

	...
<b>Online team meeting</b>	<a href="https://fau.zoom.us/j/67882200480?pwd=SFZEcmhWbVJFM3VHK2ErVmdzVWdvZz09">https://fau.zoom.us/j/67882200480?pwd=SFZEcmhWbVJFM3VHK2ErVmdzVWdvZz09</a>
<b>Production system (if any)</b>	...
<b>Test system (if any)</b>	...
<b>GitHub repository</b>	<a href="https://github.com/amosproj/amos2022ss01-firmware-downloader">https://github.com/amosproj/amos2022ss01-firmware-downloader</a>
<b>GitHub kanban board (project)</b>	<a href="https://github.com/amosproj/amos2022ss01-firmware-downloader/projects/1">https://github.com/amosproj/amos2022ss01-firmware-downloader/projects/1</a>
<b>Team T-shirt (white)</b>	<a href="https://www.shirtinator.de/en/loadBasket/hriPWRy39Qc">https://www.shirtinator.de/en/loadBasket/hriPWRy39Qc</a>
<b>Team T-shirt (black)</b>	<a href="https://www.shirtinator.de/en/loadBasket/ziDwG0qolz7">https://www.shirtinator.de/en/loadBasket/ziDwG0qolz7</a>
<b>Additional materials</b>	<a href="https://drive.google.com/drive/folders/1CuSPsDV2Uylrpx1031sULPWs9QJqpzD?usp=sharing">https://drive.google.com/drive/folders/1CuSPsDV2Uylrpx1031sULPWs9QJqpzD?usp=sharing</a>

Last Name	First Name	GitHub User Name	Email Address
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<b>Goals</b>	Successfully using the scrum framework to create a software that is complete, has no bugs, doesn't break and fulfills all given requirements.		Signature
<b>Meeting norms</b>	Wednesday meeting is mandatory for everyone, other separate meetings for the people involved (may vary). Being on time is mandatory. Delays or no-shows (e.g. sickness) have to be announced ASAP, at least before the start of the meeting. Team meeting should be structured and held according to SCRUM. Actual work has to be done during the sprint and/or in separate meetings.		Florian Schels
<b>Working norms</b>	criticism only on professional level; try to solve issue directly, if not possible contact the SM, if still no solution make it part of the team meeting		Maximilian May Andreas Hellmich
<b>Coordination norms</b>	Agree with FS and AM. POs responsible for technical coordination, SM responsible for ideal implementation of SCRUM Framework and team issues. Ideally SM involvement declines over time. If Meeting is requested by SD to solve misunderstandings they should select the Meeting leader		
<b>Communication norms</b>	Informal communication via Whatsapp. Technical communication via Slack. Respond within 24h max (and if it's just "I'll look into it at x"); Communicate illness/delays once noticed; If anything is not clear, communicate that immediately.		
<b>Consideration norms</b>	no side conversations during meetings		Tejesh Pala
<b>Cont. improvement norms</b>	team progress is tracked using project board. Impediments backlog is discussed in team meeting.		Uday Varun Kothapalli
<b>Rewards</b>	If sprints are successful, no additional meetings are necessary ;)		Tariq Hussain Magsi
<b>Sanctions</b>	No Sanctions for now - might be added later"		Fazeel Arif
			Ali Asghar
			Bilal Asghar Aziz
<a href="https://oss.cs.fau.de/teaching/cour">https://oss.cs.fau.de/teaching/cour</a>			

