

A detailed LEGO minifigure office scene. In the background, a kitchen area features a sink with a faucet, a stove, and a refrigerator. A minifigure in a red jacket and pink helmet stands on a green and yellow boat. In the middle ground, a minifigure with blonde hair in a green jacket sits at a desk with a computer monitor displaying a blue logo. To the right, another minifigure with orange hair sits at a desk with a laptop. The foreground shows a round table with a pink cup, a stack of papers, and a small brown dog. The floor is made of wooden planks.

Remote Work & Remote Collaboration

Software Engineering II
WS 2020/21

Enterprise Platform and Integration Concepts

I

want to,
can, or
have to,

work from home

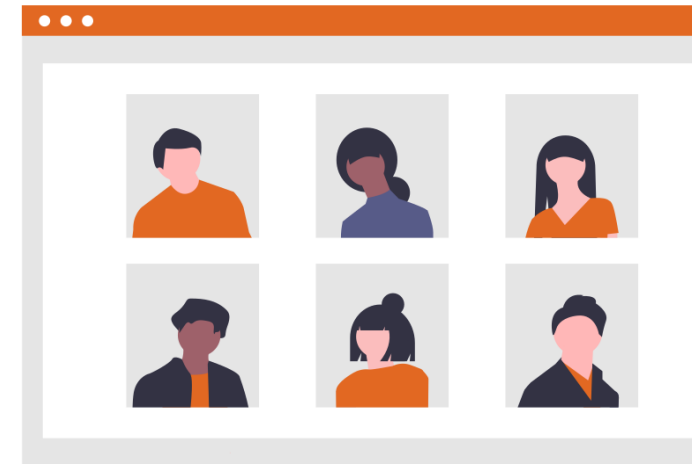
Motivation



Remote Work / Global Software Development

- 81% of Agile survey respondents' organizations used **distributed Agile teams** (i.e. not co-located)
- 71% of respondents featured multiple Agile co-located teams collaborating across geographic boundaries

“ The current worldwide health crisis may prove to be an inflection point that leads to an additional increase in distributed teams as a “new normal” ”
— 14th Annual State of Agile Report



Motivation



Reasons for remote / Global Software Development

- **Work-Life balance**, flexibility of work
- **Costs** / reallocation of funds
(better laptops instead of office space?!)
- Implement "**Follow the Sun**" development
 - Core idea: reduce time to market by always having a team work on the product
 - Hand off work at end of work day to next site several time zones away
- (Safer during a **global pandemic!**)
- ...



Source: Carmel, E., Espinosa, J. A., & Dubinsky, Y. (2010). "Follow the Sun" Workflow in Global Software Development. *Journal of Management Information Systems*, 27(1), 17-38.

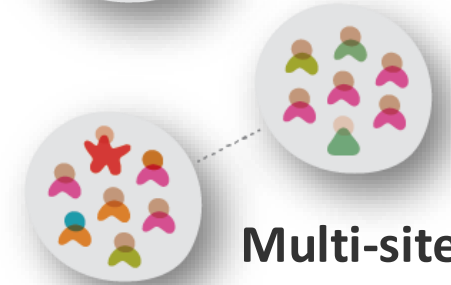
Background: Collaboration Patterns



- Everyone in the same physical location: **Single-site team**
 - Collaborate without arranging anything
 - Easily see what everyone else is up to, shared space?
- 2+ groups at separate locations within a larger team: **Multi-site**
 - Perhaps formal sub-team boundaries and responsibilities
 - E.g. dev team split between Germany and India
- Most of team co-located, few working remotely: **Satellite workers**
 - Contractors, autonomous work of satellites?
- Everyone in separate locations (usually from home): **Remote-first**
 - All communication online, full commitment
 - Most open-source projects



Single site



Multi-site



Satellite workers



Remote-first

Background: Remoteness & Agile

Agile Manifesto Principles

- People collaborate better with direct interactions

“ The most efficient and effective method of conveying information to and within a development team is face-to-face conversation. ”

Agile Manifesto also states: *Individuals and Interactions over Process and Tools*, so adapt to what works for you!

- Relationships within teams are the **glue of collaboration**
- Co-located communication is richer than online communications
- Keep this in mind when selecting tools and collaboration processes
 - (Switch cameras on, especially in 1:1 conversations?)

Challenges of Remote

Possible issues of team setups

- Multi-site teams form "**us-vs-them attitude**"
 - *Contact visits*: short cross team visits, build relationships
 - *Ambassadors*: Spend prolonged time at a different site
- Dividing the work into **silos**
 - Remember Conway's Law
 - Each team should get to create direct business value
- **Detached Satellites**
 - Most communication will happen within co-located team
 - Satellite workers may lose connection
 - Temporary measure?



