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# ONBOARDING

## Microservice2Go Part 1

*C&M Practical Material*  
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This M2Go document describes the onboarding process for all students who work at C&M. The onboarding tasks to be fulfilled vary depending on the type of work a student performs:

- M2Go: Student who takes part in the practical course and/or seminar
- PSE/TES: Student who is member of a PSE (Praxis der Software-Entwicklung) or TES (TEam-projekt Softwareentwicklung) team
- BaMa: Student who writes a Bachelor (Ba) or Master (Ma) thesis at C&M

A further type designation used in this document is "All" which stands for all (types of) C&M students. The (sub-)exercises which are marked with "All" are exactly the ones that have to be carried out by students who only visit the WASA lecture, but who do not participate in a practical course or seminar.

At C&M, the onboarding process is defined by exercises which consist of a number of sub-exercises. By solving the exercises of this first M2Go part, the C&M students become familiar with C&M's most relevant cooperation rules by applying them to their personal working environment.

The information which onboarding tasks must be carried out by a C&M student is added to each title of a (sub-)exercise by listing the corresponding type designations in square brackets.

# 1 Documentation

## 1.1 Document Storage

The document storage is a network drive which can be accessed with different systems. In Microsoft Windows, the document storage can be accessed using the path `\\sccfs.scc.kit.edu\OE\TM\VR\Mitglieder` in Windows Explorer, while Mac or Linux users require the protocol Samba `smb://sccfs.scc.kit.edu/OE/TM/VR/Mitglieder` to open the document storage. To log in, the KIT account is used with the addition of the domain "@student.kit.edu", (e.g., `uxxxx@student.kit.edu`). The main purpose of the document repository is the structured storage of documents, in particular the C&M member's work consisting of a document written with  $\text{\LaTeX}$  and an associated PowerPoint figures file. Each C&M member has their own working folder. For M2GoParticipants, the folder is available at `\\sccfs.scc.kit.edu\OE\TM\VR\Mitglieder\3-2.Pr_Se`. The document storage is only available in the KIT network. For a connection outside the network, a Virtual Private Network (VPN) connection (see <https://www.scc.kit.edu/dienste/vpn.php>) is required.

### Exercise DocumentStorage

1. **Connect to the Document Storage** [All]

Connect to the document storage from your computer and find out where the lecture material is stored.

2. **Adjust the File Names** [M2Go, PSE/TES, BaMa]

Locate your own directory and replace the substring in the names of the PDF file and the PowerPoint figures file by your surname (written in lower letters).

## 1.2 Thesis Document

The thesis documents of all students (M2Go, PSE/TES, BaMa) are written using  $\text{\LaTeX}$  and the online editor Overleaf which can be accessed using the link <https://www.overleaf.com/>. For this purpose, a template packed as ZIP file is made available in the student's working folder in the sub-folder "5.LaTeX\_Sources". The ZIP file must be unpacked and uploaded to Overleaf. Detailed information for using Overleaf is available in the document `2.latex-nutzung_bei_cm`, stored in the folder `\\sccfs.scc.kit.edu\OE\TM\VR\Mitglieder\1.ORGANISATION\1.Teamdokumente [CM-T-LAT]`.

**Exercise ThesisDocument** [M2Go, BaMa]

**1. Import Template to Overleaf**

Open Overleaf and log in with your KIT account. Upload the  $\text{\LaTeX}$  template by using the provided ZIP file. Afterwards, ensure that the main document is set to the correct file and compile the document.

**2. Rename Overleaf Project**

Rename the project name by replacing the substring "name" with your surname. As a result, the document can be downloaded according to the naming specifications.

**3. Adjust Title Page**

Open the file named 0-1\_titlepage.tex and fill out the form. Finally, upload the resulting PDF document to your working folder.

