AMTube – Booklets

1. Initial Idea

Web-app where users can publish videos to share them with other users.

System Objectives

- Present landing page with latest published videos;
- Manage user authentication;
- Present profile page user-dedicated;
- Allow users to publish, search and watch videos;
- Allow users to subscribe to their favourite content creators to easily access their videos.

Potential Users

- People interested in watching videos from their favourite content creators;
- Content creators willing to create and share videos.

Use Cases

- User registers to the app;
- User logins to the app;
- User accesses the home page, visualizing the latest videos published by other users he subscribed to;
- User can subscribe to/unsubscribe from other users;
- User can upload a video;
- User can edit/delete a video he previously uploaded;
- User can navigate to his/another user profile and view his details and his published videos;
- User can be notified whenever one of his subscriptions uploads a new video;
- User can search videos;
- User can like/comment a video;
- User can manage his profile;
- User logouts;
- User deletes his account and all videos uploaded;

2. User Stories and Prototypes

SIGN-UP

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As an unregistered user, I want to be able to register to the application so that I can access it	1 High	1 High	1 High	1

LOGIN

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a non-logged in registered user, I want to be able to login to the application so that I can use the application services	1 High	1 High	1 High	1

LOGOUT

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to logout from the application	1 High	1 High	2 Med	1

*Detail of the Header present in every page once the user is logged in

| AMTube | Q search | 🔔 | Subscriptions | My Videos | Profile | Logout |

MAIN

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to view the Main Page, so that I can visualize the latest videos	1 High	1 High	1 High	5

AMTube Q search 🔔 Subscriptions My Videos Profile Logout

Latest Videos

▶ Video Title Profile Name
▶ Video Title Profile Name
▶ Video Title Profile Name
▶ Video Title Profile Name

▶ Video Title Profile Name
▶ Video Title Profile Name
▶ Video Title Profile Name
▶ Video Title Profile Name

SUBSCRIPTIONS

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to subscribe to a user, so that I can quickly access his videos/profile	4 Low	4 Low	4 Low	1
As a registered user, I want to be able to reach the Subscriptions Page, so that I can visualize the users I subscribed to	2 Med	2 Med	3 Med	1
As a registered user, I want to be able to be notified when one of my subscriptions uploads a new video, so that I can easily know about it	4 Low	4 Low	3 Med	5

MY VIDEO

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to upload a video, so that others can see it	1 High	1 High	2 Med	2
As a registered user, I want to be able to view the videos I have uploaded on the platform	1 High	1 High	1 High	2
As a registered user, I want to be able to delete a video I previously uploaded so that others can't see it anymore	1 High	1 High	1 High	2
As a registered user, I want to be able to edit a video's details uploaded on the application	2 Med	2 Med	4 Low	2

VIDEO

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to watch a Video uploaded on the application	1 High	1 High	1 High	3
As a registered user, I want to be able to like/dislike/comment a video, so that I can interact with the content creator and his community	3 Med	3 Med	3 Med	2

SEARCH

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to search videos so that I can watch them	1 High	1 High	1 High	3
As a registered user, I want to be able to search other users, so that I can watch his profile and videos	1 High	1 High	3 Med	3

PROFILE

USER STORY	PRIORITY	VALUE	RISK	ESTIMATE
As a registered user, I want to be able to reach my Profile page so that I can see my details	2 Med	2 Med	2 Med	2
As a registered user, I want to be able to access another user's Profile page, so that I can see his details and his published videos	3 Med	3 Med	2 Med	2
As a registered user, I want to be able to manage my profile	2 Med	2 Med	1 High	2
As a registered user, I want to be able to delete my account and all videos uploaded	2 Med	2 Med	1 High	2

AMTube 🔍 search 🔔 | Subscriptions | My Videos | Profile | Logout |

My Profile

Delete My Account

⚠️

Deleting your account will also delete every video you uploaded on AMTube

Username: | Placeholder showing current username |

E-Mail: | Placeholder showing current email |

Current Password: | Enter your password... |
New Password: | Enter your password... |