#	Meeting Day	Uni	Comment	Product Owner	Software Developer	Release Manager	Scrum Master
1	2022-04-27			Andreas Hellmich / Florian Schels	Everyone else	N/A	Maximilian May
2	2022-05-04			Andreas Hellmich / Florian Schels	Everyone else	Andreas Hellmich	Maximilian May
3	2022-05-11	Yes		Andreas Hellmich / Florian Schels	Everyone else	Tariq Hussain Magsi	Andreas Hellmich / Florian Schels
4	2022-05-18			Florian Schels	Everyone else	Bilal Asghar Aziz	Maximilian May
5	2022-05-25	Yes		Andreas Hellmich	Everyone else	Ali Asghar	Maximilian May
6	2022-06-01			Florian Schels	Everyone else	Tariq Hussain Magsi	Maximilian May
7	2022-06-08	Yes	Mid-term due	Andreas Hellmich	Everyone else	TEJESH PALA	Maximilian May
8	2022-06-15			Florian Schels	Everyone else	Uday Varun Kothapalli	Maximilian May
9	2022-06-22			Andreas Hellmich	Everyone else	Ali Asghar	Maximilian May
10	2022-06-29	Yes		Florian Schels	Everyone else	Fazeel Arif	Maximilian May
11	2022-07-06			Andreas Hellmich	Everyone else	Uday Varun Kothapalli	Maximilian May
12	2022-07-13			Florian Schels	Everyone else	Bilal Asghar Aziz	Maximilian May
13	2022-07-20	Yes		Andreas Hellmich	Everyone else	TEJESH PALA	Maximilian May
14	2022-07-27		Demo day!	Andreas Hellmich / Florian Schels	Everyone else	Fazeel Arif	Maximilian May
15	2022-08-03		Retrospective	Andreas Hellmich / Florian Schels	Everyone else	TEJESH PALA	Maximilian May

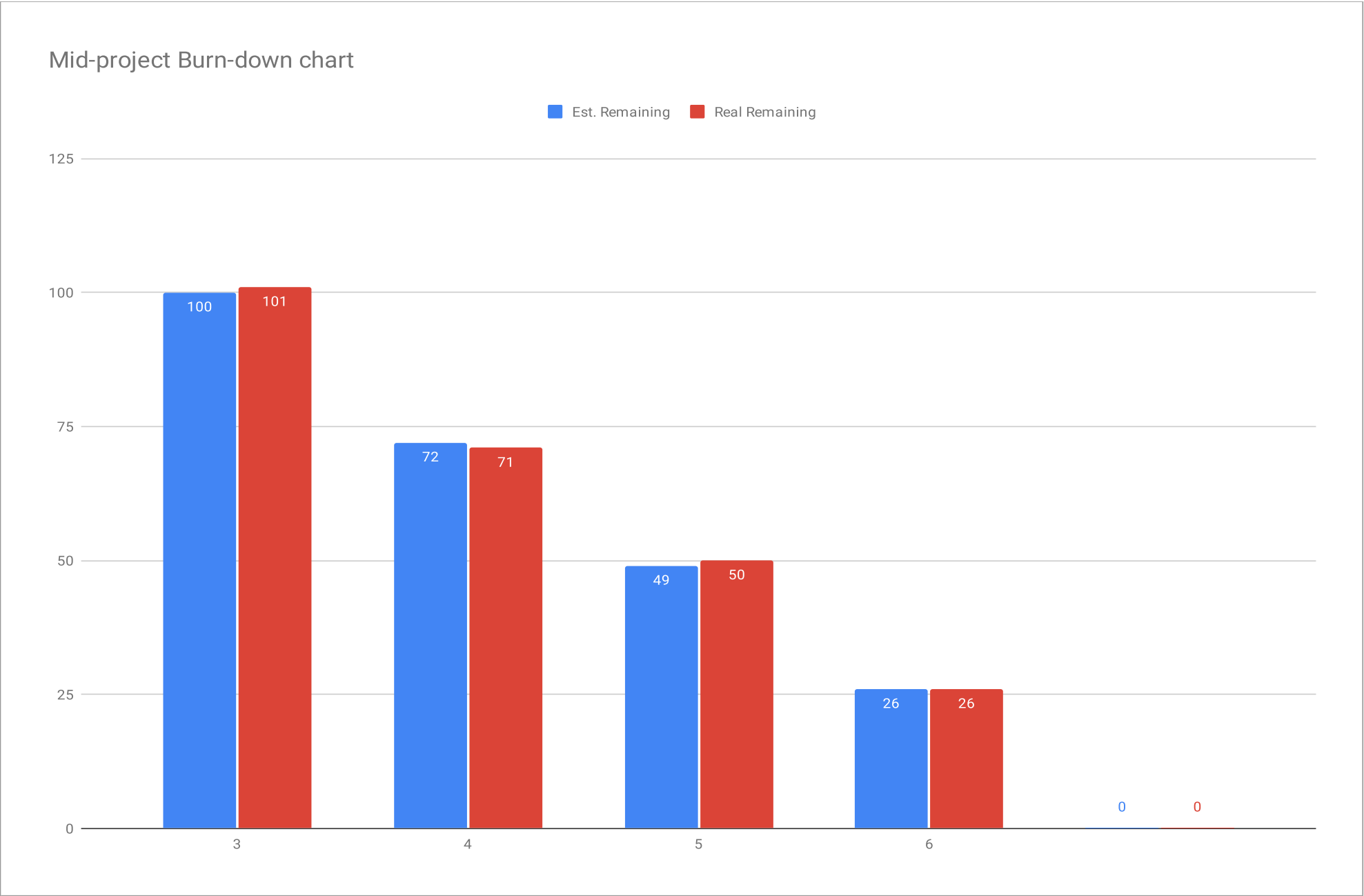
Product Vision	Project Mission
<p>The EMBA environment helps IT-Security professionals to get an easy and uncomplicated overview over vulnerabilities in firmware files. Its analysis process is started by an automated download of firmware files, which then are investigated for vulnerabilites. Users can acces EMBArk, a webbased dashboard, in order to obtain insights into the results. The whole product is based on a modular structure so only a part of the functionalities can be used, as well as the selection of vendors can be limited or easily expanded by adding additional modules.</p>	<p>The mission of this project is to create a fully automated and modularized firmware crawler, that can crawl vendor websites regularly and unsupervised for previously unknown firmware images. The found images are then added to EMBArk, where the vulnerability analysis is executed, logged and visualized.</p>

