This project is co-financed by the European Union and the Republic of Turkey

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir

TURKEY in **HORIZON 2020**
COOPERATION. INNOVATION. COMPETITIVENESS

Technical Assistance for Turkey in Horizon 2020 Phase-II
EuropeAid/139098/IH/SER/TR

Turkey in Horizon 2020 II

Our Experience in H2020

Dr. Tolga Sönmez, HAVELSAN

General & Introductory Training on Civil Security for Society

26th May 2021

REPUBLIC OF TURKEY MINISTRY OF INDUSTRY AND TECHNOLOGY

COMPETITIVE SECTORS PROGRAMME

TÜBİTAK

Havelsan

- Large Industrial Company

- Headquarters in Ankara Turkey

- ~1800 employees, mostly engineers

- Four main fields of activity of HAVELSAN are:
  - Command and Control Systems,
  - Training and Simulation Technologies,
  - Country and Cyber Security Solutions, and
  - Management Information Systems.

REPUBLIC OF TURKEY
MINISTRY OF INDUSTRY
AND TECHNOLOGY

COMPETITIVE SECTORS PROGRAMME

TÜBİTAK

Core Competencies

Signal processing
- Advanced signal processing applications
- Kalman filters, particle filters, estimation and optimization algorithms
- Modelling, hardware and software simulators

Navigation Systems
- INS/GPS systems
- Indoor localization
- Terrain Aided Navigation Systems
- Integration of MEMS inertial sensors
- Capturing human motion data, classification

Artificial Intelligence
- Deep Neural Networks, CNN, RNN
- AI algorithms applied on motion data, bio mechanics, anomaly detection
- Health applications using motion data

Sensor Fusion
- Multi sensor fusion
- Processing and fusion of radar, electro-optic, AIS, sonar sensors
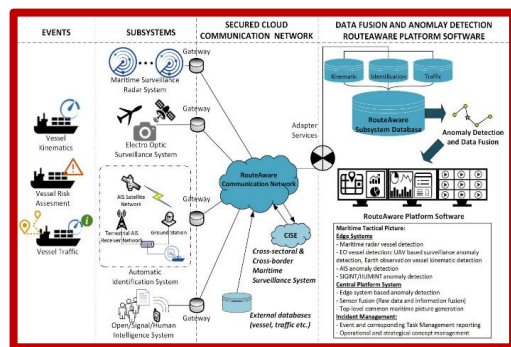- Tracking of targets in a single fused picture

Horizon Experience

- Started with Evaluator experience
- Participation experience with few projects in 7th Framework,
  - Mismatched consortium
  - Out of focus project scope
  - Engineers' unbearable desire to mix and match everything
- In 2018, we have decided to coordinate Horizon projects.

EU Projects

BLE based indoor navigation systems ITEA project
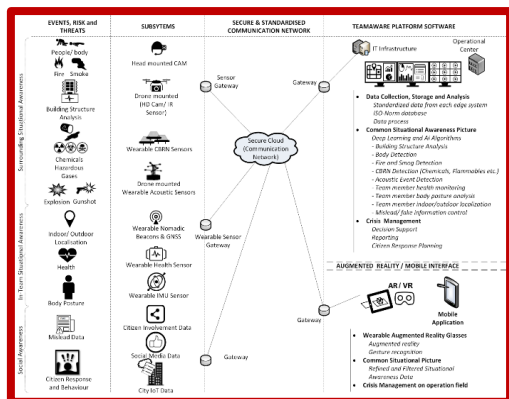
2019 (13.0/15.0)
DRS-2020 (Ranked 1st among 92 15.0/15.0)

BM- 2018-2019-2020 (12.5/15.0)

BM-2020 (11.50/15.0)

INFRA-2020 (9.0/15.0)

