V²:

VISOR VENTURE

List of Participants

Participant Id.	Participant Organisation Name	Country
1: EW (Coordinator)	The Event Warehouse	The Netherlands
3: HSG	Holland Security Group	The Netherlands

1. EXCELLENCE
1.1 Objectives
1.1.1 Motivation and Scope

On a normal day there is about 262 megabytes of data traffic per square kilometer. On a festival day that rises to 33,000 megabytes / km.[1]

Our public life de facto largely takes place in the public spaces, usually in the open air[2]. This implies that public spaces should **allow citizens to be themselves without unsolicited interference from others**. An important feature of the public spaces is that they are multifunctional, and often used for all sorts of social events, including music festivals, public holidays, markets, and so on. Every year an abundance of both small and large events (>1000) take place in such public spaces in the EU at large. Typically, these events constitute **miniature cities**, with their own infrastructure revolving around stages. At this point, it is extremely common for dangerous situations to occur at these events, sometimes even resulting in fatal incidents. From a societal perspective, safety and security play a crucial role in such spaces given the massive influx of people, as well as, terrorist threats, noise, crime, riots, harassment, pollution, environmental crimes, fires, undesirable social behavior, looting, public drunkenness, dehydration, drug-trafficking, bacterial infections, and other dangers that seriously impede the quality of life, and event safety. Such public order and safety is generally guaranteed by an integrated set of organizers, e.g., municipalities, law enforcement officers as well as private security services, fire brigades and emergency medical services, and first-aid to name a few. In turn, a wide range of instruments is used by these **chained partners**[3], including drawing-up criticality scenarios, crowd management, surveillance equipment, risk analyses, event permits, briefing, and, investigation. Although such approaches do have a positive impact on supervision and enforcement in public areas, it can be concluded at the same time that much can still be improved.

The smarter collection, fusion, and use of data, interpretation from the operation, as well as the more sophisticated collaboration based on data and interpretation, is potentially a decisive weapon in the fight against disorder and insecurity in public spaces.

Several studies[4,5] have shown that better exploitation of open- and closed-source data can be of decisive importance in monitoring security at major festivals and events. Dangers can be detected and even predicted through live monitoring of shared messages. Calamities around violence, drug and alcohol use can for examples be battled in this way. Other studies have focused on using GPS data for better crowd control. In previous research[6], the research results are presented to a cloud-based platform that uses GPS data for crowd management and has been deployed in 14 events in England, Switzerland, the Netherlands (NL), including the coronation of King Willem-Alexander in NL. Augmented reality is already being used to gather real-time intelligence during raids, military training, surveillance, and patrolling missions as reported by the FBI[7]. For example, two experiments with augmented reality are presented in which the Dutch police use them for forensic research in, among other things, a simulated XTC laboratory[8]. In such data-driven, AR-centric initiatives, privacy and data security generally play a decisive role. In the meantime, not only international research has been carried out - see for example[9] - but also in practice experience has been gained, for example in the de-escalate experiments that have been conducted in the busiest and most lively night-life area of the municipality of Eindhoven- stratumseind[10].

What is lacking to date, is a robust, integrated, customizable platform and associated well-tested "cookbook" of approach that allow to combine and leverage the above-mentioned technologies, and enable triangulation of diverse data sources and technologies, and inject them with state-of-the-art artificial intelligence to provide near real-time risk analysis and deep, actionable insights.

What is more, the safety and security sector in the EU has been frantically developing technologies such as drones and smart fences, that is, providing security and safety techniques and solutions and platforms, from project to project, in a highly isolated and **stovepiped** manner; this inhibits **reuse** over projects and thus interoperability as well as

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[1] http://www.smartbiz.nl/article/150586/big-data-en-het-festivalseizoen-hoe-meer-data-hoe-beter-het-festival/
[2] http://turfschipper.nl/onzichtbareor.pdf
[3] http://www.eventsafetyinstitute.nl/wp-content/uploads/2014/12/politie_en_evenementen_definitief_schoon_blu-2.pdf
[4] https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/13896/3/Understanding%20 Generation%20Y %20and%20 Their%20Use%20of%20Social%20Media_A%20Review%20and%20Research%20Agenda.pdf
[5] https://www.researchgate.net/publication/287206488_A_Crowd_Monitoring_Framework_using_Emotion_Analysis_of_Social_Media_for_Emergency_Management_in_Mass_Gatherings
[6] https://jisajournal.springeropen.com/articles/10.1186/s13174-015-0040-6
[7] https://www.fbi.gov/file-repository/stats-services-publications-police-augmented-reality-technology-pdf/view
[8] http://delivery.acm.org/10.1145/2960000/2957302/p267-datcu.pdf?ip=131.155.239.210&id=2957302&acc=ACTIVE%20SERVICE&key=0C390721DC3021FF%2EECCBF8AC29DF345E%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1543921964_bb23871df4c780802595187b3e3efaf8
[9] https://cacm.acm.org/magazines/2014/4/173222-security-and-privacy-for-augmented-reality-systems/abstract
[10] https://www.geonovum.nl/uploads/documents/6-Werken%20met%20Sensoren,%20gewoon%20doen.pdf

general solutions' sustainability. In this way, such safety and security services are spiraling out of control, rather than becoming a true business opportunity with an easy-to-customize generic backbone based on common best practices.

The purpose of the **V²** project is to **seize and explore the business opportunity** of improving safety and security during smart events, including, but not restricted to fairs and festivals, e.g., music and sport festivals.

V² will excel by elaborating a plan for a Small-Medium Enterprise, including a technical and business plan, to offer value-adding products and services that enable smarter and safer events. The product offer will feature: (1) the V² platform that provides the hard- and software needed to collect data from various internal and external data sources, (2) **end-to-end support for smart events** to allow event organizers to outsource their smart event security and safety management, and (3) **training and consultancy services** to train and advise the next generation of smart event security and safety professionals.

