

# Management of ServiCes Across MultipLE clouds

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WS18/19-SS19

Computer Networks Group

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# Let's get to know each other first..

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- What's your name?
- What do you expect from this project group?
- What's your technical background?
  - Programming skills/languages
  - Cloud computing, virtualization
  - Project management, issue tracking, meeting minutes
  - Version control systems, e.g., git, SVN

# Overview

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- **What is a project group?**
- How will PG SCrAMbLE be organized?
- Where do we start?
- What is NFV?
- What is PG SCrAMbLE about?

# Project group

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- A **self-organized** group of students
- Practice working in a team on a project for a complete year
- Completely different from the assignments in lectures
  - We often do not know the answers and the way to obtain them
  - Even if we have some ideas, yours might be better
  - There is no predefined solution for your tasks
- Idea: prepare students for work in industry

# Roles

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- What we do, as your advisors:
  - Answer general questions
  - Help with high-level organization
- What we **don't** do:
  - Define exact implementation tasks for you
- What you will do:
  - Organize your group, subgroups, responsibilities
  - Define your project plan
  - Distribute work among all, fairly and reasonably
  - Make sure you meet the milestones & deadlines

# Project group workload

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- 20 ECTS = 600 hours = 12 hours per week
  - Assuming you are in the “new” master’s program
- That is assuming no vacation, no holidays, no sickness, no nothing ...
- So, practically, you should plan for **15 hours a week!**
- At least 2 working days per week
- Anything less will not work (and will not be tolerated)
  - We have failed people because of that!

# PG registration

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- Refer to the link below for registration
  - <https://cs.uni-paderborn.de/en/studies/formalities/current-news-from-the-examination-committee/notes/news/cs-an-und-abmeldung-zu-proseminaren-seminaren-und-projektgruppen-aktualisierung/>
- Please note that you have to register for seminars and project groups just like for all other classes both for the course itself and for the **corresponding exam**.
- Exam registration period: 22.10.2018 - 22.11.2018
- De-registration from PG possible till 22.11.2018

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# PG SCrAMbLE organization

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- Weekly meetings
  - All students + advisors
  - 1-2 hours
  - Reports, tasks, deadlines, milestone presentations, etc.
- Weekly lab day (**non-negotiable**)
  - All students
  - ~8 hours (or 4+4 if absolutely necessary)
- Regular individual discussions with each group member to track progress, detect problems, and hear from you
- Collisions with exams, home leave, etc. have to be informed early on, **to the mailing list**

# Meetings and time tracking

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- **Meeting minutes** including attendees, decisions and action points from advisor meetings and lab days
- **Attendance table** indicating for each group member if they were present/absent/excused in each group meeting and lab day
- Individual working **time sheets** indicating how many hours you have worked for the project group and a brief description of the task
- Deadline for updating these documents **in the repository** for each week is the Monday afterwards

# Mailing list

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- The mailing list is our main communication channel  
[pg-scramble@lists.uni-paderborn.de](mailto:pg-scramble@lists.uni-paderborn.de)
- You can send/receive emails to/from this list using your **university email address**
- **Do check your emails at least once a day!**
- If for any reason you do not want to send one particular email to the whole group, always send your email to **both** Hadi and Sevil

# Repository

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- We will use Github
  - <https://github.com/CN-UPB/pg-scrambLe.git>
- Repository for revision control and collaborating on
  - Code
  - Documents
  - Presentations slides
  - Meeting minutes
  - Attendance list
  - Working time sheets
  - Issue tracking and milestones
  - Project wiki

# Deadlines

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- For all announced deadlines we consider the end of the day, at 23:59, on the respective date
- Missed deadline: 0.3 reduction for every started 24 hours (i.e., 0.3 at 00:01 the day immediately after the deadline, 0.3 the next day at 00:01, etc.)
- Check-in times in the repository will count as reference

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# Phase 1: Groundwork

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- Tutorials within the group to select & teach each other required tools and concepts (e.g., git, LaTeX, project management, issue tracking, Kanboard, Slack, etc.)
- Mini-seminar to learn and teach others about the PG topics
  - Select a topic **by Oct. 18<sup>th</sup>**
  - Write a short report (2-3 pages) **by Nov. 9<sup>th</sup>**
  - Give a short presentation (~15 minutes) **in the week of Nov. 12<sup>th</sup>**
- Project plan with work packages & milestones
  - Deadline: **Nov. 23<sup>rd</sup>**