New Horizon Projects

ewatch

Teamaware

EU and Horizon Projects

BorderAware

Route Aware

SupplyAware
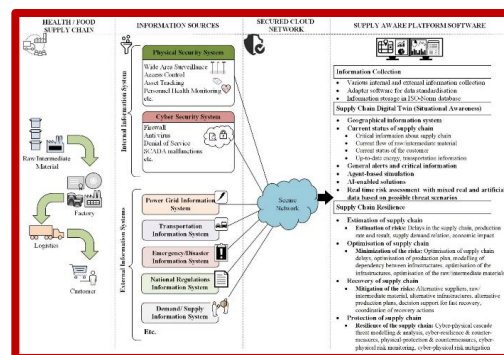
SU-DRS02-2020: Technologies for first responders
- 1st rank among 92 projects with 15.0/15.0 points
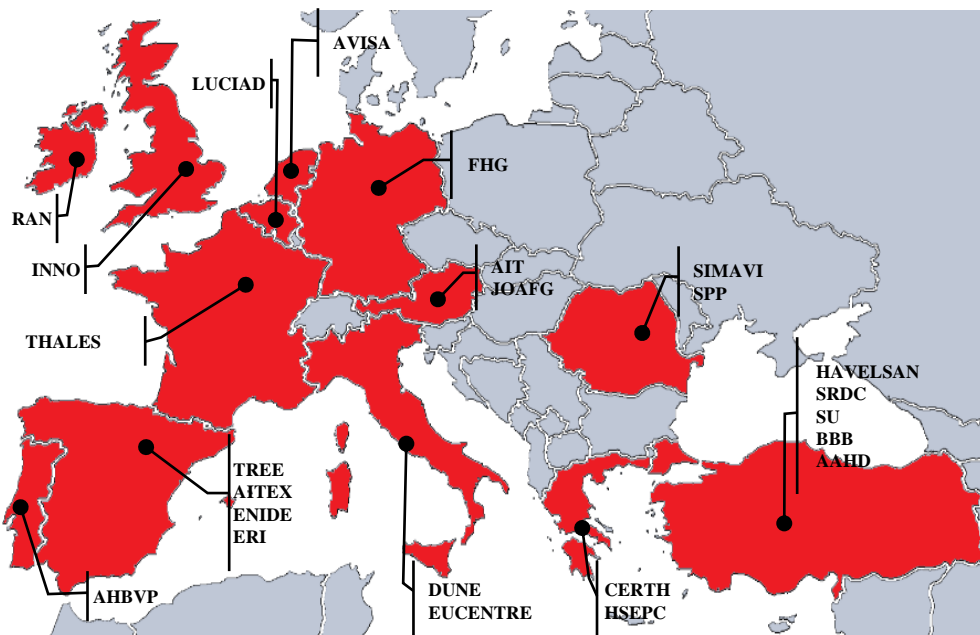
Part. no.	Participant legal name	Country	Org. type
1 (Coord.)	HAVELSAN HAVA ELEKTRONİK SANAYİ VE TİCARET AŞ	TURKEY	LI
2	TREE TECHNOLOGY SA	SPAIN	SME
3	THALES SIX GTS FRANCE SAS	FRANCE	LI
4	EUROPEAN CENTRE FOR TRAINING AND RESEARCH IN EARTHQUAKE ENGINEERING	ITALY	RI
5	ASOCIACIÓN DE INVESTIGACIÓN DE LA INDUSTRIA TEXTIL	SPAIN	RI
6	MICROFLOWN AVISA BV	NETHERLANDS	SME
7	DUNE SRL	ITALY	SME
8	INNOVA INTEGRA	UNITED KINGDOM	SME
9	SRDC SOFTWARE RESEARCH & DEVELOPMENT AND CONSULTANCY CORP.	TURKEY	SME
10	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	AUSTRIA	RI
11	FHG-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	GERMANY	RI
12	LUCIAD / HEXAGON GEOSPATIAL	BELGIUM	LI
13	ENIDE SOLUTIONS, S.L.	SPAIN	SME
14	SABANCI UNIVERSITY	TURKEY	U
15	INFORMATION TECHNOLOGIES INSTITTUE	GREECE	NPO
16	ETICAS RESEARCH AND INNOVATION	SPAIN	NPO
17	SOFTWARE IMAGINATION & VISION	ROMANIA	LI
18	RESILIENCE ADVISORS EUROPE	IRELAND	NW
19	BURSA BUYUKSEHIR BELEDIYESI	TURKEY	NPO
20	AMBULANCE AND EMERGENCY PHYSICIANS ASSOCIATION	TURKEY	NPO
21	ASSOCIACAO HUMANITARIA DOS BOMBEIROS VOLUNTARIOS DE PENICHE	PORTUGAL	FR
22	JOHANNITER ÖSTERREICH AUSBILDUNG UND FORSCHUNG GEMEINNÜTZIGE	AUSTRIA	NPO
23	SERVICIUL DE PROTECTIE SI PAZA	ROMANIA	LEA
24	HELLENIC SOCIETY OF EMERGENCY PREHOSPITAL CARE	GREECE	NPO