Incorporate social community management and product intelligence onto the emerging V² paradigm involves major business and technical challenges:
1. **Business Perspective**. A series of enterprise competitors exist that offer high-edge safety and security functionality with competitive and strategic market presence; entering this market therefore constitutes a serious risk, entails steep learning curves, demands high up-front investment and quality testing of the proposed solution. Moreover, the platform may require a business model whose theoretical underpinnings and potential revenue-streams may not exist yet.
2. **Technical perspective**. Incorporating smart event safety and security management and intelligence demands developing and testing the following assets at least. The real-time data ingestion engine, data processing facility, and data analysis and visualization modules. Also, all of the performing assets must be provided with facilities for coordination and smart event empowerment, which ensure **continuous assimilation and feedback** of project runtime information for three purposes at least: (a) accountability; (b) feedback loops; (c) product and team intelligence.
To sum up, in order to support the development of **high-quality and sustainable V² opportunities**, V² will deliver a business plan for the start-up that will **tap into the unexplored market of** European smart event safety and security with potential clients ranging from event organizers to heavy-infrastructure across the entire EU society (e.g., cities and EU regions) at large. Envisioned **core business opportunities** will include: (a) **Integration of the latest AI technologies into a single solution –** clients will exploit a single platform without the need to setup own safety and security organization and infrastructures; (b) **Increased and guaranteed span of control of security and safety organizations –** clients will be able to provide higher guarantees to their own end-users (e.g., event attendees) by triangulation of heterogenous closed- and open-data sources, while V² provides automations for the monitoring and analysis of streaming video/sound and text data, reducing the overwhelming burden of staff to continuously watch several (up to 100) small monitors themselves. (c) **Decreasing the risks and costs of event safety and security** by improving pre-event risk analysis, allowing (close to) real time safety and security monitoring and analysis, and allowing better post-event assessments and reactive measures. (d) **Reducing the number and severity of incidents at events**, by leveraging pro-active (instead of reactive) actions from security staff.

1.1.2 Targeted Results and Ambition

The **key enabling technology platform** offered by V² will be, on one hand, the ability for that enables the stakeholders(s) involved in organizing an event, festival, market, parade, exhibition or other event in a public space to significantly improve: (1) the **preparation** of smart events in terms of a risk analysis based on data stemming from not only internal data resources (e.g., tickets sales data) but also external (Big) data sources including social media (Facebook, Instagram, etc.); (2) the execution of safety and security activities during **a smart event** based on actual, real-time data captured from camera-devices, drones, smart phones, IoT devices and the such, (3) improve the reaction **directly after** safety/security risk has occurred in order to reverse effects, or at least minimize the aftermath. The key stakeholders that may reap the benefits of VISOR include: municipalities, security companies, legal enforcement agencies, and, event organizers. In particular, it is the key **ambition** of V² to seize the business and societally-beneficial opportunity of a technological backbone to offer actual security/safety services to smart event stakeholders during the following four key phases (see figure below).
Phase 0. Prepare & Profile (Pre-Event). V² essentially enables to:

- Apply privacy-by-design to ensure compliance of collected and consulted data with GDPR laws and regulations;
- Identify, extract, collect ("crawling"), transform ("wrangling"), and storing open data about an event, including for example, data from Facebook, Instagram, and Google-Maps;
- Distill a data quality profile from the integrated data;
- Prepare a **digital twin of the smart event terrain** to optimize the deployment and operation of all other supporting equipment (e.g., fixed cameras, VR facilities);

- Develop a **risk analysis** assessing vulnerabilities, and determine the potential impact of a risk based on real (instead of fictive, outdated and/or paper-based) data, and simulate and visualize potential security/safety scenarios using the digital VR smart event twin.

Phase 1: Monitor & Analyze (During-Event).

V^2 will offer monitoring and analysis tools for smart event stakeholders to:

- **Capture "live (real-time) data streams"** such live drone and CCTV footage; and, superimpose them with live images "on-the-ground" which are collected by security officers with devices including smart glasses and smart phones;
- **Detect anomalous situations**, e.g., festival goers that zig-zag through the audience, or increased activities near the physical barriers, e.g., fences, of the festival terrain;
- Real-time analysis of live data streams exploiting state of the art AI technologies, notably deep leaning, triangulate them with input of phase-0 to create a multi-dimensional **"living digital twin" of the smart event and offer real-time intelligence**;

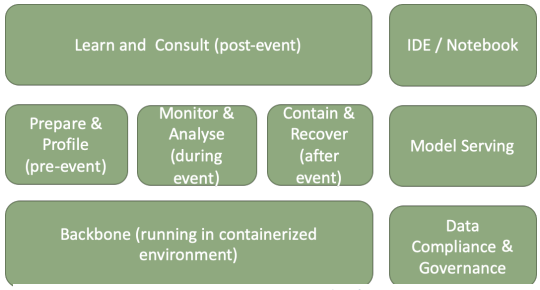

Figure 1 - Key Components, V2 Platform

Phase 2: Contain and Recover (Directly-After-Event)

In case a vulnerability has materialized, the V^2 tools and platform will offer support to:

- **Predict** the way in which the **risk will unfold** in terms of the sequence of next events;
- **Visualize** this prediction with the living digital twin, allowing the facility to "**play forward**" various likely **scenarios** in which the security threat might develop;
- Help to **contain** each situation by suggesting **pre-emptive and corrective measures** (e.g., geofence a particular area/recovery suggestions) exploiting **trained models** gained by machine-learning technology.

