Dynamic Translation

tEMR
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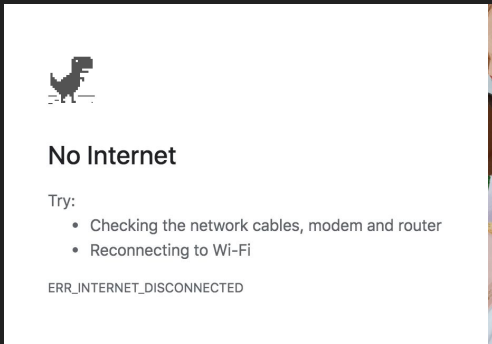
Agenda

- Problem Statement
- Architecture Overview
- Product Demo
- Metrics
- Future Stories and Additions
- Reflection on Project Work
- Handoff To Client
- Team Superpower
- Q&A and Thank You

Problem Statement

Problem Statement

Physicians encounter patient data inputted in languages different from their own during medical trips. Unreliable internet access makes it hard to use online translation tools like Google Translate.



Project Vision

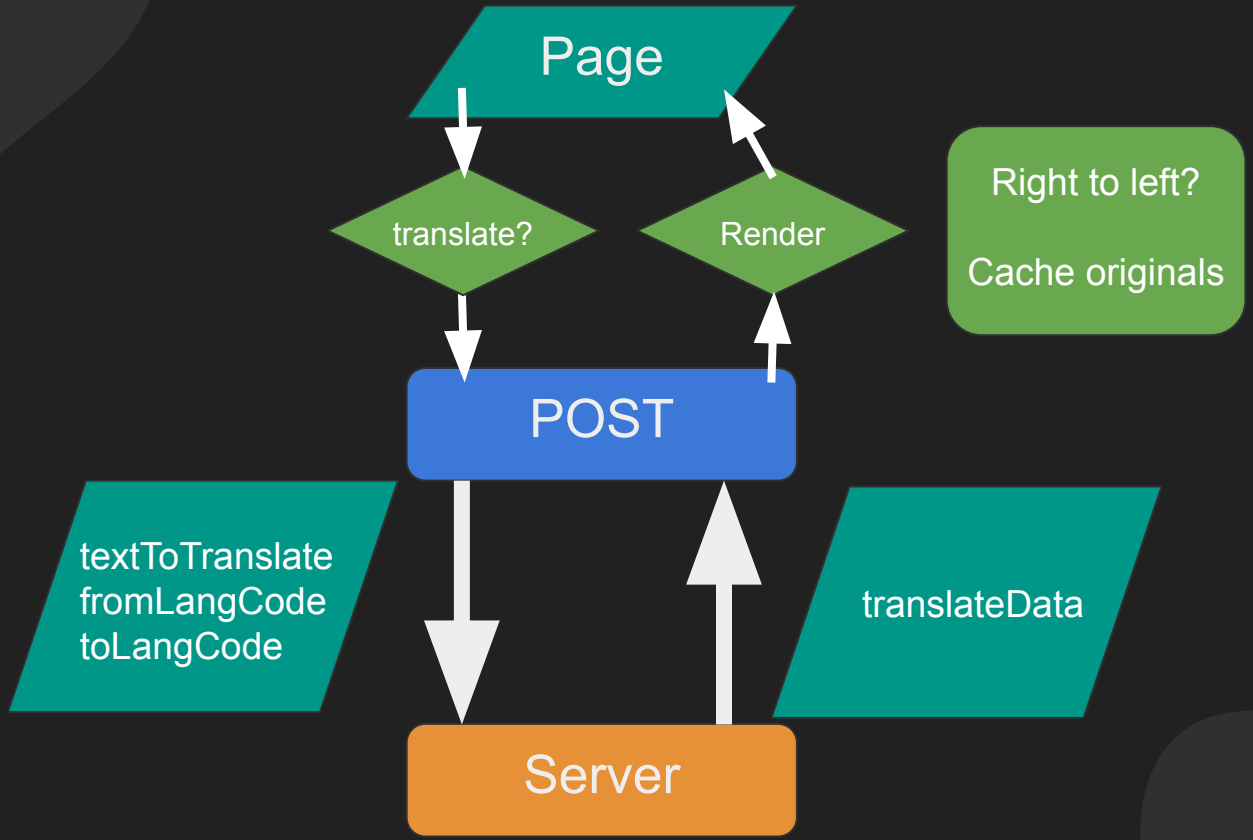
As fEMR is a global project focused on providing continuity to medical relief efforts in low resource settings, it is important the application supports languages from all over the world. The internationalization team has worked to support 44 different languages for both static and dynamic translations in low resource environments