TeamAware

EVENTS, RISK and THREATS

- People/ body
- Fire   Smoke
- Building Structure Analysis
- Chemicals Hazardous Gases
- Explosion Gunshot
- Indoor/ Outdoor Localisation
- Health
- Body Posture
- Mislead Data
- Citizen Response and Behaviour

Surrounding Situational Awareness
In-Team Situational Awareness
Social Awareness

SUBSYTEMS

- Head mounted CAM
- Drone mounted (HD Cam/ IR Sensor)
- Wearable CBRN Sensors
- Drone mounted Wearable Acoustic Sensors
- Wearable Nomadic Beacons & GNSS
- Wearable Health Sensor
- Wearable IMU Sensor
- Citizen Involvement Data
- Social Media Data
- City IoT Data

SECURE & STANDARDISED COMMUNICATION NETWORK

Sensor Gateway

Gateway

Secure Cloud (Communication Network)

Wearable Sensor Gateway

Gateway

TEAMAWARE PLATFORM SOFTWARE

IT Infrastructure   Operational Center

- **Data Collection, Storage and Analysis**
  - *Standardized data from each edge system*
  - *ISO-Norm database*
  - *Data process*
- **Common Situational Awareness Picture**
  - *Deep Learning and AI Algorithms*
  - *- Building Structure Analysis*
  - *- Body Detection*
  - *- Fire and Smog Detection*
  - *- CBRN Detection (Chemicals, Flammables etc.)*
  - *- Acoustic Event Detection*
  - *- Team member health monitoring*
  - *- Team member body posture analysis*
  - *- Team member indoor/outdoor localization*
  - *- Mislead/ fake information control*
- **Crisis Management**
  - *Decision Support*
  - *Reporting*
  - *Citizen Response Planning*