## Phase 2: Implementation

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- Start implementing based on your project plan
- Regularly present your progress
- Document your work (start early on!)
- Final demo, presentation, and final report



# Mini-seminar

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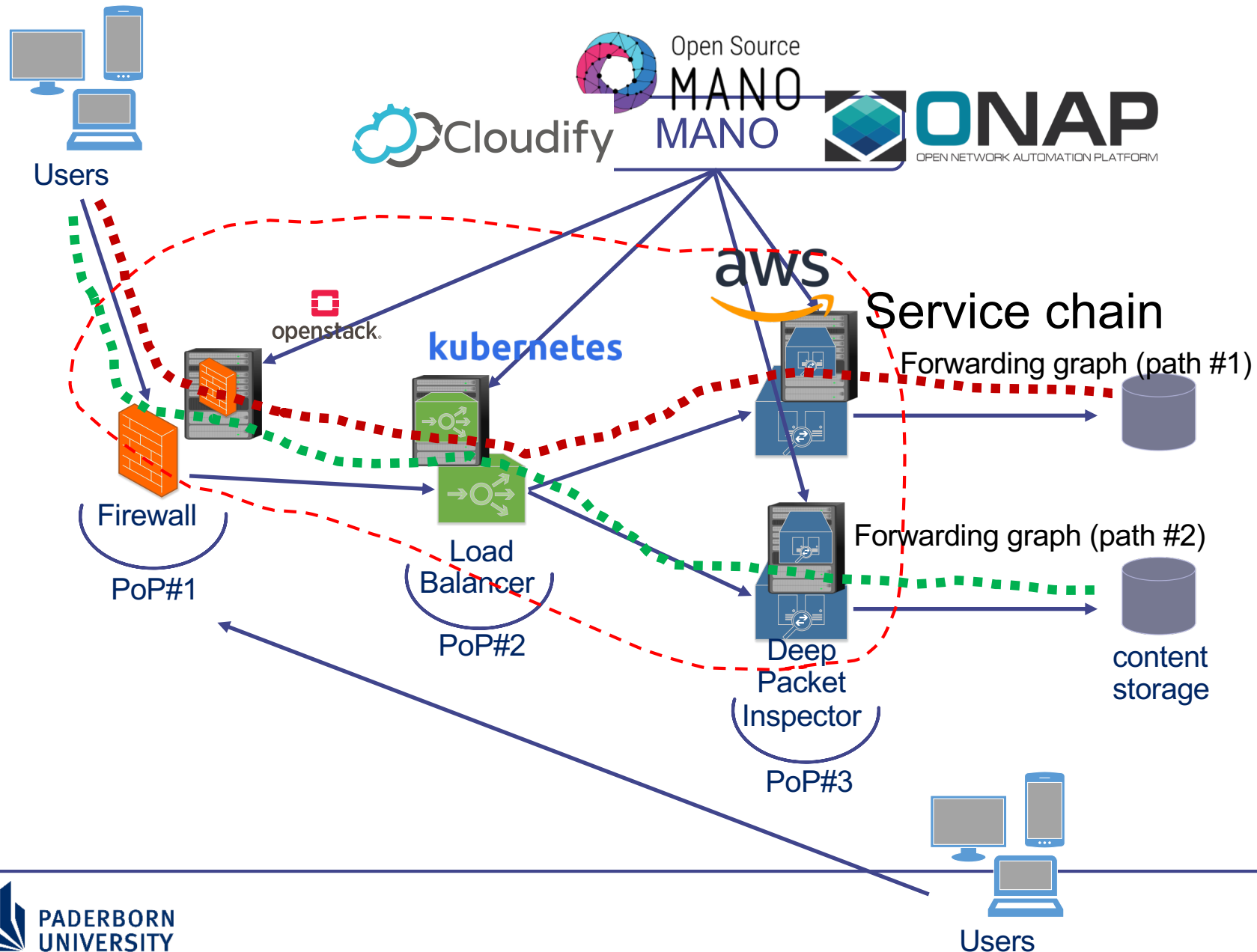
- Topics:
  - Management and Orchestration Challenges in Network Functions Virtualization
  - Network Service Orchestration: A Survey
  - NFV: Security Threats and Best Practices
  - Service Description in the NFV Revolution: Trends, Challenges and a Way Forward
  - Software-Defined Network Function Virtualization: A Survey
  - NFV: State of the Art, Challenges, and Implementation in Next Generation Mobile Networks (vEPC)
  - Dependability of the NFV Orchestrator: State of the Art and Research Challenges
  - Network Service Orchestration Standardization: A Technology Survey
  - Horizontal-Based Orchestration for Multi-Domain SFC in SDN/NFV-Enabled Satellite/Terrestrial Networks
- Papers can be found in the following Github directory:
  - <https://github.com/CN-UPB/pg-scrambLe/tree/master/teaching/papers>