Term	Definition
major bug	A bug that results in an unexpected outcome, either visible to the user or persisted within the database.

#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn-Down
<b>Project</b>								
	Total			100		101		
<b>Sprints</b>								
				<b>Est. Size</b>	<b>Est. Remaining</b>	<b>Real Size</b>	<b>Real Remaining</b>	
3	Project Research			28	100	30	101	
4	Project Setup			23	72	21	71	
5	Download Module			23	49	24	50	
6	Additional Vendor Modules			26	26	26	26	
					0		0	
3	Project Research				28		30	
			<b>Research &amp; Planning</b>					
			Examination of Asus_Harvest	5		5		
			Examination of firmadyne scraper	5		5		
			Examination of Belkin_Harvest	5		5		
			Examination of Sitecom_Harvester	5		5		
			Creation of Database Model	5		5		
			Creation of Architectural Design Documents	3		5		
4	Project Setup				23		21	
			<b>Create basic software modules</b>					
			Create Firmware Download Executer	5		3		
			Extract Metadata from firmware file	5		5		
			Examination of ABB firmware download area	5		5		
			Create Database	8		8		
5	Download Module				23		24	
			<b>Create first vertical slice (Download -&gt; DB)</b>					
			Examination of GE firmware download area	5		3		
			Save metadata to database	5		5		
			Examination of 'Firmware-Scrapers'	5		8		
			JSON configuration file	3		3		
			Examination of Schneider Electric firmware download area	5		5		

#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn-Down
6	Additional Vendor Modules				26		26	
		Creation of multiple vendor modules						
			Download Module for Schneider Electric	5		5		
			Check if firmware is new	5		5		
			Download Module for GE	8		8		
			Download Module for Honeywell	8		8		



