



AnimalDex

Laboratory of Advanced Programming



1940729 Baldi
1951836 Catalano
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Project Description



Our goal is to encourage people to get to know the italian fauna and raise awareness about it.

AnimalDex is a distributed web application which allows the players to register encountered animals, interact with other players and get to know the italian fauna. Moreover, it is possible to seek for help if a player encounters a wounded animal, by contacting our veterinary operators.

Our application is available to anyone who is interested and it is developed for educational and entertaining purposes.

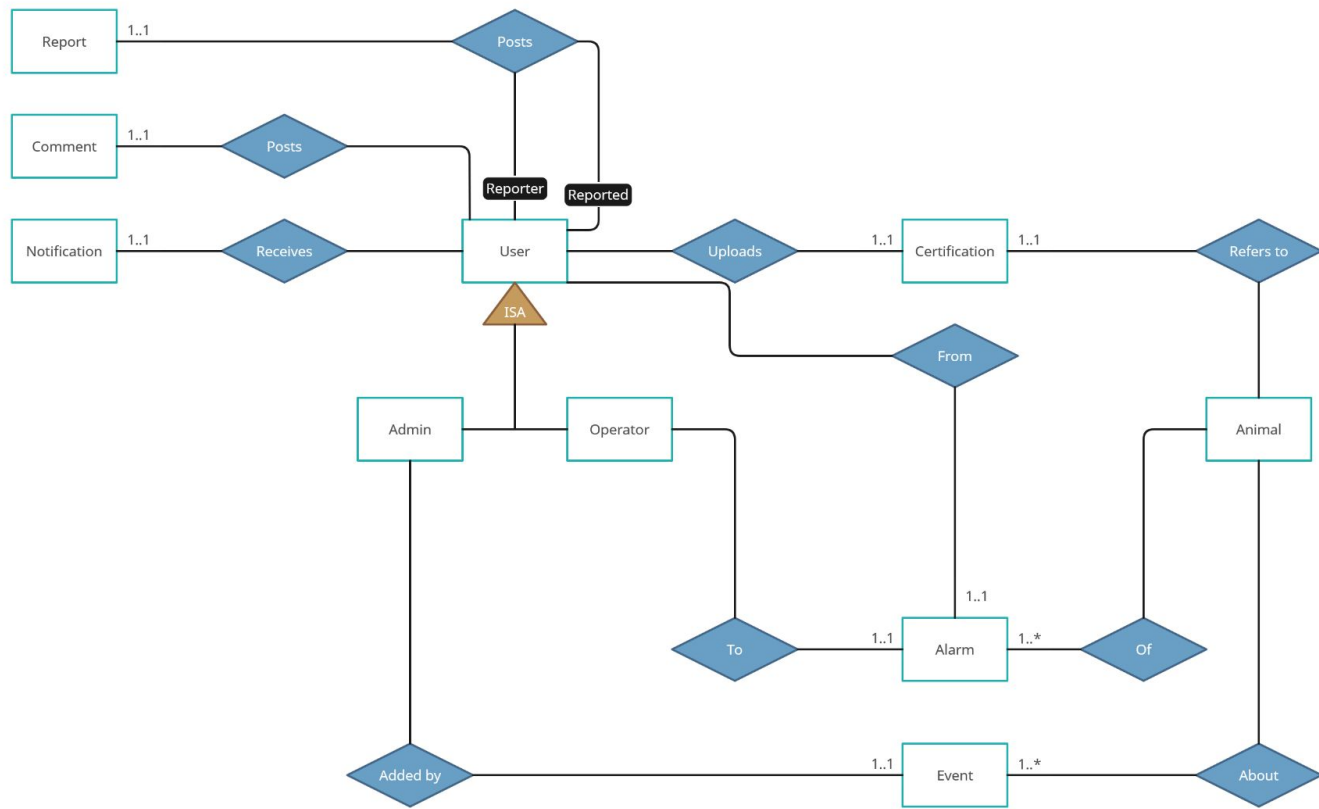
Project Design



The design process includes:

- ER Diagram
- Technologies
- Microservices
- Function Points
- Cocomo II
- Balsamiq (Mockups)

Modeling Phase - ER Diagram



Technologies

Common tools:

- Github
- Docker



Backend User/Admin/Operator:

- Rabbitmq
- Nodejs
- Flask
- Spring boot
- Google oauth
- Postgresql



Frontend User/Admin/Operator:

- Thymeleaf
- HTML
- JavaScript
- Css



Backend CentralServer:

- Spring boot
- Postgresql



Frontend CentralServer:

- Thymeleaf

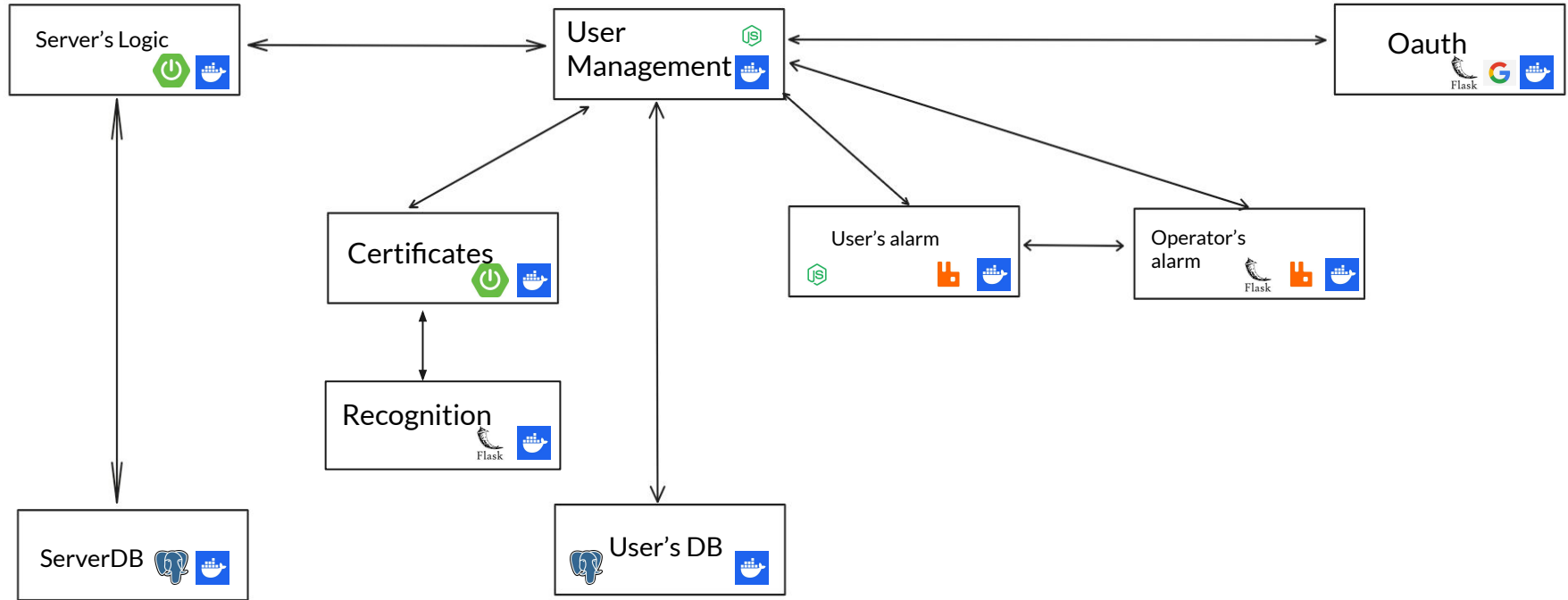


Microservices



- User Management
- Certificate
- Notification
- Forum
- Animal's Recognition

Architecture



Function Points




Table Name	EIF	ILF	DET	RET	FP
Notification	0	1	3	1	6
Certificate	1	1	4	1	6
Event	0	1	8	1	6
Comment	0	1	3	1	6
Report	0	1	5	1	6
Alarm	0	1	10	1	6
Animal	0	1	5	1	6
Operator	0	1	6	1	6
User	1	1	14	1	6

