GRANT AGREEMENT NO.: 731677

Call: H2020-ICT-2016-2017
Topic: ICT-13-2016
Type of action: RIA

FLAME

Facility for Large-Scale Adaptive Media Experimentation

3rd OPEN CALL

TABLE OF CONTENTS

1 General Open Call information

The FLAME project hereby announces its third Open Call for 3rd party projects.

This call solicits for **3rd party projects** to explore edge experiences considering consumer's desire for personalised, localised and interactive media content delivered through current and emerging human-computer interfaces used in outside spaces or between outside and inside spaces. The 3rd party projects will demonstrate the utilisation and value of FLAME service design patterns for orchestrating media services. FLAME is seeking innovative use of the patterns as a key part of the evaluation criteria for proposals, whether projects are seeking incremental service delivery for today's devices and transformative solutions based on services and devices for augmented and mixed reality.

More information on the scope of this first Open Call can be found in Section 8 of this document.

2 Call information

Project full name:	FLAME - Facility for Large-Scale Adaptive Media Experimentation
Project grant agreement number:	731677
Call identifier:	FLAME-OC2
Call title:	Third FLAME Open Call
Submission of draft proposals deadline for the feasibility check:	10th October 2019 @ 17:00 CET
Notification of the results from the feasibility check:	18th October 2019
Final Submission deadline:	8th November 2019 @ 17:00 CET
Notification of the final result:	Beginning of December 2019
Webinar for explaining Open Call details and providing guidelines for proposers	2th September 2019 @ 11:00 CET
Estimated start date of 3rd party projects	1st January 2020

3 Financial information:

Category and call identifier	Call budget	Max. budget per 3rd party project	No. of 3rd part projects to be funded	Total Guaranteed support[1]
Industry Trials FLAME-OC3-IND	€ 850 000	€ 100 000	2	€ 104 000
SME Trials FLAME-OC3-SME		€ 70 000	5	
Start-up Trials FLAME-OC3-STR		€ 50 000	6	
Total number of 3rd party projects to be funded			13	

4 Requirements related to the proposer:

- Proposers must be eligible for funding in H2020 projects and be established in an EU Member State or in an Associated Country.
- Proposals will only be accepted from a **single party**.
- A proposer can only be selected for funding for one proposal, even if the proposer submitted multiple proposals that are ranked high enough to be selected for funding. In the latter case, the proposer may be given the opportunity to choose the one to be retained for funding.
- For the 3rd party projects in the category 'SME trials', only proposals from small, medium SMEs according to the definition used by the EC (for 3rd party projects in the category 'Innovation by SME') are eligible
- For 3rd party projects in the category of "Start-ups", proposals from start-ups are eligible.
- To avoid conflicts of interest, applications will not be accepted from persons or organisations who are partners in the FLAME consortium or who are formally linked in any way to partners of the consortium. All applicants will be required to declare that they know of no such potential conflicts of interest that should prevent them from applying.
- Proposers must select a single infrastructure (either Barcelona, Bristol, London or Buseto Palizzolo) to conduct its 3rd party project. This infrastructure will provide support to the experimenter.
- For the SME trials at least one 3rd party project will be funded in each one of the 4 FLAME Replicators cities (Bristol, Barcelona, Buseto Palizzolo, London) and one additional in every of these four cities based on the final ranking (5 in total)

[1] An extra budget of typically € 8000 per 3rd party project will be allocated to the FLAME consortium partner acting as Mentor for guaranteed support.

- For the Start-up trials at least one 3rd party project will be funded in each one of the 4 FLAME Replicators cities (Bristol, Barcelona, Buseto Palizzolo, London) and two additional in every of these four cities based on the final ranking (6 in total)
- The Industry trials should be in any of the of the four Replicators cities and the 3rd party project will be funded based on the final ranking.

5 Other conditions:

- Language in which the proposal must be submitted: English
- Proposals must follow the provided template (see Section 7 of this document and Appendix A)
- Proposals (draft as well as final proposals) must be submitted through the online submission portal (accessible from https://www.ict-flame.eu/open-calls/)[2]

6 Contact

opencalls@ict-flame.eu

[2] Please note that the submission portal for FLAME Open Call proposals is NOT the H2020 portal.

7 The FLAME Project

FLAME is an initiative designed to create a sustainable FMI ecosystem through experimentation, collaboration and innovation. Within this scope, FLAME works within the creative industries to create exciting, viable applications for the Future Media Internet (FMI) that bring value to the many sectors dependent on effective production and distribution of media content, such as broadcast, gaming, education, and beyond into healthcare and smart city management.
FLAME aims to change the way people interact by fundamentally changing how they send, receive, and perceive the world around them using the power and flexibility of the FMI.
For more technical details and how-to please refer to the Resources section of the FLAME website https://www.ict-flame.eu/ .

7.1 Introduction to the project

FLAME aims to optimise media content delivery by enabling deep interactions between media service providers and an underlying communications infrastructure using software defined networking and information centric networking techniques. The main target is to provide a significant leap forward for media delivery supporting personalized, interactive, mobile and localized (PIML) workflows. The FLAME platform provides this leap through capabilities for low latency distributed computing as well as content over a 5G-enabled programmable infrastructure, providing the user with faster access to media and services, lower latency and higher personalization of the experience through closer media processing (Figure 1). Through the platform's fast and dynamic service request routing capability, media service providers will have fine-grained control over load and therefore costs across the network. This offers the potential to significantly reduce the overall costs while ensuring fast availability of services towards end users.

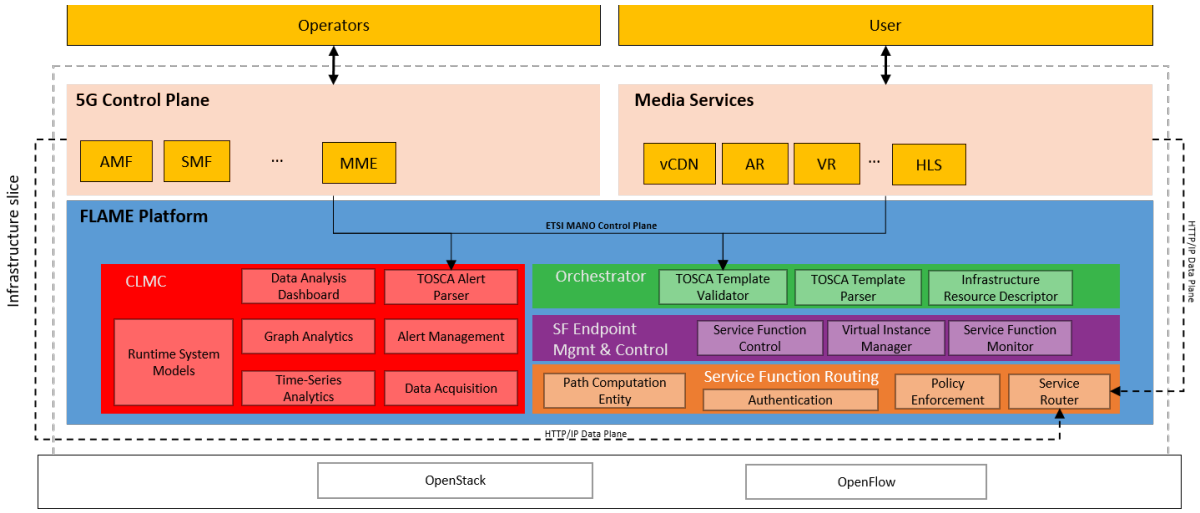

Figure 1: FLAME Overview

FLAME is composed by 3 main components that will be outlined in the next sections: The Platform, the Infrastructure, and the Media Services.

7.2 Platform Capabilities

The Platform benefits are described in detail in Section 7 of D3.1 "FMI Vision, Use Cases and Scenarios". In general, the goal is to improve performance of interactive media systems whilst managing costs associated with infrastructure resources. Figure 2 provides a summary of four key performance requirements for FMI and generally the 5G space along discussion of associated benefits:

- **Reduce latency:** latency has long been recognized as a major impact on user experience, leading not only to the deployment of content delivery networks but many past and ongoing protocol improvements (e.g., introduction of QUIC aiming at browsing latency improvements). Reducing the service path length is an important target for FLAME through utilizing an intelligent service endpoint management and flexible routing solutions.
- **Stem unicast proliferation:** the emergence of HTTP as the de-facto streaming protocol in the Internet, infrastructure providers are currently incapable of utilizing in-network multicast capabilities to stem the linear cost explosion that the unicast delivery model of HTTP creates. Through its capability to deliver HTTP response through in-network native multicast, FLAME provides a unique capability that significantly reduces costs for multi-viewer scenarios.

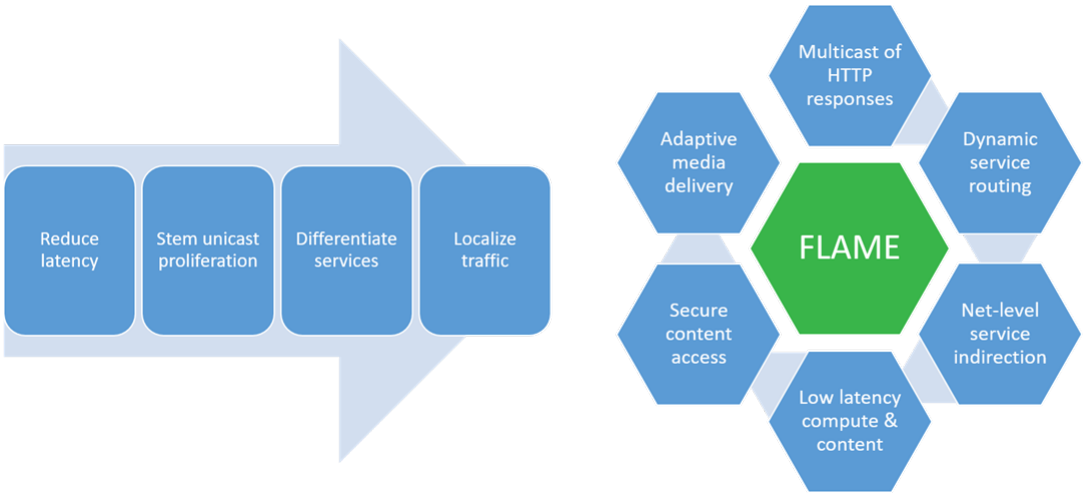

Figure 2: FLAME Platform Benefits Addressing FMI and 5G Requirements

- **Differentiate services:** virtualization opens up the capability to differentiate services by placing service endpoints throughout the network with localized and personalized behaviour. This, however, requires the network to provide a dynamic service routing capability that directs traffic to the most appropriate local service instance. Also, a failover mechanism is required to indirect service requests if a local instance is unable to provide sufficient service response. Furthermore, adaptive media delivery is crucial for differentiation of services, allowing for adapting services, for instance, to different user device requirements by adding transcoding capabilities to the service path for specific users. FLAME provides exactly these capabilities.

- **Localize traffic:** reduction of network traffic is often realized through localizing traffic wherever possible, also addressing the aforementioned latency reduction. Capitalizing on FLAME capabilities to dynamically route requests to the most appropriate service instance achieves a likely significant reduction of traffic being sent over longer paths. It also allows for keeping data local in terms of information security as well as possibly exposing the traffic to fewer parties involved. This ability to localize traffic needs to be balanced in a real-life deployment with the possibly higher operational costs for the distributed servers in comparison to centralized data centres. FLAME provides this ability to trade off these aspects towards a commercially viable offering.
- **Remove insecure content access:** the FLAME capability to elevate content delivery from intermediary Content Delivery Networks (CDNs) to fully secured surrogate service endpoints provides further security (e.g., secure content delegation will remove the need for triangular routing to origin servers). Insecure content references would be removed by allowing content to be hosted at surrogate service endpoints with minimal computational authorization functionality. This ensures that content is not exposed to unauthorised parties.

For more information and details please refer to deliverable D3.3 FLAME Platform Architecture and Infrastructure Specification v1

7.3 Infrastructure Capabilities

This section describes the FLAME infrastructure in the cities of Bristol, Barcelona, Buseto Palizzolo and London. It is mentioned that infrastructures for the last two cities are established as result of the Replicators 3rd party projects derived from the 2nd FLAME Open Call. If you want to have more details about Bristol and Barcelona, please refer to deliverable D5.1 Replication Process v1

7.3.1 Bristol

In order to explore and validate the deployment of 5G in an architecture that combines existing technologies and innovations, University of Bristol have deployed a rich testbed comprised of several networking and computing technologies, interconnecting a significant area in the Bristol city centre. This testbed aims to provide a managed platform for the development and testing of new solutions delivering reliable and high-capacity services to several applications and vertical sectors here referred to as FLAME.