"If you have 4 groups working on a compiler, you'll get a 4-pass compiler."
— Eric S. Raymond

Challenges of Remote



Possible organizational issues

- Impersonal **onboarding** (uncertainty, trust, responsiveness)
- **Mentoring** (junior) staff
 - Hard to mentor people remotely, avoid juniors being satellite workers
 - Ensure each site has mentors to guide teams
- **Indirect management**
 - No direct insight into people's work, you need to trust
 - Infer what's happening based on the results
- Harder to build **shared company/team culture**
 - Best collaboration practices have to be **discovered**
 - Finding & building them requires exposure to others and their ways of work



Sources:

<https://martinfowler.com/articles/remote-or-co-located.html>

<https://www.jamesshore.com/v2/blog/2019/three-challenges-of-distributed-teams>

Challenges of Remote

Consequences of remote teams

■ Security

- Private and work computer might now be the same
- Can a company make sure that data is safe in homes?

■ Culture mismatches in geographically distributed team

- Diverse (work) cultures & social norms
- Culturally accepted ways of communicating
- Expectation management

■ No shared space

- No physical coordination artifacts, no chance encounters
- Total reliance on digital project management tools



Consider regular
Water Cooler Chats /
"der Flurfunk"

Challenges of Remote: Covid-19 Learnings



Consequences of permanent remote work

■ Home Office is not a real office

- ❑ Bad equipment situation (esp. young employees)
- ❑ Missing interactions with other persons
(e.g., rumors are part of our social interaction)
- ❑ Convenient but bad habits (How many pizzas did you have?)
- ❑ Breaks will be neglected and are shorter than usual
- ❑ 8h day or until the task is done?
- ❑ Danger of social isolation (esp. singles with gaming as hobby)
- ❑ Back-to-back meetings and permanent online concentration



Work-Life-Balance

Attend meetings wherever you want

Easier to handle private things

No spontaneous interruption

...

Is Productivity Going **Up** or **Down**?

More coordination and handovers

Work around the clock

Whom to ask?

How to judge your contribution?

Calendar full of meetings

...

In a recent study of WFH [Bloom15], productivity increased, but promotion rates conditional on performance fell.

Remote Benefits For Management

Remote means anyone can work anywhere, but also...

- **Higher productivity on individual tasks,**
less on collaborative ones
- **Available talent pool**
 - The best teams are made up of the best people?
 - Widen talent selection
(but the people you really want to hire might already live in tech centers?!)
 - Software development not tied to a place
 - Reluctance to accept location & commuting disadvantages

Median rent for 1 bedroom apartment in SF's Bay Area was \$1,975 (April 2019)



Recommendations for Remote Work



■ Structure your working day

- Meetings just 25/50 minutes
- Ensure breaks
- Use meeting requests
- Block working and private time

■ Centralize document storage (incl. collaborative editing)

■ Prioritize your communication channels

- Mail (can wait), VIP Mail, Discord (short requests), Meetings, mobile (decide who has this number, don't be pushy), short messages (outside working hours)
- Turn on video
- Limit notifications (each one is an interruption)!

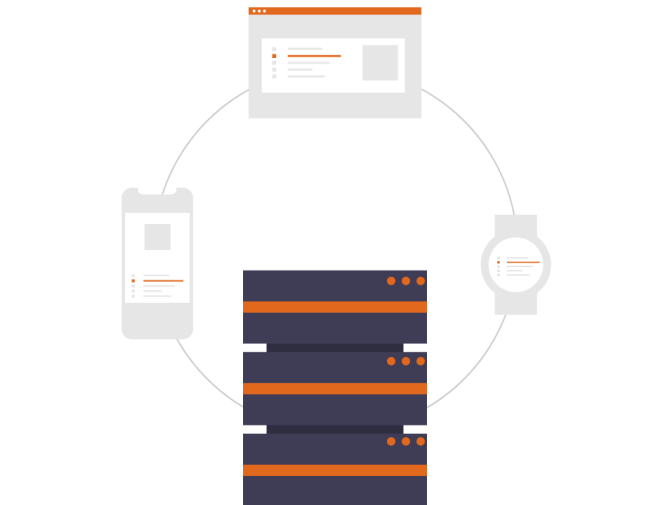


Recommendations for Remote Work



■ Provide the right hardware

- Paperless office
- Ergonomic desk, monitors, keyboards
- Where to keep your backup disk?
- Always have a good internet connection (upload!)
- Don't forgot remote work security (stable VPN)