Phase 3: Learn & Consult (Post-Event)

Finally, **V^2 will offer services that enable "play-back"** of an event exploiting the **smart event digital twin**, and accelerate "flush" to learn from situations that could have been better, and to share it with third parties. In addition, and perhaps more importantly, V^2 will continuously improve its algorithms by **fueling its AI engine** with smart event data, and **distill lessons-learned**. A **training program** will be developed to train the next generation of AI-savvy security/safety professionals, and educate other stakeholders like policy makers, and festival organizers. Lastly, **consultancy services** will be offered for smart event stakeholders to gain expert advice about smart event safety and security implementation and management strategies and operations based on the V^2 platform. As part of this SME Instrument, V^2 aims at **four feasibility objectives** measured through **tangible outputs:**

Objective & Tangible Output	Description
O1: **V^2 Smart Event tools and stakeholders Understanding**	**Define** stakeholders that provide techniques and a methodology for smart event preparation and profiling in terms of risk assessment with smart event digital twins.
O2: **V^2 Monitoring and Analysis techniques and tools Feasibility**	Feasibly establish techniques and a methodology to exploit V^2 tools that monitor real-time data streams towards a "**living**" smart event digital-twin
O3: **V^2 Containment and Recovery Advice techniques and tools**	**Define** techniques and a methodology to exploit V^2 tools that assist in predicting and visualizing the way in which a safety/security situation may develop, suggest pre-emptive measures, and provide advice on recovery of the situation back to normal.
O4: **The V^2 Business Plan**	Define a **strategic agenda** towards a TRL2 of V^2 tangible outputs.

The above contributions will fuel the creation of a Small-Medium Enterprise to further pursue prototypical elaboration and evaluation for the immediate purpose of achieving a commercializable solution design at Technology Readiness Level 2. The proposed solution will, at that point, change radically the business of setting-up and managing smart events at large, helping event stakeholders to understand and systematically incorporate V^2 in their daily professional activity. The measurable key performance indicators that will be used to ascertain the ultimate feasibility of the V^2 business plan are defined as follows:

Research & Innovation KPIs
KPI-RI-1: Pre-**Release of the V^2 Platform feasibility assessment document** - feasibility will be reached if TRL2[11] is achieved for a *to-be-devised* V^2 Platform software architecture
KPI-RI-2: **Release of at least 1 demonstrator mock-up**, to security service providers, event organizers of and/or part of project beneficiaries

[11] See technology-readiness levels (TRL) from the general annexes to EU proposals.

KPI-RI-3: **Cross-Validation of V² baseline demonstrator with three micro-V2-runs (**e.g., at three small scale experiments at the Nederlandse festival PaasPop[12]**)**
Business Planning KPIs
KPI-BP-1: **BMC**, the canvas must be complete and approved by an external business advisory board
KPI-BP-2: **3 Business Plan Thumbs-Up** & recommendation **letters from 3+** committed clients
KPI-BP-3: Simulated **costs reduction of at least 5%** w.r.t. current technology (e.g., less costs for monitoring)

All the above KPIs are **measurable**. Organisational efficiency increase (KPI-RI-3) will be measured by comparing project times of similar projects (**benchmarks**) with respect to simulations and test-runs (micro-trials) based on our demonstrators as part of case-study research for V².

1.2 Relation to the Work-Programme

V2 targets the *"SMEInst-2018-2020"* call. We now explain the contributions against call objectives.

Innovation in SMEs	F2 Contribution
"**They (read the SME instruments) are exclusively aimed at people and companies who have ideas that are radically different from existing products or services on the market or under development (not incremental improvements), are highly risky, and require significant investments to get to market.**"	V² radically departs from conventional safety and security solutions that are typically technology-weak and very much fragmented offering partial support, embracing and integrating state-of-the-art technologies from Artificial Intelligence (AI) bringing together a consortium that not only possess deep knowledge and an impressive track record on AI/data science/engineering, but also, and more importantly, safety and security services and solutions.
"The interim evaluation of Horizon 2020 found that while the programme demonstrates potential in terms of fostering breakthrough, market-creating innovation, support for doing so needs to be substantially strengthened."	V² is geared towards establishing a highly innovative new platform and associated safety and security services that holds the tantalizing promise of establishing market-creating innovation in tandem with revenue-generating activities with the potential of creating enormous social impact, e.g., in terms of increased quality-of-living for EU citizens.
"*The EIC Accelerator pilot (SME Instrument) supports high-risk, high-potential small and medium-sized enterprises to develop and bring […] growth.*"	New business models for security sector New product: platform and supporting hardware that can be built up and deployed partially locally for each smart event New services based on the platform.

1.3 *Concept and Methodology*

1.3.1 Technical Baseline towards Feasibility

As discussed in the above, **end-to-end support** for assuring smart event safety and security **does not exist**. Currently, merely partial and highly "stovepiped" solutions are provided, e.g., drone providers solely offer tools to capture real-time footage of a festival terrain and profile objects and/or persons; whilst sentiment analysis tools for example simply offer services to distill the sentiments of festival goers about certain phenoms, such as catering or music. To increase technical quality, the project will focus on realizing this vision emphasizing specific stages of the application lifecycle behind the V² platform, namely its **early stage design**[13]. We regard the vision as highly-ambitious, since actual baselines for V² are by far **non-existent**, with the following table illustrating a few tentatives:

Baseline	Baseline for:	Description
Apache Spark	O2: **V² Monitoring and Analysis techniques and tools; data-pipelines and ML**	Spark is deployed for ETL processes and machine learning, and needed to spin up infrastructure on demand.
Google TensorFlow	**O2: V² Monitoring and Analysis techniques and tools; analysis (deep learning) techniques**	TensorFlow is an end-to-end open source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML applications.
Apache Kafka	O4: **The V² Operational Backbone**	Apache Kafka is a publish-subscribe messaging broker that allows for a-synchronous, and loosely coupled integration of V² modules.

1.3.2 Overall Approach and Methodology

V² has been organised around different types of activities described below. The associated work activities and time plan are given late in Section 3.1.1. The individual work packages (WPs) are introduced and discussed later in details in Section 3.1.2.

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12 PaasPop traditionally kicks of the festival season in the Netherlands. It is organized each year in the municipality of Meierijstad (Schijndel) as a three-day event during the Easter weekend. Typically, this festival attracts over 80k festival goers, 15 stages with more than 175 bands, including a wide range of musical and theater genres.