The University of Bristol's 5G testbed is a multi-site network connected through a 10km fibre with several active switching nodes. The core network is located at the High-Performance Network (HPN) laboratory at the University of Bristol and an extra edge computing node is available in another central location, known as Watershed. As shown in Figure 3, the access technologies are located in two different areas in the city centre: Millennium Square for outdoor coverage and "We The Curious" science museum for indoor coverage.

A summary of the testbed constituent equipment and capabilities available for FLAME platform is:

- Multi-vendor software-defined networking (SDN) enabled packet switched network
  - Corsa switch (Corsa DP2100)
  - Edgecore switch (Edgecore AS4610 series & AS5712-54X)
- SDN enabled optical (Fibre) switched network
  - Polatis Series 6000 Optical Circuit Switch
- Multi-vendor Wi-Fi
  - SDN enabled Ruckus Wi-Fi (T710 and R720)
- Cloud and NFV hosting
  - Datacentre for Application/VNF hosting, built upon
    - 11x Dell PowerEdge T630 compute servers 700+ vCPU cores, 1TB+ RAM and 100TB of HDD storage.
- Advanced fibre optics FPGA convergence of all network technologies enabling considerable flexibility, scalability and programmability of the front/back-haul, to provide experimentation with -
  - Elastic Bandwidth-Variable Transponders
  - Programmable Optical White-box
  - Bandwidth-Variable Wavelength Selective Switches (BV-WSS)

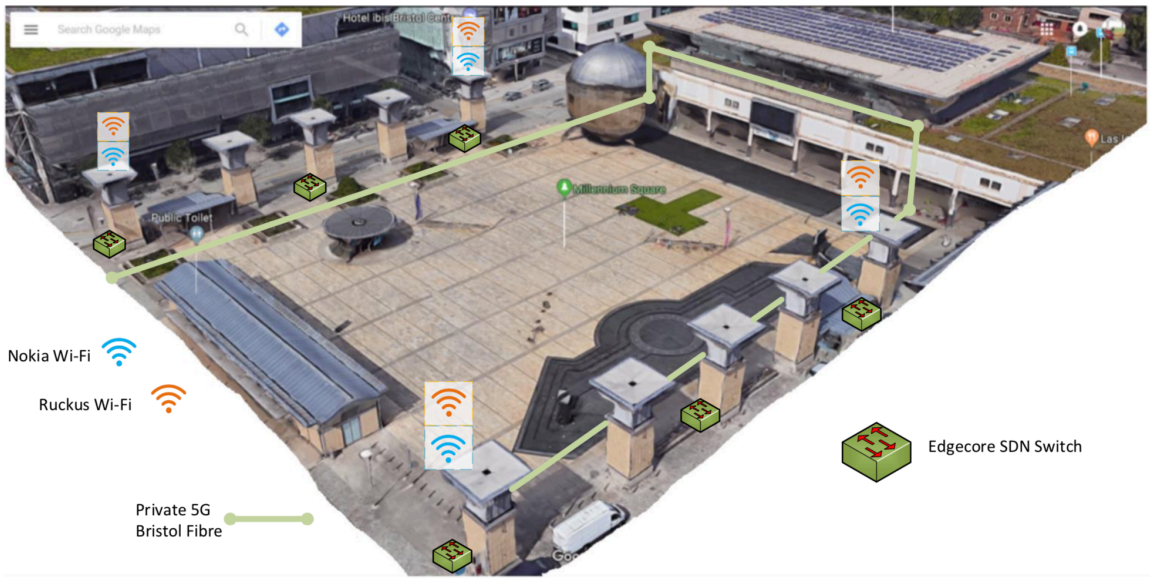

Figure 3: Distribution of the testbed access technologies

The diverse range of access technologies are interconnected in sharing the same underlying system while being used by FLAME framework to provide connectivity for the demonstrators, showcasing seamless integration between heterogeneous network components, an important concept in 5G. Additionally, the alternative and innovative technologies available, such as

pureLiFi for fixed access, can be used to demonstrate the principle of access-agnosticism, also important for the 5G vision.

The state of the art radio access technologies deployed in Millennium Square will deliver high-bandwidth, high-bitrate and high-reliability connections to the user equipment, therefore enabling the usage of the network-intensive distributed applications developed by FLAME demonstrators.

The high performance and edge computing capabilities will power resource-intensive applications developed by FLAME demonstrators. In these applications, hardware acceleration and GPU-processing will be used to deliver enhanced performance and enable low-latency/real-time user interaction.

Finally, University of Bristol 5G testbed will deliver an automated and programmable environment, that will be used by FLAME southbound interface to create fully integrated orchestration for both application components and network services.

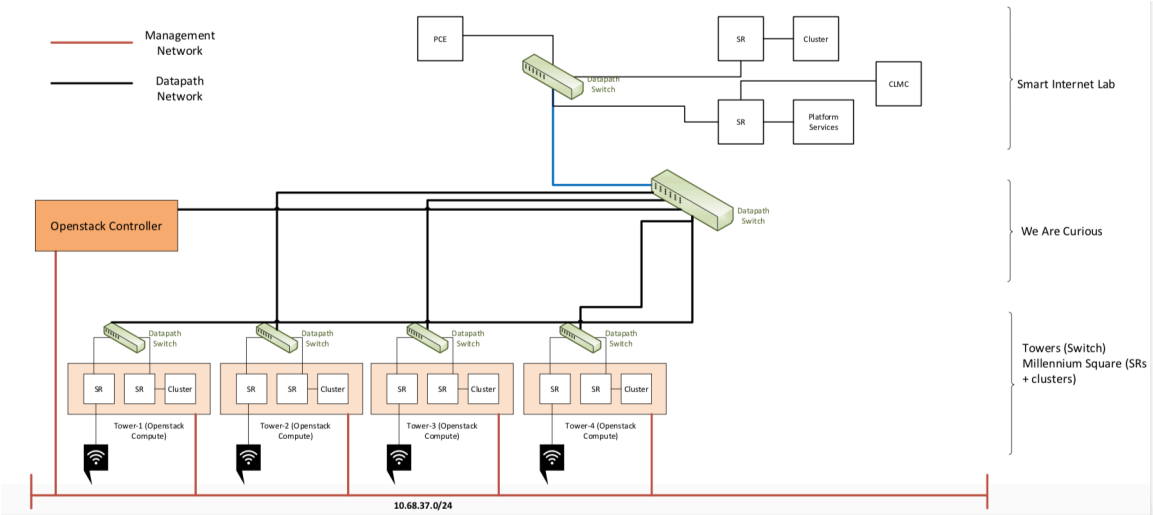

Figure 4: Bristol-FLAME logical infrastructure

Figure 4 shows the logical FLAME platform architecture deployed at Millennium Square in Bristol. A set of four towers has been allocated to host FLAME Mobile Edge Computing nodes. Each tower has a compute node based on OpenStack Ocata NOVA. Each compute node is connected to an EdgeCore SDN switch that is connected to a single SDN switch located at We The Curious (WTC). The four compute nodes and the edge core SDN switches are connected to the SDN controller based on FloodLight also located at the WTC.

7.3.2 Barcelona

The Barcelona infrastructure offers a real deployment of a wireless access and backhaul scenario. The implementation of the FLAME architecture consists of (1) the on-street deployment that provides Radio Access Network (RAN) capabilities and a dedicated wireless backhaul, (2) the Multi-Access Edge Computing (MEC) installations to provide light added value services close to

the edge, and (3) the main DC deployment in i2CAT facilities. Main DC IT resources are used to provide heavy computational / storage services, e.g. high definition video content, video transcoding, quality of service and consumption analytics, as well as resource orchestration and management logic, e.g. OpenStack, ODL, DHCP servers, etc.

The on-street deployment consists of the wireless nodes mounted on lampposts that provide connectivity for user equipment over Wi-Fi. The lampposts are each connected via optical fibre with the FLAME edge infrastructure and are connected from one lamppost to another via wireless backhaul links. In Barcelona, the edge infrastructure is deployed within a street cabinet, consisting of an edge server to enable ICN routing and providing VNF capabilities, as well as networking devices that aggregate traffic coming from the lampposts and also provide connectivity towards the main DC. The fibre connection between the edge cabinet and the main DC has an intermediate hop in the IMI facilities at Glòries area, Barcelona. Figure 5 shows the city of Barcelona, highlighting the location of the i2CAT and IMI premises, as well as the street Pere IV, where the on-street infrastructure (Wi-Fi and edge cabinet) are deployed. In the following, each of the deployments (on-street, edge, and main DC) are explained in detail.

Figure 5: Barcelona city overview with the locations of i2CAT, IMI and the on-street deployment (Pere IV)

On-street deployment: wireless nodes on lampposts

Within the Pere IV street, a segment of around 400m hosts the deployment of the four wireless nodes that provide RAN capabilities. Figure 5 shows an isometric view of the Pere IV with the FLAME street segment and the wireless nodes.

Figure 6: Barcelona FLAME on street deployment at Pere IV street

The wireless nodes are equipped with either 2 or 3 wireless network interfaces implementing IEEE 802.11ac standard with backwards compatibility for the IEEE 802.11 a/g/n standards. One of these interfaces is always used for the RAN, i.e. it is used to instantiate wireless Access Points (APs), whereas the remaining 1 or 2 interfaces are used to provide wireless backhaul connectivity from each lamppost to its neighbours. Figure 7 shows the data rates achieved over the wireless backhaul between each of the lamp posts. The numbering follows the order of the street (from left to right, as show in Figure 7). The RAN performance depends on where the clients are located and how the APs are configured. For single STA connections we observe throughput of up to 200-250 Mbit/s.

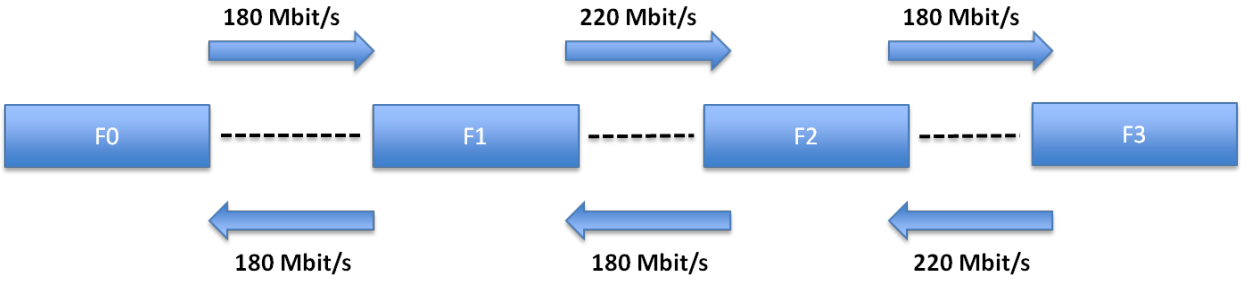

Figure 7: Barcelona Wi-Fi backhaul data rates achieved from each lamp post F0-F4 to its neighboring lamp post(s)

The lamppost equipment also has two Ethernet ports that are both connected to the fibre media converter which enables a wired connection over fibre to the edge cabinet. This wired connection is planned mainly for control and management purposes. Data in the 3rd party projects will be transferred through the wireless backhaul network to forward it to other lamp posts or to send it to the edge cabinet, where it can be forwarded to the main DC or the Internet. The wireless nodes will not store data or provide computing capabilities for experimenters; computing will be performed in the cabinet server and in the main DC.

Edge deployment: cabinet server and networking devices

Barcelona infrastructure includes an edge computing server and a switch, both placed in the cabinet at Pere IV street. The edge server offers application developers and content providers to 3rd party project with cloud-computing capabilities close to the end users. In principle, having services closer to the end user will improve the user experience. Just as an example, resources on the edge computing server might be used for supporting the following: video analytic applications, location services, IoT, augmented reality applications, optimized local content distribution and data caching. In the context of FLAME, a portion of the edge server resources should be allocated for the instantiation of FLAME platform inherent services (e.g. Network Attachment Points (NAPs)). The remaining resources, not used by the FLAME platform, in the cabinet server will be available for the experimenters. In Barcelona deployment, the edge cabinet server is a 12 core CPU mini-tower server with 128 GB RAM and around 2 TB of storage capacity. This machine has been registered as a compute node into the OpenStack controller hosted in the main DC. The Barcelona infrastructure setup represents a cost-effective infrastructure installation where a single cabinet server is assigned per several lampposts.

