

Kick Off Presentation

Master's Thesis – Collaborative Development of Open APIs - Status Quo and Ideas for Improvements

Advisor: Gloria Bondel

Student: Mihailo Rajacic

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Chair of Software Engineering for Business Information Systems (sebis)
Faculty of Informatics
Technische Universität München
www.matthes.in.tum.de

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1. Motivation

The main motivation for this thesis were two large issues in current situation with Open API development:

- **Lack of API related knowledge in companies that are not digital companies (e.g. Google, Amazon, Yahoo...):**
 - Walmart has only one API that has yielded only one mashup (entirely new digital applications and services that integrate existing APIs.) (Evans, Basole, 2016). This fact leaves an open space to establish a group of design decisions and artefacts that would bring value to companies like Walmart, but also improve performances of new APIs in digital companies.
- **Open APIs design and development currently doesn't include enough involvement from consumers:**
 - As stated in the paper (Bondel et al. 2019) - Many companies do not collaborate with external users and provide a rather provider-driven API that does not fulfill the consumer's needs (Smith 2018). Involvement of external users in devel. process can bring a lot of business value, but if chosen wrong it can lead to even higher cost (man hours in both companies, travel costs etc.). That is why stakeholders need to carefully identified.

2. Research questions

RQ 1

What design decisions have to be made during the development of open APIs? (Literature review)