Technical Feasibility Activities. The technical feasibility activities will cover all the main research and technical innovation topics discussed in Section 1.3.2 and subsections. They will be carried out using a set of **3 work packages** (WP1-WP3) and temporally organized in a set of **3 milestones**, labeled MS-I to MS-III. Following typical agile practices, the overall approach will define bi-weekly cycles of research & development in which initial prototypes will be increasingly refined according to a prioritized set of requirements defined in Week 1 of the project and refined throughout the following periods. Feasibility will be the result of MS-III. A high-level description of the 3 milestones of the project is as follows:

- **MS-I (End of Cycle 1, Week 2):** Definition of technical **baselines** and initial version of the **user-stories**.
- **MS-II (End of Cycle 6, Month 3):** Feasibility of complete V^2 **baselines**: initial version of the V^2 prototype**,** Business plan draft.
- **MS-III (End of Cycle 10, Month 6):** Evaluation of mission baselines against KPI.

Business Viability Activities. Viability activities will explore the social and economic feasibility activities assuming Italian societal laws and statute. Interviews and Delphi studies will be employed to explore socio-economic viability; BMC modelling and analysis will procure a baseline for business planning.

Demonstration Activities. The R&I results will be applied in WP3 to define 1 demonstrator in the domain of "open-air concerts". The demonstrator will be delivered at TRL 2.

1.3.3 Sex and gender analysis

Sex and gender considerations are beyond the scope of this feasibility study and thus not explicitly discussed in this proposal. We seek for balanced participation in the V^2 development team.

2. IMPACT

We may summarize the value that V^2 will deliver to European industry as follows:

Value Proposition: V^2 will deliver **an innovative framework** and tool designs to leverage safety and security during events, essentially **making** such **events smart**, thus increasing the productivity of security officers, the transparency of event operations, as well as better oversight of vulnerabilities, and countermeasures during operation.

Being driven by an SME Instrument, V^2 will adopt and build upon existing methodologies, tools, and approaches from the state of the art but will build novel mechanisms for the representation and tracking of B2F transactions over a managed community of freelance practice. This vision agrees with the **strategic and societal impact** directions set by the Commission, aligning in particular to the Digital Agenda for Europe[13]. In particular, V^2 envisions responsibility deployment of AI technologies, **without prejudice**, **without human guesswork** (a guaranteed level of accuracy), while **ensuring confidentiality** (without infringing privacy), **providing transparency** (with respect to algorithms used).

2.1 Entering the market

The market of safety and security services for events has already existing for over 30 years. Users of the V^2 platform and associated services include, but are not restricted to:

- **EU Festival organizers**: may utilize V^2 in order to outsource their smart event security and safety, lowering the exorbitant costs involved in building the software and hardware infrastructure needed for solutions like V2.
- **EU Law enforcement agencies**: may tap into the V^2 systems of smart events, and/or exploit V^2 themselves in order to guarantee safety of crowds during smart events. This involves for example deploying V^2 for the purpose of better managing in- and outbound traffic during the festival days,
- **EU Municipalities**: are an important stakeholder for the organizations of smart events, as they are typically the "host", and largely involved in checking and agreed with licenses, and have to comply with similar laws and policies such as GDPR throughout the EU;
- **EU-based Private security organizations:** may be customers in the sense that they could either be re-sellers of the V^2 product and services, and/or integrate V^2 in their current security practices.
- **EU-Security regions / regional security agencies:** refer to organizational entities in which local governments (cities and municipalities) join forces with police, fire squads and medical aid to act effectively in large-scale emergency situations. An example entails the Veiligheidsregio in the Netherlands.

Barriers: impediments to enter the EU market include the large pre-investment requirements in the V^2 platform, support technology and the human capital needed to develop this, low cost operators with low prices for safety and security services (under the price), bargaining power of customers, lock-in (favored) suppliers, etc.

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13 https://ec.europa.eu/digital-single-market/en/news/time-machine-and-humane-ai-building-eu-priorities-digital-day

Competitors: The V^2 concept is unique in its own right. We expect potential competition from three sectors: (1) **the private security sector** that may offer partial solutions (e.g., CCTV image processing and alerting); (2) **technology vendors** that are typically US based, such as Google and Amazon, offering e.g., deep learning tech for object/person recognition; (3) **internationally operating event companies** such as LiveNation that are capable of extending their current IT support in terms of ticketing systems for the purpose of security (e.g., tracking and profiling of festival goers). It is the unequivocal goal of the V^2 project proposed herein to conduct an in-depth market survey and review, through literature study, interviews, and brainstorm meetings.

Market size: the EU market size for festivals alone is already estimated[14] 2,3 billion euro's, and is forecasted to grow to 4.1 billion euro's in 2020. With respect to security, music festivals typically spend 3%-5% of their budget on security. For example, CNV's *Festivals of Contemporary Music* report[15] found France's festivals spent a combined €3.74 million on security– an average of €13,613 each per day, or €42,970 for the entire festival – with security, logistical and technical costs jumping 11% due to terrorist threats and increased safety and security constraints. The greater the audience, the greater those costs involved. "At the Isle of Wight festival[16], between security and police, it costs £1million," says John Giddings, the event's head. Another example is the Download festival that employs 8,643 people each year – that's 2,097 back of house staff, 4,223 front of house staff, 1,800 security guards and 520 medics, to accommodate120k festival goers over three days[17]. The above shows that the market size of security and safety for **smart event/festival organizations** is large and growing quickly. Industry pundit EDC claims that in 2019: [18] "security spending in Europe will come from services ($14.8 billion), followed by software ($8.6 billion) and hardware ($3.9 billion). Among services, the most significant by far will be managed security services ($5.8 billion) and integration services ($5.4 billion), highlighting the need for access to **customized and always-updated security services**. The other fastest-growing categories for 2019 will all come from software, namely **security analytics, intelligence, response, and orchestration software** (security AIRO, with an 11.2% increase) and identity and digital trust software (9.8% increase)". The above figures show that let alone the **technology and festival market** potential of V^2 is very high, however, V^2 could also be applied to other settings, e.g., fairs and sport events. At this time, it is still *impossible* to give an estimate of the market size of V^2; this is set to be an objective part of the achievement of objective O1 (see Tab. 1).