Stakeholders

Team fEMR is a nonprofit organization dedicated to providing continuity of care between short-term medical relief efforts in low resource settings all around the world.

- Physicians
- ICD-10 coders
- Patients

Project Architecture


Page
translate?
Render
Right to left?
Cache originals
POST
textToTranslate
fromLangCode
toLangCode
translateData
Server

Offline Translation Libraries

Argos

Fast

Small model size (~90MB)

English -> X Language

X Language -> English

88 Models (44 Languages)

MarianMT

Slower on average

Larger model size (~300MB)

Many more language pairs

English in the Middle not needed

1440 models

Offline Translation Library Decision

SHIP WITH ARGOS

- Ship with all Argos models
- 44 languages initially supported
- Supported through “English in the Middle” translations

ADMIN PAGE

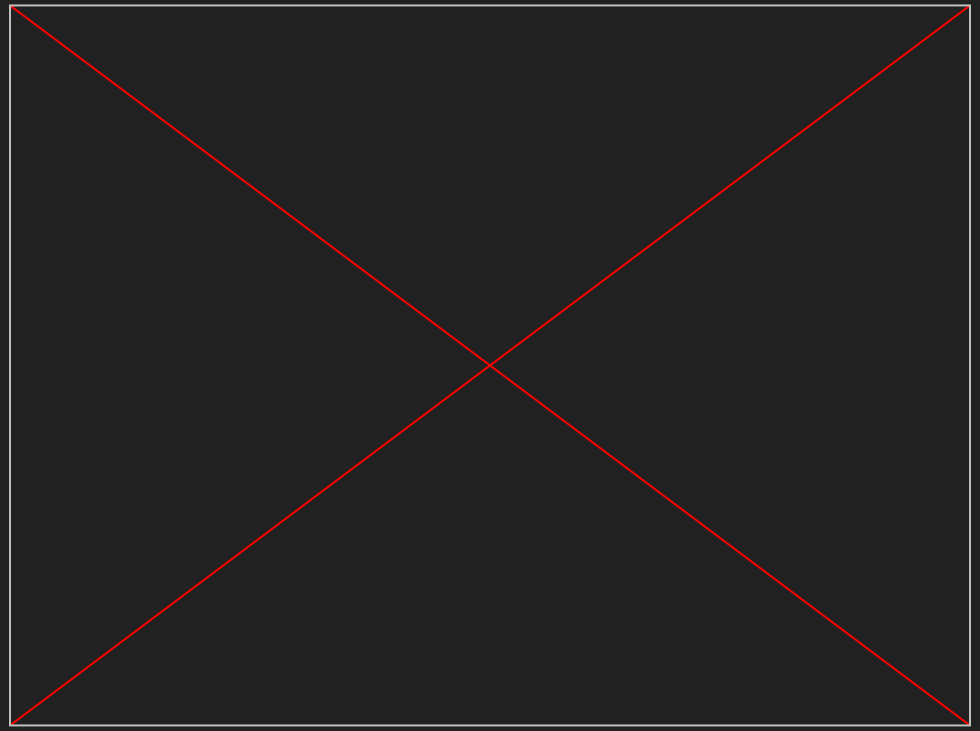
- Admin page to support downloading and updating of new models
- Automatically schedules downloads when a user selects a new language
- After download, language is “fully optimized” through the use of both Argos and Marian models

Argos Supported Languages (On Ship)

