

# Guided Research: Intelligent Contextual Task Support for Mails

Simon Bönisch, 02.11.2018, Final Presentation

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

# Outline



Identifying and Tracking Tasks in E-Mails

Challenges and Requirements

Tool Comparison

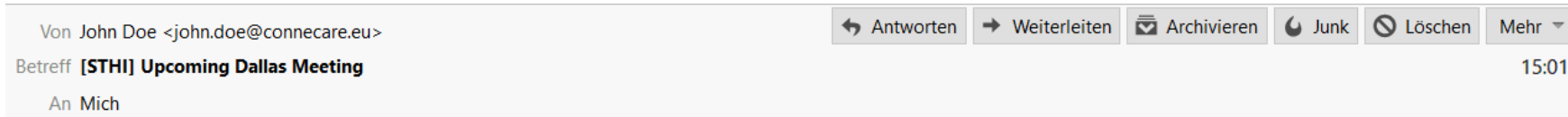
Proposed Solution: Intelligent Contextual Mail

Technical Details

Conclusion

# Identifying Tasks in E-Mails

## First Example – Mail



Hi all,

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs).

Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

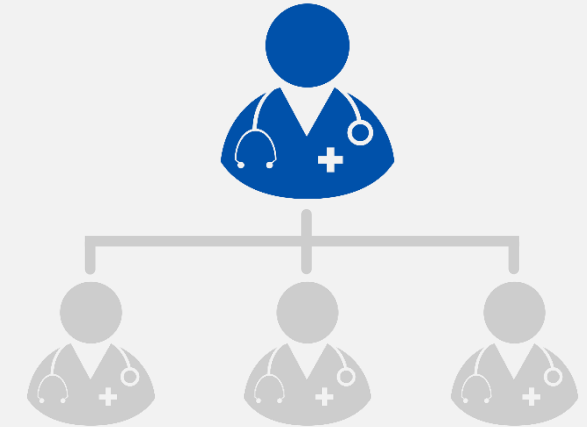
Do not hesitate to contact me in case of doubts or need of more information, thanks for you cooperation and see you soon!

John

---  
John Doe

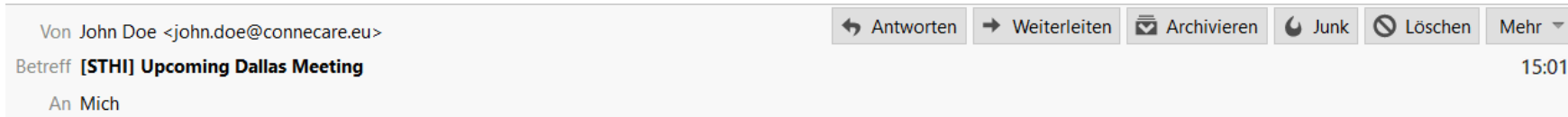
Project Coordinator  
TUM, Munich  
+49 89 123 456 789

## Context



# Identifying Tasks in E-Mails

## First Example – Tasks highlighted



Hi all,

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs).

Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

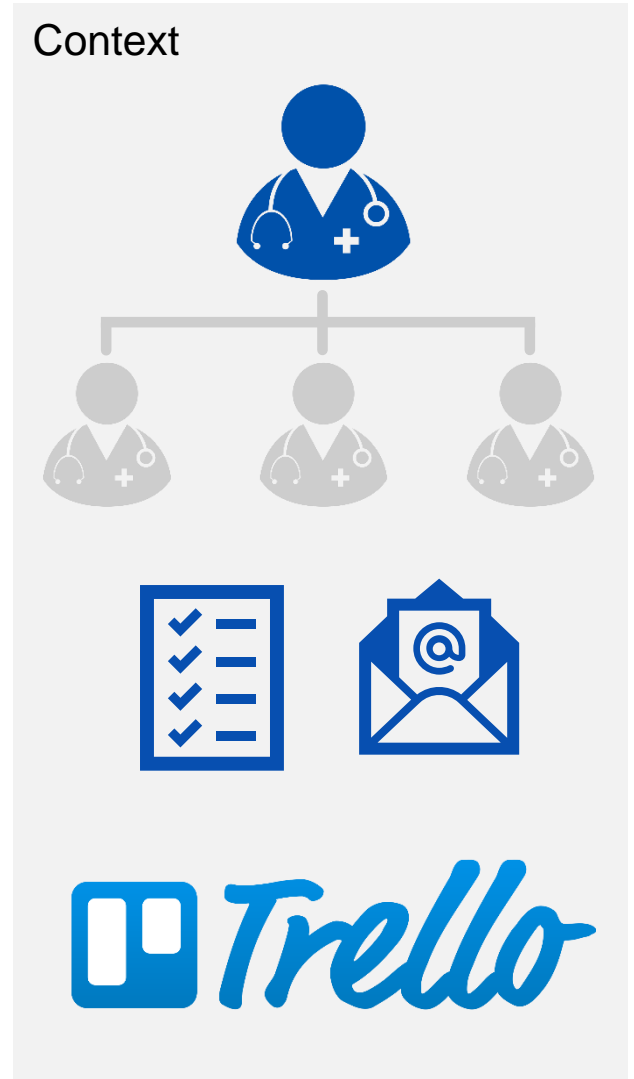
To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information, thanks for you cooperation and see you soon!

John

---  
John Doe

Project Coordinator  
TUM, Munich  
+49 89 123 456 789



# Tracking Tasks in E-Mails

## Second Example – E-Mail and Case Details

The screenshot shows the CONNECARE web interface. At the top, there's a navigation bar with 'Home > My Cases > Lauren Williams > Workplan > Monitoring Prescription (Systolic/Diastolic Blood Pressure)'. Below this, a header for the case study includes 'Dallas Case Study - Lauren Williams', 'Age: 48', 'Current Stage: Workplan', and 'Case ID: 3ky7bnezseqp'. A 'Case Actions' button is visible. The main content area has tabs for 'Summary', 'Process', 'Data', 'Team', 'Notifications', 'Messages', and 'Notes'. The 'Process' tab is active, showing a flow diagram with 'Professional' and 'Patient' stages. Below the flow diagram, there are fields for 'Clinician: Felix Michel', 'Role: Umcg Professional', 'Due Date: Not Available', and 'State: ✓ Clinician parameters are defined, ✓ Patient parameters are defined'. Further down, there are sections for 'Min value allowed', 'Max value allowed', 'Slots to take the measurements', 'Measurement Frequency', 'Alert Frequency', 'Max delay in minutes', 'Start date', 'End date', 'Comments', and 'Measurement'.

Measurement	Systolic Blood Pressure
2018-10-07 15:50	~60
2018-10-08 10:15	~60
2018-10-09 12:36	~80
2018-10-04 12:47	~180
2018-10-03 18:46	~70

The screenshot shows an email interface with a header containing action buttons: 'Antworten', 'Weiterleiten', 'Archivieren', 'Junk', 'Löschen', and 'Mehr'. The email is from 'James Reed <james.reed@external.company.com>' with the subject 'Re: Unsure about peak in blood pressure measurements' and a timestamp of '21:44'. The recipient is 'An Mich'. The email body contains the following text:

Hi Simon,

well, to sum things up, I don't think there are any serious problems or post-operational issues regarding the patient in question. These personal monitors for home use are just a little finicky when it comes to environmental conditions and electromagnetic interferences. Nothing to worry about in principle.

To be sure however and to account for the extra complications that you described, I would suggest to enlongen the blood pressure monitoring by at least two weeks. It's little effort, especially for you and the hospital and that way we completely eliminate the possibility of something serious that we are currently overlooking.

Hope I could help,  
Best wishes,

James

On 25.10.18 at 21:33 Simon wrote:

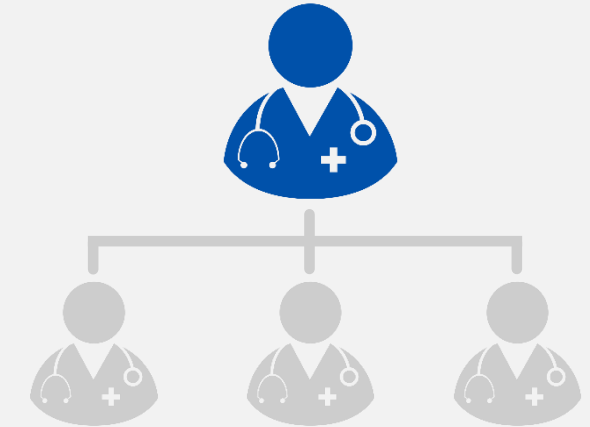
Hi James,

thanks for the advice. I had already thought of something like that but I was really unsure as I am lacking experience with these kinds of devices.

So you think we can just ignore the whole incident?