PSE/TES students are working on a common documentation and are invited to the Overleaf project by the supervisors. The project is to be renamed by the PSE/TES students by replacing the substring to the names of all team members in alphabetic order "name1\_name2\_nameN". The resulting PDF document is to be uploaded to the team folder Mitglieder > 3-1.PSE\_TES > 2.PSE or Mitglieder > 3-1.PSE\_TES > 3.TES.

## 2 Communication and Cooperation

At C&M, English and German are used in the following way: (i) The thesis of each student and all content related to teaching and research are written in English. (ii) The documents used for the coordination of work (e.g., agendas, time sheets, status messages) are written in German since all discussions (including the oral exams) are conducted in German. Therefore, the comments of reviews of English documents (e.g., the thesis worked out by each M2GoParticipant during the practical course or the seminar) are written in German.

### 2.1 Time Sheet

All working hours carried out in the context of the practical course and the seminar are documented in a personal time sheet (the documentation does not include the working hours of the lecture which are not documented at all). Therefore, the first task is to create such a time sheet on the (SharePoint-based) C&M Teamsserver.

- M2GoParticipants find the required start and end date in the PDF document "Veranstaltungsorganisation" (see notes text of Page 1) located at Mitglieder > 2-1.WASA\_M2Go\_Aktuell.
- PSE/TES participants enter the date of the first meeting and the end of the semester as start end dates.
- BaMa students get the start and end date information in an individual kick-off meeting.

In order to create a timesheet entry, the work type to be performed must first be captured ("Erfassung der durchzuführenden Arbeiten") which can be accessed at ([https://team.kit.edu/sites/cm-tm/\\_layouts/15/start.aspx#/Lists/Benutzerverwaltung/AllItems.aspx](https://team.kit.edu/sites/cm-tm/_layouts/15/start.aspx#/Lists/Benutzerverwaltung/AllItems.aspx)). Afterwards, the time sheet page can be opened ([https://team.kit.edu/sites/cm-tm/\\_layouts/15/start.aspx#/Lists/Stundenzettel/Mein%20Stundenzettel.aspx](https://team.kit.edu/sites/cm-tm/_layouts/15/start.aspx#/Lists/Stundenzettel/Mein%20Stundenzettel.aspx)) and entries can be added.

**Exercise TimeSheet** [M2Go, PSE/TES, BaMa]**1. Create a New Work Element**

Open the page for recording the work on the SharePoint and add a new element by clicking on "Neues Element". Fill out the form as follows:

- Art: Praktikumsarbeit or Seminararbeit or Proseminar or PSE or TES or Bachelorarbeit or Masterarbeit
- Anfangsdatum: see explanation above
- Enddatum: see explanation above
- Stunden: 150 (Praktikumsarbeit) or 90 (Seminararbeit / Proseminar) or 270 (PSE) or 240 (TES) or 450 (Bachelorarbeit) or 900 (Masterarbeit)

**2. Add First Hours**

Add a new time element which covers the organizational work and fulfilled exercises. Choose the work type "Produktive Arbeit" and add the invested hours. An entry should contain the name of the exercise(s) or challenge(s) which were carried out. The work type "Besprechungen" should be chosen in the case of meetings. No further work type (e.g., C&M-bezogene Arbeit) is relevant for M2GoParticipants. Only capture the working hours related to the practical course or the seminar and not those related to the WASA lecture.

## 2.2 GitLab Account

GitLab is used for the development of applications and artifacts in M2Go. C&M uses the GitLab instance of KIT which is accessible through <https://gitlab.kit.edu>. The KIT account is required to register at KIT GitLab. As login option, the federated login "FeLS - Federated Login Service" with the home organization "Karlsruhe Institute of Technology" is used. After the first login, an optional but recommended profile picture is added to the GitLab profile at <https://gitlab.kit.edu/-/profile>.