Confirm Changes

AMTube 🔍 search 🔔 | Subscriptions | My Videos | Profile | Logout |

(U1) **User 1**   **Subscribe**

| Video Title | Video Title | Video Title | Video Title |

| Video Title | Video Title | Video Title | Video Title |

3. Effort estimation

No.	Module	Function Name	Description	Type	DET	RET / FTR	Complexity	FP	Remarks
1	User	User	Model stored to represent the users	ILF	3	1	Low	7	
2	Video	Video	Model stored to represent the videos	ILF	9	1	Low	7	
3	Comment	Comment	Model stored to represent the comments	ILF	5	1	Low	7	
4	Notification	Notification	Model stored to represent the notifications	ILF	2	1	Low	7	
5	Subscription	Subscription	Model stored to represent the subscriptions	ILF	2	1	Low	7	
6	Login	Login	Login to the Application	EI	2	1	Low	3	
7	Register	Register	Register to the Application	EI	3	1	Low	3	
8	Main Page	Show Latest Videos	Shows the latest videos published on AMTube	EQ	9	1	Low	3	
9	My Videos	Upload New Video	Upload a new video on AMTube	EI	9	1	Low	3	
10	My Videos	Delete Video	Delete a video precedently uploaded	EI	1	1	Low	3	
11	My Videos	Edit Video	Edit title/description/thumbnail of a video precedently uploaded	EI	8	1	Low	3	
12	Profile	Edit Profile	Edit the user's username/mail/password	EI	2	1	Low	3	
13	Notification	Show Notifications	Shows the user the latest videos uploaded by the users he subscribed to	EQ	5	2	Low	3	3 DET from Video (Title, Date & Thumbnail)
14	Subscription	Add Subscription	User subscribes to another user	EI	2	1	Low	3	
15	Subscription	Delete Subscription	User cancels the subscription to another user	EI	2	1	Low	3	
16	Video	Show Video	User views the selected video and its comments	EQ	14	2	Average	4	
17	Video	Add Comment	User comments the video he's watching	EI	5	1	Low	3	
18	Video	Delete Comment	User deletes his comment previously posted under the video he's watching	EI	1	1	Low	3	
19	Video	Add Like/Dislike	User likes or dislikes the video he's watching	EI	2	1	Low	3	ID video + the number of likes/dislikes
20	Profile	Show User	Show the profile of user	EQ	6	3	Average	4	Subscription + Username + Videos
21	Search	Search	User queries for a video title or another user	EQ	9	2	Average	4	Videos + User

Total Unadjusted Function Points: **86**.

Considering Java as main language, this is equivalent to **4558 SLOC**

COCOMO II - Constructive Cost Model

Software Size   Sizing Method Function Points ∨

Unadjusted Function Points 86   Language Java ∨

Software Scale Drivers

Precedentedness Nominal ∨   Architecture / Risk Resolution High ∨   Process Maturity Nominal ∨

Development Flexibility Very High ∨   Team Cohesion Very High ∨

Software Cost Drivers

Product

Required Software Reliability Low ∨

Data Base Size Nominal ∨

Product Complexity Nominal ∨

Developed for Reusability Nominal ∨

Documentation Match to Lifecycle Needs Nominal ∨

Maintenance Off ∨

Personnel

Analyst Capability High ∨

Programmer Capability High ∨

Personnel Continuity Very High ∨

Application Experience Nominal ∨

Platform Experience Nominal ∨

Language and Toolset Experience Nominal ∨

Platform

Time Constraint Nominal ∨

Storage Constraint Nominal ∨

Platform Volatility Low ∨

Project

Use of Software Tools Very High ∨

Multisite Development Very High ∨

Required Development Schedule Nominal ∨

Software Labor Rates

Cost per Person-Month (Dollars) 1800

Calculate

Results

Software Development (Elaboration and Construction)

Effort = 4.7 Person-months
Schedule = 5.9 Months
Cost = $8380

Total Equivalent Size = 4558 SLOC
Effort Adjustment Factor (EAF) = 0.33

Staffing Profile

Your project is too small to display a staffing profile due to truncation.