Thanks again,  
Best wishes

## Context



CONNECARE

# Tracking Tasks in E-Mails

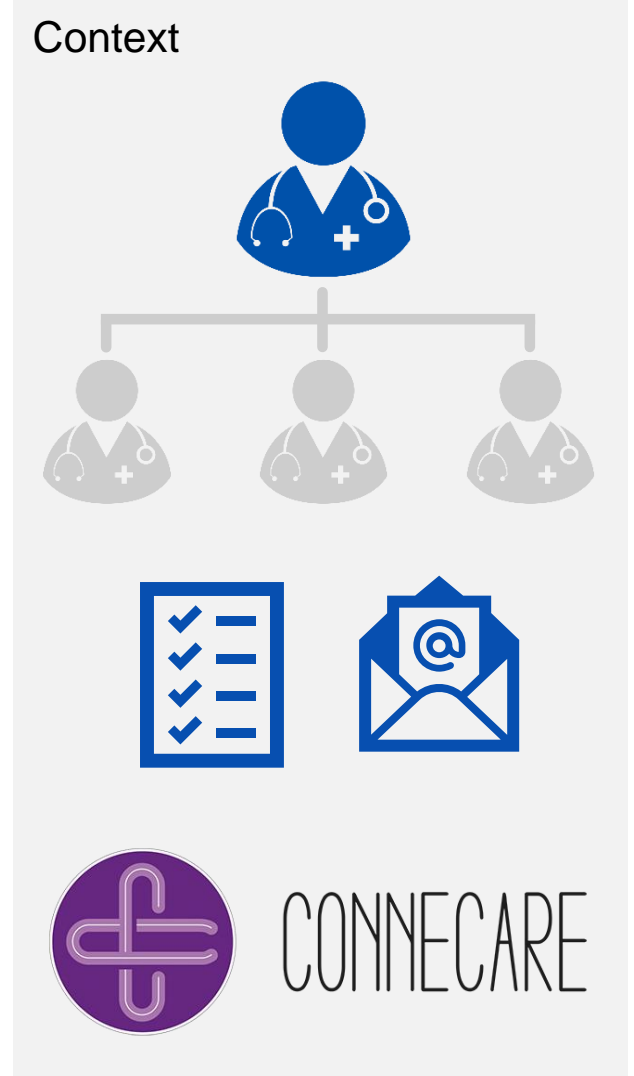
## Second Example – Case Management Overview

CONNECARE English Welcome: Felix

Home > My Cases

Case Name	State	Patient	Case Owner	Notifications	Messages	#Tasks
Dallas Case Study	5 minutes ago	Sarah Tylor (29)	Felix Michel			2
Dallas Case Study	3 days ago	Emily Jones (37)	Felix Michel	⚠		0
Dallas Case Study	3 days ago	Michael Johnson (41)	Felix Michel			0
Dallas Case Study	3 days ago	Christopher Wilson (22)	Felix Michel	⚠		0
Dallas Case Study	3 days ago	Lauren Williams (48)	Felix Michel			0
Dallas Case Study	6 days ago	James Davis (24)	Felix Michel	⚠		0
Dallas Case Study	6 days ago	David Brown (61)	Felix Michel			1
Dallas Case Study	6 days ago	William Moore (34)	Felix Michel			1
Dallas Case Study	7 days ago	Joshua Smith (37)	Felix Michel			0
Dallas Case Study	7 days ago	Ashley Brown (42)	Felix Michel			0
Dallas Case Study	10 days ago	Nicole Wilson (56)	Felix Michel		✉	0

?



# Challenges

1. Information is un- or semi-structured
2. Isolated solutions for specific problems
3. Proprietary licenses lead to vendor lock-ins

## 1. Information is un- or semi-structured

- [R1] Information extraction**
- [R1.1] Extraction of well-known entities
- [R1.2] Processing of natural language
- [R1.3] Support for user-defined detection patterns
- [R1.4] Annotation of extracted data in initial text

## 2. Isolated solutions for specific problems

- [R2] Third party integration**
- [R1.1] Integration of core features of third party system
- [R1.2] Multi-provider support
- [R1.3] Data updates through third party systems
- [R1.4] Task-mail linkage

## 3. Proprietary licenses lead to vendor lock-ins

- [R3] Open source license**



# Requirement Support amongst most common Tools

Category	Tool	Information Extraction (R1)				Third Party Integration (R2)				Open Source License (R3)	Reference
		<i>Extraction from structured data</i>	<i>Processing of natural language</i>	<i>Support for user-defined patterns</i>	<i>Annotation of extracted data in initial text</i>	<i>Integration of external system</i>	<i>Multi-provider support</i>	<i>Updates through third party system</i>	<i>Task-mail linkage</i>		
Established Mail Clients	Outlook (+Plugins)	○ (●)	○ (○)	○ (●)	○ (○)	○ (●)	○ (●)	○ (●)	● (●)	○ (○)	<a href="https://outlook.live.com/owa">outlook.live.com/owa</a>
	Thunderbird (+Plugins)	○ (○)	○ (○)	○ (○)	○ (○)	○ (○)	○ (●)	○ (○)	○ (○)	● (●)	<a href="https://www.thunderbird.net">www.thunderbird.net</a>
	Gmail (+Integrations)	● (●)	● (●)	○ (○)	○ (○)	○ (●)	○ (●)	○ (●)	● (○)	○ (○)	<a href="https://mail.google.com/mail">mail.google.com/mail</a>
Emergent Mail Clients	Newton	○	○	○	○	●	●	●	●	○	<a href="https://newtonhq.com">newtonhq.com</a>
	hiri	○	○	○	○	○	○	○	●	○	<a href="https://www.hiri.com">www.hiri.com</a>
	Mailbird	○	○	○	○	●	●	●	○	○	<a href="https://www.getmailbird.com">www.getmailbird.com</a>
Enterprise Management Platforms	Zoho One	○	○	○	○	●	●	●	○	○	<a href="https://www.zoho.com/mail">www.zoho.com/mail</a>
	Pega Platform	●	●	●	○	○	○	○	○	○	<a href="https://www.pega.com">www.pega.com</a>
	Asana	○	○	○	○	●	●	●	○	○	<a href="https://asana.com">asana.com</a>
Automation Platforms	Zapier (+Integrations)	● (●)	○ (●)	● (●)	○ (○)	● (○)	● (●)	○ (○)	○ (○)	○ (○)	<a href="https://zapier.com">zapier.com</a>
	Parseur	●	○	●	○	●	●	○	○	○	<a href="https://parseur.com">parseur.com</a>
	Parserr	●	○	●	○	●	●	○	○	○	<a href="https://parserr.com">parserr.com</a>
Intelligent Contextual Mail (ICM)		●	●	●	●	●	●	●	●	●	<a href="https://icm.in.tum.de">icm.in.tum.de</a>

Legend: ● = completely supported, ◐ = partly supported, ○ = not supported

# Requirement Support amongst most common Tools

## Established Mail Clients

- Exist for multiple years
- Widely used around the world
- Advanced e-mail functionality
- Native task management
- Full-fledged plugin system
- **Outlook**  
Business-grade mail client with high spread and high usage
- **Thunderbird**  
Free and open-source mail client with rather classic orientation
- **Gmail**  
Free but proprietary mail client & server targeted at personal use

Requirement	Outlook	Thunderbird	Gmail
1.1 Extraction from structured data	○(●)	○(○)	●(●)
1.2 Processing of natural language	○(○)	○(○)	●(●)
1.3 Support for user-defined patterns	○(●)	○(○)	○(○)
1.4 Annotation of extracted data in input	○(○)	○(○)	○(○)
2.1 Integration of external system	○(●)	○(○)	○(●)
2.2 Multi-provider support	○(●)	○(●)	○(●)
2.3 Updates through third party system	○(●)	○(○)	○(●)
2.4 Task-mail-linkage	◐(◐)	○(◐)	◐(◐)
3 Open source license	○(○)	●(●)	○(○)

# Requirement Support amongst most common Tools

## Emergent Mail Clients

- Released in the last years
- Functional improvements
- Modernized user experience
- Emphasize third party integrations
- Integrations mostly developed in-house
- Newton**  
Platform independent mail client emulating look and feel of a messenger app
- hiri**  
Business-oriented mail client with collaboration features for the Microsoft universe
- Mailbird**  
Highly customizable mail client with highest count of third party integrations

Requirement	Newton	hiri	Mailbird
1.1 Extraction from structured data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.2 Processing of natural language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.3 Support for user-defined patterns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.4 Annotation of extracted data in input	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.1 Integration of external system	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.2 Multi-provider support	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.3 Updates through third party system	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.4 Task-mail-linkage	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3 Open source license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Requirement Support amongst most common Tools

## Enterprise Management Platforms

- For managing and controlling businesses
- Bundles of multiple specialized modules
- Third party integrations for non-native functionality
- Often serve as central hub
- **Zoho One**  
Suite of ~40 integrated applications with third party integrations for otherwise missing functionality
- **Pega Platform**  
Case Management Platform designed as a base for quickly developing own business applications
- **Asana**  
Single application more focused on managing projects with distributed teams