To be able to clone and commit to GitLab, a Secure Socket Shell (SSH) key pair is required. Therefore, an SSH key is created by following the guideline provided at <https://gitlab.kit.edu/help/user/ssh.md#generate-an-ssh-key-pair>. For running the command "ssh-keygen", a terminal needs to be opened (e.g., "Windows PowerShell"). For encryption, ED25519 is selected. In addition, the KIT mail address (as student **uxxxx@student.kit.edu**) is added with the comment flag (-C) as shown in Listing 2.1.

Copy the content of your public SSH key (generated key file ending on .pub) and add the key to your GitLab account (<https://gitlab.kit.edu/-/profile/keys>). A guideline is provided at <https://gitlab.kit.edu/help/user/ssh.md#add-a-public-key>.

```
1 ssh-keygen -t ed25519 -C "uxxxx@student.kit.edu"
```

**Listing 2.1: Create an SSH Key Pair**

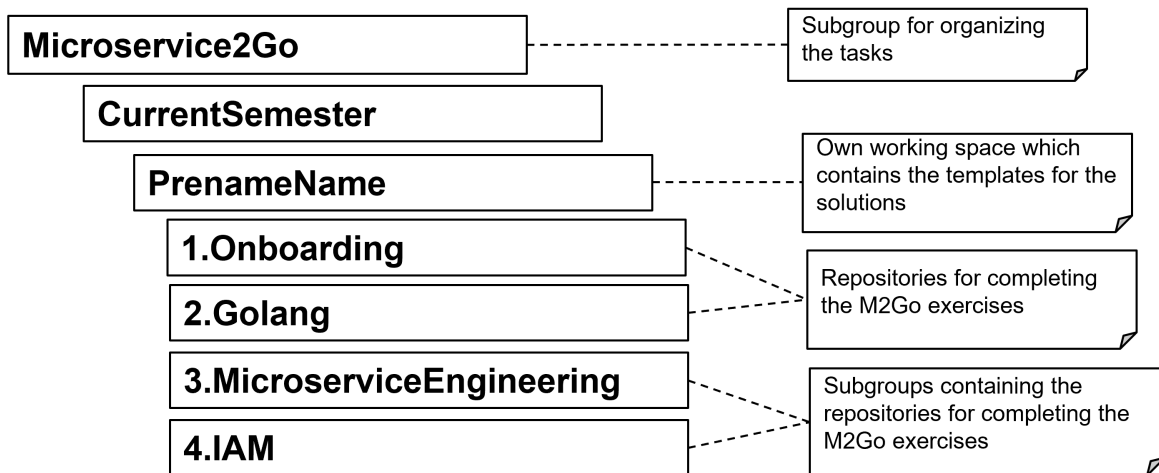
[//gitlab.kit.edu/help/user/ssh.md#add-an-ssh-key-to-your-gitlab-account](https://gitlab.kit.edu/help/user/ssh.md#add-an-ssh-key-to-your-gitlab-account). An expiration date for the SSH key is not required.

### Exercise CMGitLabSetup

1. **Create GitLab Account** [All]  
Login to KIT GitLab and register your account.
2. **Add a Profile Picture (Optional but Recommended)** [All]  
Edit your GitLab profile and add your profile picture as avatar.
3. **Create SSH Key Pair** [M2Go, PSE/TES, BaMa]  
Generate an SSH key pair with your KIT mail address.
4. **Add SSH Public Key to GitLab Account** [M2Go, PSE/TES, BaMa]  
Follow the GitLab guideline to add the SSH public key to your GitLab account.
5. **Notify C&M Employees** [All]  
Send a mail with subject "Erstellung des GitLab-Accounts abgeschlossen" to `cm.research@lists.kit.edu` to get access to the C&M GitLab group.

When Microsoft Windows is used, it is important that the service "OpenSSH Authentication Agent" is running. If you have problems running the SSH agent on Microsoft Windows, follow the instructions at <https://blog.stueber.de/posts/github-per-ssh/> to run the service and add the necessary environment variable.