The FLAME cabinet is connected to the main DC via a private network owned / operated by IMI. This network consists of two segments: 1- Optical network which connects Glòries node to the FLAME set up in the Pere IV street and 2- an optical network with maximum capacity of 8 lambdas (each supporting 10 Gbps) between the Glòries node and the main DC. The initial capacity considered on the optical segment is 20 Gbps but depending on the FLAME needs an adequate bandwidth will be allocated for the experimentations.

Main Data Centre

The FLAME street deployment in Barcelona is connected to a Data Centre managed by i2CAT where resources for FLAME are provided in a non-exclusive manner. It consists of computing devices, hosting a production-level virtualisation environment and the necessary networking devices that interconnect with the edge deployment.

Specifically, the virtualisation environment consists of three servers running OpenStack Ocata, ranging from 32 GB to 96 GB RAM, from 4 to 6 cores and ~2 TB of storage capacity. The nodes exert the actions of controlling, computing and storing. The production-ready environment is defined following some of the best practices, such as high availability and redundant storage. To meet the former, the aforementioned servers provide different and/or replicated functionality. The control plane of such cluster for virtualisation is architected in a way that punctual and/or localised faults can be overcome.

Overall, the DC resources are utilized to instantiate and host functionality such as the control plane management for the wireless nodes (ODL), required storage capacity for media server content or other experimenter needs and the required FLAME platform services.

The following image depicts the architecture of the Barcelona infrastructure for FLAME.

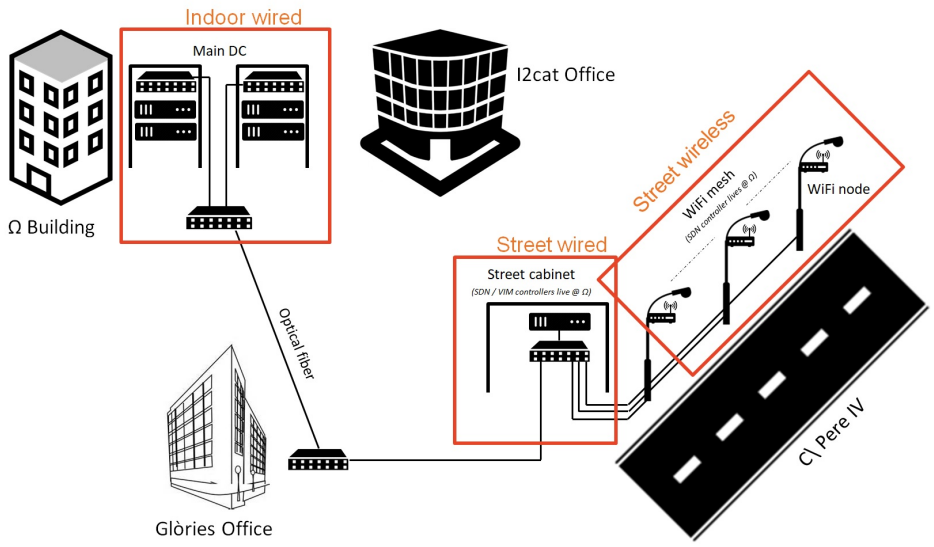

Figure 8: High-level view of the FLAME infrastructure in Barcelona

For the 3rd party projects, the overall amount of vCPUs, RAM and Storage available for their experiments is given in Table 1. These resources can be used to instantiate their own VMs and media services provided by FLAME.

Table 1: Compute resources available for 3rd party projects at the main DC and edge

	vCPUs	RAM	Storage
Main DC	10	32	200 GB
MEC	14	32	200 GB

Barcelona deployment represents a cost-effective city installation where the FLAME solution could provide the significant leap forward for media delivery supporting personalized, interactive, mobile and localized (PIML) workflows. Leveraging on 5G-enabled programmable infrastructure, FLAME advantages, such as faster access to media and services, lower latency and higher personalization of the experience through closer media processing, will be offered through virtualized resources at the main and edge DC. This creates room for a significant reduction in the overall costs while ensuring fast availability of services towards end users. In particular, unlike the Bristol deployment where the hardware installation per lamppost is required to enable FLAME offerings (without providing any extra computing capacities for other added value service like content caching), resources on the general-purpose server mounted on the cabinet in Barcelona create a virtualized environment where NAPs as well as other added value services can be instantiated on demand. This will significantly reduce the installation cost (CAPEX) as well as maintenance and operational costs (OPEX).

7.3.3 Buseto Palizzolo

In the PRIS proposal the 5G infrastructure is located in a rural community in Sicily (south Italy) where one of the main social problems is related to the high rate of migration of young people from those rural areas towards metropolitan areas or to north Italy. In this territory, Level7 has already a relative dense infrastructure that will be upgraded and then connected to the FLAME infrastructure and in particular the nodes that Level7 directly operates are:

- Node in the city hall
- Node in the school
- Node in the cemetery (only for infrastructure needs)
- Node in the cultural center building
- Node in the small square in front of the city hall
- Node in the public library
- Node in the silo of the aqueduct (for infrastructure needs)

All those nodes, are in the Buseto Palizzolo territory and directly operated by Level7 proprietary infrastructure. Also, the local municipality is a Level7 customer for all their buildings since 2011. Below a map is shown, taken from Google Earth, that shows the characteristics of the rural area of Buseto Palizzolo and how it is far from “considered dense populated “.

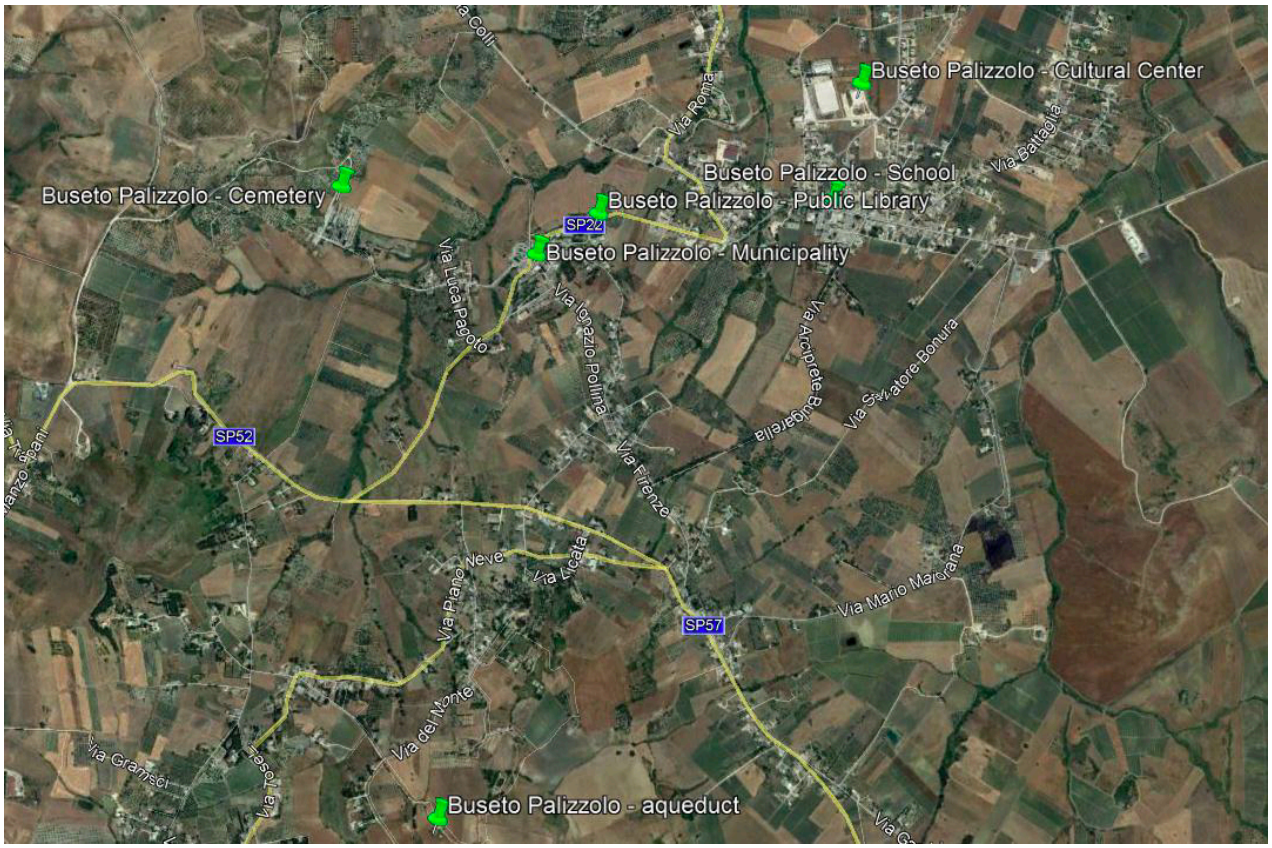

Figure 9: The rural area of PRIS Replicator

PRIS replicator will upgrade the current Level7 infrastructure to a FLAME based testbed that can operate experiments in the rural are of Buseto Palizzolo.
The current infrastructure is interconnected via wireless links, however it is forecasted that the infrastructure will be upgraded to fiber as soon as the national telecommunication plan will release the services in the second half of 2019. Indeed the territory of Buseto Palizzolo is one of those territories that have been founded by the national government (via Infratel, a company owned by the Italian government) for disadvantaged communities.

In regards to the possibile scenarios and supported areas for the technology, experiments can be done in the outdoor areas that are covered by the nodes as well as in the indoor areas that will support the FLAME infrastructure.
For the outdoor areas the expected coverage is approximately shown in the following figure.

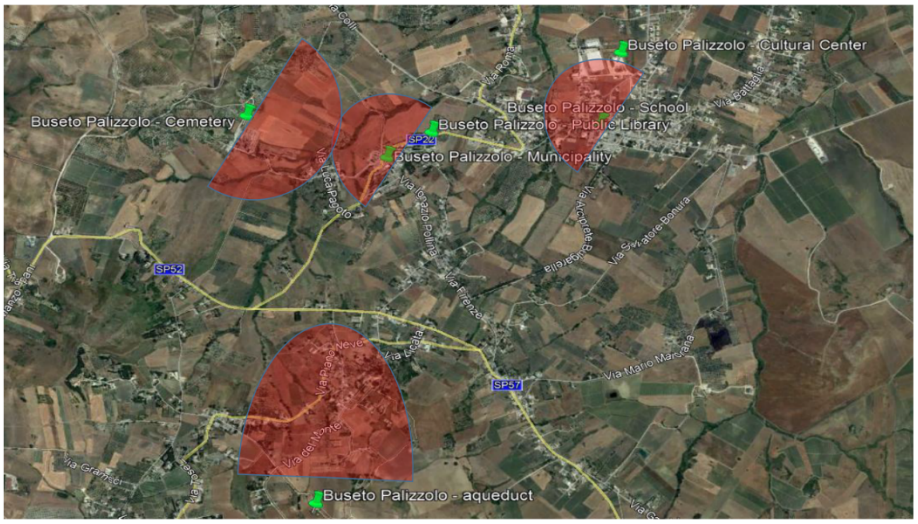

Figure 10 PRIS node outdoor coverage

For the indoor areas, in coordination with the local community, experiments can be done in the cultural center (that hosts a museum of agricultural heritage tools) as well as the local school (kids under 15 years old and the local library.