Requirement	Zoho One	Pega Platform	Asana
1.1 Extraction from structured data	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
1.2 Processing of natural language	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
1.3 Support for user-defined patterns	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
1.4 Annotation of extracted data in input	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.1 Integration of external system	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.2 Multi-provider support	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.3 Updates through third party system	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.4 Task-mail-linkage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Open source license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Requirement Support amongst most common Tools

## Automation Platforms

- For automation of repeatable processes
- Integrate arbitrary external systems by standardized means
- Backend-Tool, UI only for configuration
- Often triggered by (external) events
- **Zapier**  
Wide-spread automation platform with good integration support and native email parser
- **Parseur**  
Mainly rule-based email parser that features simple UI to enable configuration by non-technical users
- **Parserr**  
Similar to Parseur, but provides advanced rule-based analysis instead of focusing on UI

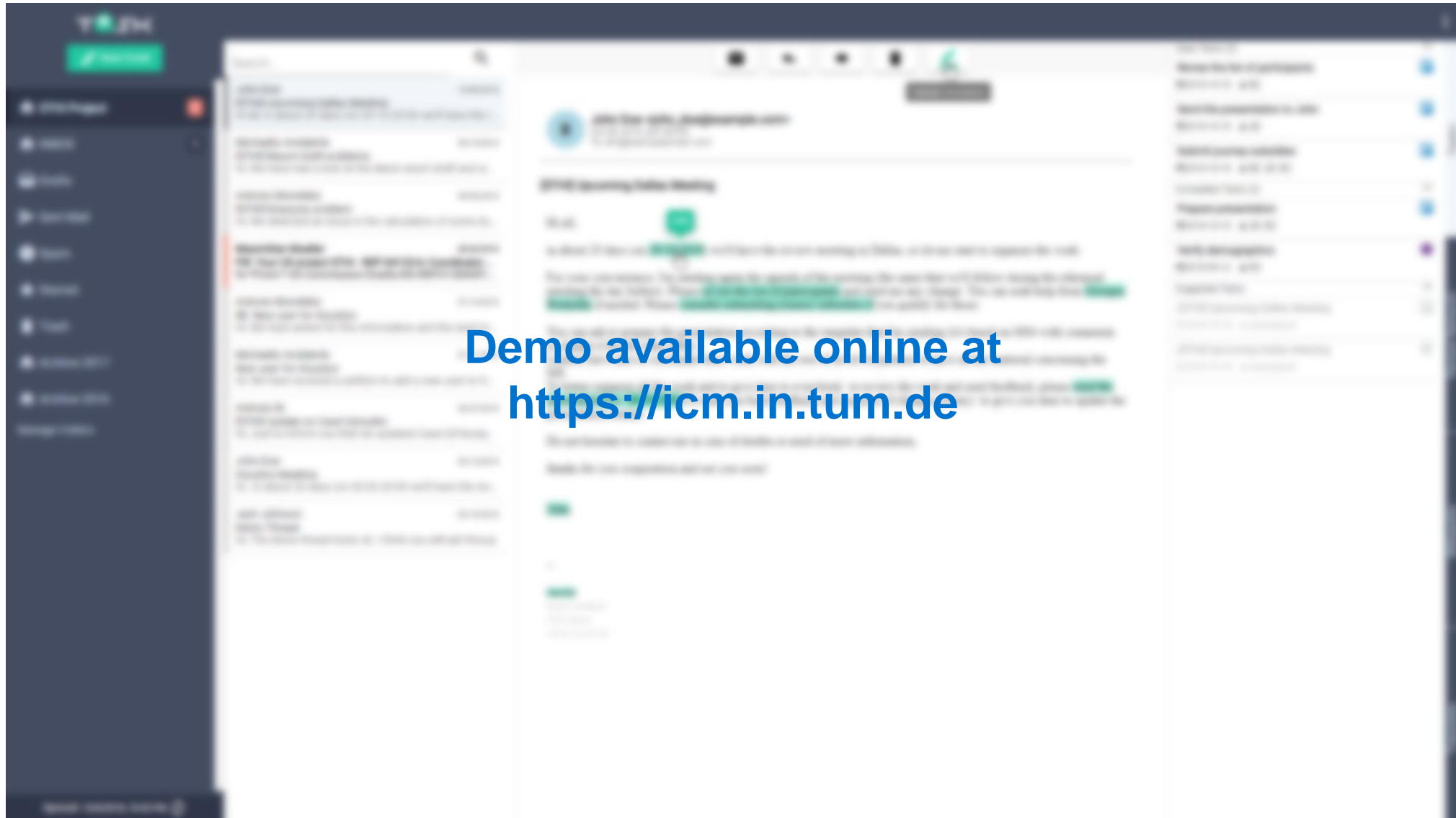
Requirement	Zapier	Parseur	Parserr
1.1 Extraction from structured data	●(●)	●	●
1.2 Processing of natural language	○(●)	○	○
1.3 Support for user-defined patterns	●(●)	●	●
1.4 Annotation of extracted data in input	○(○)	○	○
2.1 Integration of external system	◐(◐)	◐	◐
2.2 Multi-provider support	●(●)	●	●
2.3 Updates through third party system	○(○)	○	○
2.4 Task-mail-linkage	○(○)	○	○
3 Open source license	○(○)	○	○

# Requirement Support amongst most common Tools

Category	Tool	Information Extraction (R1)				Third Party Integration (R2)				Open Source License (R3)	Reference
		<i>Extraction from structured data</i>	<i>Processing of natural language</i>	<i>Support for user-defined patterns</i>	<i>Annotation of extracted data in initial text</i>	<i>Integration of external system</i>	<i>Multi-provider support</i>	<i>Updates through third party system</i>	<i>Task-mail linkage</i>		
Established Mail Clients	Outlook (+Plugins)	○ (●)	○ (○)	○ (●)	○ (○)	○ (●)	○ (●)	○ (●)	● (●)	○ (○)	<a href="https://outlook.live.com/owa">outlook.live.com/owa</a>
	Thunderbird (+Plugins)	○ (○)	○ (○)	○ (○)	○ (○)	○ (○)	○ (●)	○ (○)	○ (○)	● (●)	<a href="https://www.thunderbird.net">www.thunderbird.net</a>
	Gmail (+Integrations)	● (●)	● (●)	○ (○)	○ (○)	○ (●)	○ (●)	○ (●)	● (○)	○ (○)	<a href="https://mail.google.com/mail">mail.google.com/mail</a>
Emergent Mail Clients	Newton	○	○	○	○	●	●	●	●	○	<a href="https://newtonhq.com">newtonhq.com</a>
	hiri	○	○	○	○	○	○	○	●	○	<a href="https://www.hiri.com">www.hiri.com</a>
	Mailbird	○	○	○	○	●	●	●	○	○	<a href="https://www.getmailbird.com">www.getmailbird.com</a>
Enterprise Management Platforms	Zoho One	○	○	○	○	●	●	●	○	○	<a href="https://www.zoho.com/mail">www.zoho.com/mail</a>
	Pega Platform	●	●	●	○	○	○	○	○	○	<a href="https://www.pega.com">www.pega.com</a>
	Asana	○	○	○	○	●	●	●	○	○	<a href="https://asana.com">asana.com</a>
Automation Platforms	Zapier (+Integrations)	● (●)	○ (●)	● (●)	○ (○)	● (○)	● (●)	○ (○)	○ (○)	○ (○)	<a href="https://zapier.com">zapier.com</a>
	Parseur	●	○	●	○	●	●	○	○	○	<a href="https://parseur.com">parseur.com</a>
	Parserr	●	○	●	○	●	●	○	○	○	<a href="https://parserr.com">parserr.com</a>
Intelligent Contextual Mail (ICM)		●	●	●	●	●	●	●	●	●	<a href="https://icm.in.tum.de">icm.in.tum.de</a>

Legend: ● = completely supported, ◐ = partly supported, ○ = not supported

# Proposed Solution – Intelligent Contextual Mail



**Demo available online at  
<https://icm.in.tum.de>**

- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

- Search...
- John Doe 10/08/2018  
[STHI] Upcoming Dallas Meeting  
Hi all, in about 20 days (on 29.10.2018) we'll have the r...
  - Michaelio Andalerte 09/15/2018  
[STHI] Report draft problems  
Hi, We have had a look at the latest report draft and w...
  - Antonio Mondelez 09/06/2018  
[STHI] timezone problem  
Hi, We detected an issue in the calculation of some du...
  - Maximilian Mueller** 08/20/2018  
**FW: Your US project STHI - REP-54123-6: Coordinator ...**  
fyi \*From:\* US Commission [mailto:NO-REPLY-GRANT-...
  - Antonio Mondelez 07/12/2018  
RE: New user for Houston  
Hi, We have asked for this information and the need to...
  - Michaelio Andalerte 07/11/2018  
New user for Houston  
Hi, We have received a petition to add a new user to H...
  - Antonio M. 04/27/2018  
[STHI] Update on Case1@Austin  
Hi, Just to inform you that we updated Case1@Tarrag...
  - John Doe 02/14/2018  
Houston Meeting  
Hi , in about 20 days (on 05.03.2018) we'll have the rev...
  - Jack Johnson 02/10/2018  
Demo Thread  
Hi, The demo thread looks ok. I think you will get throug

**B** John Doe <john\_doe@example.com>  
Oct 08, 2018, 4:47:45 PM  
To: sthi@exampledomain.com

[STHI] Upcoming Dallas Meeting

Hi all,

date

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs). Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

John

...