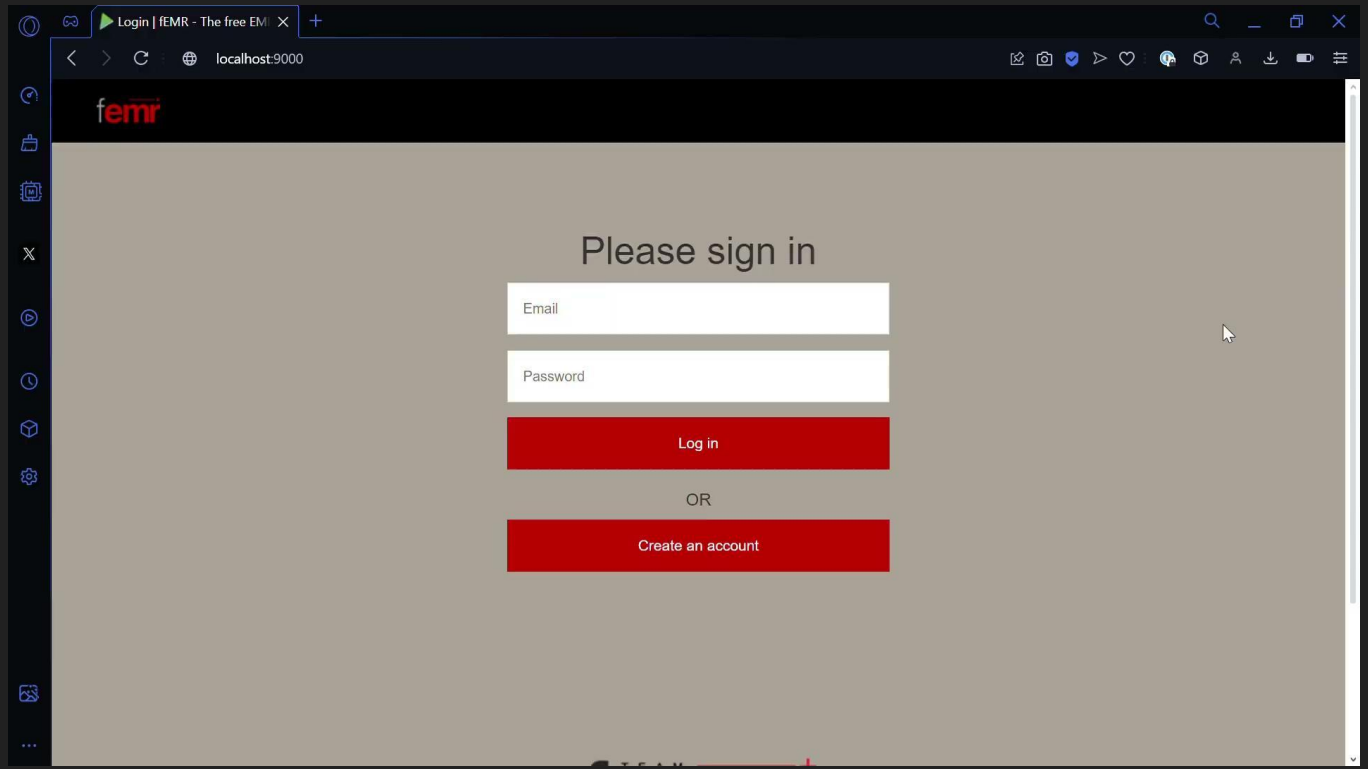
- Arabic
- German
- Spanish
- Finnish
- Irish
- Hindi
- Hungarian
- Indonesian
- Italian
- Japanese
- Korean
- Portuguese
- Swedish
- Ukrainian
- Azerbaijani
- Bulgarian
- Bengali
- Catalan
- Czech
- Danish
- Greek
- Esperanto
- Estonian
- Persian
- French
- Hebrew
- Lithuanian
- Latvian
- Malay
- Norwegian
- Dutch
- Polish
- Romanian
- Russian
- Slovak
- Slovenian
- Albanian
- Thai
- Tagalog
- Turkish
- Chinese
- Chinese (traditional)
- Urdu