2.2 Business model baselines

Value Chain. The V^2 will rely on several, to-be-selected, technology providers to further shape and advance the V^2 framework. As a consortium, we already have developed a network of several interested technology providers/suppliers, such as the Germany-based company CONDOR that offers drone surveillance systems. In addition, we are in close contact with the EU **ENLETS** consortium[19] that is the leading network on technology within the European Union, boasting 27-member states joined in ENLETS, aiming at making a radical difference in the approach of technology used by Law Enforcement Agencies in Europe at large.
Revenue Model. Since one of the key goals of the V^2 project is to advance the business model, the revenue model is still under scrutiny. Several revenue models will be considered including, but not restricted to, leasing models for the V^2 infrastructure, subscription models, a software licensing model, etc.
Scalability. We foresee that V^2 will have to transition from a nascent startup to an organization capable of sustained and profitable growth, adopting the **lean startup approach**. Indeed, it lies in the ambition of V^2 to offer her products and services to smart events, e.g., music festivals, at large. This is not unusual due to the EU-character of such events, and with a strong EU-signature of "franchise" event organizers such as Mojo, LiveNation and AEG, and security companies such as The Security Company. However, we firmly believe is undeniably important to get the **business concept** right in the beginning, hence this will be the focal point during the first nascent phase of V^2. For example, as part of the enterprise advisory board, JADS is closely connected to Rockstart[20] who *may* be involved in **scaling up** once V^2 has been launched successfully.

2.3 Financing.
Whilst V^2 is at its early-stage startup phase, we first need to get the concept right in terms for **better market research**, elaborating on the **business value** (early signs look very promising), and, identifying our **target customers**. This indeed the critical need for solid business planning and better identifying regulatory requirements and defining the

[14] https://www.statista.com/statistics/752101/festivals-market-size-in-europe/ and https://www.festicket.com/nl/magazine/news/festival-insights-2018/
[15] https://www.iq-mag.net/2017/04/3-75m-euro-security-bill-french-festivals/
[16] https://www.theguardian.com/music/2015/jul/09/cost-of-staging-music-festival
[17] https://www.parcelhero.com/content/downloads/pdfs/festivals/festivalreport.pdf
[18] https://www.idc.com/getdoc.jsp?containerId=prEMEA44978719
[19] http://www.enlets.eu/
[20] https://www.jads.nl/rockstart.html and https://www.rockstart.com/

minimally viable product. The initial phase of the V² project we propose herein will be partially funded by **collective self-investment**, and partially through the requested EU funding (see Sec 3.4).

2.4 IPR, knowledge protection and regulatory issues

All knowledge will be managed in accordance with the **Consortium Agreement** which will be developed on the basis of known models such as DESCA or IPCA and will describe the roles of the research partners and the industries with respect to project results exploitations, IP-Ownership, Confidential Information, Access Rights to Background and Foreground IP for the duration of the project and any other matters of the consortium's interest. Relevant inventions will be patented (in accordance with the terms of the Consortium Agreement) for the use of the partners, and relevant licensees and spin-offs will be transferred, so that both established companies and emerging companies can benefit from the V² project. Foreground IP shall be owned by the project partner carrying out the work leading to such Foreground IP.

In view of surveillance and data collection, the V² experiments have an explicit impact on the right to privacy and data protection of citizens as articulated in GDPR and national laws. The following measures will address this:

1. V² will offer appropriate guarantees by embracing the **"Privacy-by-Design" principle** for the protection of privacy2. The **data minimization principle** serves as a starting point for VISOR. Only those data are collected that are necessary to achieve V²'s objective; 3. the V² experiments will initially take place under the **auspices** of the Dutch police, and finally, 4. PaasPop (currently, the foreseen third-party for experiments) will explicitly articulate in her **privacy policy** associated to each sold ticket that (s)he acknowledges that the police and/or security staff may carry out filming for the security of ticket holders and the prevention of crime.

Data Management, Background IPR, Results IPR and protection strategy, GDPR, Confidentiality and Open Access policies as well as conflict resolution will be addressed at the level of **PCC** (see Sec 3.2).

3. IMPLEMENTATION

3.1 Overview and time plan

The V² work plan (Outlined on the right-hand side) is organized into several components: work packages (WPs) 1 and 2 deal with research, innovation, and validation activities. WP3 and WP4 address collaboration, dissemination, exploitation, and project management. The correlation between WP1-WP3 is **centered around WP1**; following agile methods, all tasks of all WPs start at the same time in week 1 – given their output yield, each will have its own expected date of final delivery. Biweekly intermediate will be available for related WPs.