AUGMENTED REALITY / MOBILE INTERFACE

AR / VR   Mobile Application

- **Wearable Augmented Reality Glasses**
  - *Augmented reality*
  - *Gesture recognition*
- **Common Situational Picture**
  - *Refined and Filtered Situational Awareness Data*
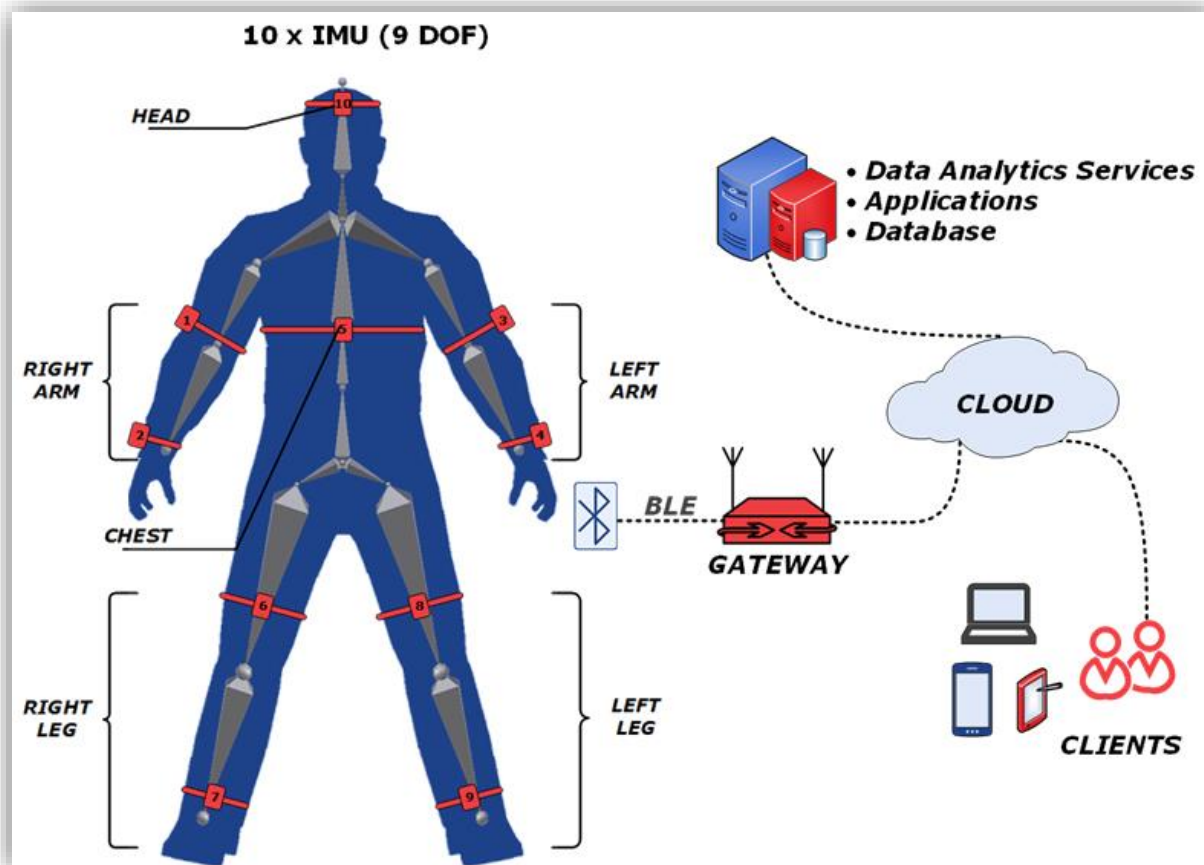- **Crisis Management on operation field**

Havelsan Responsibilities

- Project Coordination

- BMA (Body Motion Analysis), remote monitoring of activities by wearables, AR and AI algorithms for activity detection. Fatigue, wound detection.