The structure of the M2Go subgroups is displayed in Figure 2.1. The own working subgroup can be found at <https://gitlab.kit.edu/kat/cm/m2go/current/uxxxx> and should be structured according to Figure 2.1. Remember this structure when tasks require to create new repositories.



**Figure 2.1:** M2Go Subgroup Structure

#### Exercise OnboardingRepository [M2Go]

##### 1. Create Onboarding Repository

In the own working subgroup, create a new empty repository called "1.Onboarding". During the creation of the process, do not select the option "Initialize repository with a README" by removing the checkmark.

##### 2. Clone Onboarding Repository to Local Machine

Clone the repository 1.Onboarding using SSH located under `https://gitlab.kit.edu/kit/cm/teaching/m2goexercises/onboarding` to your local machine.

##### 3. Push Existing Repository

In the created repository, follow the presented guide "Push an existing Git repository". This pushes the cloned repository to the newly created repository.

##### 4. Edit README.md

Open the README.md file (e.g., with a text editor or Visual Studio Code) and fill in the requested information to your person. Set checkmarks to the completed onboarding tasks.

##### 5. Perform First Commit and Push

Commit the changes with a meaningful commit message. Afterwards, push the results to GitLab.

## 2.3 Onboarding Completion

In this exercise of Part 1, the first content should be written into the thesis document. At C&M, a scientific writing style is maintained. Good source for academic writing and rules are

- <https://www.phrasebank.manchester.ac.uk/>
- [https://sdq.kastel.kit.edu/wiki/Wissenschaftliches\\_Schreiben/English](https://sdq.kastel.kit.edu/wiki/Wissenschaftliches_Schreiben/English)

The following writing and formatting rules should be adhered to:

1. Personal pronouns (e.g., I, we, you) are avoided. Example: I implemented something with Go. => Something was implemented with Go.).
2. No contractions (such as it's, don't) are used.
3. Specific formatting (e.g., italic, bold, text styles, ...) is avoided in the continuous text of the thesis document.
4. All titles of chapters, sections, figures, listings are written in title case.
5. Figures, listings, and tables are referenced with `\ref{ }` and described by a text which explains their content.
6. Figures are created using the original Microsoft Office PowerPoint tool (since free PowerPoint tools unfortunately do not provide satisfying results).
7. All PowerPoint figures and all other figures (e.g., screen dumps) are part of one thesis figures file for which a template is made available in the working folder.
8. The text size within a figure (e.g., relationships, labels) should be approximately the same size as the main document text.
9. Figures are not rotated (e.g., by 90°)
10. Code artifacts (e.g., use cases, markup files, and source code consist of numbered lines and have the title "Listing <Nr>: <Title>".

**Exercise OnboardingCompletion** [M2Go]**1. Describe the M2Go Coordination Concept Applied at C&M**

Which are the roles (e.g., M2GoCandidate) and the systems (e.g., GitLab) and artifacts (e.g., time sheet) used in M2Go? Include a PowerPoint figure by which the M2Go coordination concept is illustrated. Make sure that the figure is part of the file pr\_<your\_surname>\_fig.pptx (practical course) or se\_<your\_surname>\_fig.pptx (seminar or proseminar) which is stored in your working folder.

**2. Become Familiar With the C&M LITERATURE**

The folder "3-5.Literature" of the document storage contains the so-called C&M LITERATURE. In CM\_LITERATURE.pdf, the Figure "Categories and Subcategories" on the first page introduces a structure according to which the publications and documents relevant for C&M's research are organized. Which categories and subcategories of C&M LITERATURE are covered by the WASA lecture?

Take a look at the format of the indexes used in C&M\_LITERATURE.pdf. Define the rules according to which (i) books, journal articles, conference publications (e.g., [Ev03]) and (ii) documents from organizations (e.g., [CM-W-WAS]) are built.