John Doe  
Project Coordinator  
TUM, Munich  
+49 89 123 456 789



Highlight Annotations

- Open Tasks (3)
- Revise the list of participants  
2018-10-18 ES
  - Send the presentation to John  
2018-10-18 JB
  - Submit journey subsidies  
2018-10-18 ES JB SW
- Completed Tasks (2)
- Prepare presentation  
2018-10-18 ES JB SW
  - Verify demographics  
2018-09-12 FM
- Suggested Tasks
- [STHI] Upcoming Dallas Meeting  
2018-10-18 Unassigned
  - [STHI] Upcoming Dallas Meeting  
2018-10-18 Unassigned



- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

Folder List

Search...

- John Doe 10/08/2018  
[STHI] Upcoming Dallas Meeting  
Hi all, in about 20 days (on 29.10.2018) we'll have the r...
- Michaelio Andalerte 09/15/2018  
[STHI] Report draft problems  
Hi, We have had a look at the latest report draft and w...
- Antonio Mondelez 09/06/2018  
[STHI] timezone problem  
Hi, We detected an issue in the calculation of some du...
- Maximilian Mueller 08/20/2018  
FW: Your US project STHI - REP-54123-6: Coordinator ...  
fyi \*From:\* US Commission [mailto:NO-REPLY-GRANT-...
- Antonio Mondelez 07/12/2018  
RE: New user for Houston  
Hi, We have asked for this information and the need to...
- Michaelio Andalerte 07/11/2018  
New user for Houston  
Hi, We have received a petition to add a new user to H...
- Antonio M. 04/27/2018  
[STHI] Update on Case1@Austin  
Hi, Just to inform you that we updated Case1@Tarraq...
- John Doe 02/14/2018  
Houston Meeting  
Hi, in about 20 days (on 05.03.2018) we'll have the rev...
- Jack Johnson 02/10/2018  
Demo Thread  
Hi, The demo thread looks ok. I think you will get throug

E-Mail List



Highlight Annotations

**B** John Doe <john\_doe@example.com>  
Oct 08, 2018, 4:47:45 PM  
To: sthi@exampledomain.com

[STHI] Upcoming Dallas Meeting

Hi all,

date

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs). Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

John

John Doe  
Project Coordinator  
TUM, Munich  
+49 89 123 456 789

Detail View

Open Tasks (3)

Revise the list of participants

2018-10-18 ES

Send the presentation to John

2018-10-18 JB

Submit journey subsidies

2018-10-18 ES JB SW

Completed Tasks (2)

Prepare presentation

2018-10-18 JB SW

Verify demographics

2018-09-12 FM

Suggested Tasks

[STHI] Upcoming Dallas Meeting

2018-10-18 Unassigned

[STHI] Upcoming Dallas Meeting

2018-10-18 Unassigned

Context Bar

- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

Search...

- John Doe [STHI] Upcoming Dallas Meeting 10/08/2018  
Hi all, in about 20 days (on 29.10.2018) we'll have the r...
- Michaelio Andalerte [STHI] Report draft problems 09/15/2018  
Hi, We have had a look at the latest report draft and w...
- Antonio Mondelez [STHI] timezone problem 09/06/2018  
Hi, We detected an issue in the calculation of some du...
- Maximilian Mueller** 08/20/2018  
**FW: Your US project STHI - REP-54123-6: Coordinator ...**  
fyi \*From:\* US Commission [mailto:NO-REPLY-GRANT-...
- Antonio Mondelez RE: New user for Houston 07/12/2018  
Hi, We have asked for this information and the need to...
- Michaelio Andalerte New user for Houston 07/11/2018  
Hi, We have received a petition to add a new user to H...
- Antonio M. [STHI] Update on Case1@Austin 04/27/2018  
Hi, Just to inform you that we updated Case1@Tarrag...
- John Doe Houston Meeting 02/14/2018  
Hi, in about 20 days (on 05.03.2018) we'll have the rev...
- Jack Johnson Demo Thread 02/10/2018  
Hi, The demo thread looks ok. I think you will get throug

**B** John Doe <john\_doe@example.com>  
Oct 08, 2018, 4:47:45 PM  
To: sthi@example.com

### Conversation-Task-Linkage

#### [STHI] Upcoming Dallas Meeting

Hi all,

in about 20 days (on **29.10.2018**) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please **revise the list of participants** and send me any change. You can seek help from **Georges Prettjohn** if needed. Please **consider submitting journey subsidies** if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs). Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please **send the presentation by 18.10.2018** I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

### Highlighted Annotations in HTML Mail

**John**

...

**John Doe**  
Project Coordinator  
TUM, Munich  
+49 89 123 456 789

Highlight Annotations

- Open Tasks (3)
- Revise the list of participants 2018-10-18 ES
  - Send the presentation to John 2018-10-18 JB
  - Submit journey subsidies 2018-10-18 ES JB SW
- Completed Tasks (2)
- Prepare presentation 2018-10-18 ES JB SW
  - Verify demographics 2018-09-12 FM
- Suggested Tasks
- [STHI] Upcoming Dallas Meeting 2018-10-18 Unassigned
  - [STHI] Upcoming Dallas Meeting 2018-10-18 Unassigned

### Multi-Provider-Support

### Task Suggestions

- STH Project
- INBOX
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

- Search...
- John Doe  
[STH] Upcoming Dallas Meeting  
Hi all, in about 20 days (on 29. 10 2018) we
  - Michaelo Andalerle  
[STH] Report draft problems  
Hi, We have had a look at the latest report
  - Antonio Mundelez  
[STH] Timezone problem  
Hi, We detected an issue in the calculation
  - Maximilian Mueller  
FW: Your US project [STH] - REP-041234-6  
Hi "From:" US Commission [mailto:NO-RE]
  - Antonio Mundelez  
RE: New user for Houston  
Hi, We have asked for this information and
  - Michaelo Andalerle  
New user for Houston  
Hi, We have received a petition to add a ne
  - Antonio M.  
[STH] Update on Case1@Austin  
Hi, Just to inform you that we updated Ca
  - John Doe  
Houston Meeting  
Hi, in about 20 days (on 05.03 2018) we'
  - Jack Johnson  
Demo Thread  
Hi, The demo thread looks ok. I think you'

Monitoring Prescription (Systolic/Diastolic Blood Pressure) ×

Context ▾

Metadata ▾

Content ▴

**Measure type**  
Systolic/Diastolic Blood Pressure

**Min value allowed**  
50, 60

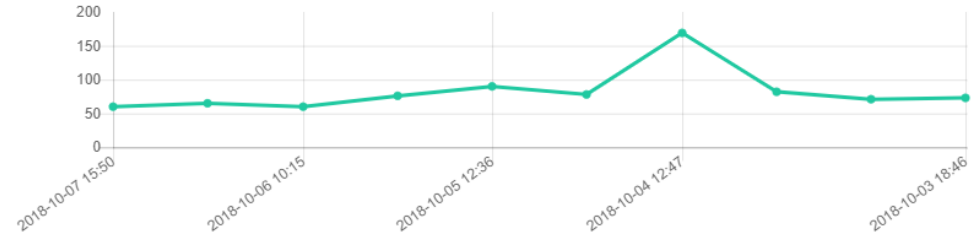
**Max value allowed**  
160, 190

**Start date**  
2018-10-03

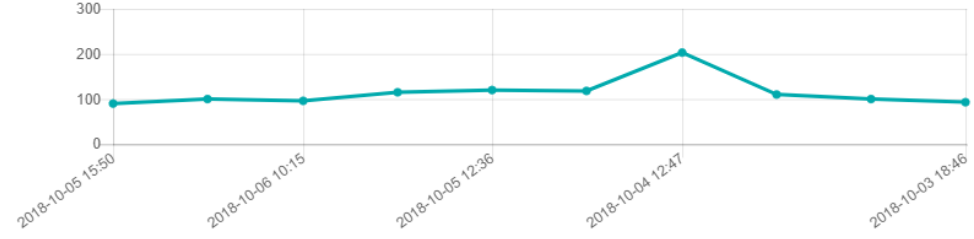
**End date**  
2018-10-14

**Slots to take the measurements**  
Any time a day

**Measurement**  
Blood Pressure Diastolic



Blood Pressure Systolic



Unlink

**Task Title**

**Task Context**

**Task Metadata**

**Task Content (provider-specific)**

- Open Tasks (3)
- Revise the list of participants  
2018-10-18
- Send the presentation to John  
2018-10-18
- Submit journey subsidies  
2018-10-18
- Prepare presentation  
2018-10-18
- Verify demographics  
2018-09-12
- Supporter Tasks
- [STH] Upcoming Dallas Meeting  
2018-10-18
- [STH] Upcoming Dallas Meeting  
2018-10-18