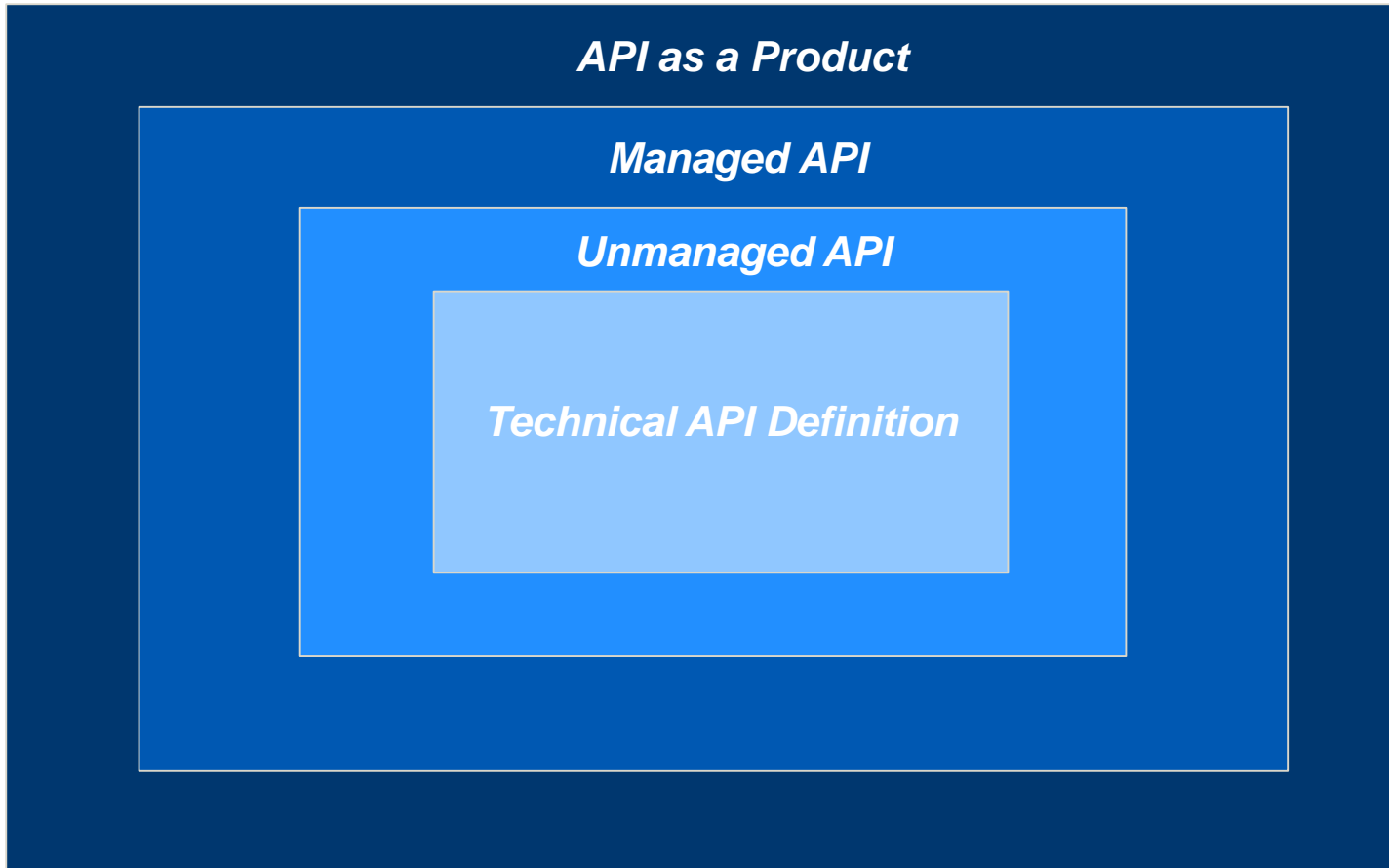
RQ 2

What stakeholders are involved in the collaborative development of open APIs? (Lit. rev. , Interviews)

RQ 3

How could a process for collaborative open API development look like? (Interviews)

3. API Definition



Technical definition of API - Set of protocols, functions, mechanisms, tools, definitions, and attributes to share and develop new services across different domains and expand the existing services. (Hussain, 2019)



Unmanaged API - In use, but with the lack of precisely defined audience and independently enforced business and IT controls. (Ashby, Jensen 2018)



Managed API – API that has a lifecycle from its creation to its retirement. (Siriwardena, 2014)



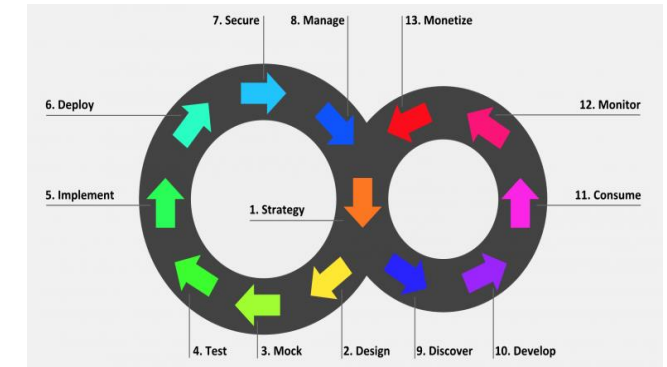
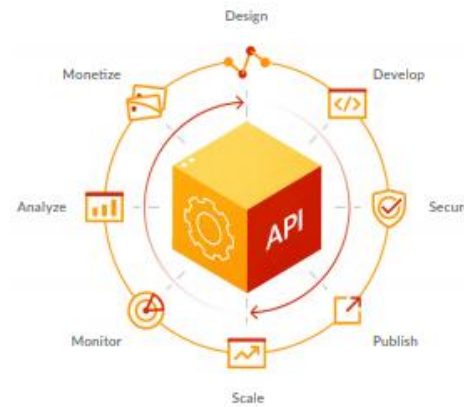
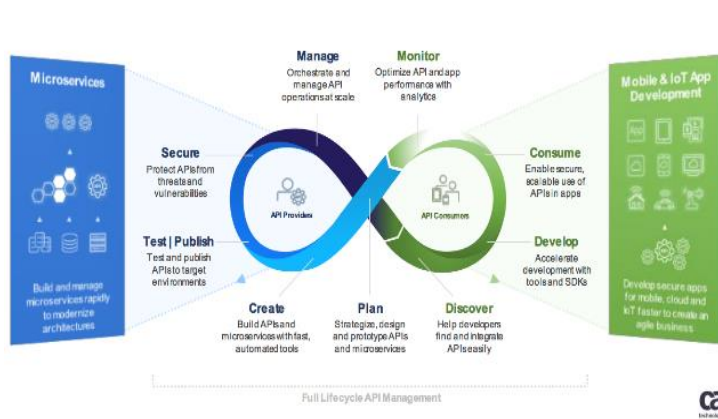
API as a Product – API that needs to be marketed and positioned correctly for maximum profits. (Endler, 2017)