- Mathematical model for dispersion of chemicals

Budget= 7M€

Duration: 36M

Wearable Technologies- Motion Capture

Edge Units

- 9 DOF (gyroscope, accelerometer, magnetometer)
- BLE data rate (20-25 Hz)
- Coverage: ~ 50m (outdoor), ~ 20m (indoor)
- Battery Life: 10 hr
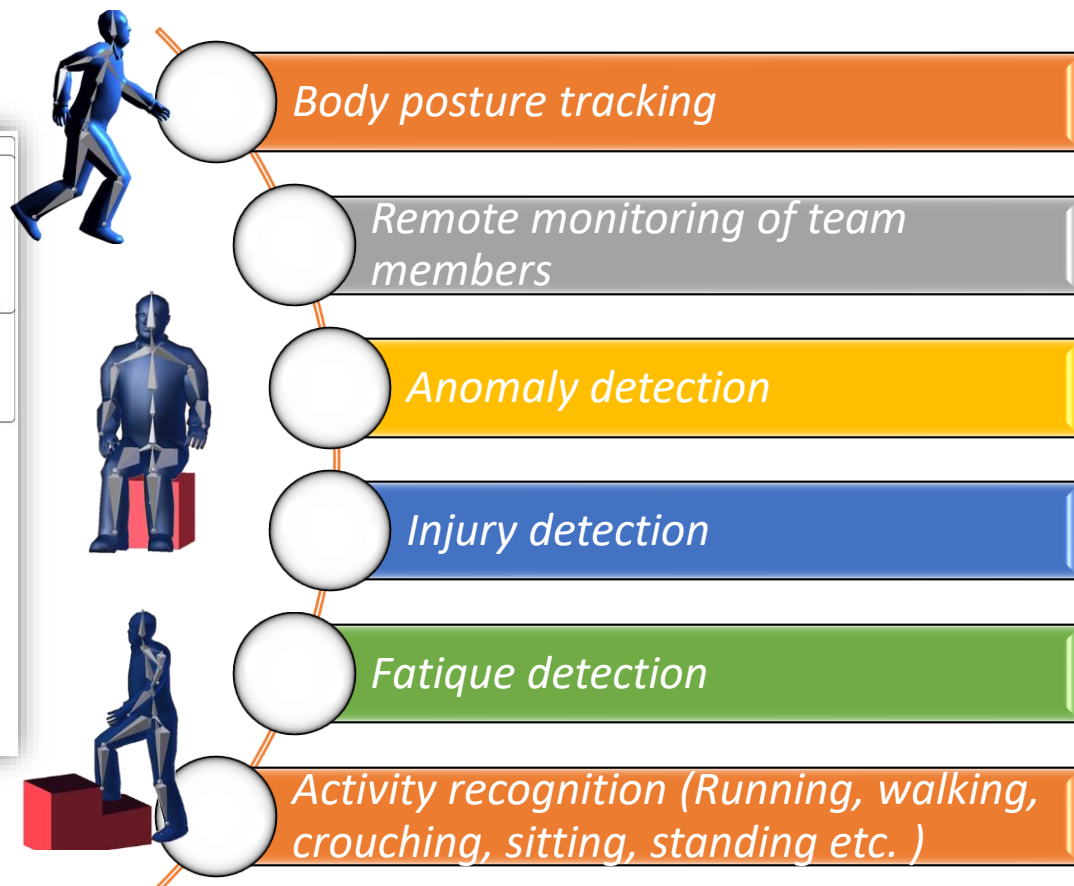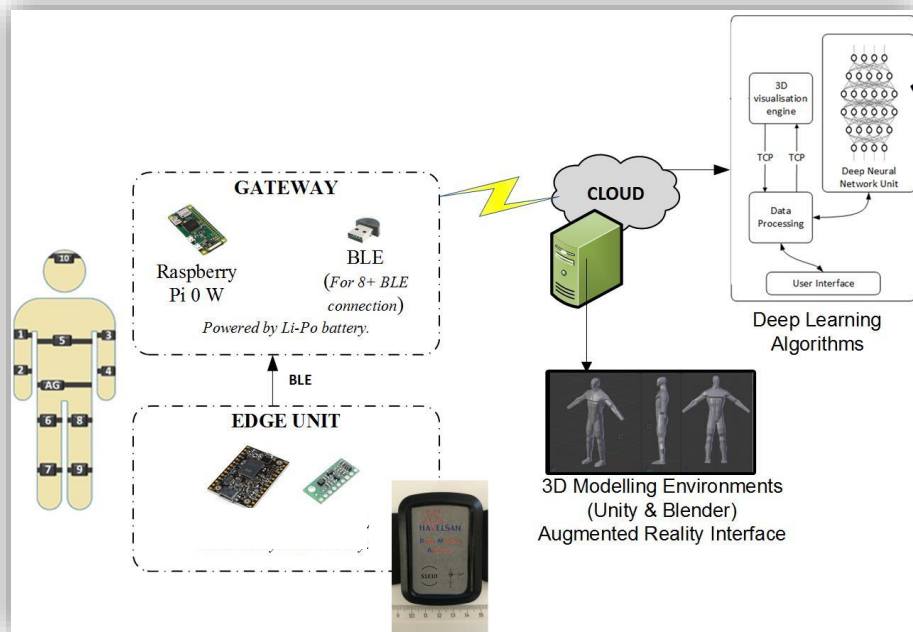- Dimensions: 69.5x50.5x21 [mm]
- Weight: 50 gr