In the following figure the current infrastructure (in blue) is shown together with the new nodes that will be implemented in the PRIS replicator (in orange). Once the fiber infrastructure will be made available to Level7 (this should happen in the second half of 2019) the infrastructure should be as follows with the current infrastructure (in blue) shown together with the new nodes that will be implemented in the PRIS replicator (in orange):

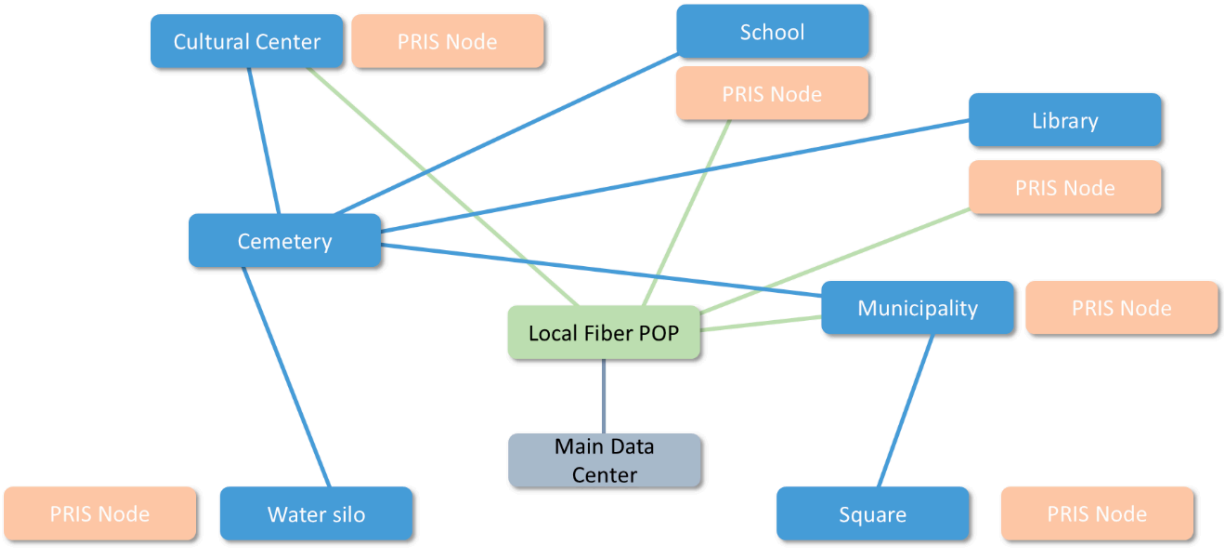

Figure 11 PRIS node interconnection (upgraded to fiber)

In this figure the green lines are fibers connecting the buildings to the local PCN/POP that is then connected to the national POP (for the new fiber infrastructure this should be in Milan MIX the first Italian national Internet Exchange). Each fiber connection (green line) will be at least 1Gbps.

Besides the PRIS nodes (in orange) a local node for computational needs will support the FLAME architecture. This specific infrastructure is called “edge cabinet” and it is connected to each PRIS node (via wireless or fiber). For the local PRIS edge cabinet, the following hardware will be dedicated to the FLAME infrastructure:

- Two x86 computational devices, each one with 4 cores CPU, minimum 16GB of RAM and 256GB SSD.
- One server with 8 cores, minimum 128GB of RAM and 10TB of local storage available.

All the devices will be registered as available resource at the OpenStack controller.

For each network node (orange box in the above figure) the following features will be available locally:

- WiFi access supporting SDN (e.g. SBC devices, Ruckus devices, etc.), and 802.11ac as well as 802.11a/n for backward compatibility
- SDN switch: x86 linux appliance or similar with at least 4 network cards and Openflow 1.3 support.
- One computational device: x86 hardware, with 4 cores CPU, minimum 8GB of RAM and 256GB SSD.

In the main data center, remotely connected to the PRIS replicator, the following hardware will be dedicated to PRIS:

- Three servers will be available in order to OpenStack and the FLAME software suite. Each server will be with 2 CPU, at least 64GB or RAM and 4TB storage.

Besides the networking aspects, other facilities will be available for testing and in particular:

- Weather station: the weather station will be installed at the aqueduct node in order to provide basic weather data that can be accessed from the Internet as well as locally. The weather station can also be useful for 3rd party projects with the farmers present in the territory, as a basic service for the local community as well as for future development for agricultural scenarios.
- IP cameras: IP cameras will be installed in the aqueduct and in the roof of the City Hall. In both cases the cameras will be installed with a main focus on the landscape instead of pointing to faces or to persons so that privacy will not be violated by the cameras. The main purpose of the cameras is to collect a constant and valuable multimedia stream that can be used both technically (for the storage) and as reference content for experimentation from 3rd parties.

Other facilities will be also present in each node, but not directly made available and accessible to experimenters such as:

- Alarm for power outages
- Power Backup systems (batteries)
- Cabinet Temperature monitoring
- Video Surveillance

7.3.4 London

King's College London (KCL) has developed a state-of-the-art 5G testbed based on OpenStack and SDN-enabled infrastructure. This testbed is interlinked with other universities in the UK, including University of Bristol.
This infrastructure, as well as its interconnection with Bristol, has been tested and validated as part of the first-ever end-to-end demonstration/trial of 5G, funded substantially by the UK's Department of Culture, Media and Sport (DCMS).
The infrastructure comprises of a fully 3GPP-compliant 5G air interface with radios at 3.5GHz powered by Massive MIMO technology and 28GHz powered by millimetre wave specifications. The radios are fronthauled into the baseband unit and then into the virtual radio access network; the resulting data flow is then routed into the virtualized core network. The testbed is completely softwarized, hosting all 5G functionalities as VNFs on commodity hardware. This also allows an interconnection to 3rd party systems, such as the Internet of Things and Autonomous Vehicles. As such, we own the infrastructure, have full access to the facilities on campus, and have the ability (and necessary permissions) to deploy FLAME on top of this infrastructure and demonstrate the replicability of FLAME. Note that the 5G testbed is a TRAC facility within KCL and the access to it by 3rd party projects is costed to ensure its upkeep and maintenance.

5G Infrastructure:
King's College London (KCL) is located in centre of London and has five campuses located in various parts of the city. KCL is the most centrally located of all the London-based universities.

The key infrastructure for replicating FLAME resides in Strand Campus (Figure 12) and the network has a 3-tier design:

- access networks support different technologies, including 4G (through Open Air Interface), Wi-Fi and gigabit Ethernet each one with its own subnet or subnets.
- distribution layer to perform routing functions between different access networks and
- a core layer which aggregates and routes traffic for the VNFs.

The core, distribution and access tiers are interconnected with 40Gbps fibre across all links and the access tier provides 1Gbps and 10Gbps links.

The set-up consists of:

- ***Access points***. Located at 10 different places in the strand campus (all of them use WiFi). There is also a cellular set-up in the lab (using open air interface), paving the way to test software-defined radio integrations with FLAME. Programmable SIM cards and multi-vendor end-user devices having AR capabilities are also available to test the services offered.
    - Wi-Fi Cisco AIR-CAP 7021
    - Cellular (SDR, Open Air Interface and virtualized core)
- ***5G Lab (Edge).*** The first point of contact from the access devices. where 6 compute nodes are located with each node having one of the following specifications:
    - 6 cores, 12 threads with 24GB ram and 512GB SSD and 1 GBPS NIC and a GTX 1080
    - 8 cores, 16 threads, 16GB ram, 756 GB storage (500GB HDD + 256GB SSD), 1GBPS NIC and 2 GTX 1080.

  It is planned that two or more of these nodes will be dedicated for FLAME. Depending on resource requirements, up to four other nodes can be available in a dedicated fashion for specific experiments and testing. Since all infrastructure supports virtualization, it will also be able to spin up resources as needed.
- ***KCL Datacenter***. This is built upon one controller node (where OpenStack is hosted), seven compute nodes (two with real-time[3] support) with each node having 128GB memory, and two Intel E5-2699A CPUs of 44 cores each (88 virtual processors) clocked at 2.4GHz. The compute node runs the host OS (Ubuntu 16.04) on a RAID1 of SSDs and the VNF instances on a RAID1 of 1TB hard disks. Server hardware is fully redundant as well as the switches and the core network is interconnected with redundant links for bandwidth aggregation and failover. Additional compute nodes and the FLAME controller will be located at the KCL Datacenter which is located in the same campus. The Datacenter is connected to the 5G lab via multi-vendor switches (EdgeCore, CORSA). It is worth noting that we run several subnets with routing between them and the network is not a flat topology but rather a collapsed core topology as found in major operators.
- ***5G-EX***. KCL DC connects to 5G-exchange point at Slough runs a fully SDN enabled infrastructure with Corsa switches and connects the KCL testbed to University of Bristol and Surrey testbeds. This will enable potential integration with the FLAME replicator in Bristol.

[3] The real-time KVM host is configured for SR-IOV and CPU pinning in the BIOS

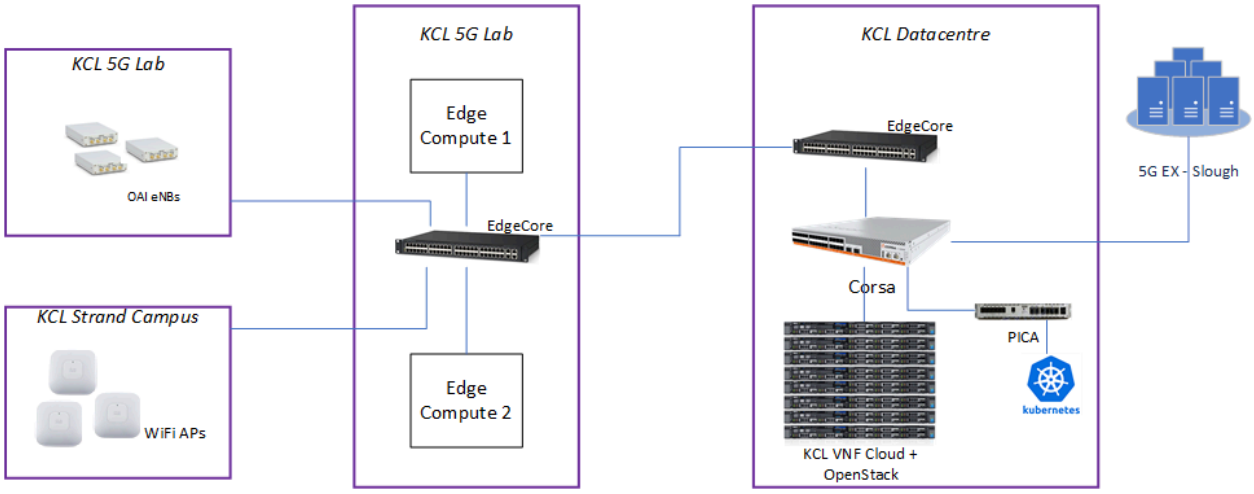

Figure 12: KCL 5G testbed diagram capabilities

7.4 Media Capabilities

FLAME provides a set of media capabilities as a part of the project offering. These media capabilities will be available for experimenters and particularly for the entities that participate in the project as result of the open calls. These capabilities are provided in FLAME by means of Foundation Media Services, which offer an initial set of basic functionalities useful for a variety of media implementations, such as storage capacity and adaptive streaming. In this way, the Foundation Media Services can be seen as packetized media components. FLAME has defined a list of Foundation Media Services, which will be implemented along the project work plan. Some of these Foundation Media Services has been selected to take advantage of the key FLAME benefits, based on the project technical approach, such as reduced latency or secure content access, as described in section 7.2

The Foundation Media Services that will be ready for the 3rd parties involved in the project after the first open call are depicted in the table.

Name	Description
Metadata database	This component consists in a generic database to store metadata, which is a required module in most of media services. Some complex media services require the stateful replication of a synchronised database. For example, a certain service may require a replicated metadata database in the edge to improve the availability of media contents. FLAME benefits and technological innovations enable an efficient procedure for the replication of databases.
Content ingest and storage	This component enables the insertion of assets to be delivered in media services. By means of a REST API, assets can be uploaded, deleted and downloaded. The component includes a local database to keep some data about the stored contents. The FLAME platform capabilities enable a smart replication of this component for a better service performance.

Name	Description
Media quality analysis	This component provides information about a certain media asset, including technical information (codec, duration, framerate, resolution, bitrate) and also an estimation of its visual quality.
Transcoding and transrating and content conditioning	Transcoding consists in the change of the video or audio specification to represent the content of an asset (source encoding). Transrating is a similar process but in this case the encoding specification does not change. Transcoding and transrating typically aim to reduce the bitrate of an asset (this processing will cause a reduction of the quality, too). This component enables the encoding based on the video formats AVC and HEVC. By means of a REST API, the user can specify the characteristics of the output video, such as the resolution, the framerate and the desired bitrate or rate factor. Content conditioning consists in the processing of the media assets to make them available in an adaptive streaming service. Assets are split in chunks and encoded at different bitrates to offer a video-on-demand adaptive streaming service by means of this component.
Adaptive streaming	Adaptation is the process that allows a player to take into account the network and the receiver capabilities to automatically and instantaneously adapt the transmitted bitrate (and the quality) in a streaming service. In this way, adaptive streaming optimises the instantaneous quality along the asset duration. This component requires a previous step of content conditioning. This service supports two different adaptive streaming technologies: MPEG-DASH and HLS.

