needed to get more insight in the value of Jobs-to-be-Done and Job Stories.
- Investigate the relation of Job Stories and User Stories, and how to integrate Job Stories with existing agile approaches.
- Extraction of concepts with natural language processing.

Questions and discussion

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