Gateway

- BLE – WiFi gateway
- TCP Protocol
- Bandwidth ~ 20 Kbps
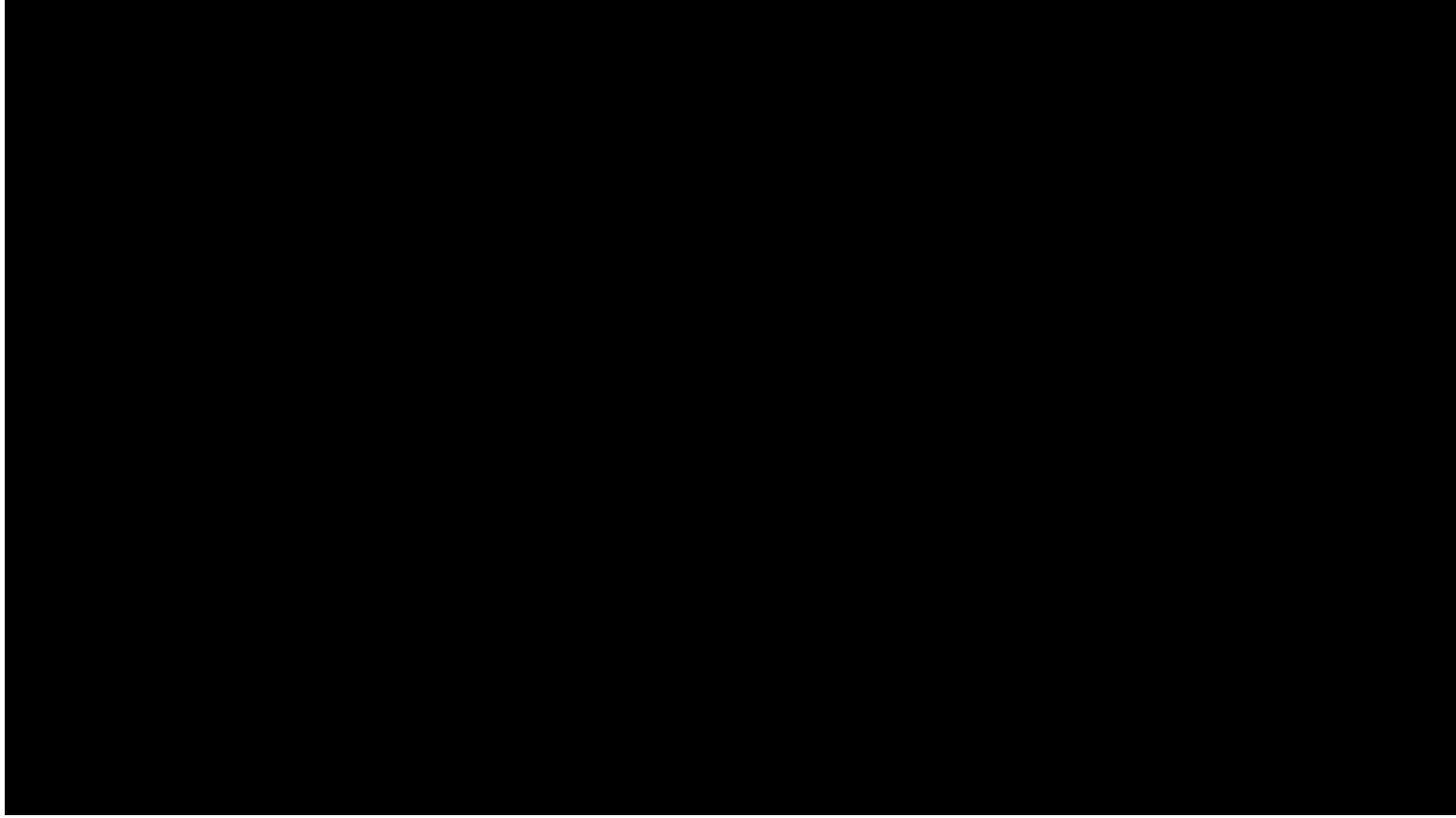- Latency: < 50 ms
- Battery Life: 10 hr