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# Network Function Virtualization (NFV)



# Overview

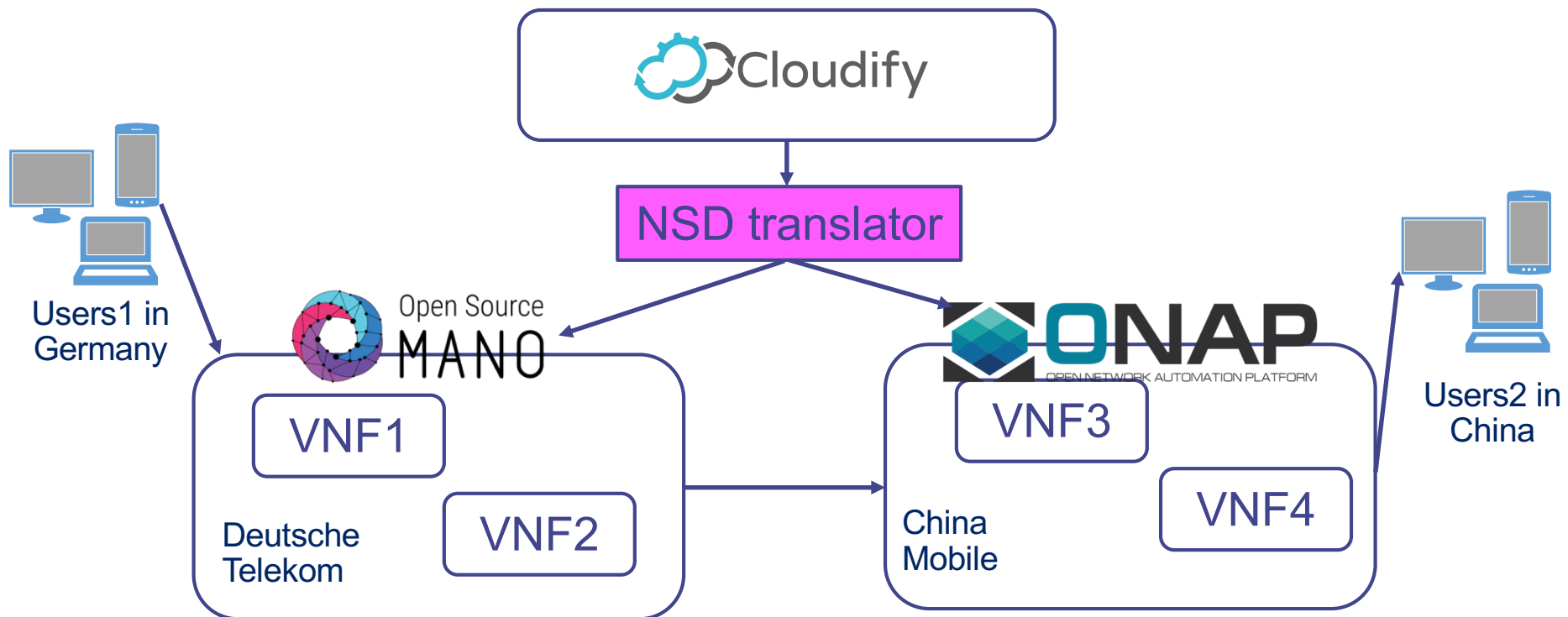
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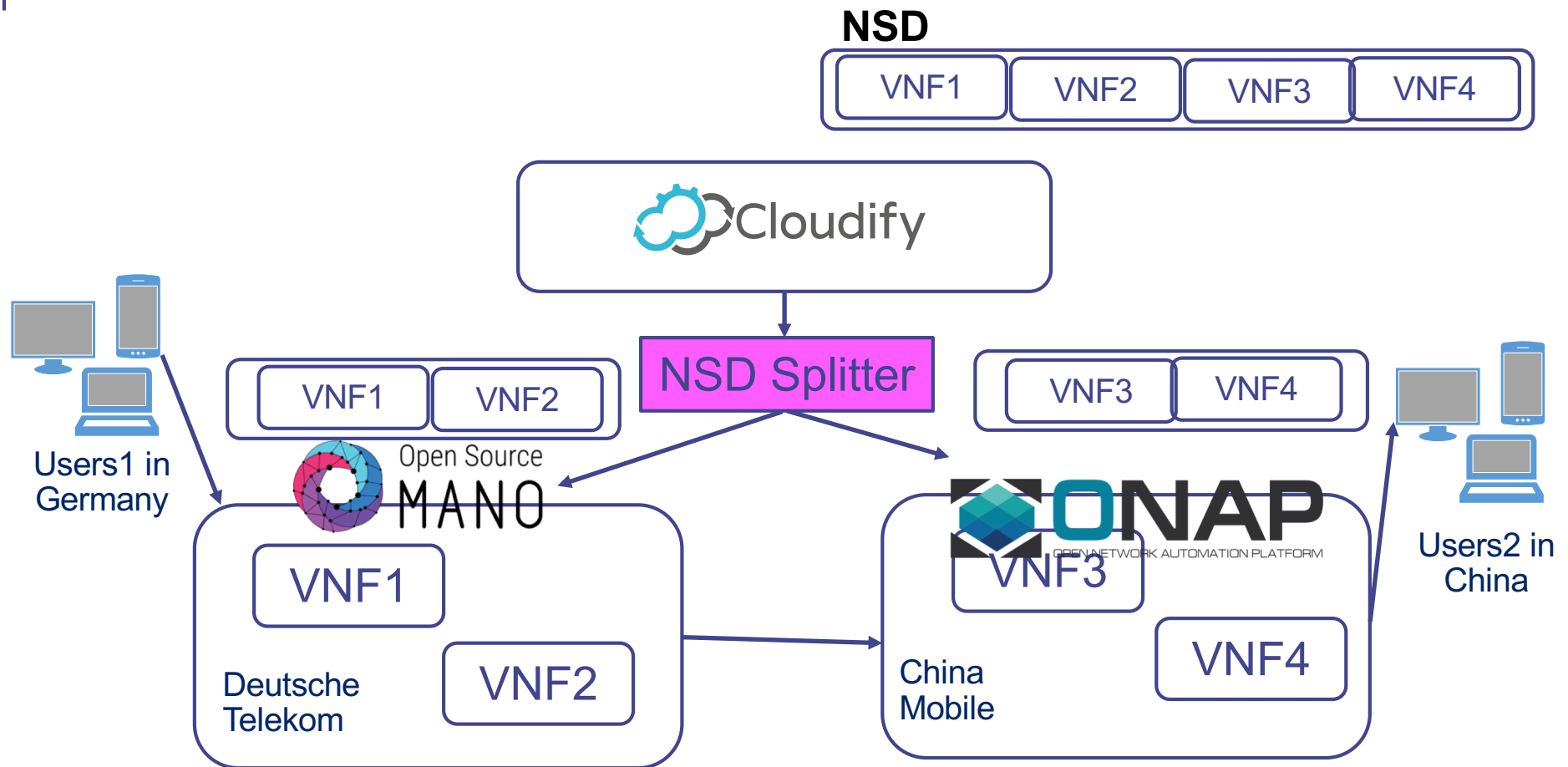
- Consists of 3 work packages
  - WP1: Network service descriptor translator
  - WP2: Network service descriptor splitter
  - WP3: OSM adaptor

# WP1: Network service descriptor translator

- Network service descriptor (NSD)
  - Used to describe the network service
  - Consists of constituent VNFs, virtual links, and forwarding graphs