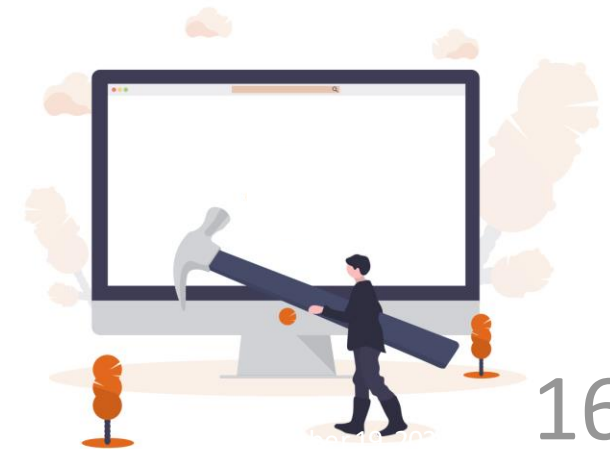
Recommendations for Remote Work



- Take care of your **physical** health
- Take care of your **mental** health
 - Virtual coffees and off-work events with colleagues
 - Keep a good routine going
- How to lead a remote team
 - Check in with your team regularly
 - Don't be afraid to overcommunicate
 - Keep having fun



If you have a hammer,
everything looks like a nail.



Tools for Remote Work



Remote Working Agreement

- Find **consensus in team** on collaboration practices
- Write it down, refer back to it regularly
- **Revise it** with new information and learnings
- Agreement could include aspects such as:
 - How do we contact each other and schedule conversations?
 - How do we **indicate availability** to communicate (or a lack of it?)
 - Do we have **shared core working hours**?
 - How do we **organize team meetings**? How do we collaborate on design activities?
 - How do we deal with work items and project boards?
 - What are things that are **"no-gos"** for you / your team?



Tools for Remote Work



General types of communication technologies

- **Collaborative modeling tools:** Computer aided software engineering (CASE) tools, collaborate on models in real time with support
- **Collaborative writing tools:** Simultaneously write a document (Office365, Overleaf,...)
- **Discussion tools:** Transmission of messages, e.g. email and chat (Slack, Teams,...)
- **Inclusive modeling tools:** Simple tools such as whiteboards, paper, sticky notes (Mural,...)
- **Virtual meeting tools:** Synchronous (video) communication (Skype, Zoom, Teams,...)
- **Version control tools:** Manage and organize versions of project artifacts (Jira, GitHub,...)



Tools for Remote Work



- ➔ The practice of "**Use The Simplest Tools**" should apply
 - Consider the cost of complex tooling
 - Simple tools usually easy to learn, use & share with others