- John Doe  
[STH] Upcoming Dallas Meeting  
Hi all, in about 20 days (on 29.10.2018) we...
- Michaelo Andalerle  
[STH] Report draft problems  
Hi, We have had a look at the latest report...
- Antonio Mundelez  
[STH] Timezone problem  
Hi, We detected an issue in the calculation...
- Maximilian Mueller  
FW: Your US project [STH - REP-541234-6] C...  
Hi "From: US Commission [mailto:NO-REP...
- Antonio Mundelez  
RE: New user for Houston  
Hi, We have asked for this information and...
- Michaelo Andalerle  
New user for Houston  
Hi, We have received a petition to add a ne...
- Antonio M...  
[STH] Update on Case1@Austin  
Hi, Just to inform you that we updated Case...
- John Doe  
Houston Meeting  
Hi, in about 20 days (on 05.03.2018) we'll...
- Jack Johnson  
Demo Thread  
Hi, The demo thread looks ok. I think you w...

Task Title \*

[STH] Upcoming Dallas Meeting

consider submitting journey subsidies if

revise the list of participants

send the presentation by 18.10.2018

Metadata Title Suggestions ^

Due Date | Assignees

2018-10-18 | Emma Smith

2018-10-29

Date Suggestions

Task Description

Confirm

Revise the list of participants

Context

Board \* | List \*

Study Texas Heart Institute | Dallas Meeting

Metadata

Due Date

2018-10-18

Content

Task Description

see team share for list of part

Mentioned members

- Georges Prettjohn
- John Doe

Board members

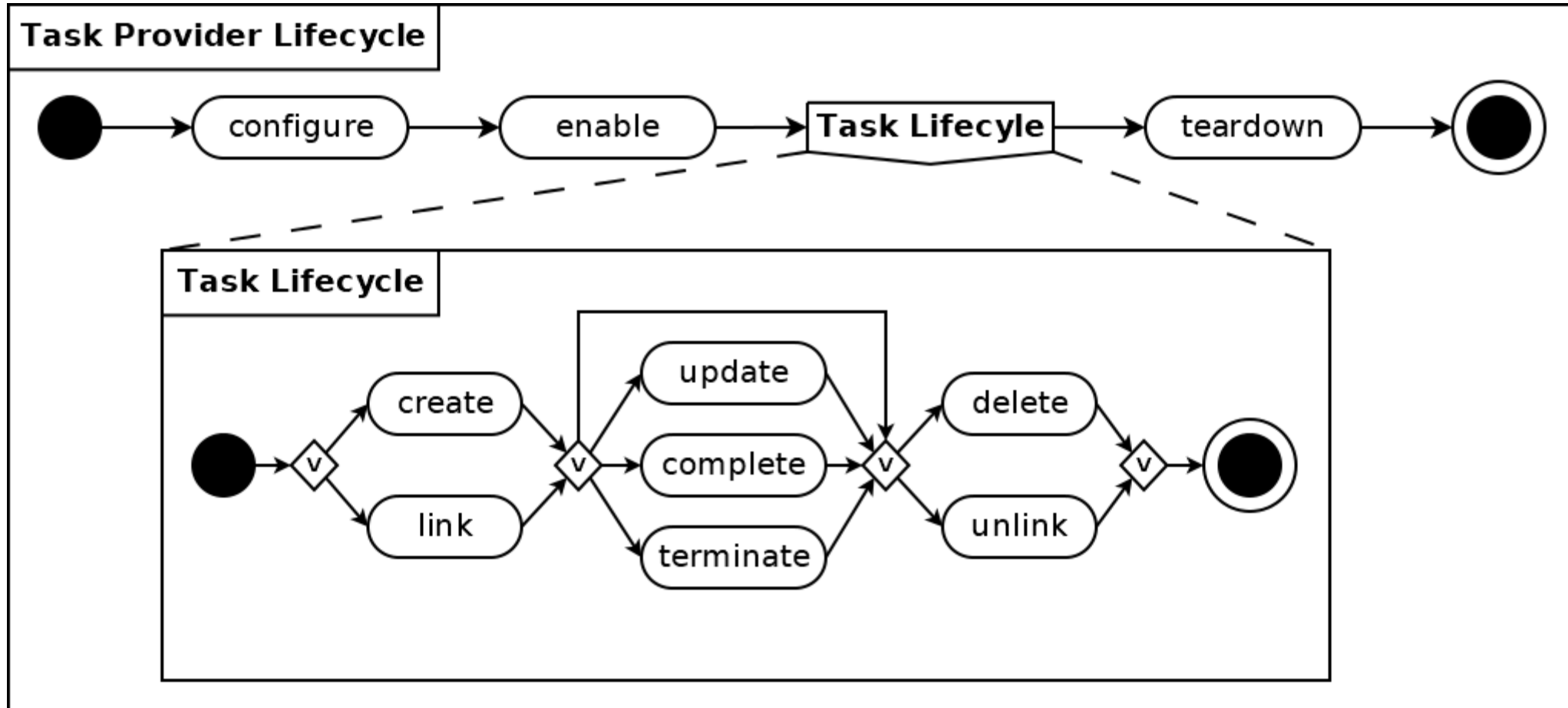
- Emma Smith
- Jacob Brown

Owner Suggestions

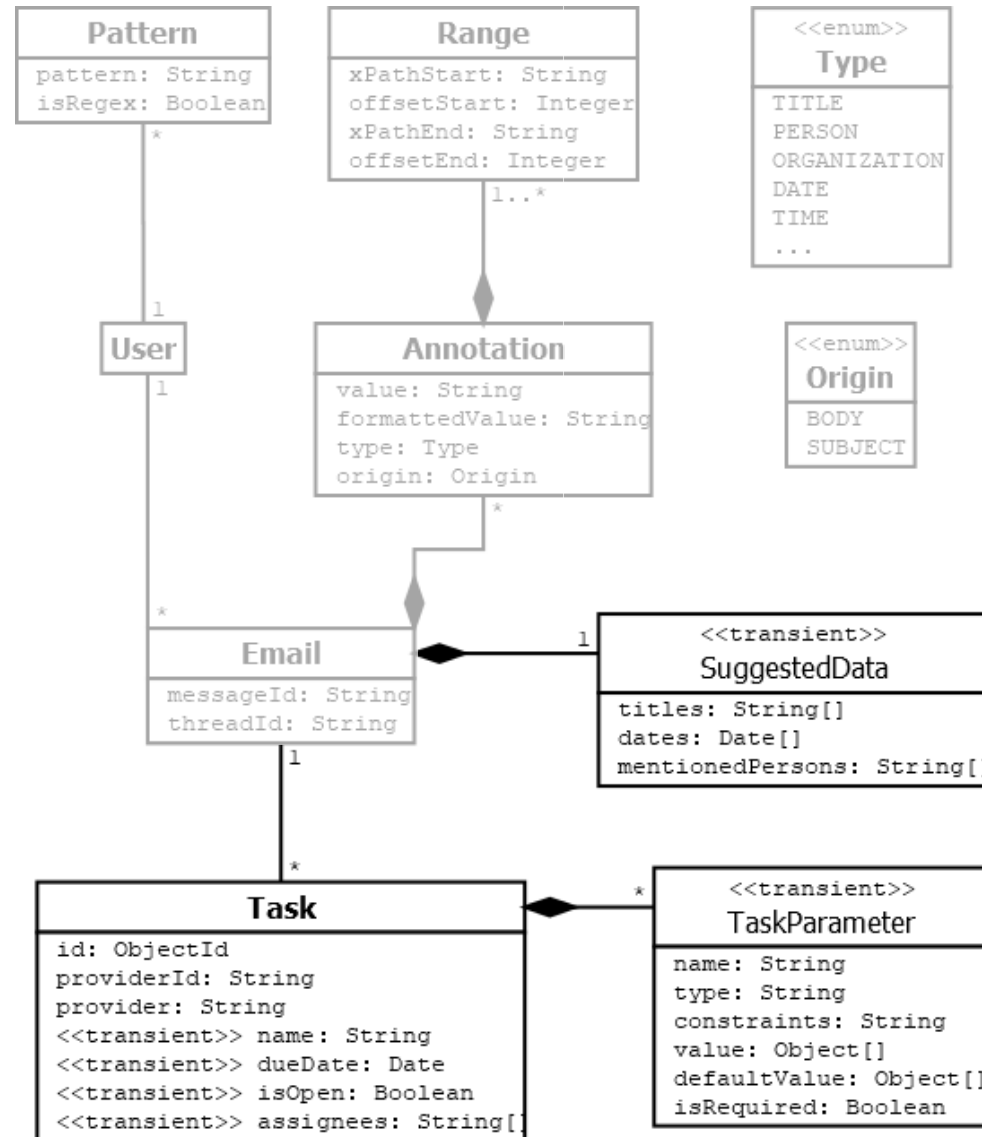
Update | Archive | Delete | Unlink

- Open Tasks (3)
- Revise the list of participants  
2018-10-18
- Send the presentation to John  
2018-10-18
- Submit journey subsidies  
2018-10-18
- Completed Tasks (2)
- Prepare presentation  
2018-10-18
- Verify demographics  
2018-09-12
- Suggested Tasks
- [STH] Upcoming Dallas Meeting  
2018-10-18
- [STH] Upcoming Dallas Meeting  
2018-10-18