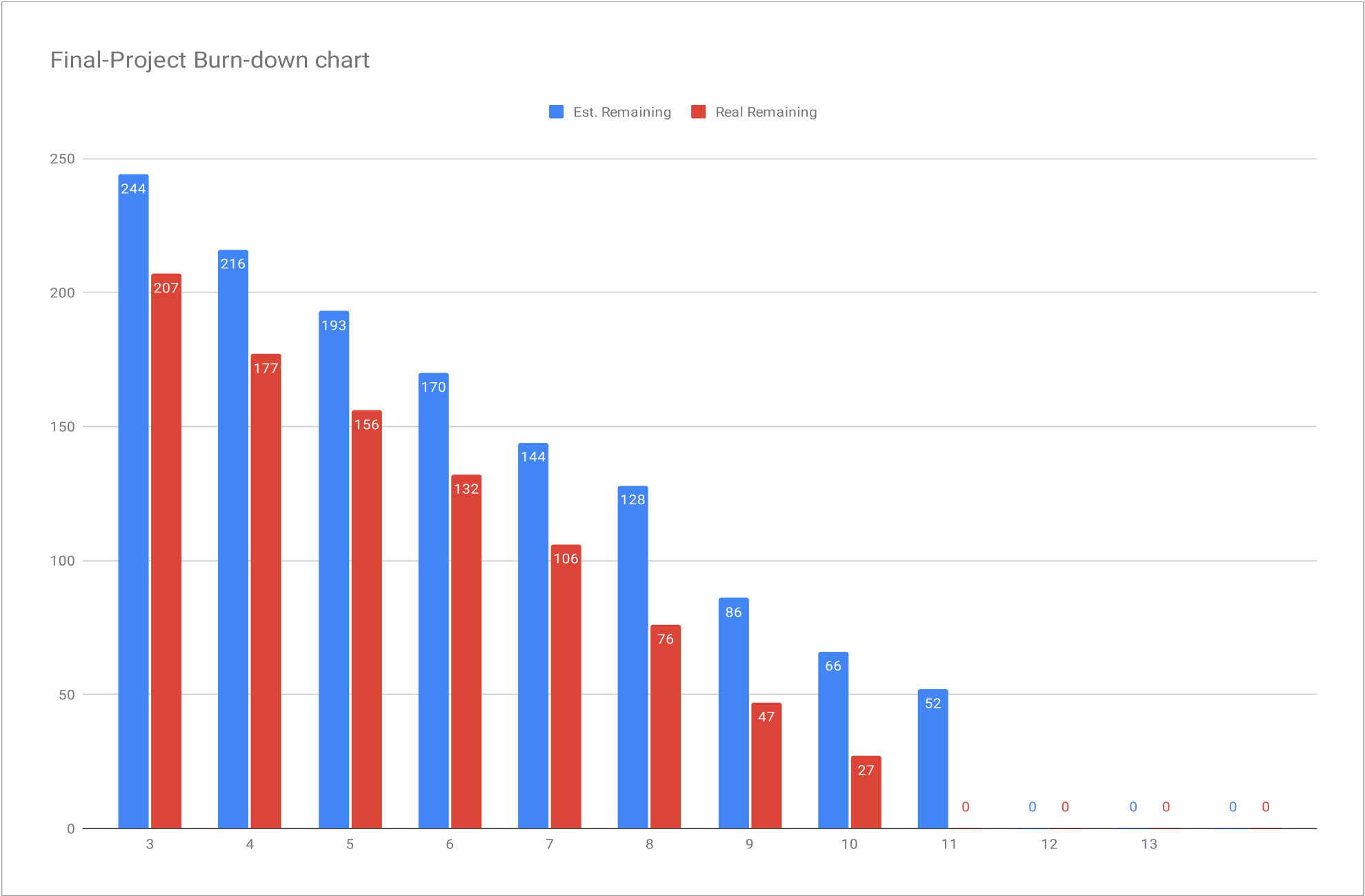


#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn-Down
<b>Project</b>								
	Total			244		207		
<b>Sprints</b>								
				<b>Est. Size</b>	<b>Est. Remaining</b>	<b>Real Size</b>	<b>Real Remaining</b>	
3	Project Research			28	244	30	207	
4	Project Setup			23	216	21	177	
5	Download Module			23	193	24	156	
6	Additional Vendor Modules			26	170	26	132	
7	Prepare Embark Connection			16	144	30	106	
8	Project Cleanup & Development Tooling			42	128	29	76	
9	Automated Installation & Embark Connection			20	86	20	47	
10	Embark Connection & Error tolerant Environment			14	66	27	27	
11	Refactoring & Error tolearant Environment			52	52	0	0	
12					0		0	
13					0		0	
					0		0	
3	Project Research				28		30	
			<b>Research &amp; Planning</b>					
			Examination of Asus_Harvest	5		5		
			Examination of firmadyne scraper	5		5		
			Examination of Belkin_Harvest	5		5		
			Examination of Sitecom_Harvester	5		5		
			Creation of Database Model	5		5		
			Creation of Architectural Design Documents	3		5		
4	Project Setup				23		21	
			<b>Create basic software modules</b>					
			Create Firmware Download Executer	5		3		
			Extract Metadata from firmware file	5		5		
			Examination of ABB firmware download area	5		5		
			Create Database	8		8		
5	Download Module				23		24	