Total amount of FP


119

Function Points



EI	FTR	DET	FP
User/Admin deletion	1	8	2
Registration User/Admin	1	14	2
Registration Operator	1	6	2
Operator Deletion	1	3	1
User/Admin modification	1	10	2
Operator modification	1	5	2
Delete comment	1	2	1
Add comment	1	3	1
Modify comment	1	2	1
Uploading certificate	1	3	1
Modification certificate	1	1	1
Modify/Insert profile image	1	1	1
Login Operator	1	2	1
Login Admin/User	1	2	1
Admin/User add report	1	5	2
Ban user	1	1	1
Add event	1	8	2
Modify user evaluation by operator	1	2	1
Modify operator evaluation by user	1	2	1
Add Alarm by User	1	10	2
Modify Alarm by Operator	1	2	1


Function Points



EO	FTR	DET	FP
AnimalDex filter per User	2	4	4
AnimalDex filter per region	1	4	2
AnimalDex filter per name	1	4	2
Sort AnimalDex	1	4	2
Forum filter by username	1	3	2
Forum filter by date	1	3	2
View map	2	2	4
View scoreboard	1	2	2
Show winner	1	2	2

EQ	FTR	DET	FP
View Animal	1	4	1
View User	1	11	2
View notification	1	1	1
View certificated Animal	2	6	4
View report	1	5	2
View Alarm	1	8	2
View evaluations	1	6	2

Function Points



RET/DET	1-19 DET	20-50 DET	51+ DET
0-1 RET	Low 6/4	Low 6/4	Med. 9/7
2-5 RET	Low 6/4	Med. 10/7	High 15/10
6+ RET	Med. 10/7	High 15/10	High 15/10

EI

FTR/DET	1-4 DET	5-15 DET	16+ DET
0-1 FTR	Low 1	Low 2	Med. 3
2 FTR	Low 3	Med. 4	High 5
3+ FTR	Med. 5	High 6	High 7

EO/EQ

FTR/DET	1-4 DET	5-15 DET	16+ DET
0-1 FTR	Low 2/1	Low 3/2	Med. 4/3
2 FTR	Low 4/3	Med. 5/4	High 6/5
3+ FTR	Med. 5	High 6	High 7

Cocomo II - Cost Model

COCOMO II - Constructive Cost Model

Monte Carlo Risk
Auto Calculate

Software Size

Sizing Method

Unadjusted
Function
Points

Language

Software Scale Drivers

Precedentedness Architecture / Risk
Resolution Process Maturity

Development Flexibility Team Cohesion

Software Cost Drivers

Product

Required Software
Reliability

Data Base Size

Product Complexity

Developed for Reusability

Documentation Match to
Lifecycle Needs

Personnel

Analyst Capability

Programmer
Capability

Personnel
Continuity

Application
Experience

Platform Experience

Language and
Toolset Experience

Platform

Time Constraint

Storage Constraint

Platform Volatility

Project

Use of Software
Tools

Multisite
Development

Required
Development
Schedule

Maintenance

Software Labor Rates

Cost per Person-Month (Dollars)

Cocomo II - Results

Software Development (Elaboration and Construction)

Effort = 37.1 Person-months

Schedule = 9.8 Months

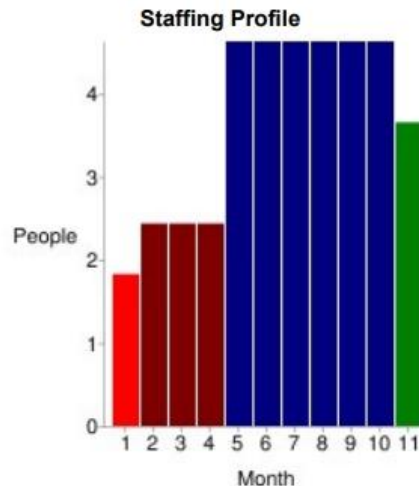
Cost = \$37141

Total Equivalent Size = 6307 SLOC

Effort Adjustment Factor (EAF) = 1.53

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
Inception	2.2	1.2	1.8	\$2228
Elaboration	8.9	3.7	2.4	\$8914
Construction	28.2	6.1	4.6	\$28228
Transition	4.5	1.2	3.7	\$4457





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

Phase/Activity	Inception	Elaboration	Construction	Transition
Management	0.3	1.1	2.8	0.6
Environment/ CM	0.2	0.7	1.4	0.2
Requirements	0.8	1.6	2.3	0.2
Design	0.4	3.2	4.5	0.2
Implementation	0.2	1.2	9.6	0.8
Assessment	0.2	0.9	6.8	1.1
Deployment	0.1	0.3	0.8	1.3