8 Scope of the call

FLAME aims to deliver compelling edge experiences to consumers using 5G networks. FLAME puts the human at the centre of interactive media experiences, optimising streaming of on-demand and live video content whilst pushing the boundaries of ground-breaking shared experiences between people at distant locations.

FLAME is seeking 3rd party projects to explore edge experiences considering consumer's desire for personalised, localised and interactive media content delivered through current and emerging human-computer interfaces used in outside spaces or between outside and inside spaces. Projects should seek to flexibly connecting people at the edges through the content they create and consume in fundamentally new ways.

FLAME understands that experience is constrained by consumer's HCI environment. Today, the mobile phone offers unparalleled flexibility but in terms of interaction devices are limited. Emerging wearable technologies and presentation devices such as HoloLens have great potential.

FLAME is therefore looking for innovation in both areas: incremental service delivery for today's devices and transformative solutions based on services and devices for augmented and mixed

reality. The two innovation areas share the common need for spatial-temporal orchestration of media services and content in outdoor spaces with low latency and real-time response times to service functions. As such all 3rd party projects must consider the innovative use of FLAME's service design patterns and how such patterns deliver enhanced user experience.

8.1 Service design patterns

FLAME aims to provide application and service developers with a library with a set of service design patterns that provide primitives for networked interaction design. The patterns are human-centric and constructed to provide high-level abstractions of key interactions between users and the services/content that links them together. The patterns help developers by defining ways FLAME Platform benefits (dynamic routing, endpoint management and control, multicast, cross layer management) can be incorporated into application and services. A definition of the service design patterns can be found on the FLAME website www.ict-flame.eu/designpatterns including behaviours such as sync'ed playout, distributed load balancing, content placement, mobile function offloading, and many more.
All 3rd party projects must demonstrate the utilisation and value of service design patterns for orchestrating media services. FLAME is seeking innovative use of the patterns is a key part of the evaluation criteria for proposals whether projects are seeking incremental service delivery for today's devices and transformative solutions based on services and devices for augmented and mixed reality. The innovation areas share the common need to demonstrate patterns for spatial-temporal orchestration of media services and content in outdoor spaces with low latency and real-time response times to service functions.

8.1.1 Localised video production, consumption and delivery trials – Innovative services for today's devices

Today, video is the primary medium used to share experiences and stories from consumers and professional broadcasters. Most of the consumer content is distributed by Internet scale content delivery platforms such as YouTube even if interaction with the content is localised and global reachability is not needed.

FLAME is seeking to trial highly localised on-demand and live video production and distribution workflows where the infrastructure and resources more closely aligns with the communication needs to consumers. Proposals relying on video content to be produced, stored, processed and delivered within intelligent edge networks without requiring backhaul to the core network would be preferred.

FLAME seeks innovation in content production, consumption, and delivery processes for localised video experiences. Projects should focus on:

- B2C apps building on intelligent edge-based video processing services

- B2B media solutions for aggregating and distribution of different sources of geospatial video content and other media

8.1.2 Augmented and mixed reality trials – Innovative services for future worlds

Today, using the power of immersive technologies, people can experience distant locations and situations from the comfort of their homes whilst people on location in real situations can have experiences augmented with highly contextualised media content. These experiences provide opportunities across the creative industries for learning, entertainment and advertising. There are still significant challenges, however. Current AR/VR solutions offer limited interactivity both with objects or other humans appearing within the content. People are primarily consumers navigating static or streamed content by, for example, looking around in an immersive VR scene or 360 video or moving a smart phone to view specific geo-located AR content on location. In addition, VR is constraining as it doesn't bring the humans and objects into the real environment around them.

Significant efforts have been devoted to develop Mixed Reality solutions that aim to increase interactivity and collaboration between people at distant locations allowing them to share common activities and experiences together. Mixed reality is a merging of real (AR) and virtual worlds (VR) to provide environments where physical and virtual objects co-exist and interact often in real-time. Mixed reality means that the experience must acknowledge that there are humans and objects in the room and humans and objects must exist in that environment. Mixed reality provides an experience that, even when inhabiting an entirely new reality, still take into account the real world in which you exist. Mixed reality knows a person is about to walk into a wall, a table, and it can show a person that without removing them from the experience.

FLAME seeks innovative trials in content production, consumption and delivery processes for augmented and mixed reality. Projects do not need to cover entire end-to-end AR/VR workflows, but expect them to offer new edge services to be orchestrated and not just the devices/apps alone. Projects should focus on:

- Emerging consumer devices, apps and services for visualisation of augmented reality in outside spaces
- Emerging consumer devices and services supporting 3D human activity acquisition using emerging wearable and non-invasive techniques in outside spaces
- B2B services for localised production, processing and orchestration of augmented reality content including real-time content

8.1.3 (Industry trials" 3rd party projects) Dynamic Infrastructure Capacity Extensions

FLAME seeks innovative experiments and trials where industry extend local infrastructure with mobile infrastructure capability (e.g. production unit) in support of adhoc demand for live events. We expect projects to focus on:

- Models and processes for dynamic extension of localised infrastructure capacity
- Policy-based control of edge resources extended to incorporate mobile infrastructure capacity
- Media services exploiting FLAME's service design patterns, instrumented with suitable data points for policy-based control and provisioning on both local and extended infrastructure.

9 Submission Information

The proposal must be:

- Submitted on-line through: https://www.ict-flame.eu/open-calls/3rd-flame-open-call/
- Submitted in English

Once the deadline for submitting a proposal is reached, the call will be closed and the evaluation process will start. The duration of the evaluation of the proposals and approval by the EU will be kept within 1 month.
In case of this specific Call, the target date for acknowledgement of selection is set at the beginning of December 2019.

A **feasibility check** is compulsory before the final submission (see Section 10).

The outcome of the evaluation will be communicated to the proposers via email as soon as the process is completed. The notification will include a detailed report of the evaluation process where for each criterion the score and the motivation of the evaluators will be reported.

Selected 3rd party projects can start at 1st of January 2010, but no later than 10th of January.
The deadline for the final report for the different 3rd party projects are 6 months after the start of the 3rd party project, but no later than the end of 30th of June 2020
Please note that a later start may imply a shorter 3rd party project.
The final evaluation of the 3rd party projects will happen at a review meeting with the EC. The exact date will be fixed during the execution of the project.

Submission of draft proposals deadline for the feasibility check:	10th October 2019 at 17:00 CET

Notification of the results from the feasibility check:	18th October 2019
Final Submission deadline:	8th November March 2019, at 17:00 CET
Notification of the final result:	Beginning December 2019
Start of the 3rd party project:	1st January 2020, but no later than 10th January 2020
End of the 3rd party project:	No later than 30th of June 2020

10 Feasibility check, role of the Mentor and Ethics Checklist

10.1 Feasibility Check

As described above, an additional concise section is added to the proposal (Section E of the Proposal Template) and is provided in collaboration with the FLAME project consortium members.

This feasibility check will be carried out by the FLAME consortium partners responsible for the FLAME infrastructures (UNIVBRIS and IMI/i2CAT) with the support of the mentors of the Replicator`s 3rd party projects of OC2 and the Project Coordinator.

The FLAME Consortium **STRONGLY** suggests proposers to get in touch with the partners responsible to get more information about the feasibility check. In particular for the proposals of 3rd party projects that target / regard the:

- Bristol infrastructure, the first contact for the feasibility check is: bristol@ict-flame.eu
- Barcelona infrastructure, the first contact for the feasibility check is: barcelona@ict-flame.eu
- London infrastructure, the first contact for the feasibility check is: london@ict-flame.eu
- Buseto Palizzolo infrastructure, the first contact for the feasibility check is: palizzolo@ict-flame.eu

10.2 Mentoring

This section also identifies the Mentor of the 3rd party projects, who is the lead contact person within the project who will be responsible for the follow up. Once the winner projects have been identified and a commencement date has been agreed the mentoring process will start.

The key responsibilities of the mentors to the third-party projects will be to:

- Understand the requirements.
- Monitor the implementation of the projects based on the proposed time-plan
- Providing insight into the technical capabilities
- Making recommendations to the FLAME consortium for updates, and recording lessons learned.
- Coach the 3rd party project partners during implementation.
- Follow up with the results/outputs.

FLAME operates a pool of mentors that are dedicated to 3rd party projects and have a distinct interest in their success. ITINNOV coordinates the pool of mentors and is responsible for the overall mentoring process. ITINNOV will ensure that mentors are allocated to each project and that each mentor fulfils their responsibilities of:

- Providing regular reports on the progress to the FLAME consortium.
- Identifying issues to be escalated to the FLAME partners which pose a risk to the project.
- Allocating FLAME partners to assist with troubleshooting issues with the projects.
- Reporting on the review of each project at the completion stage.

10.3 Ethical and Privacy Framework

An ethical and privacy framework in section provided in SECTION J of the proposal template (see Section 7) to the applicants to consider the ethical implications of their 3rd party projects, and how to safeguard participants involved and their personal data All applicants should review this framework and address how the planning of their 3rd party projects have considered these points. At the feasibility check the ethics of the 3rd party project will be reviewed by the FLAME Project partners, with feedback provided on how to improve the ethical and privacy considerations and identify any escalations which may need to be undertaken at the respective infrastructures. The feedback will be provided to applicants in the aim of improving the quality of the submission. At the final submission stage if there are still ethical or privacy issues which pose a potential problem to the 3rd party project this will be escalated to an independent advisor external to the FLAME project.

Any provisions for the handling of personal data must comply with GDPR[4] as well as relevant Member State implementations of such Directives, as well as Human Rights Article 8. This includes, but is not limited to, minimisation of the collection of personal data, anonymisation of

[4] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016

the data as early as possible, strong protection of personal data and bilateral contracts between parties sharing personal data. Further information can be found in FLAME deliverable D7.1 Data Management Action Plan[5].

11 Proposal Information

The use of a specific proposal format as described in this section is mandatory. The template is limited in size and is focusing on "what the proposer wants to do" and "what the expected result is". Here you may find a short description of all the proposal template sections:

Section A **Proposal Overview** (maximum 300 words).
The information in this section may be used in public documents and reports by the FLAME consortium.

Section B **Detailed description of the 3rd party project and expected results** (minimum 4 pages, and maximum 6 pages)
This section describes the details of the proposed 3rd party project. The proposers should clearly specify what is expected to be obtained, how it will be achieved and why it is relevant? This section should also include all information with respect to a comparison to competing commercial solutions to show the innovative character of the project and the expected impact.

Section C **Usage of FLAME platform, infrastructure and media services** (minimum 2 pages, and maximum 5 pages)
This section describes in the details how the proposers intend to use the FLAME platform, infrastructure and media services specifying in the details what will be used.
Special attention should be made in which FLAME service design patterns will be utilised and the TRL of the technologies that will be used.

Section D **Data Management Plan** (target length 1 page)
This section contains the Data Management Plan that the experimenters will put in place to manage personal data during the execution of the 3rd party project. The Data Management Plan will be evaluated during the Ethics review from a dedicated Ethics Committee.

[5] https://www.ict-flame.eu/download/d7-1-data-management-action-plan/?wpdmdl=909&masterkey=5a89b92d172ec

Section E **Feasibility check** (max. 2 pages)

This section contains the feedback from the FLAME partner in charge for the feasibility check of this proposal. The proposing party must submit its draft proposal to the partner responsible by the 18th of October 2019 (see Section 2).

The initial submission of the proposal has no content under this section. The feedback by the project partners is copied into this section of the proposal.

For the final submission, the proposer should describe under this Section how the comments received from the feasibility check are covered, with clear reference to the rest Sections of the proposal.

Section F **Background and qualifications** (maximum 2 pages)

This section describes the proposer and includes an overview of the activities, the proposer's qualifications, technical expertise and other information to allow the reviewers to judge the proposer's ability to carry out the 3rd party project.

Section G **Expected feedback to FLAME Consortium** (1 page)

This section contains valuable information for the FLAME platform and infrastructure and should indicate the expected feedback the FLAME consortium can expect from the use/replication of it. This information is essential in view of the further improving the FLAME facility.

Section H **Requested funding** (1 page)

This section provides an overview of the budgeted costs and the requested funding. A split is made in personnel costs, other direct costs (travel, consumables, etc.) and indirect costs.