**3. Investigate Current Thesis Projects Carried Out at C&M**

At the back of the document WASA\_INTRODUCTION (stored on the C&M homepage, <https://cm.tm.kit.edu/index.php>), the current thesis projects carried out by C&M are presented (see also the subfolders of Mitglieder > 3-3.Ba\_Ma in which the Bachelor's/Master's thesis of the SeniorStudents currently working at C&M are stored). Choose the thesis project(s) in which you would like to work on. Describe the core of the chosen project(s) and outline competences and contributions you could bring to the project(s).

Remember to document the invested time of all your M2Go-related actions in your time sheet.

PSE/TES participants will find their tasks in the folder Mitglieder > 3-1.PSE\_TES in the common folder 1.Organization. The document PSE\_TES\_INTRODUCTION contains the introductory exercises. The detailed tasks concerning the project can be found in the subfolders 2.PSE and 3.TES respectively.

## 2.4 Status Message

The status message is sent on predefined dates on Tuesday no later than 12:00 noon. The frequency and the recipient mail addresses of the status message depend on the type of work:

- M2GoParticipants find the precise dates in the document "Veranstaltungsorganisation" stored in the folder Mitglieder > 2-1.WASA\_M2Go\_Aktuell. The recipient address of the status message is: `cm.research@lists.kit.edu`
- PSE/TES students send a status message each week to their supervising PhDResearcher(s).
- BaMa students send a status message each week to: `cm.research@lists.kit.edu`

Before the message is sent, the time sheet, as well as the working folder should be updated. This includes the thesis document, the PowerPoint figures file, and the subfolder of the UMLet files.

The content of the status message is copied from Listing 2.2. Each C&M student must take care that the working performance is in the "green (or violet) range" indicated by the time sheet (the color is available at <https://team.kit.edu/sites/cm-tm/Lists/Stundenzettel/Gruppierung%20nach%20Personen.aspx>).

```
1 Betreff: Statusmitteilung KW XX
2
3 Text: Der Stundenzettel auf dem Teamserver und die eigenen
      Arbeitsbereiche auf dem Dokumentenserver sowie im GitLab haben
      einen aktuellen Stand. Die Gesamtstundenzahl befindet sich im "grü
      nen" Bereich.
```

**Listing 2.2: Status Mail Content**

### Exercise StatusMessages

1. **Send Status Message** [M2Go, PSE/TES, BaMa]  
Update your thesis document (PDF) and your figures file (PowerPoint) in your working folder. Ensure, that the naming convention is met and update the time sheet. Send the status message on the corresponding dates no later than before noon (i.e., 12 pm).
2. **Provide Initial Submission** [M2Go]  
The initial submission is part of the first status message. Copy the PDF file and the PowerPoint figures file stored in your working folder into the subfolder "1.Initial\_Submission" and add the suffix "\_initial" to both files. Note that a place to the practical course is only assigned to students whose initial submissions fulfill the defined requirements.

This ONBOARDING document end with a remark related to the handling of errors or ambiguities found by M2GoParticipants. The practical course thesis template includes at the end of the section "How-to Descriptions" a LaTeX template by which errors are to be documented in a defined way. This

template should be filled out before any error is communicated to "cm.research@lists.kit.edu". Such a mail should only be sent in the case of serious errors in order to avoid communication overhead.

### 3 Bibliography

- [Ev03] Eric Evans: Domain-Driven Design: Tackling Complexity in the Heart of Software, Addison-Wesley Professional, 2004.
- [CM-T-LAT] Cooperation & Management: LATEX-NUTZUNG BEI C&M, \\sccfs.scc.kit.edu\OE\TM\VR\Mitglieder\1.ORGANISATION\1.Teamdokumente.
- [CM-W-WAS] Cooperation & Management: Web Applications and Service-Oriented Architecture, Lecture Course Units, [https://team.kit.edu/sites/cm-tm/Mitglieder/2-2.WASA\\_Lecture](https://team.kit.edu/sites/cm-tm/Mitglieder/2-2.WASA_Lecture).