Demo

Dynamic Translation Demo



Package Downloads Demo



Metrics

Defects Fixed

TEMR-88	Port error bug on mac	=	
TEMR-87	Unknown number of new packages/libraries added to fEMR this year	=	...
TEMR-86	FEMR app builds without checking for proper licensing	=	
TEMR-84	Testing library code fails to run	=	
TEMR-77	femr error outs when arabic is inputted into the chief complaints	˅	
TEMR-21	Git Permission Bug	=	
TEMR-20	BufferReader cant do utf-8 byte encoding	=	
TEMR-19	GitHub FEMR super-femr permission failed	=	
TEMR-9	Windows fEMR Install needed folders	=	

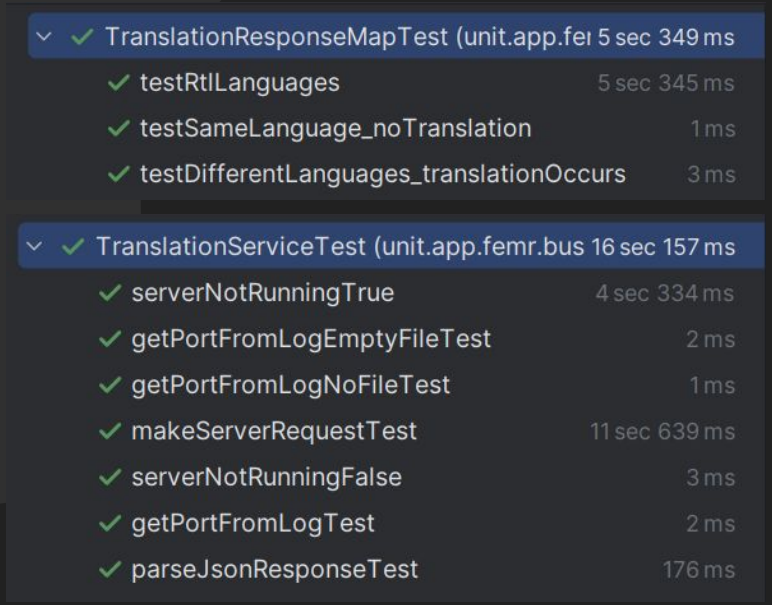
T	Key	Summary	P	
	TEMR-128	App doesn't start due to unavailable port	^	...
	TEMR-118	Encounter Resubmission Bug	^	
	TEMR-116	Users button in admin panel doesn't present user page	=	
	TEMR-115	Remove "leave feedback" button from create account sub menu on sign in page	=	
	TEMR-110	"python" command in ProcessBuilder creation does not work for all systems	^	
	TEMR-109	Some right-aligned languages still displayed and typed left-to-right	=	
	TEMR-108	Create Account Leave Feedback button overlaps with bottom page text	˅	
	TEMR-93	Disappearing Original Text when translating Arabic to English	=	
	TEMR-92	In Arabic encoding the URL errors 414 becomes too long too easily	=	
	TEMR-91	French character à (%C3%A0) breaks URL encoding	=	

35 temr-dev Bugs Reported

Test Quality

- Two test suites and testing libraries :
  - JUnit 4 for Java Tests
  - Pytest for Python tests
- Tests for Java Translation Functions
- Tests for Python HTTP Server and how it handles Argos, Marian, English in the Middle, and invalid translations