Section I **Use of proposal information**

In this section the proposing party is asked to include some statements related to sharing information of his proposal with the EC and the FLAME consortium. Proposals are treated in a confidential way, meaning that only successful proposals must be disclosed to the FLAME consortium. Open calls previously organized by other projects were very successful and have revealed that many submitted non-granted proposals also contain very interesting and valuable information that could be used for setting up collaborations or to extract ideas for further improving the FLAME facility. Therefore, the FLAME project would like to have the opportunity to collect more detailed information and further use this information, also if the proposal is not selected for funding.

In any case, the FLAME consortium will treat all information of a proposal confidentially following the GDPR framework and rules.

Section J **Ethical and Privacy Framework**

3rd party projects on the FLAME platform and infrastructure may involve the participation of members of the public in digital media 3rd party projects e.g. augmented reality games, virtual reality games, filming, and audio recording. The framework in this section should guide experimenters to safeguard against any implications of their 3rd party projects which pose a risk to a member of the public's involvement in the research to take place.

The full proposal template can be found in Annex A to this document.
Please note that **in the draft proposal that will be submitted for feasibility check, at least sections A, B, C and J should be fully completed**.
Please be aware that the partner responsible for the feasibility check will NOT review draft proposals or propose any changes to the proposal. This partner will only give feedback on the feasibility of the proposed 3rd party project, based on the completed sections A, B, C and J. The feasibility check does not provide a commitment that the proposal will be selected.

12 Evaluation Process

Evaluation and ranking will be carried out by an external jury of experts.
Proposals submitted by Parties meeting the requirements will be further evaluated according to the following criteria:

1. ***Clarity and methodology*** (Cf. Section B of the Proposal Template)

   The 3rd party projects should be scientifically and/or technically sound. There should be a clear problem statement, a solid 3rd party projects design, a good methodology, etc.
2. ***Feasibility*** (Cf. Sections C and E of the Proposal Template)
3. ***Use of service design patterns*** (Cf. Section B of the Proposal Template)
4. ***Qualifications of the proposer*** (Cf. Section F of the Proposal Template)

   The proposer should exhibit prior research/development experience and the necessary qualifications to perform the 3rd party project.
5. ***Value for money*** (Cf. Section H of the Proposal Template)

   The requested budget should be in line with the proposed work plan.
6. ***Potential for Feedback*** (Cf. Section G of the Proposal Template)

   The FLAME consortium is seeking feedback regarding the use of the FLAME facility.
7. ***Industrial/Scientific innovation:*** the degree of industrial innovation of the solution for wireless control (cf. Section B of the proposal template).

The score given here should reflect the degree of innovation: there should be an indication to which extent the proposed solution is different and innovative compared to existing and/or competing solutions. In order to demonstrate this criterion, the proposer is expected to clearly motivate his project and compare his proposed solution with existing solutions in the appropriate field.

In addition, potential for exploiting the results of the 3rd party project in commercial wireless solutions and/or for providing a verifiable impact on the standardisation process will be assessed in this criterion.

This score should also reflect the industrial relevance including the expected and projected impact on the company through product development.

8. ***Demonstration potential*** (cf. Section B of the proposal template)

   The expected results of the 3rd party project should have potential for demonstration of the results on relevant events (exhibitions, congresses, technical seminars, networking events, user group events, etc.). The proposer is expected to identify relevant demonstration opportunities.

Criterion	Short description	Weight	Maximum score
1	Clarity and methodology	1	5
2	Feasibility	2	10
3	Use of service design patterns	2	10
4	Qualifications of the proposer	1	5
5	Value for money	1	5
6	Potential for Feedback	1	5
7	Industrial/Scientific innovation	2	10
8	Industrial and/or standardization relevance	2	10
9	Demonstration potential	2	10
	Maximum Total score		**70**

13 Reporting

As the selected proposers Third Party in the FLAME project, no input will be required for any of the regular project reports (FLAME deliverables), which the FLAME consortium needs to submit to the EC.

The Third Party only has to submit a final report after completion of the 3rd party project. A specific template needs to be used and will include:

Part A. ***Summary***

Part B. ***Detailed description***

This section describes the details on the 3rd party project
It includes:

- B.1 Concept, Objectives, Set-up and Background
- B.2 Technical results and Functionality Validation
- B.3 Impact

Part C. ***Feedback to FLAME***

This section contains valuable information for the FLAME consortium and describes the Third Party's experiences while performing the 3rd party project.

Part D. ***Promotion Material***

This section provides information that can be used to make a leaflet/poster and a blog of your 3rd party project for promotional purposes

This report will not only serve as an evaluation tool to judge payment of the Third Party, but will also serve as:

- input to the evaluation of the user-friendliness of the FLAME facilities, and
- identification of gaps in the offered facilities and functionalities.

Part of this report may be used by the FLAME consortium for inclusion in their reporting documents to the EC and in public presentations. Inclusion of confidential information should therefore be indicated and discussed with the FLAME consortium.

This report will also be used for the formal review by the European Commission. Each Third Party is expected to attend this formal review meeting with the EC. In exceptional cases (to be motivated by the Third Party), the Third Party can be represented by his Mentor.
The template for the final report will be made available during the execution of the 3rd party project.

14 Financial and Contractual Information

FLAME Contract

Between

The University of Southampton

And

[***insert company name***]

This document is a draft and will be finalised by the end of the open call period.

Table of Contents

Contracting parties

(a) University of Southampton, a non-profit organization established in University Road, Southampton, UK, SO17 1BJ, with VAT No. GB 568 6304 14000, duly represented by Emma Mills – Head of EU Finance, hereinafter referred to as the "**FLAME Coordinator**"

(b) [***insert company name***], a company established in [***insert relevant address***] hereinafter referred to as the "**Company**", duly represented by [Add name and title],

Together the "**Contracting Parties**" or individually the "**Contracting Party**", have agreed to the following terms and conditions, including those in **Annexes 1-7**, which form an integral part of the agreement (hereinafter referred to as the "**Contract**").

1. General provisions

1.1. This Contract defines the framework of rights and obligations of the Contracting Parties under the specific project submitted by the Company and that has been awarded funding under the FLAME project (**insert 3rd party project name here)**, hereinafter referred to as the "**3rd party project**", as further described in **Annex 1.**

1.2. "**FLAME**" is an EU H2020 project creating a sustainable Future Media Internet ecosystem through experimentation, collaboration and innovation. The University of Southampton acts on behalf of the consortium, comprising the University of Southampton, Atos Spain SA, InterDigital Europe Ltd, Fundacio Privada i2CAT, Internet I Innovacio Digital a Catalunya, University of Bristol, Nextworks, Martel GmbH, De Vlaamse Radio En Televisieomroeporganisatie NV, Disney Research, Zurich, a division of The Walt Disney Company (Switzerland) GmBH, Eidgenoessische Technische Hochschule Zuerich, Institut Municipal d'Informàtica de Barcelona (the "**FLAME Consortium**").

1.3. The European Commission (hereinafter referred as the "**EC**") and the FLAME Coordinator and the FLAME Consortium have signed Grant Agreement no 731677 for the implementation of FLAME as part of the H2020 Framework Programme for Research and Development.

1.4. FLAME has, as one of its major objectives the distribution of EC Horizon 2020 funding to create a sustainable Future Media Internet ecosystem through experimentation, collaboration and innovation as described in **Annex 2**. The FLAME Project has been positively evaluated and is therefore entitled to receive funding and distribute funding according to the terms and conditions set out under this Contract. The funds which will be received by the Company under this Contract are provided by the EC. The FLAME Coordinator has been tasked by the EC to manage these funds as described in the Grant Agreement no 731677.

2. Entry into force of the contract and termination

2.1. This Contract shall enter into force on the day of its signature by the last Contracting Party, which can be sent as a scanned copy of the Contract by electronic means to the other Contracting Party. The Contract shall continue in full force until complete fulfilment of all obligations undertaken by the Company for the 3rd party project, estimated to be approximately [six (6)/twelve (12] months duration and as agreed in **Annex 1** or such duration as may be agreed with the Coordinator**.** Termination of the Contract will be subject to the terms and conditions set out in Article 13, below.

2.2. The provisions relating to Intellectual Property Rights, Information and Dissemination, Financial Audits and Control, Liability, Applicable Law, Settlement of Disputes and Confidentiality (specifically for the time period set out in Article 8 below) shall survive the expiration or termination of the Contract.

3. Performance obligations and responsibilities of the Company

3.1. The Company undertakes to take part in the efficient implementation of the 3rd party project and to cooperate and perform and fulfil promptly and on time, all of its obligations set out in this Contract and in particular **Annex 1**, **Annex 2** and **Annex 7** for use of the data as may reasonably be required and with a duty of good faith and compliance with the Ethics Statement accompanying the call documents.

3.2. The Company will comply with the obligations as set out in this Contract and **Annexes 1, 2 and 7**, in particular:

3.2.1. The Company will use the allocated funding for the sole purpose of carrying out the 3rd party project and in accordance with the requirements of Article 6.

3.2.2. The Company shall immediately inform the FLAME Coordinator of any changes in status or circumstances that may lead to a delay in or inability to perform its obligations under the Contract.

3.2.3. The Company shall not assign its rights, duties or obligations under this Contract to any person or entity, in whole or in part and any attempt to do so shall be deemed a breach of this Contract.

3.2.4. The Company shall comply with the terms of the Data Sharing Agreement set out in **Annex 7**.

3.2.5. The Company shall keep all records relating to the 3rd party project including financial records for Eligible Costs as set out in Article 6 for a period of seven (7) years from the termination or expiry of this Contract.

3.2.6. The Company shall comply with all relevant laws including but not limited to anti-corruption and anti-bribery, data protection (including the provisions set out in **Annex 7**), equality and ethics including compliance with the Ethics Statement accompanying the call documents.

3.3. The Company shall also comply with the following specific obligations in relation to FLAME:

3.3.1. Populate and maintain a contact sheet (held by Coordinator) with key contact details of staff;

3.3.2. Reporting obligations:

Provide a brief report every 3 months on project activities and person-month effort consumed
- at PM3, PM6 for 6-month projects

At PM1: provide a report describing the 3rd party project plan
- At PM6 provide a final report detailing work done and results achieved

3.3.3. Dissemination obligations:

- Blog post for publication on the FLAME website, at end of PM6

3.3.4. Work to promote the FLAME Project and its mission;

3.3.5. Use the FLAME brand appropriately in its communications; and

3.3.6. Do nothing that may have an adverse effect on the reputation of the FLAME Project or FLAME Consortium members.

3.3.7. Take all appropriate measures to ensure that, prior to gathering any data from human participants or working on any data gathered from human participants, full ethics approval to commence work has been obtained from either the University of Southampton or an ethics committee of similar standing. Documentation demonstrating this approval must be sent to the FLAME Coordinator at

the University prior to the commencement of work. Failure to comply with this obligation will constitute a material breach of this agreement and will lead to immediate termination of the 3rd party project.

3.4. Project Milestones

- MS1: Project plan report, at end of PM1
- MS2: Project final report and blog post, at end of PM6

In addition to project milestones, each 3rd party project must complete a Data Management Plan in draft at the start of the project and in full before project completion (see Chapter 11 of FLAME D7.1: https://ict-flame.eu/wp-content/uploads/sites/3/2018/02/D7.1-Data-Management-Action-Plan.pdf).

4. Conflict of Interests

4.1. The Contracting Parties agree to take all measures to prevent any situation where the impartial and objective implementation of the 3rd party project is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest ("**Conflict of Interest**").

4.2. Each Contracting Party must formally notify the other Contracting Party without delay of any situation constituting or likely to lead to a Conflict of Interest and immediately take all the necessary steps to rectify this situation.

4.3. The FLAME Coordinator will notify the EC without delay of a Conflict of Interest of either the Company of the FLAME Coordinator.

4.4. The Contracting Parties agree to take any reasonable measures notified to the FLAME Coordinator by the EC to rectify a Conflict of Interest.

5. Breach of contractual obligations

5.1. In the event of a breach the FLAME Coordinator will give written notice requiring that, where possible, such a breach is to be remedied within thirty (30) days. In case the Company has not remedied the breach within the notice period, or a remedy is not possible, the FLAME Coordinator may decide to terminate the contract unilaterally and to take measures to secure from the Company the repayment of the payments already received.

5.2. For the avoidance of doubt the following sets out a non-exhaustive list of events that will constitute a breach:

5.2.1. The FLAME Coordinator identifies that the Company has breached its obligations under the Contract;

5.2.2. The Company has changed the nature of its business and therefore is not able or willing to continue the 3rd party project; or

5.2.3. The Company breaches the provisions of the Data Sharing Agreement set out at Annex 7.

6. Funding and financial provisions

Maximum financial contribution

6.1. The financial contribution shall be specified in the 3rd party project description included in Annex 1.

6.2. The maximum financial contribution to be granted to the Company will be capped at the financial contribution as part of the proposed budget specified in Annex 1 and must not exceed one hundred and fifty thousand euros (€150,000).