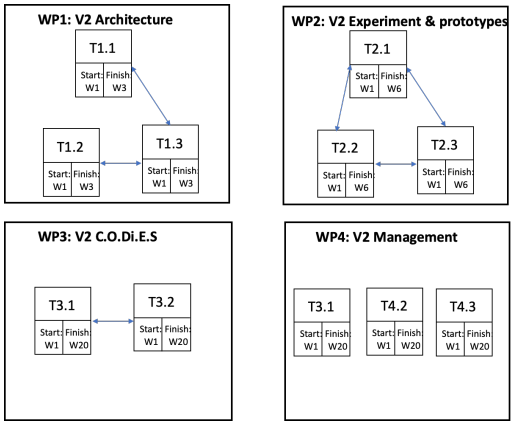

Figure 2 V² Workpackages and Tasks

Work Package Title (Effort) - Lead	**WP1: V² Architecture (5 MM) - EW**
Objectives. The goals of this WP are as follows: it will first analyse state of the art of enterprise social networking, followed by requirement analysis & architecting. In contemporary, the WP will draft two plans: (1) a business plan; (2) legal & societal plan. A large part of the effort will be devoted to the definition of the business plan behind the V² idea as well as the continuity between the V² technical outfits.	
WP1 Description of Work **T1.1: State of the art analysis, requirements and architecture specification.** Activities in this task will concentrate on: (i) delivering a **state-of-the-art survey** covering relevant technologies, research papers, and commercial products in the relevant areas of the project; (ii) A **requirement analysis** that will be conducted for all the technical WPs, including the demonstrators, and refined through the project. Concerning demonstrator requirements, the task will run in parallel to T2.2 and support it. **T1.2: Business plan definition and evaluation.** Activities in this task will concentrate on: (i) drafting a business model canvas (BMC) to brainstorm within other internal project participants as well as the external advisory board (more details on this in section 3.2); (ii) defining a complete business plan from the BMC bootstrap; (iii) devise a validated business plan through at least 3 Delphi studies. **T1.3: Legal, ethical & societal plan definition and evaluation.** Activities in this task will concentrate on: (i) drafting a societal and social-networking model compatible with V²; (ii) evaluate and address the legal implications; (iii) plan improvements of V2 technical requirements to address (i) and (ii).	
WP1 Deliverables **D1.1:** V² Requirements Analysis and Software Architecture Models; functional specifications. **D1.2:** V² Business Plan. **D1.3:** V² Legal, Ethical & Societal Plan.	

Work Package Title (Effort) - Lead	WP2: V² Prototyping (4 MM) - HSG

Objectives

The goals of this WP are as follows: are to provide prototypical designs for the **V² platforms tools and integration backbone,** implementing a demonstrator that integrates basic functionalities of the V² platform components to achieve **Technology Readiness Level 2**.

WP2 Description of Work

T2.1: V² Platform Prototyping & Integration. The activities in this task will concentrate first in designing an **initial baseline prototype** of the V² platform, to be tested initially with a series of 3 round table brainstorm sessions and 5 real-life V² try-outs, e.g., during PaasPop.

T2.2: V² Prototyping & Integration with V² Platform. The activities in this task will concentrate first on evaluating pre-existing Deep Learning facilities of the "V² Monitor & Analysis" module (cf. Fig-1), which are already integrated into AI platforms like Google's TensorFlow. Subsequently, the task will address the implementation of the V² data and governance model that will guarantee secure processing and storage respecting laws and policies like GDPR. Finally, the task will address the integration with the V² platform.

T2.3: Demonstrator Evaluation with Experiments: Feasibility. The activities in this task will concentrate first in defining an initial prototype, including a solid validation assessment plan. Subsequently, the initial designs will be advanced in an iterative manner (relying on DevOps) to achieve the objectives of this proposal.

WP2 Deliverables

D2.1: V² Platform + V² Monitor and Analysis + release notes; platform evaluation report.

D2.2: Data Compliance & Governance Module + release notes; Data Compliance and Governance evaluation report.

Work Package Title (Effort) - Lead	WP3: V2 Co.Di.&.S.[21] (1 MM) – EW

Objectives. The main goals of this WP are fourfold: (i) to define and execute a the essential dissemination, communication and exploitation activities to maximize the impact of results in the EU; (ii) to foster adoption support both from an festival organisation side, and an security providers side (LEAs, private security companies, security regions,.); (iii) to align with and coordinate with communities of professionals and researchers around the EU, such as EU H2020 ENLETS and the UN's Global Initiative on AI and safety/security[22]; (iv) to relay V² results as ready-to-use information, software components, or any evolution/integration of these. This includes the reach-out and collaboration with running projects (H2020 and ISF) within and outside Europe (information/experience/software component exchange and possible interoperation). Also, this includes the interaction with standardisation bodies (if any) by future influencing existing standards, increasing standard credibility and thus take-up, **providing representative scalable experimentations, implementations and proofs-of-concept**.

WP3 Description of Work

T3.1: Communication Platform. The objective of this task is to install, setup and operate the Web site of the V² project. It is a single-entry point for project-related material and download area, including ready-to-use results (software components from and outside project), information about project progresses and highlights, events in social computing (within and outside project), and tutorials. We will use a modern platform such as Ghost and WordPress to make the portal attractive and robust. The outputs of this task will be documented in deliverable D4.1.

T3.2: Dissemination, Exploitation & Standardisation. V² targets from the beginning of the project the writing of a vision article whose first part is the problem statement of V². Dissemination also includes the submission of workshops at satellite events (e.g., during the PaasPop Academy[23]), the organisation of consultation meetings, and participation/contribution to any event on the project core topic, including EU events like the Future Internet Assembly, EU ISF PROTECT[24] meetings and EU ISF ENLETS workshops. Concerning standards, V² prefers the consolidation of existing standards through versioning. Beyond, V² intends to provide credible, representative demonstrators grounded on existing standards to influence forthcoming releases, to augment their sharing, promotion and broader utilisation **to have real impact on products and consequently market conquests**. The outputs of this task will be documented in deliverables D4.1 and D4.2.

WP3 Deliverables

D3.1: Communication Platform & Access Analytics + Collaboration & Outreach report.

D3.2: V² Best practices and Impact Report, and Standardization & Market Roadmap

Work Package Title (Effort) - Lead	WP4: V² Management (2 MM) - EW

Objectives. This WP will define the project management structure and implement it. It will track progress and deviations from plan for research activities, costs, and financial activities and compile required reporting according to EU templates. Quality management will be implemented and a collaboration platform will be set up.

WP4 Description of Work

T4.1: Project coordination. This task will coordinate the technical activities, including planning, supervision of the scientific, technical and business work, development of the project strategy and work plans, identification of risks and implementation of

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21 Communication, Dissemination Exploitation & Standardisation

22 https://globalinitiative.net/ai-cybercrime-and-the-un/

23 http://paaspopacademy.nl/

24 https://protect-cities.eu/

corrective actions, and, continuous coordination through calls and emails. This task will also coordinate the data management plan (DMP) definition, if and as required.
T4.2: Administration and reporting. This task will perform the administrative tasks of the project, including financial administration, financial risk management, set up of templates to facilitate reporting for all participants, periodic reporting for management, dissemination, standardization and financial activities.
T4.3: Collaboration and quality management. The task will monitor overall progress of technical activities, costs, compliance with planned milestones and timelines, risk management, and, internal reviewing of deliverables.