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	0.3	0.7	0.4	$503
Elaboration	1.1	2.2	0.5	$2011
Construction	3.5	3.7	1.0	$6369
Transition	0.6	0.7	0.8	$1006

Software Effort Distribution for RUP/MBASE (Person-Months)

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.0	0.1	0.4	0.1
Environment/CM	0.0	0.1	0.2	0.0
Requirements	0.1	0.2	0.3	0.0
Design	0.1	0.4	0.6	0.0
Implementation	0.0	0.1	1.2	0.1
Assessment	0.0	0.1	0.8	0.1
Deployment	0.0	0.0	0.1	0.2

4. System Architecture

The system architecture is based on the orchestration of the micro-services each running on its own Docker Container and each accessing its own data.
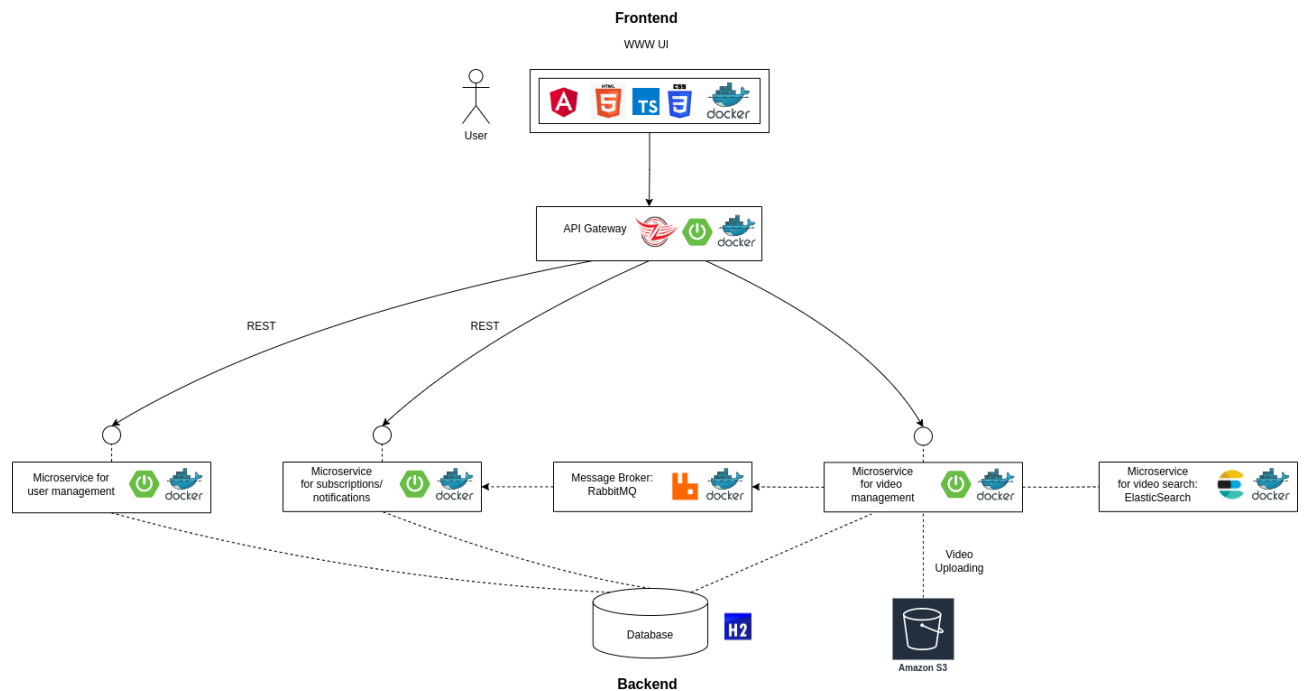
- **Frontend**: developed in *Angular* (relying on *HTML+CSS+TypeScript*), it is responsible for the UI, dealing with the visualization and the interaction with the user.
- **Api Gateway**: leveraging on *Netflix Zuul*, it serves as a single entry point for the client and routes the user requests coming from the backend to the proper micro-service. It also contacts the User Management micro-service to verify if the request is coming from an authorized user.
- **User Management**: handles registration / authentication (relying on a *JWT token*) /access to the user profile;
- **Subscriptions/Notifications**: deals with the subscriptions issued by each user, allowing the user to be notified whenever one of his subscription uploads a new video, receiving the communication of the upload from a queue handled by *RabbitMQ.*
- **Video management**: handles the upload/visualization/modification/deletion of videos. It also allows the user to like/comment a video.
- **Video search**: it deals with the search of a video and relies on *ElasticSearch*.