Distribution of the financial contribution

6.3. The financial contribution to be granted to the Company shall be calculated and distributed for the following "**Eligible Costs**" only:

6.3.1. Personnel: salary costs of personnel who are directly involved in the execution of the 3rd party project.

6.3.2. Equipment: Equipment needed for the execution of the 3rd party project.

6.3.3. Other Direct costs: other goods and services: Consumables and other goods and services, as long as they are for the achievement of the goals of the Experimentation Period.

6.3.4. Subcontracting: Tasks to be subcontracted have to be agreed during the negotiation phase and cannot include tasks deemed critical for the 3rd party project.

6.3.5. Indirect costs: (within the budget limit and covering items such as rent, admin, printing, photocopying, amenities etc.) are eligible if they are declared on the basis of the flat-rate of 25% of the eligible direct costs (see Article 6.3), from which are excluded:

(a) Costs of subcontracting and
(b) Costs of in-kind contributions provided by third parties which are not used on the beneficiary's premises

6.3.6. All costs should be stated inclusive of any irrecoverable VAT. Research grants are outside the scope of VAT and all input VAT on expenses directly related to the 3rd party project will therefore be irrecoverable.

6.4. Financial support will be implemented as reimbursement of the costs incurred by the recipients when implementing the supported activities, all in accordance with the provisions specified in **Annexes 1 and 2**.

6.5. Payments to the Company will be made by the FLAME Coordinator. The FLAME Coordinator will give prior written notice to the Company of the estimated date and the amount to be transferred into the Company's bank account (according to the information in **Annex 3**), giving the relevant references.

6.6. In any case, the financial grant to be paid will always be subject to the following conditions:

6.6.1. The achievement of the milestones and deliverables specified in **Annex 1** and reported in accordance with the terms of this Contract.

6.6.2. The payment will be made for the Eligible Costs only as stated in Article 6.3.

6.6.3. The FLAME Coordinator reserves the right to withhold the payments if the Company does not comply with the obligations and responsibilities specified in this Contract and in **Annexes 2 and 7.**

6.7. Payments will be transferred in stages with an initial payment an interim payment and a final payment all as set out in **Annex 1**.

6.7.1. The initial payment of 20% of the total financial grant will be released no later than **fifteen** (15) calendar days after the Contract has been agreed and signed by the Company and by the FLAME Coordinator.

6.7.2. The interim payment of 60% of the total financial grant will be paid after the successful completion of the first Milestone of the 3rd party project.

6.7.3. The final payment of 20% of the total financial grant will be transferred after satisfactory completion of Milestone 2 of the experimental project.

6.8. Banking and transaction costs relating to the bank transfers will be paid by the Company.

7. Liability of the Company

7.1. The EC, the FLAME Coordinator and the other members of the FLAME Consortium cannot be held liable for any acts or omissions of the Company in relation to this Contract nor for any damage caused by the Company as a consequence of implementing this Contract including any acts of gross negligence.

7.2. The Company shall bear sole responsibility for ensuring that their acts within the framework of this Contract do not infringe third parties rights.

7.3. The EC, the FLAME Coordinator, and the other members of the FLAME Consortium cannot be held liable for any damage caused to the Company as a consequence of implementing the 3rd party project including consequential losses including, for the avoidance of doubt, any losses in respect of processing activities in relation to data.

8. Confidentiality

Principles

8.1. With respect to all information of whatever nature or form as is disclosed between the Contracting Parties in connection with the 3rd party project and identified in writing as confidential, the terms of this Article shall apply.

Confidentiality obligations

8.2. The Contracting Parties agree that the information defined in Article 8.1 is communicated on a confidential basis and its disclosure may be prejudicial to the owner of the information, and the Contracting Parties undertake that they will not, during the 3rd party project and for a period of five (5) years from the expiration date of the 3rd party project, use any such information for any purpose other than in accordance with the Contract and the terms specified in **Annexes 2 and 7**.

8.3. The Contracting Parties undertake that they will, during the 3rd party project and for a period of five (5) years from the expiration date of the 3rd party project, treat the information as confidential, provided always that such agreement and undertaking shall not extend to any information which the receiving Party can show:

8.3.1. was, at the time of disclosure to the Company, published or otherwise generally available to the public; or

8.3.2. has, after disclosure to either of the Contracting Parties, been published and become generally available to the public otherwise than through any act omission on the part of the receiving Party; or

8.3.3. was already in the possession of a Contracting Party, without any restrictions on disclosure, at the time of disclosure to the receiving Party; or

8.3.4. was rightfully acquired from others without any undertaking of confidentiality; or

8.3.5. is or was independently developed by a Contracting Party without use of the information provided by the disclosing Party; or

8.3.6. was required to be disclosed in order to comply with applicable laws or regulations or with a Court or administrative order.

8.4. In case of breach of the confidential rules in this Contract, the Contracting Party breaching the confidentiality obligations will remain solely liable for possible claims.

8.5. The Contracting Parties agree that confidential information that is disclosed to the EC by the FLAME Coordinator may be disclosed to:

8.5.1. the EC's staff, other EU Institutions and bodies; or

8.5.2. third parties as necessary to implement the FLAME Project or safeguard the EC's financial interests,

8.5.3. all subject to those parties being bound by obligations of confidentiality.

8.6. Breach of the provisions of this Article 8 may result in termination of this Contract by either Contracting Party.

9. Intellectual property rights

9.1. "**Background IP**" means all IP Rights owned by or licensed to the Company and all IP Rights owned by or licensed to the FLAME Coordinator at the time of the Contract.

9.2. "**IP Rights**" means patents, rights to inventions, copyright and related rights, trade marks and service marks, business names and domain names, rights in get-up, goodwill and the right to sue for passing off, rights in designs, rights in computer software, database rights, rights to use, and protect the confidentiality of, confidential information (including know-how and trade secrets) and all other intellectual property rights, in each case whether registered or unregistered and including all applications and rights to apply for and be granted, renewals or extensions of, and rights to claim priority from, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world.

9.3. "**Experimentation Results**" means any tangible or intangible outputs of the 3rd party project such as data knowledge or information, in whatever form or nature, whether it can be protected or not, that are generated by the Company in the 3rd party project, as well as any IP Rights attached to it. "**FLAME Results**" means any tangible or intangible outputs of hosting the 3rd party project on the FLAME Platform such as data knowledge or information, in whatever form or nature, whether it can be protected or not, that are generated by the FLAME Platform as a result of hosting the 3rd party project, as well as any IP Rights attached to it.

9.4. The Contracting Parties agree that no rights or transfer ownership shall be granted to any Background IP of either Contracting Party as a result of this 3rd party project save for as expressly provided for in this Contract.

9.5. Each Contracting Party hereby grants a worldwide, non-exclusive licence to any Background IP required for the 3rd party project to the other Contracting Party solely for the purposes of the 3rd party project and the FLAME Project and sub-licensable solely to the FLAME Consortium members for those purposes only.

9.6. The Contracting Parties agree that IP Rights in the Experimentation Results developed during the 3rd party project shall be owned by the Company. The Contracting Parties also agree that IP Rights in the FLAME Results shall be owned by the FLAME Replicator partner hosting the FLAME Platform for the 3rd party project.

9.7. It is not anticipated that any result which is not clearly identifiable as exclusively belonging to the category “Experimentation Results” or “FLAME Results” will be generated in the course of the 3rd party project. If such a result is generated it shall be designated a “Jointly Generated Result”. The Contracting Parties agree that ownership of any Jointly Generated Result will be determined by the negotiation of a separate agreement between the Parties. Any separately negotiated agreement will be on fair, reasonable and non- discriminatory terms, taking into account the legal obligations of the parties to third parties..

9.8. The Contracting Parties acknowledge that there may be IP Rights related to data that will be subject to the specific provisions of the Data Sharing Agreement in Annex 7. In case of any conflict between the provisions of this Contract and the Data Sharing Agreement in relation to IP Rights, the provisions of the Data Sharing Agreement shall prevail.

10. Force Majeure

10.1. “**Force Majeure**” shall mean any unforeseeable exceptional situation or event beyond the Contracting Parties’ control, which prevents either of them from fulfilling any of their obligations under the Contract, which was not attributable to error or negligence on their part and which proves to be inevitable in spite of the exercising all due diligence. Any default of a service, defect in equipment or material, or delays in making them available, unless they stem directly from a relevant case of Force Majeure, as well as labour disputes, strikes or financial difficulties cannot be invoked as Force Majeure.

10.2. The Contracting Parties shall take the necessary measures to limit any damage due to Force Majeure. They shall do their best to resume the implementation of the action as soon as possible.

10.3. A Contracting Party shall not be considered to be in breach of its obligations and tasks if such breach is caused by Force Majeure. A Contracting Party will notify the other Contracting Party of any Force Majeure as soon as possible. In case the Company is not able to overcome the consequences of Force Majeure within thirty (30) calendar days after such notification, the FLAME Coordinator is entitled to terminate the Contract unilaterally.

11. Information and Dissemination

Information and communication with the EC and the FLAME Consortium

11.1. For the avoidance of doubt this Article has no impact on the Confidentiality provisions set out under Article 8 above.

11.2. The Company shall, throughout the duration of the 3rd party project, take appropriate measures to engage with the public and the media about the 3rd party project and to highlight the financial support of the EC and the FLAME Consortium.

11.3. Any communication activities of the Company related to the 3rd party project must:

11.3.1. Display the EU emblem;

11.3.2. Include the text: "*This 3rd party project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731677*."

11.4. Any publicity made by the Company in relation with the 3rd party project, in whatever form and on or by whatever medium, must specify that it reflects only the author's views and that the EC and the FLAME Consortium are not liable for any use that may be made of the information which it contains.

11.5. The Company acknowledges and agrees that EC and the FLAME Project shall be authorised to publish, in whatever form and on or by whatever medium, the following information:

11.5.1. the name of the Company;

11.5.2. contact address of the Company;

11.5.3. the general purpose of the 3rd party project;

11.5.4. the amount of the financial contribution of FLAME foreseen for the 3rd party project;

11.5.5. the geographic location of the activities carried out;

11.5.6. the list of dissemination activities and/or of patent (applications) relating to the 3rd party project;

11.5.7. the publishable reports submitted to it, in accordance with **Annex 1** and the obligations under this Contract; and

11.5.8. any picture or any audiovisual or web material provided to FLAME during the 3rd party project.

11.6. The Company shall ensure that all necessary authorisations for such publication have been obtained and that the publication of the information by the EC and FLAME does not infringe any rights of third parties.

11.7. The Company must participate in dissemination and networking events organized by the EC or FLAME, as specified in **Annex 1** and the obligations under this Contract.

Information and communication among the Contracting Parties

11.8. Any notice to be given under this Contract shall be in writing to the legal authorities of Contracting Parties.

11.9. Any change of persons or contact details shall be notified immediately to the FLAME Coordinator as specified in this Contract.

Open publication and open research data

11.10. Any scientific publication resulting from the 3rd party project must be made Open Access via the Green or Gold Open Access publishing route as described here: http://library.soton.ac.uk/openaccess

11.10.1. Data supporting an open access publication must be deposited in an open access repository approved by the FLAME coordinator, unless to do so would infringe privacy or IP Rights of any party whether involved in the FLAME project or otherwise.

11.11. Dissemination of a Party's own results

11.11.1. Prior notice of any planned publication shall be given to the FLAME Coordinator at least 30 calendar days before the publication. This notice will be forwarded to the Parties of the FLAME Consortium for approval. Any objection to the planned publication shall be made to the Company within 15 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

11.11.2. An objection is justified if

(a) the protection of the objecting Party's Results or Background would be adversely affected
(b) the objecting Party's legitimate interests in relation to the Results or Background would be significantly harmed.
The objection has to include a precise request for necessary modifications.

11.11.3. If an objection has been raised the involved Parties shall discuss how to overcome the justified grounds for the objection on a timely basis (for example by amendment to the planned publication and/or by protecting information before publication) and the objecting Party shall not unreasonably continue the opposition if appropriate measures are taken following the discussion.

The objecting Party can request a publication delay of not more than 90 calendar days from the time it raises such an objection. After 90 calendar days the publication is permitted.