4. API and related terms

	API vs Web Service	API Development vs Service Oriented Architecture	API Development vs Service Engineering
Similarities	<ul style="list-style-type: none"> Designed for system interaction Work under defined protocols Extend Service functionalities 	<p>API development and SOA rely on the same principles:</p> <ul style="list-style-type: none"> Reusability Service contract Ease of discovery Composition into other services (APIs) 	<ul style="list-style-type: none"> Both Services and APIs should be performed taking into the account both technical and business side.
Differences	<ul style="list-style-type: none"> APIs are protocol agnostic and they can use any protocol or design styles, while Web Services usually use SOAP. Many public APIs are transparent, with open documentation and self-service portals for quick developer onboarding. Web Services tend to offer specific data / functionalities to specific partners. 	<ul style="list-style-type: none"> Even though APIs share the same technical characteristics as SOA, they are more open, developer centric and easily consumable. SOA helps in the agility and pace of the delivery of a service, while APIs drive the innovation, helping the pace of building apps. 	<ul style="list-style-type: none"> Different nature of services and APIs specified in the previous comparison, their development processes differ in a sense that APIs need to be developed with more agility and with more community involvement.

5. API Processes – Research

- As stated by (Kopecky, Aziz, 2016) there the area of Web API Management lacks the precise definitions and there is very little academic research done in this area, therefore the experience from business providers and certain books which include topic of API Lifecycle and processes were researched.
- After detailed literature review, a total number of **13** processes was identified. These come from API Management books and companies that have API Management platforms.



6. API Processes – Research Summary



Author	Phase														
	API Strategy	Design	Mock / Simulate	Build	Test	Secure	Publish	Document	Engage (Onboarding)	Marketing the API	Scale	Version	Monitor & Analyze	Monetize	Retirement Plan
	Implementing Oracle API Platform Cloud Service		X		X	X	X	X				X	X		
	Layer 7® API Management – Full Lifecycle	X	X	X	X	X	X	X		X		X	X	X	
	Google ApiGee Full lifecycle API management		X	X	X	X	X	X	X	X		X	X	X	X
	Red Hat 3scale API Lifecycle Management	X	X	X	X	X	X	X		X	X	X	X	X	X
	API Management: An Architect's Guide to Developing and Managing APIs for Your Organization	X	X		X	X	X	X		X	X		X	X	X
	Nordic APIs - The API Lifecycle	X	X	X	X	X	X	X			X	X	X	X	X
	Axway - Full Lifecycle API Management	X	X		X	X	X	X		X	X		X	X	X
	Pro RESTful APIs		X	X	X	X	X	X		X		X	X	X	X
	IBM API Connect API Lifecycle		X	X	X	X	X	X				X	X	X	X
	AKANA – Building Successful APIs	X	X		X	X	X	X	X	X			X	X	X
	Mulesoft – API Management Lifecycle		X	X	X	X	X	X		X			X	X	
	TIBCO API Lifecycle Management		X		X	X	X	X	X				X	X	
	Transparent Data – API Lifecycle		X		X	X	X	X					X	X	

6. API Processes – Research Summary

Phase	Collaborative?
API Strategy	✓
Design	✓
Mock / Simulate	✓
Build	✗
Test	✗
Secure	✗
Publish	✗
Document	✗
Engage (Onboarding)	✓
Marketing the API	✓
Scale	✗
Version	✗
Monitor & Analyze	✓
Monetize	✓
Retirement Plan	✓

7. Next Steps

Roles and stakeholders identification

- Review the literature and look back on the already reviewed for existing roles inside API provider and external stakeholders.

Propose the process

- Based on the research before that propose the API development process involving identified phases, matched with roles and stakeholders.