WP4 Deliverables
D4.1: Final project report + Data management plan. This project report deliverable will include the specification of the quality management procedures and the online collaboration platform. The technical, business synergy, dissemination and exploitation results attained in the duration of the project will be reported here. Also, this deliverable will identify what research data will be released as open, complying with the guidelines of the Horizon 2020 pilot action on open access to research data.

3.2 Management Structure and Procedures

3.2.1 Project Management Structure

A diagram summarising the proposed project management structure is aside.

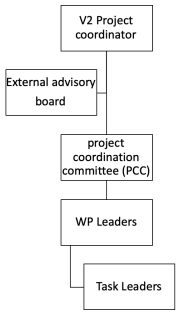

Figure 3 V2 Management Structure

Project Coordinator (EW). The Project Coordinator is responsible for the **overall management, communication, and coordination** of the entire V^2 project and also to chair the supreme project board, the **Project Coordination Committee (PCC)**. **The Project Coordinator is the only official channel that interacts with the European Commission,** especially with regards to the submission of deliverables, aspects related to third parties, and the consortium of V^2.
Project Coordination Committee (PCC). The PCC consists of one representative of each partner plus a representative from the enterprise advisory board, and **will meet monthly**, using **conference calls** and **3 times in bi-monthly plenary physical meetings for the duration of the project**. Partner representatives will also be in condition to request a PCC meeting on-need. The PCC is the highest decision board and its main task is project governance. It will have the overall responsibility of all technical, financial, legal, administrative, ethical, and dissemination issues of the project.

3.2.2 External Business Advisory Board

The External Advisory Board composed by active professionals from neutral EU organisations will advise on strategy directions for the project, help refine requirements and quality of V^2. First, **Dr. Patrick Padding is a senior expert** in security, privacy, and other innovation subjects in relation to social, societal and legal implications of **safety and security**. Patrick has acted as the chair of the security advisory group of the H2020 Secure Societies program, is leading the ENLETS project that supports front line policing and the fight against serious and organized crime. Second, **Prof. Dr. Willem-Jan Van Den Heuvel** and **Dr. Damian A. Tamburri** are extremely active professors at the Jheronimus Academy of Data Science (JADS), a pillar of excellence in the use of data-scientific and data engineering means to accomplish societal and industrial value-driven goals. Both are very active at the EU level and have been involved in as many as 15 EU projects ranging from Research and Innovation Actions, to Innovation Actions and more. Third, **Mrs. Sandra Potten**, affiliated to JADS, has a strong and long-lasting track-record in Event Management, both in project management and business development. Also, is she an experienced business liaison officer between R&D teams and (potential) clients. Finally, as a first step toward EU excellence, the advisory board formation process will benefit from the experience of skilled practitioners from **Systema S.r.l.**[25], in the person of **their CTO Dr. Constantino Manes,** a Small-Medium Enterprise in the segment of IT management of large-scale real-estate properties and their operation.
The above professionals will form a well-balanced, and experienced Business Advisory Board in line with the intents and purposes of this SME instrument.

3.4 Resources

A standard SMEInst budget (see table on the side) will be used to cover the 12 MMs envisioned for the V^2 project, as depicted in the figure aside.

	A. Costs of the feasibility study/Direct and indirect costs of the action	Total costs	Reimbursement rate %	Maximum EU contribution	Maximum grant amount
Form of costs	Lump sum				
	50 000	71 429	70 %	50 000	50 000

[25] https://www.overleaf.com/9357465878nbwqthhcjdmn

Jheronimus
Academy
of Data Science

Memo

Date
23 August 2019

Van
Prof. Dr. Arjan van den Born

TO WHOM IT MAY CONCERN

By many considered as an "SME University", JADS is a young and expansive SME-sized university collaboration between Tilburg University and the Technical University of Eindhoven revolving around data science and entrepreneurship.

With these premises and intention, JADS successfully encouraged the creation of VISOR Venture – its first Spin-Off startup. VISOR Venture aims at engaging the direst problems of our data-intensive society with Machine-Learning approaches and Big Data analytics and will specialize on smart event safety and security.

With her strong track record in managing EU projects, including the H2020 RADON and DESTINI, JADS will continue to help in shaping the VISOR Venture through: (1) bringing in her extensive network of EU-level companies and research institutions and universities (2) devising the data architecture underpinning VISOR Venture project, and, (3) R&D advise about the state-of-the art in data science tools and technology, data entrepreneurship, and sharing our expertise on dealing with IP and GDPR.

Please feel free to contact me in case you have any questions regarding the above.

Sincerely,

Prof. dr. Arjan van den Born

Sint Janssingel 92
5211 DA 's-Hertogenbosch
The Netherlands
+31 13 466 3020/2767
e-mail: W.J.A.M.v.d.Heuvel@jads.nl

26 August 2019

Topic: Support letter VISOR Venture proposal

To Whom it may concern,

As H2020 project coordinator I-LEAD, Innovation law Enforcement Agencies Dialoque (I-Lead.eu), and Coregroupleader and national contact point of the European Network law enforcement technology services (ENLETS[1]), we fully endorse the VISOR Venture phase 1 proposal.

In particular, I-LEAD's focus is on the incapability of groups of operational Law Enforcement Agencies (LEA) practitioners defining *their needs* for innovation. Where possible a direct uptake from this research will be facilitated and implemented in the ENLETS networks supporting the action. ENLETS is the European platform that strengthens police cooperation and *bridges the gap between the users and providers of law enforcement technology.* With 29 member states joined in ENLETS and an active Core Group, ENLETS will make a difference in the approach of technology used by Law Enforcement Agencies in Europe.

Through the ENLETS - I-LEAD tandem, we would like to offer our **strong support** for the SME Phase 1 project proposal titled: "*VISOR Venture*" . The VISOR venture proposal fits perfectly within our ENLET technology roadmap on Intelligence analysis and Digital Forensics, and may in fact serve as a very interesting piloting company for us to collaborate with, share initial results, and best practices with the wider community of law enforcement agencies.
This could for example take place in the piloting phase of the ISF ProTect project that is taking place under the umbrella of ENLETS. ProTect focusses on the protection of public spaces, including crowd management for which a smart use of data as well as interpretation of this data is needed. ProTect reaches out to more than 250 European cities, predominately endusers and buyers of innovative solutions like the Visor project.
ENLETS has a role in the Action Plan in the Protection of Public places [2] and was endorsed with Council Conclusions on technology in the security domain[3]. If this initiative will be granted we will support the further deployment towards the market.