11.11.4. Dissemination of another Party's unpublished Results or Background

A Party shall not include in any dissemination activity another Party's Results or Background without obtaining the owning Party's prior written approval, unless such Results or Background are already published.

11.11.5. Cooperation obligations

The Parties undertake to cooperate to allow the timely submission, examination, publication and defence of any dissertation or thesis for a degree that includes their Results or Background subject to the confidentiality and publication provisions agreed in this Contract.

11.11.6. Use of names, logos or trademarks

Nothing in this Contract shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the Parties or any of their logos or trademarks without their prior written approval.
No Party shall acquire any right under this Consortium Agreement to use, and shall not use, any other Party's or its Affiliates' names, trademarks, crests, logos, fanciful characters or designs, or registered images (i) in any advertising, publicity, promotion; (ii) nor to express or to imply any endorsement of a Party's products or services; (iii) nor to use any of said names, trademarks, logos, characters, or designs in any other manner (whether or not similar to uses prohibited by (i) and (ii) above) or for any purpose whatsoever without such Party's prior written approval. These provisions shall survive the expiration or termination of this Contract.

12. Financial audits and controls

Company Obligations

12.1. The Company shall make available directly to the EC or their representatives all information that is required to verify that the 3rd party project is/was properly managed and performed in accordance with the present Contract and its Annexes. The EC may carry out an audit during the Contract and

up to four (4) years after the termination or expiry of the Contract. The EC may audit the financial implementation or technical implementation under the Contract.

12.2. The Company shall keep originals or, in exceptional cases, duly authenticated copies – including electronic copies of all documents relating to the Contract for up to five (5) years after the termination or expiry of the Contract. These shall be made available to the EC where requested during any audit.

12.3. The Company shall ensure that the EC´s services and any external body(ies) authorised by it have on-the-spot access at all reasonable times, notably to the Company's offices, to its computer data, to its accounting data, and to all the information needed to carry out an audit, including information on individual salaries of staff involved in the 3rd party project.

12.4. The European Court of Auditors shall have the same rights as the EC, notably right of access, for the purpose of checks and audits, without prejudice to its own rules. In addition, the EC may carry out on-the-spot checks and inspections in accordance with Council Regulation (Euratom, EC) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the EC in order to protect the European Communities' financial interests against fraud and other irregularities.

12.5. Audit Findings

12.5.1. If the audit shows ineligible costs, or improper implementation of the action under the Contract, it may lead to suspension or termination of the Contract by the FLAME Coordinator and potential rejection of costs.

12.5.2. In the event that the EC audit rejects any costs and seeks to recover contributions from the FLAME Coordinator of financial contributions made to the Company, the Company agrees to repay such amounts to the FLAME Coordinator.

12.5.3. If the EC suspects that the Company committed fraud or other illegal acts, it will inform the European Anti-Fraud Office (**"OLAF"**).

13. Termination and Suspension

Termination

13.1. This Contract shall terminate on the completion of the 3rd party project and receipt of the final payment by the Company.

13.2. The FLAME Coordinator may terminate the 3rd party project:

13.2.1. if the EC terminates the FLAME Grant Funding Agreement; or

13.2.2. if the Company commits a material breach of the Contract as set out in Article 5.

13.3. The Company may terminate the 3rd party project if the FLAME Coordinator commits a material breach of the Contract.

13.4. A Contracting Party may terminate this Contract in the event that the other Contracting Party is declared bankrupt, being wound up, having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, or is subject to any other similar proceedings or procedures.

13.5. In the event of termination of this Agreement in accordance with Article 13.2, 13.3 or 13.4, all rights acquired by the Contracting Parties and the licences granted by the Contracting Parties to each other, pursuant to this Contract shall continue upon such termination.

Suspension

13.6. In the event that the FLAME Project is suspended by either the EC or the FLAME Consortium, the FLAME Coordinator shall inform the Company without delay and the Company agrees to suspend work on the 3rd party project until the FLAME Coordinator informs the Company that the suspension is lifted

13.7. The Company agrees that costs incurred during the suspension of the 3rd party project are not Eligible Costs as defined in Article 6.

14. Language

14.1. This Contract is drawn up in English language, which shall govern all documents, notices, meetings and related processes.

15. Amendments

15.1. Amendments or changes to this Contract shall be in writing and signed by the duly authorised representatives of the Contracting Parties.

15.2. Nevertheless, in the event the EC modifies the conditions of its grant to the FLAME Coordinator, the FLAME Coordinator has the right to amend the Contract accordingly.

16. Applicable law

16.1. This Contract shall be construed in accordance with and governed by the laws of England and Wales.

17. Settlement of disputes

17.1. The Contracting Parties shall endeavor to settle their disputes amicably.

17.2. Any dispute, controversy or claim arising under, out of or relating to this Contract and any subsequent amendments of this Contract, including, without limitation, its formation, validity, binding effect, interpretation, performance, breach or termination, as well as non-contractual claims, may be submitted to mediation in accordance with the WIPO Mediation Rules. The place of mediation shall be London unless otherwise agreed upon. The language to be used in the mediation shall be English unless otherwise agreed upon.

17.3. If, and to the extent that, any such dispute, controversy or claim has not been settled pursuant to the mediation within sixty (60) calendar days of the commencement of the mediation, it shall, upon the filing of a Request for Arbitration by either Contracting Party, be referred to and finally determined by arbitration in accordance with the WIPO Expedited Arbitration Rules. Alternatively, if, before the expiration of the said period of sixty (60) calendar days, either Contracting Party fails to participate or to continue to participate in the mediation, the dispute, controversy or claim shall, upon the filing of a Request for Arbitration by the other Contracting Party, be referred to and finally determined by arbitration in accordance with the WIPO Expedited Arbitration Rules. The place of arbitration shall be London unless otherwise agreed upon. The language to be used in the arbitral proceedings shall be English unless otherwise agreed upon.

AS WITNESS:

The Contracting Parties have caused this Contract to be duly signed by the undersigned authorised representatives in three (3) copies the day and year first above written:

For **(insert Company name & Director's name/surname)** Director Signature: Signed at _____ on DD/MM/201Y	For the University of Southampton (the FLAME Coordinator) Mr/Ms/Dr [NAME SURNAME] [POSITION_IN_COMPANY] Signature Signed at _____ on DD/MM/201Y

Annexes to the Contract

Annex 1: 3rd party project description

This is based on the original submission by the Company for the 3rd party project, which might have been altered during negotiations. In addition to the original submission, the 3rd party project description also includes a list of deliverables and milestones.

Annex 2: Guide for applicants

See: https://www.ict-flame.eu/open-calls/

Annex 3: Bank account information form

This is the bank information document which must be provided and signed and stamped by the representative of the Company. The template can be found at:

http://ec.europa.eu/budget/library/contracts_grants/info_contracts/financial_id/fich_sign_ba_gb_en.pdf

Please use CAPITAL LETTERS and LATIN CHARACTERS when filling in the form.

Annex 4: Declaration of honour

Declaration of honour on exclusion criteria and absence of conflict of interest

1. As legal representative of [insert legal entity name], I declare that the entity is not:

a. bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations;

b. having powers of representation, decision making or controlling personnel being convicted of, or having been convicted of an offence concerning their professional conduct by a judgment which has the force of res judicata;

c. having been guilty of grave professional misconduct proven by any means which the contracting authority can justify including by decisions of the European Investment Bank and international organisations

d. failing to be compliant with obligations relating to the payment of social security contributions or the payment of taxes in accordance with the legal provisions of the country in which it is established or with those of the country of the contracting authority or those of the country where the contract is to be performed;

e. having powers of representation, decision making or controlling personnel having been the subject of a judgment which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity, where such illegal activity is detrimental to the Union's financial interests;

f. subject to an administrative penalty for being guilty of misrepresenting the information required by the contracting authority as a condition of participation in a grant award procedure or another procurement procedure or failing to supply this information, or having been declared to be in serious breach of its obligations under contracts or grants covered by the Union's budget.

2. I declare that the natural persons with power of representation, decision-making or control over the aforementioned legal entity are not in the situations referred to in b) and e) above.

3. I declare that I

a. am not subject to a conflict of interest and will take all reasonable measures to prevent any situation where the objectives of the FLAME 3rd party project might be compromised due to undeclared shared interests;

b. have not made false declarations in supplying the required information to the 3rd party project formally detailed as FLAME, and have not failed to supply the required information;

c. am not in one of the situations of exclusion, referred to in the abovementioned points a) to f).

4. I certify that I:

a. am committed to participate in the aforementioned 3rd party project as part of the legal entity detailed above;

b. have stable and sufficient sources of funding to maintain its activity throughout its participation in the aforementioned 3rd party project, and will provide any counterpart funding necessary;

c. have or will have the necessary resources as and when needed to carry out its involvement in the above mentioned 3rd party project.

d. will comply with my responsibilities and obligations under the FLAME 3rd party project, including those set out in the Data Sharing Agreement.

e. will respect any third party rights in relation to data provided for processing under the FLAME 3rd party project.

f. will abide by international, EU and national laws and regulations that might apply to the substance, or outcome, of data sharing arrangements as relevant to activities that I/my entity will be involved in under the FLAME 3rd party project.

g. will not share or disseminate data received through the FLAME 3rd party project without the explicit prior consent of the data provider and any others with proprietary rights in relation to that data.

h. will take all reasonable measures to safeguard data provided to me/my entity for use in the FLAME 3rd party project against possible misuse and unauthorised access.

i. will abide by international, EU and national laws imposing privacy and data protection requirements (including, in anticipation for its coming into effect, the General Data Protection Regulation **(**GDPR**)** (Regulation (EU) 2016/679)) as relevant. In particular, personal data shared under the FLAME 3rd party project will not be re-used for purposes outside the 3rd party project without the explicit prior consent of the data controller.

j. will act in good faith as far as reasonably possible under the 3rd party project and fully apply the principles of the Ethics Statement.

5. I declare that, to the best of my knowledge, I am eligible to apply for the FLAME call and all the information I have provided is true.

Annex 5: Administrative data form

Administrative data about the Company. Details to be completed.

Annex 6: Company validation information

SMEs requesting Financial Support:

The following should be provided to the coordinator to validate the SME status of the applicant.

You can submit original documents in all the official EU languages. However, you must also submit a certified/official/legal translation into English made by an accredited body or translator. FLAME will not be able to validate your SME status unless you provide these translations.

Completed Legal Entity Identification form. The form can be found at:

- http://ec.europa.eu/budget/library/contracts_grants/info_contracts/legal_entities/legEnt_privComp_en.pdf
- SMEs self-check document and associated PIC (Participation Identification Code) number produced by EU Participant Portal.
- Company Registration Number & Registration Documents.
- Signed and stamped copy of Director's passport.
- Official VAT document (or equivalent) or – if you are not registered for VAT – proof of VAT exemption not older than 6 months or proof that a VAT registration is not required.
- Balance Sheet.
- Profit and Loss accounts.
- Staff Head Count Expressed as Full Time Equivalents.
- For newly established enterprises (e.g. start-up company) that have not yet closed accounts: a self declaration, including a bona fide estimate (in the form of a business plan) for the on-going financial year.
- For enterprises without turnover whose activity implies a long time-to market: a declaration of the investment made and the likely expected return (to demonstrate that, despite the lack of turnover, your enterprise is engaged in an economic activity). Sworn or solemn statements before a judicial or administrative authority, notary or public officer are **not** acceptable proof of your SME status.

Non-SME Organisations requesting Financial Support:

The following should be provided to the coordinator to validate the status of the applicant.

You can submit original documents in all the official EU languages. However, you must also submit a certified/official/legal translation into English made by an accredited body or translator. FLAME will not be able to validate your status unless you provide these translations.

- Completed Legal Entity Identification form. The form can be found at: http://ec.europa.eu/budget/library/contracts_grants/info_contracts/legal_entities/legEnt_privComp_en.pdf
- Company Registration Number & Registration Documents.
- Official VAT document (or equivalent) or – if you are not registered for VAT – proof of VAT exemption not older than 6 months or proof that a VAT registration is not required.
- Most recent Financial Statements.
- Staff Head Count Expressed as Full Time Equivalents.

Annex 7: Data Sharing Agreement

This Agreement will set out the terms and conditions for the control and processing of Experimentation Results. This contract will be between the Company and the FLAME Replicator or 3rd Party Replicator Partner hosting the FLAME platform.

Annex A Proposal template