Tools for Remote Work

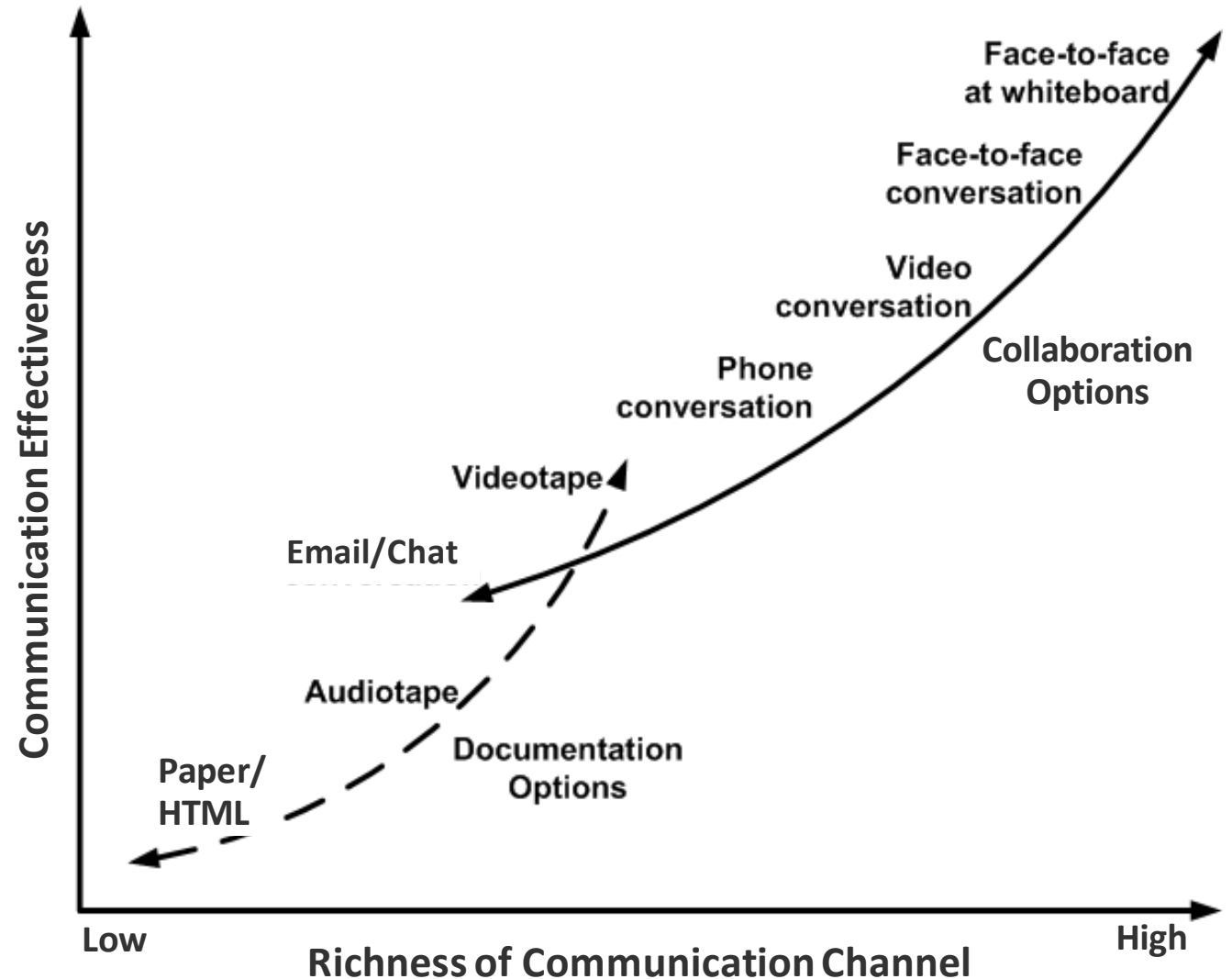


Media Richness

■ More context clues

- More physical proximity
- Gestures & facial expressions

- Ability to **answer questions in real time** distinguishes *collaboration* from *documentation* options

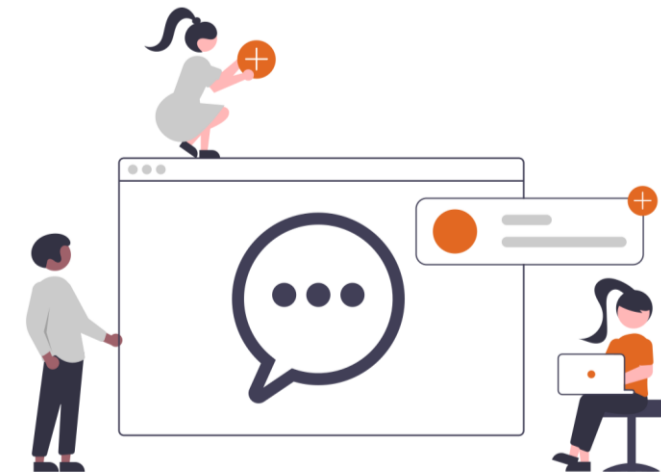


Tools for Remote Work

(Communication) tools are key

- Document state of software & **progress of work**
 - e.g. GitHub Wikis, generated diagrams, change logs
 - Daily/Weekly Standup in Discord, check in with team
 - Update and comment tickets/issues, celebrate commits and deploys
- Keep **others informed**, e.g.
 - Push code to shared branches (& tell people about it)
 - Regular deploys of the newest changes
 - Blog Post Driven Development
 - Find blog post headline before Sprint start
 - Summarize features, what issues were solved?

Git commit messages are valuable communication!
Consider "Fixed stuff"



Tools for Remote Work

Choose (technical) tools that work for you

- Specialized tasks might need **specialized tools**, e.g.
 - Design and sketching (<https://miro.com>)
 - Running feedback sessions (<https://reetro.io/>)
 - Automate project consensus (i.e. code review checks)

➡ Experiment in teams, share what worked!

- Many new tools & ideas all the time
- What should be adapted by the entire project?
- **Discuss!** Others might not share your experiences! (and that's okay)
- Caveat: change has a cost! **What had the largest value?**

GitHub Actions can automate a lot!

<https://github.com/features/actions>



Further Reading



- Kroll et al. 2013. *A systematic literature review of best practices and challenges in follow-the-sun software development*. 2013 IEEE 8th International Conference on Global Software Engineering Workshops (ICGSEW).
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<https://doi.org/10.1145/3372787.3390434>
- [Bloom15] Bloom, Nicholas, et al. *Does working from home work? Evidence from a Chinese experiment*. The Quarterly Journal of Economics 130.1 (2015): 165-218.
<https://doi.org/10.1093/qje/qju032>



Summary



Motivation & background

- Reasons for Remote/Global Software Development
- Collaboration patterns
- Remoteness & Agile

(Dis-)Advantages of remote

- Issues of team setup
- Organizational issues
- Consequences of remote teams
- Permanent remote work
- Benefits for Management

Recommendations & Tools

- Leading teams
- Remote Working Agreement
- Communication technologies
- Media Richness Theory
- Choosing your tools