# Generic Task and Task Provider Lifecycle



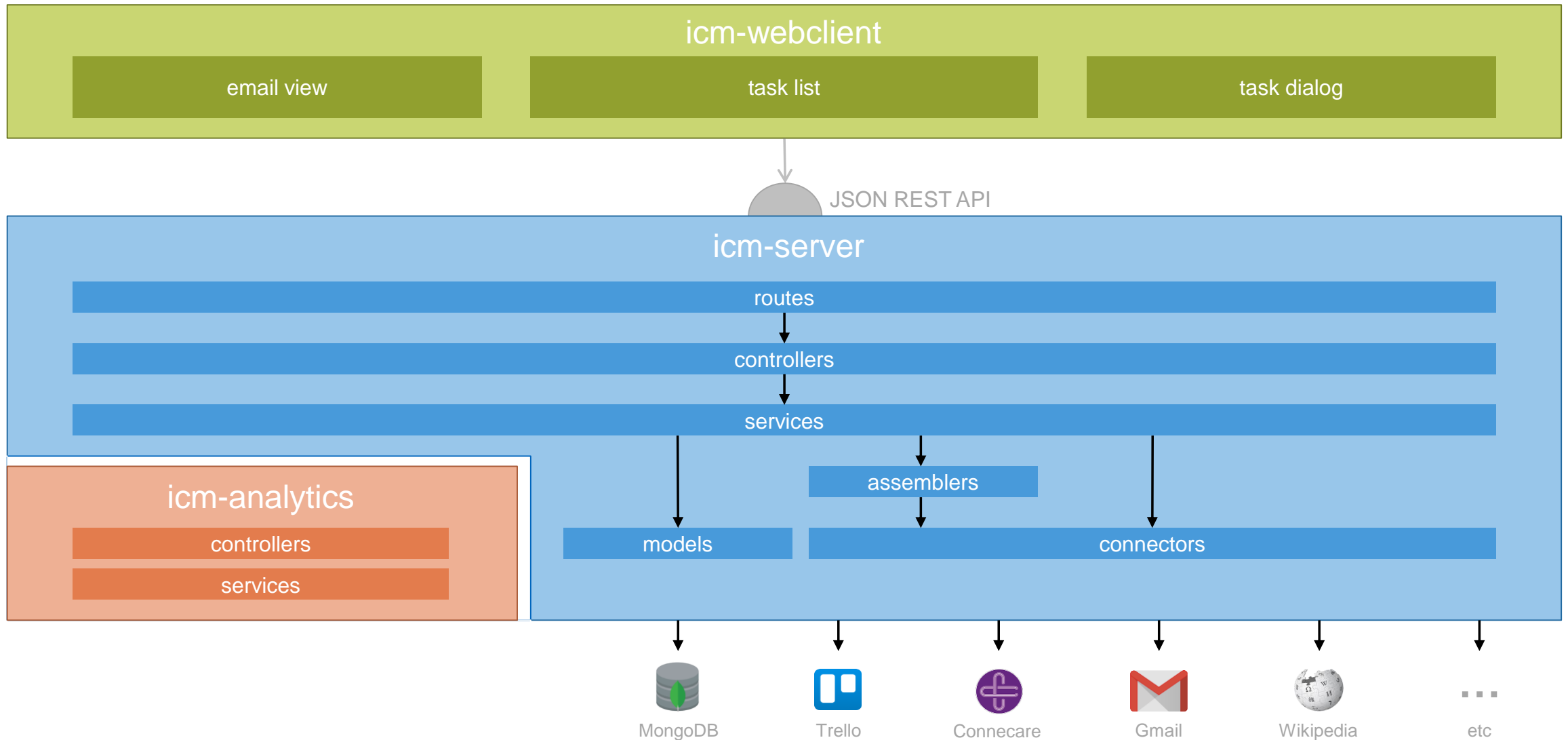
# UML Class Diagram



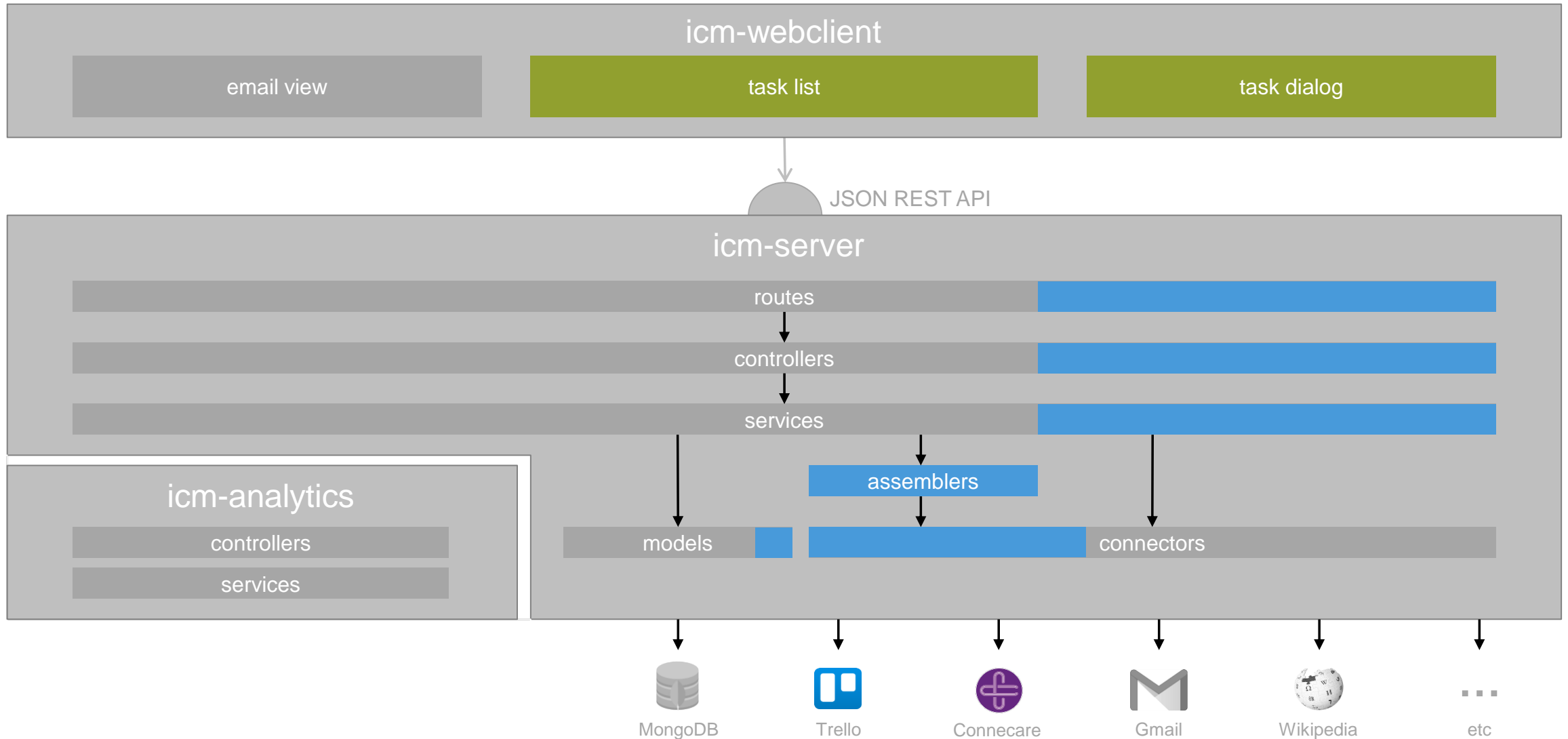
Existing Classes

(Re-)Implemented Classes

# Architecture Overview



# Architecture Overview – Main Contribution





# Initial Research Goals

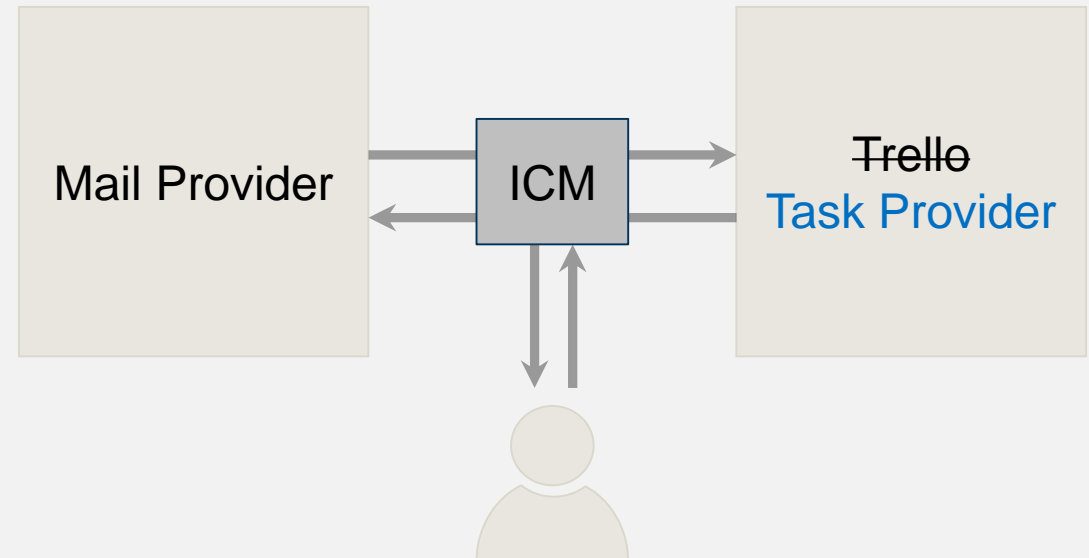
## Goal 1

Compare the integration capabilities of existing solutions for email and task management according to a set of relevant characteristics.

Gmail	✓	✓	✓		✓
Outlook	✓	✓			✓
Asana	✓		✓		
Parseur	✓	✓			✓
Zapier	✓				
Pega Platform	✓	✓		✓	✓
Newton		✓		✓	

## Goal 2

Generify ICM's task management integration to support multiple task providers and provide a proof of concept by integrating Connecare.



## Conclusion

- Identification of main requirements for a mail client with contextual task support
  - Existing tools fulfill only some of the requirements
  - ICM manages to do this ...
    - ... by providing seamless integration between mail client and task management tool
    - ... by identifying and suggesting relevant information when creating or editing a task
    - ... by enabling users to improve the suggestions using personalized patterns
    - ... while maintaining an extensible architecture
    - ... but is only a prototype that needs additional effort for productive use (general stabilization, improved error handling)
- Paper submitted to **ACM IUI 2019** with minor modifications (Conference on Intelligent User Interfaces)



B.Sc.

**Simon Bönisch**

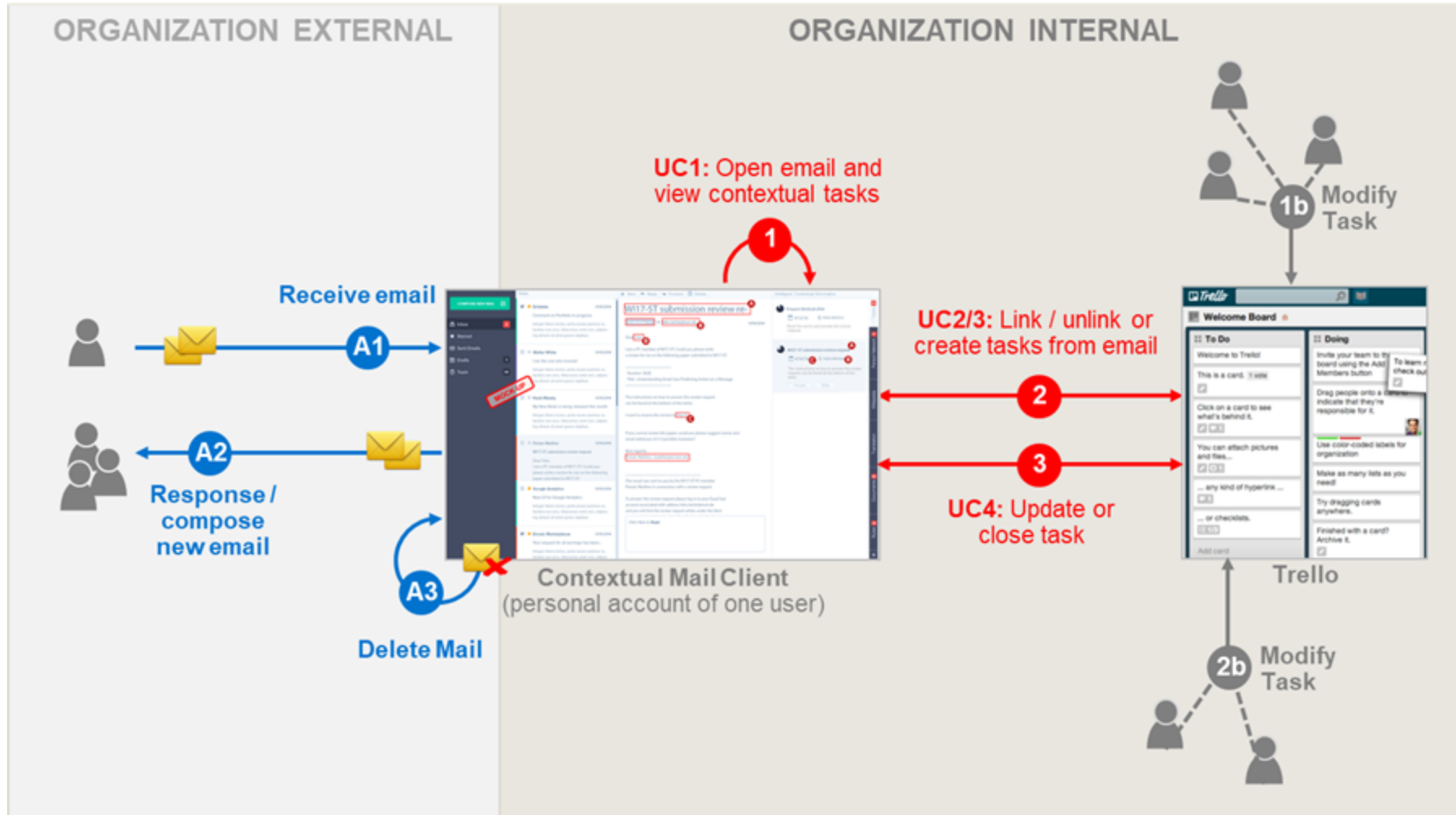
Technische Universität München  
Faculty of Informatics  
Chair of Software Engineering for Business  
Information Systems

Boltzmannstraße 3  
85748 Garching bei München

ga34toz@mytum.de  