#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn-Down
			<b>Create first vertical slice (Download -&gt; DB)</b>					
			Examination of GE firmware download area	5		3		
			Save metadata to database	5		5		
			Examination of 'Firmware-Scrapers'	5		8		
			JSON configuration file	3		3		
			Examination of Schneider Electric firmware download area	5		5		
<b>6</b>	<b>Additional Vendor Modules</b>				<b>26</b>		<b>26</b>	
			<b>Creation of multiple vendor modules</b>					
			Download Module for Schneider Electric	5		5		
			Check if firmware is new	5		5		
			Download Module for GE	8		8		
			Download Module for Honeywell	8		8		
<b>7</b>	<b>Prepare Embark Connection</b>				<b>16</b>		<b>30</b>	
			<b>Research on Embark connection options; additional vendor modules</b>					
			Investigation of Embark Database & FileStorage	5		8		
			Execute Data Scan regularly	-		-		
			Test cases for GE download module	-		-		
			Add filename field to database	1		1		
			Honeywell downloader for third category	5		8		
			Test cases for Honeywell download module	-		-		
			Download Module for ABB	5		13		
<b>8</b>	<b>Project Cleanup &amp; Development Tooling</b>				<b>29</b>		<b>29</b>	
			<b>Revert previous mistakes; streamline future development</b>					
			Execute Data Scan regularly	-		-		
			Update Config.json	3		3		
			Creation of an error tolerant environment	-		-		
			Update <a href="#">main.py</a>	-		-		
			Automated CodeChecks	8		8		
			Repository cleanup	5		5		
			Test cases for GE download module	5		5		
			Update vendor modules	-		-		
			Test cases for Honeywell download module	5		5		
			Refactor ABB	3		3		
<b>9</b>	<b>Automated Installation &amp; Embark Connection</b>				<b>20</b>		<b>20</b>	
			<b>Connect to Embark; Create installation script</b>					
			Installation script	5		5		

#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn-Down
			Refactor metadata extraction from honeywell download module	5		5		
			Honeywell downloader for second category	-		-		
			Update <a href="#">main.py</a>	-		-		
			Execute Data Scan regularly	5		5		
			Insert Data into EMBark and execute Scan	-		-		
			Run unit tests as Github action	5		5		
			Creation of an error tolerant environment	-		-		
10	<b>Embark Connection &amp; Error tolerant Environment</b>				14		27	
			<b>Connect to Embark; Design of error tolerant environment</b>					
			Update <a href="#">main.py</a>	5		8		
			Refactor <a href="#">test_database.py</a>	-		-		
			Actual linting	1		8		
			Creation of error tolerant environment	-		-		
			Insert Data into EMBark and execute scan	-		-		
			Finish Schneider Electric implementation	5		8		
			Refactor <a href="#">test_check_duplicates.py</a>	-		-		
			Refactor <a href="#">unit_tests.py</a>	3		3		
			Honeywell downloader for second category	-		-		
11	<b>Refactoring &amp; Error toleasant Environment</b>				52		0	
			<b>Refactor code, fix linting issues; Design of error tolerant environment</b>					
			Creation of error tolerant environment	8				
			Sanitize config input	3				
			Update all modules according to linting guideline	8				
			Honeywell downloader for second category	13				
			Refactor <a href="#">test_database.py</a>	3				
			Insert Data into EMBark and execute scan	5				
			Update database initialization	3				
			Refactor <a href="#">test_check_duplicates.py</a>	3				
			GE file location storage	3				
			Use one download folder for all modules	3				
12								