We see this proposal as the jumping board toward an intensive collaboration.

Yours sincerely,

Patrick Padding, CG ENLETS

[1] http://www.enlets.eu/

[2] Com 2017,612

[3] enfopol 148

4. Members of the Consortium and Partner Roles

The consortium brings together industrial partners that cover the perspectives across the V^2 value chain (see Sec. 1):

The Event Warehouse[26] **(EW)**. The Event Warehouse B.V. has been the working force behind multiple festivals and events including: PaasPop, We-Are-Electric, and many other shows at the Klokgebouw in Eindhoven and around Holland. In particular, under the direct supervision of Mr. Chris Seijkens (who will be directly responsible for the successful execution of V2) the Event Warehouse BV offers consultancy and services to organize and directly coordinate security and safety services during festivals, exploiting its network of CCTV companies, security enterprises, and the such. As a truly innovative SME, the event warehouse has collaborated with partners such as JADS, to leverage new technologies for improved and more efficient security and safety at festivals throughout Europe. EW lies at the heart of the strategic roadmap of the Event Warehouse to extend her wings to other type of events, within and outside The Netherlands, unlocking the potential of the EU market both in terms of customers and collaborators.

More specifically, the leadership and activities coordination of V^2 will be carried out by two key people.
On one hand, Mr. **Chris Seijkens (M.Sc., Male)** is the co-director of the Event Warehouse, the organizer and producer of highly successful music festivals including Paaspop, We-Are-Electric, Helldorado, Metropolis, and concerts like Faithless, Volbeat and Bryan Adams at Strijp-S in Eindhoven. Chris holds a Master of Science degree in Information Systems at Tiburg University, and has, during his 25-year career, always experimented with new technologies to foster not only the organization of events but also particularly the safety and security of said events, making them smarter and smarter with his hands-on experience. Over the years, Chris has built up an impressive network with other smart event stakeholders such as municipalities and other event organizers, proving the ideal jumping board to lift smart event safety and security to the European level. His main role is therefore to manage and supervise activities in WP3 revolving around dissemination, communication, and, (potential) exploitation and standardization.
On the other hand, **Geert Gooyaarts (M.Eng., Male)** is co-director of the Event Warehouse, focusing on the planning and setup aspects of festivals like Paaspop, We-are-Electric, and Metropolis, together with Chris Seijkens; specifically, Geert focuses on safety and security of the crowds attending the festival terrain and the associated campus. Over the years Geert has built up deep knowledge and expertise on development of (2-3D) designs of these semi-public spaces that are used in discussions, planning, preparations, and execution of operations together with critical stakeholders such as the municipalities, security companies, and police. Furthermore, during the staging and building up of the festival terrain, he exploits these models to perform safety and security checks. Lastly, the aforementioned 2-3D designs lay the foundation for tracking operational activities, including flows of the crowd and movement of security staff during events --- Geert will use this expertise and knowledge to bootstrap the technical feasibility activities jointly with HSG as part of the work entailed in WP2. Conversely, his main role in the V2 project is to co-manage the project, liaise with stakeholders and the EU, fuel new collaborations and oversee the overall impact and quality following his co-manager Chris. Geert will do this in collaboration with the enterprise advisory board that host highly experienced IT/AI and safety experts, and, with an enduring track in managing and executing R&D projects starting from FP5 up to H2020.

Beyond the aforementioned leadership and coordination key figures, Chris and Geert will appoint collaborative staff already within EW as required by the project objectives and business/technical understanding.

The Holland Security Group[27] **(HSG)**. The Holland Security Group entails a private Dutch security company specialized in the field of security solutions, facility & event services and hospitality management. HSG is active in three sectors, private, business, and public, operating in fourteen segments including, education, healthcare, banking, and, events, entertainment. With its head office in Uden and under the direct supervision of Mr. Walco van de Ven (who will be directly responsible for the successful execution of the V2 design, prototypization, and early evaluation phases), HSG boasts three additional offices throughout the Netherlands, specifically in Eindhoven, Rotterdam and Amsterdam. In particular, HSG has an impressive track record in event management services[28] including the drafting and writing of safety plans (site design, position crew), UGS routes (starting point for the emergency services), and emergency plans (escape routes and traffic plan support). More specifically, **Mr. Walco van de Ven (M.Eng., Male)**

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26 https://eventwarehouse.nl/

27 https://www.hollandsecuritygroup.com/

28 https://www.hollandsecuritygroup.com/partner-in-eventmanagement/

is the director of the Holland Security Group (HSG) that specialize in security, safety of objects, individuals and events, as well as hospitality. Clients can be found in various private and public sectors including, banks, construction, logistics, education, public transport and hospitals. HSG can deploy her own infrastructure for safety and security, e.g., a mobile central control room that is equipped with state-of-the-art communication and monitoring facilities.

The main role of Walco will be to supervise and steer WP2, and in particular the experimentation and evaluation of the V2 baseline and prototypes. This role will be backed up by the enterprise advisory board that will particular assist in guiding and actively steering the platform prototyping and integration in task 2.1 and task 2.2, under the management of van der Ven.

Besides the aforementioned leadership and coordination role, Walco plans to involve any and all professionals from HSG or any of its associates as required by the prototypical design and evaluation of expected V^2 technical results and activities.

Do you plan to subcontract any tasks?	**No**

5. Ethics and Security

The proposal does not induce any ethical concerns over the proceedings of this project. An ethics self-assessment has been carried out and revealed no critical concerns. This notwithstanding, the PCC governing body for the scope of this proposal will re-evaluate the ethical concerns for V^2 project once the social impact and business plans have been made available by V^2 responsible parties EW and HSG respectively.