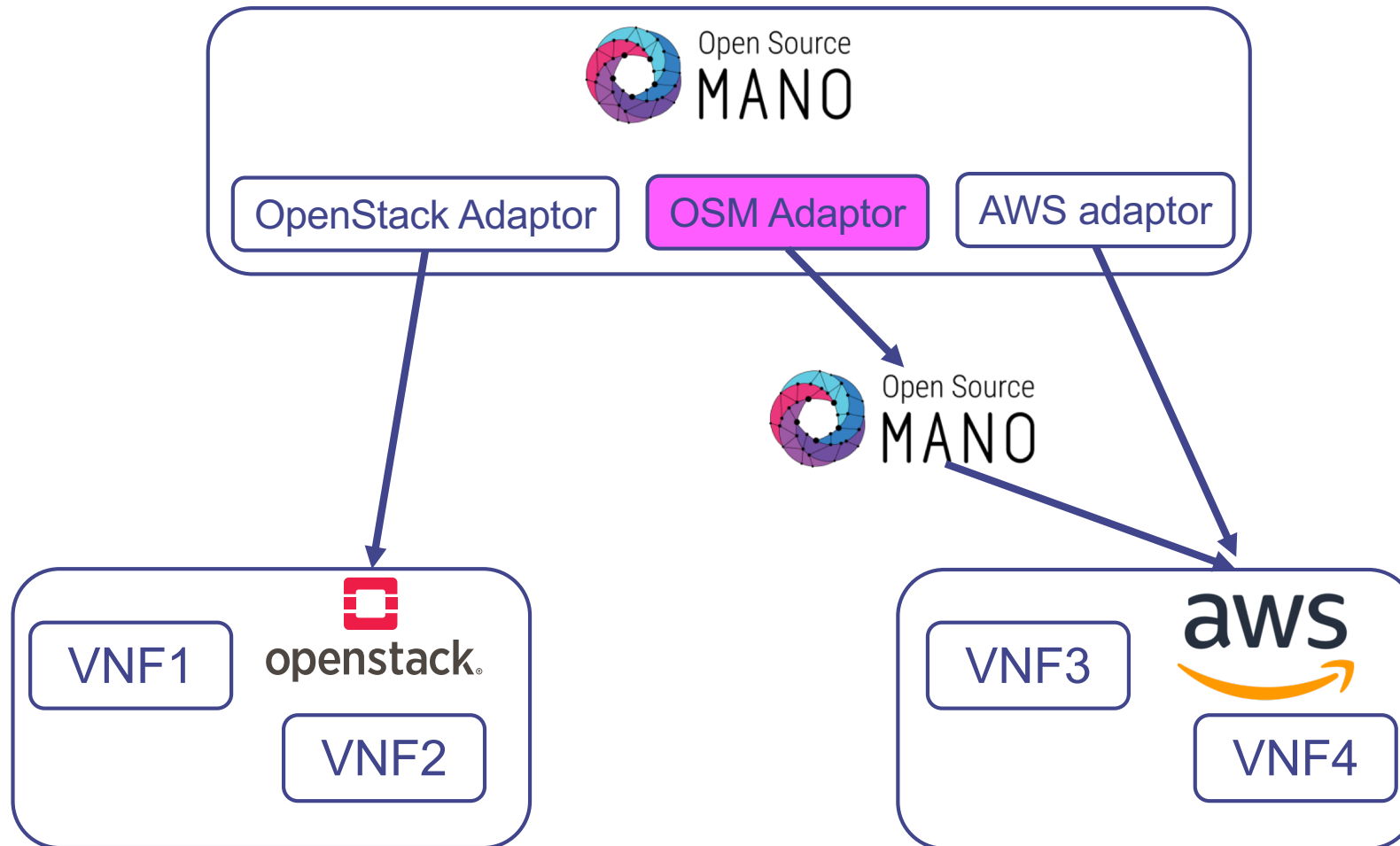


## WP2: Network service descriptor splitter



## WP3: OSM adaptor (southbound interface)

- Orchestration recursiveness
  - To provide scalability and resilience





# Let the work begin!

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- Agree on a weekly advisor meeting time slot
  - Please setup and send out a doodle this week
  - Please try to finalize this **by Oct. 18<sup>th</sup>**
- Agree on your lab day
  - Please let us know about it – we need to get you keys, etc.
- Create a GitHub account and send us your GitHub name
  - Please try to do it this week
- Select your seminar topic **by Oct. 18<sup>th</sup>**
- Start studying the references and learning about tools
- Questions? Doubts? Problems? Please ask!