Central Unit and UI

- 3D Modelling
- Body motion modelling (High accuracy – error <1°)
- AI based body motion analysis
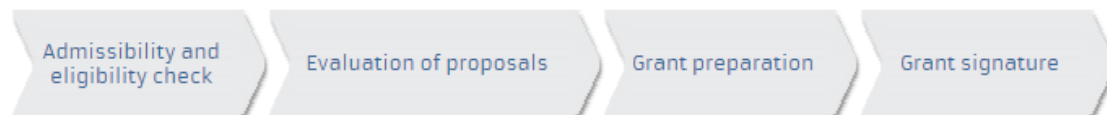- AR/VR UI
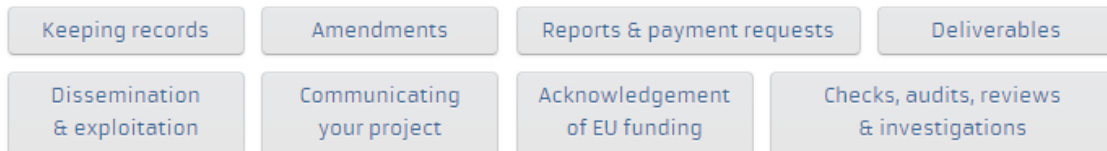- Customizable UI

Key Features

- Body posture tracking
- Remote monitoring of team members
- Anomaly detection
- Injury detection
- Fatique detection
- Activity recognition (Running, walking, crouching, sitting, standing etc.)

DEMO

Roadmap to Grand Agreement

Grants

Applying for funding

Find a call → **Find partners** → Register an organisation → Submit a proposal

Evaluation & Grant signature

Admissibility and eligibility check → Evaluation of proposals → Grant preparation → Grant signature

Grant management

| Keeping records | Amendments | Reports & payment requests | Deliverables |

| Dissemination & exploitation | Communicating your project | Acknowledgement of EU funding | Checks, audits, reviews & investigations |

- We analyse the calls and select the best fitting one and form a basic project idea
- To find partners, we use the brokerage events
  - Complementary consortium
- Then we start to collect the information from partners
  - Improve the   project idea
  - State of art
  - Innovation potential
- We write a harmonized proposal.

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COMPETITIVE SECTORS PROGRAMME

TÜBİTAK

Grant Preparation

- After the evaluations you have to sign a
  - Grant Agreement with EC
  - Consortium Agreement with the partners
- A project officer is assigned to your project after the evaluations
- You have to negotiate over the ethics and security scrutiny reports and resolve the conflicts update the proposal accordingly.