Mockup

AnimalDex

<input type="text" value="Email"/>	Change email
<input type="text" value="Username"/>	Change username
<input type="text" value="Name"/>	Change name
<input type="text" value="Surname"/>	Change surname
<input type="text" value="Password"/>	Change password
<input type="text" value="Date of birth"/>	Change date of birth

▼

☐ Allow forum notifications ☐ Allow emergencies notifications

SCRUM



We developed the web app through SCRUM method and divided the process in 6 sprints:

1. Design
2. Certification (with Recognition), User Management Part 1
3. Certification, User Management (with OAuth) Part 2
4. Certification, User Management Part 3
5. Notification, Forum Part 1 + Certification, User Management Part 4
6. Notification, Forum Part 2 + Testing, Presentation

SCRUM

WORK BREAKDOWN STRUCTURE	TASK TITLE	TASK OWNER	AMOUNT OF WORK IN HOURS			SPRINT	START DATE	DUE DATE	DURATION	PCT OF TASK COMPLETE
			ESTIMATE	COMPLETED	REMAINING					
1	Design of project		15	16	-1	1				107%
1.1	ER Schema and User stories	everyone	4	4	0	1	04/03/2024	06/03/2024	3	100%
1.2	LoFi	everyone	3	3	0	1	06/03/2024	08/03/2024	3	100%
1.3	Function Points	everyone	5	4	1	1	13/03/2024	14/03/2024	2	80%
1.4	COCOMO II	everyone	1	1	0	1	14/03/2024	14/03/2024	1	100%
1.5	System architecture estimation	everyone	1	2	-1	1	20/03/2024	22/03/2024	3	200%
1.6	II Sprint definition	everyone	1	2	-1	1	22/03/2024	22/03/2024	1	200%
2	Implementation of II Sprint features		13	13	0	2				100%
2.1	First drafting of db structure	Alessandro Catalano	2	2	0	2	25/03/2024	25/03/2024	1	100%
2.2	First drafting of frontend	Claudia Di Paolo	3	3	0	2	25/03/2024	25/03/2024	1	100%
2.3	First drafting of certification service	Saverio Dieni	5	5	0	2	25/03/2024	26/03/2024	2	100%
2.4	Database within the docker container	Alessandro Catalano	3	3	0	2	27/03/2024	27/03/2024	1	100%
2.5	Certification service within the docker container	Saverio Dieni	2	2	0	2	29/03/2024	29/03/2024	1	100%
2.6	Signup/login Logic Part 1	Catalano and Di paolo	4	6	-2	2	30/03/2024	12/04/2024	14	150%
2.7	Communication between certification and recognition	Saverio Dieni	2	2	0	2	02/04/2024	02/04/2024	1	100%
2.8	First version of central server	Saverio Dieni	8	10	-2	2	03/04/2024	05/04/2024	3	125%
2.9	Local db (sql file + docker)	Alessandro Catalano	2	2	0	2	10/04/2024	10/04/2024	1	100%
2.10	Certificate Image's Handling	Valerio Baldi	3	10	-7	2	02/04/2024	13/04/2024	12	333%