The back-end micro-services are developed using Spring Boot and the database follows the Database per Service pattern.

5. Sprints Analytics

Each Sprint lasts 14 days (2 weeks)

Sprint 1: 07/02/2022 – 18/02/2022

TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION
		ESTIMATE	COMPLETED	REMAINING				
Project Definition		23	25	-2	1			
Ideas Brainstorming	Everyone	4	4	0	1	07/02/2022	09/02/2022	3
Research of Information	Everyone	5	5	0	1	09/02/2022	11/02/2022	3
Project Planning	Everyone	8	10	-2	1	09/02/2022	18/02/2022	10
Scope, System Objectives & Goals Definition	Everyone	2	2	0	1	16/02/2022	16/02/2022	1
Technical Architecture Sketching	Everyone	2	2	0	1	17/02/2022	17/02/2022	1
Project Proposal	Everyone	2	2	0	1	18/02/2022	18/02/2022	1

Sprint 2: 18/07/2022 – 29/07/2022

TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION
		ESTIMATE	COMPLETED	REMAINING				
Project Setup		20	20	0	2			
User Stories	Everyone	4	4	0	2	18/07/2022	20/07/2022	3
Wireframes	Everyone	6	6	0	2	20/07/2022	22/07/2022	3
Function Points & COCOMO Estimation	Everyone	4	4	0	2	25/07/2022	25/07/2022	1
Product Backlog	Everyone	4	4	0	2	27/07/2022	28/07/2022	2
Documentation	Everyone	2	2	0	2	29/07/2022	29/07/2022	1

Sprint 3: 1/08/2022 – 12/08/2022

TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION
		ESTIMATE	COMPLETED	REMAINING				
Back-End Implementation		56	65	-9	3			
First version of the User Management Microservice	Casciani	4	6	-2	3	28/07/2022	07/08/2022	11
DB for User Management Microservice	Casciani	1	1	0	3	29/07/2022	07/08/2022	10
User Management Functionalities	Casciani	8	8	0	3	29/07/2022	07/08/2022	10
First version of the Notification Microservice	Casciani	4	4	0	3	04/08/2022	07/08/2022	4
Subscription Model, Repository & Controller	Casciani	6	6	0	3	04/08/2022	07/08/2022	4
Notification Model, Repository & Controller	Casciani	6	6	0	3	04/08/2022	07/08/2022	4
First Version of the Video Microservice	De Luca	6	8	-2	3	08/08/2022	11/08/2022	4
DB for videos	De Luca	1	1	0	3	08/08/2022	11/08/2022	4
Video, Comment and Like Models & Repositories	De Luca	8	8	0	3	08/08/2022	11/08/2022	4
Controller for the Video Service	De Luca	10	14	-4	3	09/08/2022	11/08/2022	3