Ethics

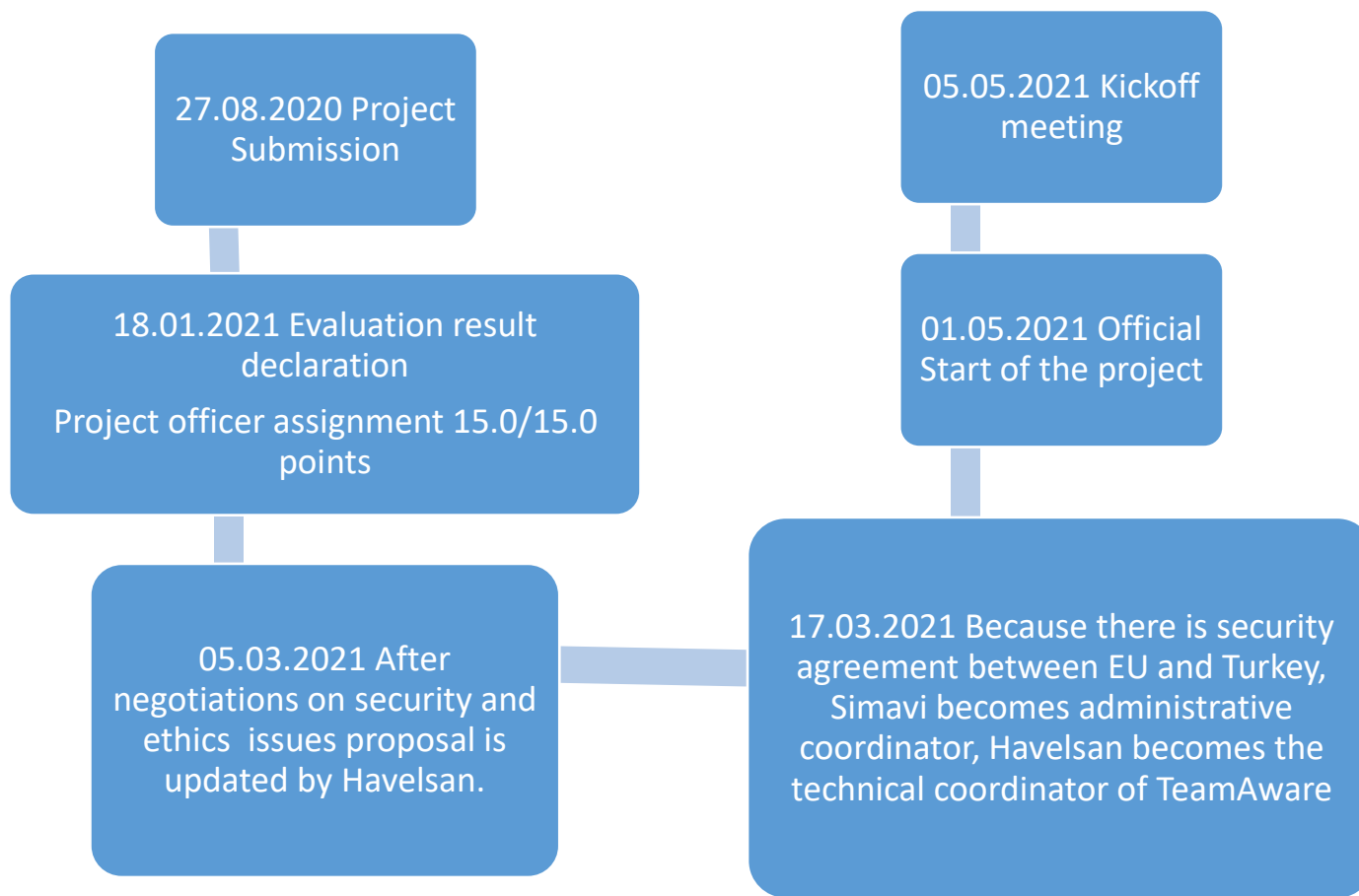| Activity	Who?	When?	How?
Ethics Self-assessment	Applicant	Application phase	Consideration of ethical issues of the proposal
Ethics Pre-screening/Screening	Ethics experts and/or qualified staff	Evaluation phase	Review of application material
Ethics Assessment (for proposals involving hESC or raising serious ethical issues: severe intervention on humans)	Ethics experts	Evaluation/ Grant preparation phase	Review of application material
Ethics Check/Audit	Ethics experts	Implementation phase	Review of project deliverables/interview with applicants

- GPDR issues, genetic research, dual use items (civil/military application), misuse of research
- Ethics summary report is drafted after the project is selected for funding.

Security

- There are four **levels of classification***:
  - TRÈS SECRET UE/EU TOP-SECRET **(TS-UE)**
  - SECRET UE/EU SECRET (**SEC-UE**)
  - CONFIDENTIEL UE/EU CONFIDENTIAL **(CON-UE)**
  - RESTREINT UE/EU RESTRICTED **(RES-UE)**

- The classification of information is decided in security scrutiny report after your project is selected for funding.

- Explosives, CBRN, critical infrastructure and utilities **,** border security , intelligent surveillance, terrorism, organised crime, digital security, space

- In our project 4 out of 166 deliverables are selected to be EU restricted.

*EU grants: H2020 Guidance — Guidelines for the classification of information in research projects: V2.2 – 07.01.2020

Timeline for TeamAware

27.08.2020 Project Submission

18.01.2021 Evaluation result declaration
Project officer assignment 15.0/15.0 points

05.03.2021 After negotiations on security and ethics issues proposal is updated by Havelsan.

05.05.2021 Kickoff meeting

01.05.2021 Official Start of the project

17.03.2021 Because there is security agreement between EU and Turkey, Simavi becomes administrative coordinator, Havelsan becomes the technical coordinator of TeamAware

After Kickoff

- Adventure just starts...

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