Test Results



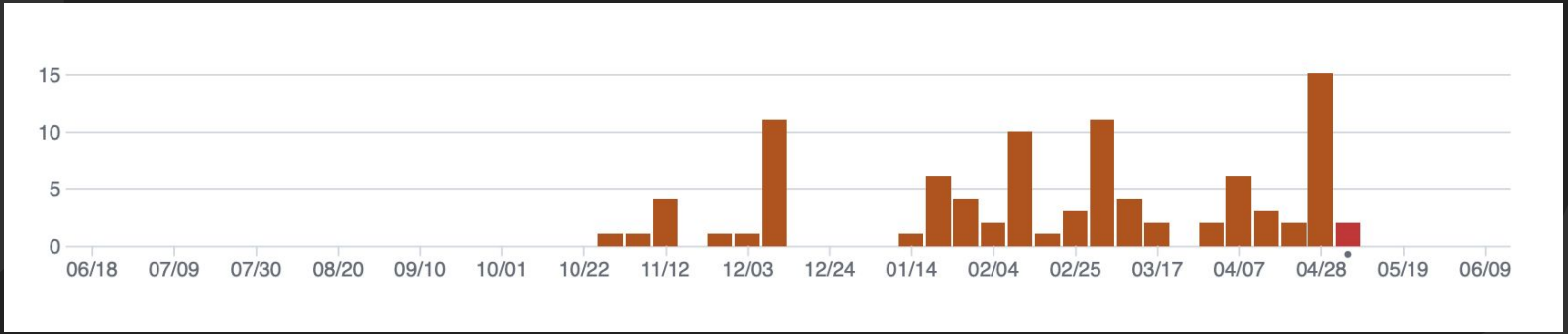

```
============================= test session starts ==============================
platform darwin -- Python 3.11.5, pytest-7.4.0, pluggy-1.0.0
rootdir: /Users/noahtobinsky/Desktop/Projects/CalPoly/CSC_Courses/CSC_402/femr
plugins: anyio-3.5.0
collected 6 items

test/unit/translator/test_server.py ......                              [100%]

======================== 6 passed, 10 warnings in 9.11s ========================
(base) noahtobinsky@Noahs-MBP-66 femr %
```