Sprint 4: 15/08/2022 – 26/08/2022

TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION
		ESTIMATE	COMPLETED	REMAINING				
Front-End & API Gateway		104	118	-14	4			
Start Frontend Microservice (model-components-structure)	Casciani	4	4	0	4	10/08/2022	15/08/2022	6
Defined URLs	Casciani	2	2	0	4	10/08/2022	15/08/2022	6
Fix Video Management	Casciani	3	3	0	4	12/08/2022	15/08/2022	4
ApiGateway Redirect	Casciani	4	4	0	4	14/08/2022	15/08/2022	2
Video Uploading from Frontend	Casciani	4	8	-4	4	16/08/2022	17/08/2022	2
Api Gateway Zuul	Casciani	4	4	0	4	17/08/2022	17/08/2022	1
Video Visualization	Casciani	4	4	0	4	18/08/2022	18/08/2022	1
S3 Support	Casciani	4	4	0	4	19/08/2022	19/08/2022	1
JWT Authentication users Backend	Casciani	4	4	0	4	20/08/2022	22/08/2022	3
Api Gateway Filtering	Casciani	4	7	-3	4	23/08/2022	24/08/2022	2
RabbitMQ Communication video & notification MS	Casciani	5	6	-1	4	25/08/2022	27/08/2022	3
Dockerfiles first version + Subscriptions Logic	Casciani	4	4	0	4	28/08/2022	28/08/2022	1
Footer and Header	De Luca	2	2	0	4	22/08/2022	22/08/2022	1
Login and Sign Up Pages	De Luca	4	3	1	4	22/08/2022	22/08/2022	1
Home Page	De Luca	6	7	-1	4	23/08/2022	23/08/2022	1
My Videos Page & Upload new Video frontend logic	De Luca	10	12	-2	4	24/08/2022	25/08/2022	2
My profile Page	De Luca	4	6	-2	4	25/08/2022	26/08/2022	2
Video Details Page	De Luca	6	8	-2	4	26/08/2022	27/08/2022	2
Profile Page	De Luca	6	6	0	4	27/08/2022	27/08/2022	1
Search Page	De Luca	4	4	0	4	27/08/2022	28/08/2022	2
Edit-Video Page	De Luca	4	4	0	4	27/08/2022	28/08/2022	2
Subscription Page	De Luca	6	8	-2	4	28/08/2022	29/08/2022	2
Notification Page	De Luca	6	4	2	4	29/08/2022	29/08/2022	1

TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION
		ESTIMATE	COMPLETED	REMAINING				
Containerization and Frontend Fixes		24	28	-4	5			
ElasticSearch Support	Casciani	8	10	-2	5	29/08/2022	31/08/2022	3
Frontend fixes to home page and search page	De Luca	6	6	0	5	30/08/2022	01/09/2022	3
Setup Docker	Casciani	10	12	-2	5	30/08/2022	02/09/2022	4

Burndown Data

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
PLAN	227	223	219	216	212	208	204	201	197	193	189	185	182	178	174	170	166	163	159	155	151	148
ESTIMATE	227	225	223	220	218	216	214	212	210	208	206	204	203	201	199	197	195	193	193	193	189	189
HRS COMPLETED	2	2	3	2	2	2	2	2	2	2	2	1	2	2	2	2	2	0	0	4	0	2
HRS REMAINING	225	223	220	218	216	214	212	210	208	206	204	203	201	199	197	195	193	193	193	189	189	187

DAY	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
PLAN	144	140	136	132	129	125	121	117	114	110	106	102	98	95	91	87	83	79	76	72	68
ESTIMATE	187	185	183	183	181	177	173	168	164	158	152	148	143	135	131	127	123	117	112	104	96
HRS COMPLETED	2	2	0	2	4	4	5	4	6	6	4	5	8	4	4	4	6	5	8	8	8
HRS REMAINING	185	183	183	181	177	173	168	164	158	152	148	143	135	131	127	123	117	112	104	96	88

DAY	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
PLAN	64	61	57	53	49	45	41	37	33	29	25	21	17	13	9	5	1
ESTIMATE	88	80	72	64	56	47	39	31	23	15	7	-1	-7	-13	-19	-23	-27
HRS COMPLETED	8	8	8	8	8	8	8	8	8	8	8	6	6	6	6	4	2
HRS REMAINING	80	72	64	56	48	39	31	23	15	7	-1	-7	-13	-19	-23	-27	-29

Total Estimated Hours: **227**

Completed Hours: **256**

Remaining Hours: **-29**

Total Days: **60**

Average Estimated Hours per Day: **3,783333333**

BURNDOWN CHART

Legend: HRS COMPLETED | PLAN | ESTIMATE | HRS REMAINING