#	Theme	Goal	Feature Name	Est. Size (Feature)	Est. Size (Sprint)	Real Size (Feature)	Real Size (Sprint)	Burn- Down



#	Feature Definition of Done	Sprint Release Definition of Done	Project Release Definition of Done
1	Code is complete	No major bugs	No major bugs
2	Code is uploaded in GitHub	vendor module test	Feature test coverage at/above 50%
3	Fulfills the acceptance criteria in the User Story		User documentation is available
4	Documentation has been updated		Developer documentation is available
5	Functionality has been reviewed		Installation script is available
6	Only MIT-Licensed Libraries are used		
7	Create tests necessary to ensure feature is working		
8	Bill of Materials updated		
9			
10			

Type	Link / reference



S.No	Context	Where do we use it (Files)	Name	Version	License	Comment
1	DB Management Initial Setup	<a href="https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/database.py">https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/database.py</a>	SQLite3	SQLite 3.7.15	Open Source S/W	Internal Library of Python
2	OS Management for locating files on the OS Directories	<a href="#">test_check_duplicates.py</a>	OS Library	Available with Python 3	Open Source S/W	Internal Library of Python
3	This is used to log diffecent messages in the filesystem for backtracing the results	<a href="https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/database.py">https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/database.py</a>	Logging Module	Available with Python 3	Open Source S/W	Internal Library of Python
4	Used for making threads in python	<a href="#">main.py</a>	threading	Available with Python 3	MIT	External Library
5	Used for automation testing	almost all individual vendor modules	selenium	Available with Python 3	Apache 2.0	External Library
6	Used for making http requests	<a href="#">ge.py</a>	requests	Available with Python 3	Apache 2.0	External Library
7	Used for scraping html from website	<a href="#">ge.py</a>	BeautifulSoup	Available with Python 3	MIT	External Library
8	Used to manipulate different parts of the python runtime environment	<a href="#">ge.py</a>	sys	Available with Python 3	Open Source S/W	Internal Library of Python
9	Used for time in python like intervals, sleep etc	<a href="#">ge.py</a>	time	Available with Python 3	Open Source S/W	Internal Library of Python
10	Used for crone jobs	<a href="#">scanner.py</a>	schedule	Available with Python 3	MIT	External Library
11	Used for unit testing	In test files	unittest	Available with Python 3	Open Source S/W	Internal Library of Python
12	Used to download utility; It download's from the url directly	<a href="https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/chromium_downloader.py">https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/chromium_downloader.py</a>	wget	Available with Python 3	Open Source S/W	External Library
13	Used for Zip and Unzip actions using Python	<a href="https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/chromium_downloader.py">https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/chromium_downloader.py</a>	zipfile	Available with Python 3	Open Source S/W	Internal Library of Python
14	Used for parsing	<a href="#">main.py</a>	<a href="#">argparse</a>	Available with Python 3	MIT	Internal Library of Python
15	Used for multiprocessing threads	<a href="#">_init_.py</a>	multiprocessing	Available with Python 3	MIT	Internal Library of Python
16	Used for Regex mapping	<a href="https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/vendors/honeywell.py">https://github.com/amospro/amos2022ss01-firmware-downloader/blob/development/vendors/honeywell.py</a>	re	Available with Python >3.6	Apache 2.0	External Library
17						
18						
19						

Last Name	First Name	Value					
Hellmich	Andreas						
Schels	Florian						
PALA	TEJESH						
May	Maximilian						
Kothapalli	Uday Varun			0	No size		
Magsi	Tariq Hussain			1	Trivial size		
Asghar	Ali			2	Small size		
Arif	Muhammad Fazeel			3	Medium size		
Aziz	Bilal Asghar			5	Large size		
				8	Very large size		
				13	Too large (size)		
		#SDs					
		6	0				

[illegible]