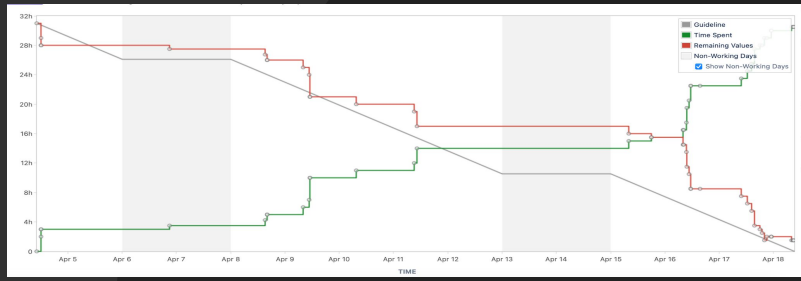
Commit History

temr-dev

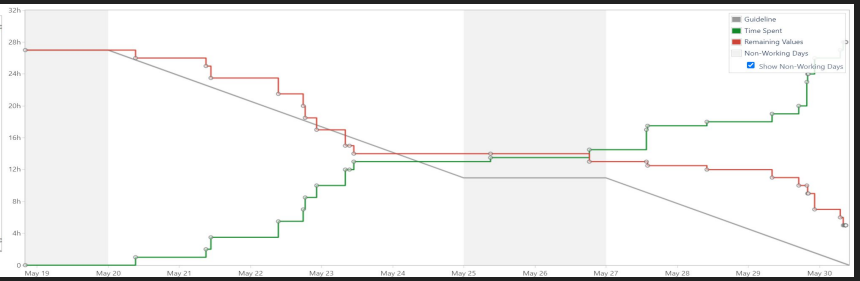


Burndowns

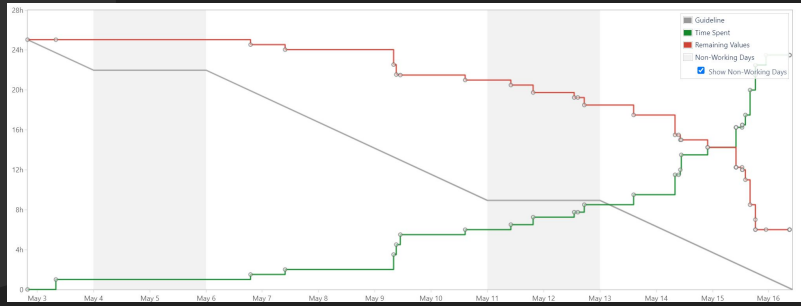
Sprint 9



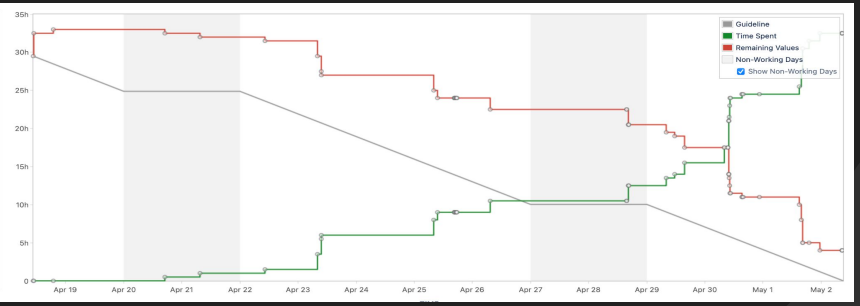
Sprint 10



Sprint 11

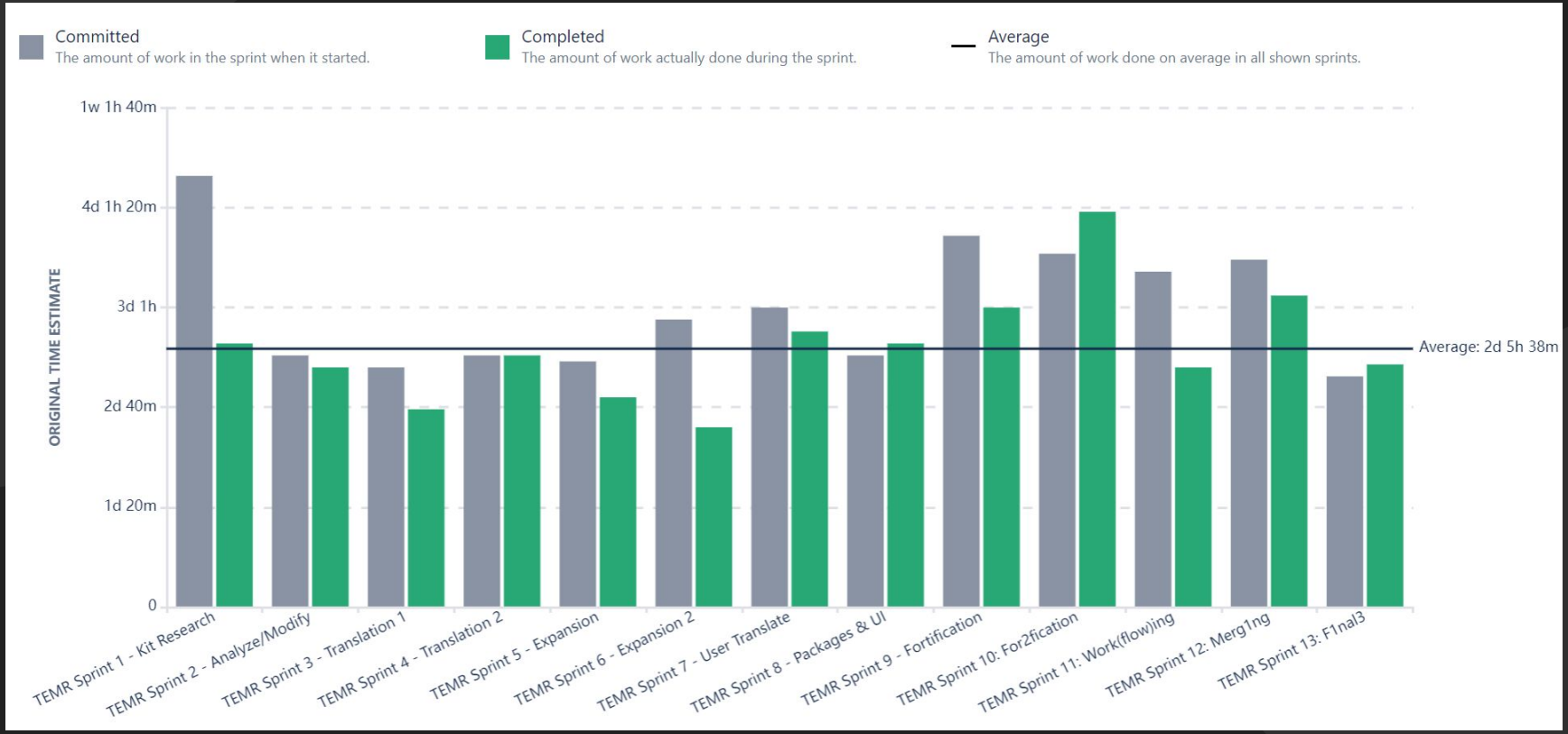


Sprint 12



Sprint 13

All The Velocity Charts



Future Stories and Additions

Future

- As a physician who speaks a language not in the list of ones currently supported by fEMR, I'd like to request that my language be supported
- As an admin, I'd like package downloads to be automatic and not require my input
- Docker deployment!