[www.matthes.in.tum.de](http://www.matthes.in.tum.de)



Backup



Basic email actions are colored in blue. Use cases are colored in red, optional steps are colored in gray.

## Site of Surgery



Context



Metadata



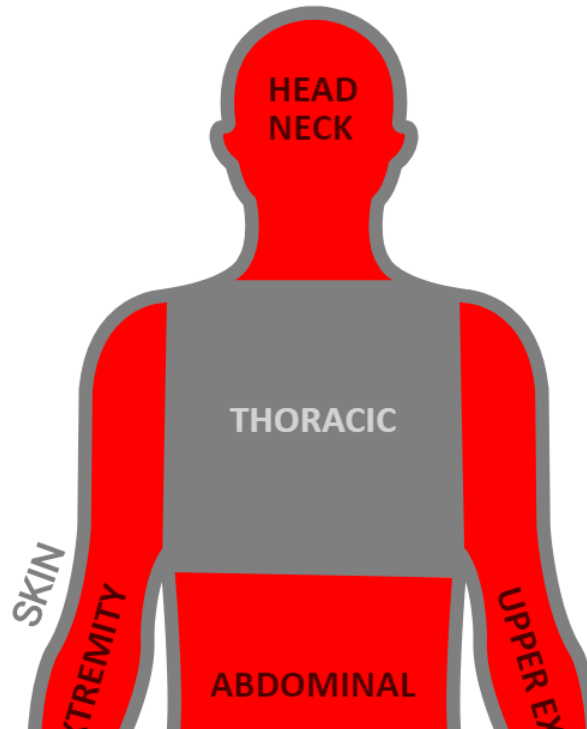
Content



### Sites of Surgery

- Head/Neck
- Thoracic
- Upper Extremity
- Abdominal
- Pelvic
- Lower Extremity
- Skin

### Site of Surgery



Update

Complete

Terminate

Unlink

- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

- Search...
- John Doe 10/08/2018  
[STHI] Upcoming Dallas Meeting  
Hi all, in about 20 days (on 29.10.2018) we'll have the r...
  - Michaelio Andalerte 09/15/2018  
[STHI] Report draft problems  
Hi, We have had a look at the latest report draft and w...
  - Antonio Mondelez 09/06/2018  
[STHI] timezone problem  
Hi, We detected an issue in the calculation of some du...
  - Maximilian Mueller** 08/20/2018  
**FW: Your US project STHI - REP-54123-6; Coordinator ...**  
fyi \*From:\* US Commission [mailto:NO-REPLY-GRANT-...]
  - Antonio Mondelez 07/12/2018  
RE: New user for Houston  
Hi, We have asked for this information and the need to...
  - Michaelio Andalerte 07/11/2018  
New user for Houston  
Hi, We have received a petition to add a new user to H...
  - Antonio M. 04/27/2018  
[STHI] Update on Case1@Austin  
Hi, Just to inform you that we updated Case1@Tarraa...
  - John Doe 02/14/2018  
Houston Meeting  
Hi , in about 20 days (on 05.03.2018) we'll have the rev...
  - Jack Johnson 02/10/2018  
Demo Thread  
Hi, The demo thread looks ok. I think you will get throug

Highlight Annotations

**B** John Doe <john\_doe@example.com>  
Oct 08, 2018, 4:47:45 PM  
To: sthi@example.com

[STHI] Upcoming Dallas Meeting

Hi all,

date

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs).

Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

John

---

John Doe  
Project Coordinator  
TUM, Munich  
+49 89 123 456 789

Search for contacts...  
Georges Prettjohn

**Dr. med. Georges Prettjohn**  
Associate Professor | Balistreri and Sons | Sales

- Dr. Dr. Francklin Havenhand  
Purdy LLC
- Gui Le Hucquet  
Koss-Turner

**Jamesy George**  
No company details

- Dr. Adrea Cadalleder  
Schamberger-Goodwin
- Prof. Dr. Whitney Golborne  
Breitenberg, Osinski and Hermann
- Prof. Dr. Dr. h. c. Wesley Anan  
No company information available  
Show more... (7)

**George Fearnhough**  
Operator

- Lilli Smalthwaite  
Hand-Emmerich
- Dr. Rasla Keilloh  
No company information available
- Prof. Elmer Derle  
No company information available  
Show more... (7)

**Dr. Dr. Georges Bunday**  
Recruiting Manager

- Deanna Lynas  
No company information available
- Emiline Sture  
No company information available
- Prof. Dr. Dr. h. c. Wesley Anan  
No company information available  
Show more... (7)

- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

- Search...
- John Doe 10/08/2018

[STHI] Upcoming Dallas Meeting

Hi all, in about 20 days (on 29.10.2018) we'll have the r...
  - Michaelio Andalerte 09/15/2018

[STHI] Report draft problems

Hi, We have had a look at the latest report draft and w...
  - Antonio Mondelez 09/06/2018

[STHI] timezone problem

Hi, We detected an issue in the calculation of some du...
  - Maximilian Mueller 08/20/2018

FW: Your US project STHI - REP-54123-6; Coordinator ...

fvi \*From:\* US Commission [mailto:NO-REPLY-GRANT-...
  - Antonio Mondelez 07/12/2018

RE: New user for Houston

Hi, We have asked for this information and the need to...
  - Michaelio Andalerte 07/11/2018

New user for Houston

Hi, We have received a petition to add a new user to H...
  - Antonio M. 04/27/2018

[STHI] Update on Case1@Austin

Hi, Just to inform you that we updated Case1@Tarraa...
  - John Doe 02/14/2018

Houston Meeting

Hi , in about 20 days (on 05.03.2018) we'll have the rev...
  - Jack Johnson 02/10/2018

Demo Thread

Hi, The demo thread looks ok. I think you will get throug







Highlight Annotations

**B** John Doe <john\_doe@example.com>  
 Oct 08, 2018, 4:47:45 PM  
 To: sthi@example.com

**[STHI] Upcoming Dallas Meeting**

Hi all,

in about 20 days (on 29.10.2018) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please revise the list of participants and send me any change. You can seek help from Georges Prettjohn if needed. Please consider submitting journey subsidies if you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs).

Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please send the presentation by 18.10.2018 I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

**John**

...

**John Doe**  
 Project Coordinator  
 TUM, Munich  
 +49 89 123 456 789

Systolic blood pressure

**Blood pressure (BP)** is the pressure of circulating blood on the walls of blood vessels. Used without further specification, "blood pressure" usually refers to the pressure in large arteries of the systemic circulation. Blood pressure is usually expressed in terms of the systolic pressure (maximum during one heart beat) over diastolic pressure (minimum in between two heart beats) and is measured in millimeters of mercury (mmHg), above the surrounding atmospheric pressure.

Blood pressure is one of the vital signs, along with respiratory rate, heart rate, oxygen saturation, and body temperature. Normal resting blood pressure in an adult is approximately 120 millimetres of mercury (16 kPa) systolic, and 80 millimetres of mercury (11 kPa) diastolic, abbreviated "120/80 mmHg".

Traditionally, blood pressure was measured non-invasively using a mercury-tube sphygmomanometer, or an aneroid gauge, which is still generally considered to be the gold standard of accuracy for auscultatory readings. More recently other semi-automated methods have become common, largely due to concerns about potential mercury toxicity, although cost and ease of use have also influenced this trend. Early automated alternatives to mercury-tube sphygmomanometers were often seriously inaccurate, but validated devices allow for an average difference between two standardized reading methods of 5 mm Hg or less and a standard deviation of less than 8 mm Hg.

Blood pressure is influenced by cardiac output, total peripheral resistance and arterial stiffness and varies depending on situation, emotional state, activity, and relative health/disease states. In the short term, blood pressure is regulated by baroreceptors which act via the brain to influence nervous and endocrine systems.

Blood pressure that is low is called hypotension, and pressure that is consistently high is hypertension. Both have many causes and may be of sudden onset or of long duration. Long-term hypertension is a risk factor for many diseases, including heart disease, stroke and kidney failure. Long-term hypotension is more common than long-term hypertension, which often goes undetected because of infrequent monitoring and the absence of symptoms.



- STHI Project 1
- INBOX 3
- Drafts
- Sent Mail
- Spam
- Starred
- Trash
- Archive 2017
- Archive 2016
- Manage Folders

Search...	Q
John Doe [STHI] Upcoming Dallas Meeting Hi all, in about 20 days (on 29.10.2018) we'll have the r...	10/08/2018
Michaelio Andalerte [STHI] Report draft problems Hi, We have had a look at the latest report draft and w...	09/15/2018
Antonio Mondelez [STHI] timezone problem Hi, We detected an issue in the calculation of some du...	09/06/2018
<b>Maximilian Mueller</b> <b>FW: Your US project STHI - REP-54123-6; Coordinator ...</b> fyi *From:* US Commission [mailto:NO-REPLY-GRANT-...	08/20/2018
Antonio Mondelez RE: New user for Houston Hi, We have asked for this information and the need to...	07/12/2018
Michaelio Andalerte New user for Houston Hi, We have received a petition to add a new user to H...	07/11/2018
Antonio M. [STHI] Update on Case1@Austin Hi, Just to inform you that we updated Case1@Tarraa...	04/27/2018
John Doe Houston Meeting Hi , in about 20 days (on 05.03.2018) we'll have the rev...	02/14/2018
Jack Johnson Demo Thread Hi, The demo thread looks ok. I think you will get throug	02/10/2018

Highlight Annotations

**B** John Doe <john\_doe@example.com>  
 Oct 08, 2018, 4:47:45 PM  
 To: sthi@exampldomain.com

**[STHI] Upcoming Dallas Meeting**

Hi all,

in about 20 days (on **29.10.2018**) we'll have the review meeting in Dallas, so let me start to organize the work.

For your convenience, I'm sending again the agenda of the meeting (the same that we'll follow during the rehearsal meeting the day before). Please **revise the list of participants** and send me any change. You can seek help from **Georges Prettjohn** if needed. Please **consider submitting journey subsidies if** you qualify for those.

You can ask to prepare the presentation according to the template that I'm sending (it's based on MS4 with comments to change it for the other MSs). Leaders have also to coordinate their work with the rest of involved partners to have all the material concerning the MS.

To better organize all the work and to give time to everybody to review the work and send feedback, please **send the presentation by 18.10.2018** I'll send you back feedback and requests of changes (if any) to give you time to update the presentation ontime.

Do not hesitate to contact me in case of doubts or need of more information,

thanks for you cooperation and see you soon!

**John**

...

**John Doe**  
 Project Coordinator  
 TUM, Munich  
 +49 89 123 456 789

Search for translations...  
 revise

**revise**

- überprüfen
- überarbeiten
- (etw.Akk) revidieren
- abändern
- bearbeiten
- verbessern

**revise**

- wiederholen



- Account
- Email Settings
- Contact Settings
- Task Settings
- Patterns

## Pattern Management

### Current Patterns

- please abc
- Do you have any idea abc
- (?<=Could you).\*(?:[!?!]) .\*
- (?<=could you).\*(?:[!?!]) .\*

Use as Regex