1	How to install Embark if someone don't have Kali Linux?	Use Kali Linux inside a VM; if necessary Andreas can provide help with setting up a Hyper-V VM  You might get it to run in other Linux-Distributions, but a Kali VM is the way to go
2	If someone stucks in programming of this software who will guide us?	Normally all coding related tasks are responsibility of the SDs. Please discuss problems with the other SDs first. However if the problem persists, we can of course also discuss them in the teammeeting or in a separate meeting and find a solution or workaround all together.
3	Who will check the code after implementation?	Release manager checks quality of the code before the teammeeting and has to ensure that everything is running as expected. POs confirm the features in the Sprint Review.
4	Do we also build a UI	No, EMBARK is the UI
5	How do we maintain the MySQL based DB for our Project?, Is it in a Server or a memory location in a file system?  Can this be maintained in an Excel output or JSON or yaml or a db access file in local file system?	As per Industry Partner, the database will be made available offline so a sqlite library will be used based on intial setup  The database uses a local .db extension file which will be used by SQLite and an internal library of Python
<b>Questions for additional Teammeeting - 2</b>		
1	Demo for unit tests	<a href="https://docs.python.org/3/library/unittest.html">https://docs.python.org/3/library/unittest.html</a>
2	Demo of actual Release Process	<a href="https://git-scm.com/book/en/v2/Git-Basics-Tagging">https://git-scm.com/book/en/v2/Git-Basics-Tagging</a>
3		
4		
5		
6		
7		
8		
9		

No.	Sprint	Impediment	Explanation	Solution	Source	Status
1	3	Uneffective Teammeeting	Poor participation in the discussions	Turning cameras on. Improve Team spirit.	Max	improved
2	3	Lack of communication during sprint		Finally everybody joined slack. Explanations and motivational email hopefully helped.	Max	improved
4	3	Lack of understanding duties and SCRUM Framework	Way too many questions, which should have been clear for a long time	An additional, not mandatory meeting was held where SM and POs offered to answer remaining questions. Nobody showed up, but previously handed in questions have been answered. I expect fully working processes and teammeetings from now on.	Max	improved
5	3	Unorganized and uninformed teammembers	Too many questions regarding links, documents etc.	Please organize yourselves. Set up folders and bookmarks for all the information and documents we need in this project.	Andreas	improved
7	4	Very late commits; unsigned commits	If you commit your work 30 minutes before teammeeting there is no time for the release manager to prepare a working demo. If you dont sign your commits, the teaching team does not know who did the work.	Issue has been discussed in team meeting and feedback email. Solution should be obvious, please organize your tasks and duties together as SDs.	POs	approached
8	4	Meeting takes too long	1) Little tasks requested by SM/POs during meetings (f.e. in Retro) take too long. 2) Sprint review takes too long.	1) We still need better participation in the teammeeting. 2) Please try to quickly present your key results and be ready to share your screen.	Max	improved
9	5	Problems are indicated too late	Please check for problems/missunderstandings/questions as early as possible. If POs are contacted on monday evening (or not at all), the timeframe for solutions is too short.	POs opened a new slack channel specifically for questions regarding them and the features. Please use it as often as necessary.	POs	improved
10	5	Lack of teamwork between SDs	Lack of teamwork and communication between SDs during the sprint.	Please connect at least in teams of two and talk about your concept before the actual implementation of the features. Check each others code afterwards before the sprint review. With this approach we can really get the best ideas and solutions out of our team.	Max	improved
11	6	Rate of rejected features too high	Too many features were rejected in the sprint review. Many tasks are only completed after repeated reminders by POs/SM.	Please connect together as SDs, assign the features, talk about your ideas and concepts and motivate each other.	Max	approached
12	7	Missing testcases	In order to quickly review features and test them sufficiently, unittests should be build and demoed by the SDs.	An additional meeting was held, where POs explained the topic.	POs	improved
13	7	Problems with release process	We still did not have a correct release process yet.	An additional meeting was held, where POs and SM explained the topic again.	Max	improved
14	8	Rate of rejected features still too high (same impediment as nr. 11, but new solution)	Too many features were rejected in the sprint review. Many tasks are only completed after repeated reminders by POs/SM.	An additional mandatory meeting will be held every friday, where SDs can present their ideas/concepts and ask questions to POs (and SM).	Max	approached
15	11	Rate of rejected and uncompleted features still too high (same impediment as nr. 11, but new solution)	Too many features were rejected in the sprint review or just not completely finished.	Please create per-issue Pull Requests on the dev-branch, which will then be merged by POs.	POs	approached