Reflection on Project Work

Reflections: What Went Well

- Good team makeup
- Working with a large legacy codebase
- Good roadmap planning in early quarters/sprints
- Merging branches with feminators
- Client meetings
- Personal Growth:
    - Clean Agile, WELC, Individual Presentations

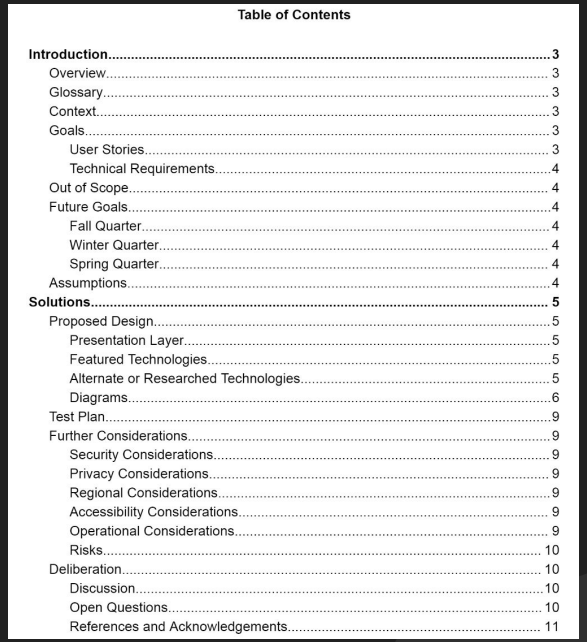
Reflection: What Didn't Go Well

- Last quarter task logging & sprint work distribution
- Scheduling meetings with feminators team
- Merged branches introduced opportunities for bugs
- Quality testing was hard on a large codebase

Handoff To Client

Handoff

- GitHub Project Management
- Documentation
  - TechSpec
  - Gitbook



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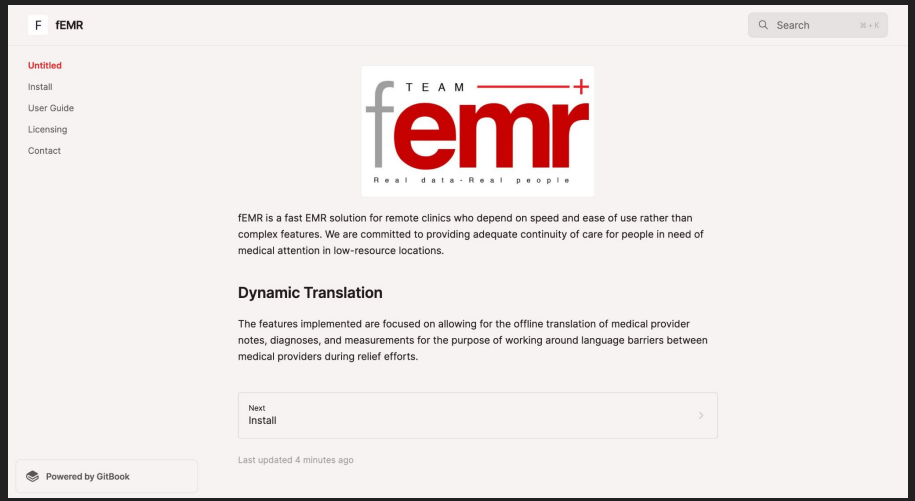
Gitbook Website

https://femr.gitbook.io/femr



Team Superpower

NAMING SPRINTS
W/ 30 CHARACTER LIMIT

TEMR Sprint 10: For2fication	28
TEMR Sprint 11: Work(flow)ing	29
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temr

Thanks you!

Questions?