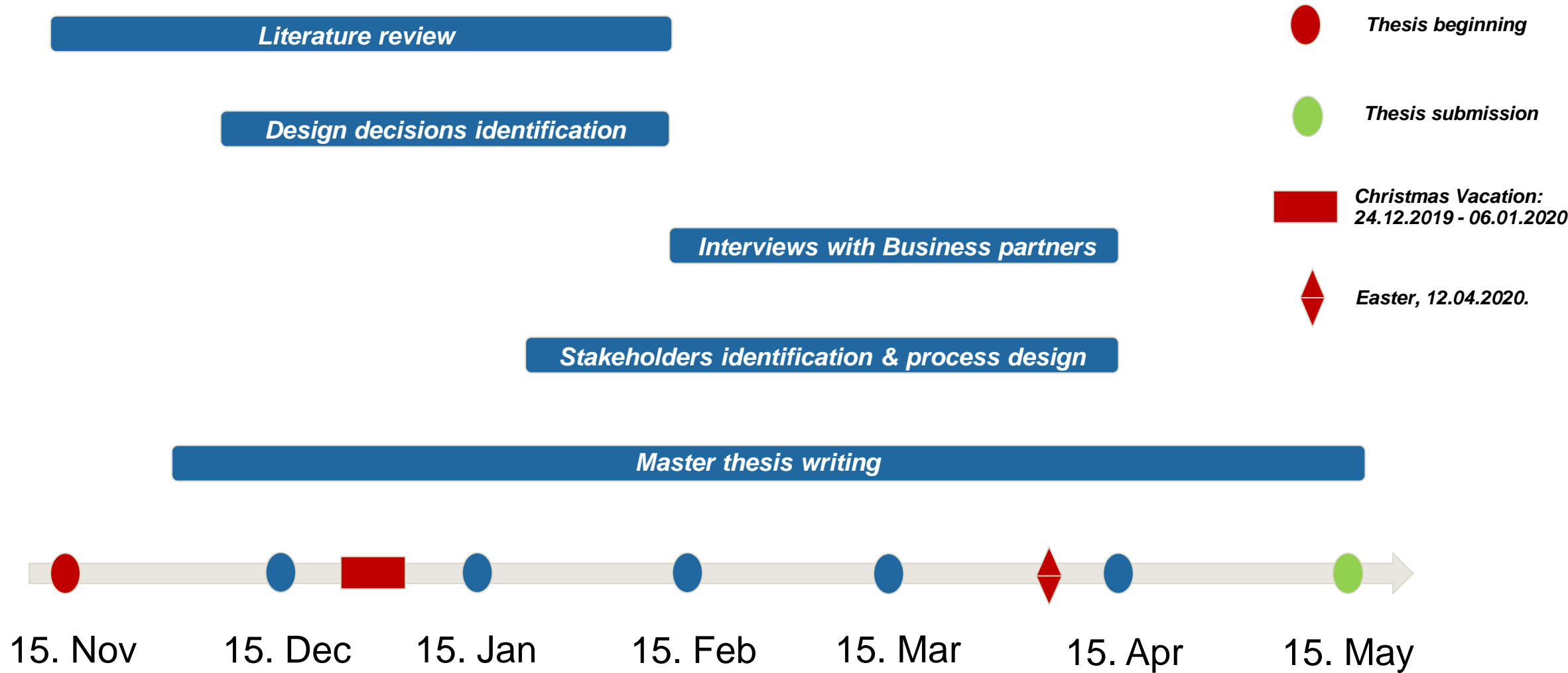
Prepare interviews

- Prepare the questions to discuss the findings from literature review phase.
- Find business partners for interviews. Focus will be on API consumers and finding their pain points in collaboration with API providers.
- API providers might be included too.

Conduct the interviews

- Conduct interviews with business partners who agreed to participate.
- Analyze the results and include them in thesis findings.

8. Timeline



Thank you! Time for discussion!



Mihailo Rajacic

Technische Universität München
Faculty of Informatics
Chair of Software Engineering for Business
Information Systems

Boltzmannstraße 3
85748 Garching bei München

Tel +49.89.289.17132
Fax +49.89.289.17136

mihailo.rajacic@tum.de
www.matthes.in.tum.de