SCRUM

3	Implementation of III Sprint features		23	25	-2	3				109%
3.1	Serving frontend with docker	Alessandro Catalano	2	2	0	3	16/04/2024	16/04/2024	1	100%
3.2	Signup/Login Logic Part 2	Everyone	5	5	0	3	17/04/2024	24/04/2024	8	100%
3.2.1	user animal certificate	Saverio Dieni	1	1	0	3	19/04/2024	19/04/2024	1	100%
3.2.2	User Personal Animaldex	Valerio Baldi Saverio Dieni	2	2	0	3	19/04/2024	19/04/2024	1	100%
3.3	Signup/Login Logic Part 3 + operator table reshape	Alessandro Catalano	4	4	0	3	22/04/2024	24/04/2024	3	100%
3.4	PersonalPage Logic redirect and data handling	Everyone	3	5	-2	3	23/04/2024	24/04/2024	2	167%
3.5	Complete Animaldex	Valerio Baldi	1	1	0	3	25/04/2024	25/04/2024	1	100%
3.6	Google Oauth	Valerio Baldi Saverio Dieni	4	4	0	3	24/04/2024	27/04/2024	4	100%
3.7	Animaldex Sorting	Valerio Baldi	1	1	0	3	27/04/2024	27/04/2024	1	100%
3.8	PersonalPage Logic data displaying	Catalano Di Paolo	3	3	0	3	25/04/2024	27/04/2024	3	100%
3.9	Animaldex Search Bar and Personaldex filter	Valerio Baldi	2	2	0	3	03/05/2024	03/05/2024	1	100%
3.10	Cookie management and integration	Saverio Dieni	4	5	-1	3	02/05/2024	04/05/2024	3	125%
3.11	Delete user account	Catalano Di Paolo	4	3	1	3	03/05/2024	03/05/2024	1	75%
4	Implementation of IV Sprint features		19	17	2	4				89%
4.1	Delete operator account	Catalano Alessandro	1	1	0	4	09/05/2024	09/05/2024	1	100%
4.2	ScoreBoard	Saverio Dieni	2	2	0	4	10/05/2024	10/05/2024	1	100%
4.3	Updating personal info of user and operator	Catalano Alessandro	6	6	0	4	12/05/2024	12/05/2024	1	100%
4.4	Winner announcement	Saverio Dieni	4	5	-1	4	15/05/2024	17/05/2024	3	125%
4.5	Adding special events	Saverio Dieni	6	3	3	4	21/05/2024	22/05/2024	2	50%
4.6	User profile image pt1	Catalano and Di Paolo	8	6	2	4,5	13/05/2024	13/05/2024	1	75%

SCRUM

5	Implementation of V Sprint features		46	40	6	5				87%
5.1	user event interaction + finish special events	Saverio Dieni	5	5	0	5	22/07/2024	03/08/2024	13	100%
5.2	show user list for admin	Alessandro Catalano	5	4	1	5	30/07/2024	02/08/2024	4	80%
5.3	faq page	Catalano/Di Paolo	1	1	0	5	02/08/2024	02/08/2024	1	100%
5.4	operator and user ban by admin	Alessandro Catalano	2	2	0	5	03/08/2024	03/08/2024	1	100%
5.5	Profile image pt2 and centralDB restructuring	Catalano/Di Paolo	3	3	0	5	05/08/2024	05/08/2024	1	100%
5.6	forum add comments and replies	Alessandro Catalano	3	3	0	5	05/08/2024	05/08/2024	1	100%
5.7	forum delete comments and replies by user and admin	Catalano/Di Paolo	2	2	0	5	06/08/2024	06/08/2024	1	100%
5.8	forum improved features	Alessandro Catalano	1	1	0	5	06/08/2024	06/08/2024	1	100%
5.9	modify comments and replies forum and forum filter	Catalano/Di Paolo	3	2	1	5	07/08/2024	07/08/2024	1	67%
5.10	Personal Map	Valerio Baldi	2	3	-1	5	09/08/2024	09/08/2024	1	150%
5.11	animal emergency	Saverio Dieni	8	6	2	5	06/08/2024	09/08/2024	4	75%
5.12	forum now on user side	Alessandro Catalano	3	3	0	5	11/08/2024	11/08/2024	1	100%
5.13	messages between users and operators	Saverio Dieni	8	5	3	5	20/08/2024	20/08/2024	1	63%
6	Implementation of VI Sprint features		9	9	0	6				100%
6.1	Emergency operator evaluation	Baldi/Dieni	3	3	0	6	27/08/2024	27/08/2024	1	100%
6.2	User evaluation	Baldi/Dieni	1	1	0	6	28/08/2024	28/08/2024	1	100%
6.3	update on changing favourite animal and displaying it	Alessandro Catalano	2	2	0	6	28/08/2024	28/08/2024	1	100%
6.4	rest mapping the report and chat microservice	Catalano/Di Paolo	2	2	0	6	28/08/2024	28/08/2024	1	100%
6.5	split change password form change credentials	Catalano	1	1	0	6	28/08/2024	28/08/2024	1	100%
6.6	Testing	Everyone	4	4	0	6	02/09/2024	03/09/2024	2	100%
6.7	Presentation	Everyone	1	1	0	6	07/09/2024	07/09/2024	1	100%
BURNDOWN DATA			TOTAL HOURS	172	176	-4	56	3,071429		DAY

Burndown chart

