GENERAL INFORMATION G2K Group GmbH

1 COMPANY NAME:
   G2K Group GmbH

2 SUBMITTER NAME AND E-MAIL ADDRESS:
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3 LINK TO COMPANY’S HOME PAGE:
   www.get2know.com

4 PLEASE SELECT WHICH SBC USE CASE YOUR TEAM IS SUPPORTING
   - Smart Space Flow Analytics
   - Smart Metering in Multi-Tenant Commercial Building
   - Smart Automated Building
   - Smart Building Cockpit

5 IN CASE OF A CROSS COMPANY TEAM SUBMISSION: WHO IS REPRESENTING WHICH PART OF THIS SUBMISSION
### About G2K

#### WHO WE ARE
- We are present in 6 Global Offices
- We employ over 120 experts
- We aim to revolutionize Situational Awareness

#### WHAT WE DO
- We pull and correlate data from any source
- We transform them into Knowledge
- Allowing clients to 'Think Ahead'

#### OUR SOFTWARE
- One software platform - serving multiple use cases
- With centralized Artificial Intelligence
- Playing back smart actions into the real world
**1. How will the solution be developed, sold and supported?**

**DEVELOPMENT**

- G2K offers an IoT-platform with **standardized use cases** generating valuable insights for its customers.
- Our platform solution entails **four basic modules** (e.g. Maps, Alarms, BI Dashboards, Historic Trails) which are then extended with add-ons specific to the required use case.
- A strong in-house developer team of about **60 developers** serve as force behind new developments and can adapt add-ons to specific user needs.
- Through years of experience, G2K was able to **integrate various algorithms, sensors, cameras, and software** from our technology partners (e.g. Bosch, Microsoft, Huawei, SAP) in our platform.

**SELLING**

- Over the years, G2K has built a **sophisticated network of partners** eager to sell our solution to customers worldwide (e.g. Microsoft, Huawei, IBM).

**SUPPORT**

- G2K has developed **strong partnerships** with installers and resellers (e.g. Funkwerk) covering installation, maintenance, and support with high quality standards.
Valuable insights allow the mall operator to:

- determine the **best mix of stores** → which combinations of stores or categories yield the highest collective mall sales
- transform from opportunistically deciding which tenants to lease to and which units within the mall each store will occupy towards a systematic and **analytical approach to prioritizing, prospecting for, and acquiring tenants**
- understand and plan store adjacencies that **drive higher consumer spending** and **longer mall visits**
- understand what types of stores best attract consumers, who live or work in the mall’s catchment area
- understand if the anchor stores are driving foot traffic and sales into the mall
- understand which tenants are unexpected "spend engines" (e.g. tenants that are driving cross-conversion and thus creating value despite their own low sales performance)

**AND THUS POSITIVELY INFLUENCE THE FOLLOWING:**

- Mall attractiveness → Length of stay → Footfall → Tenant performance → Revenue Increase
- Overall sales → Rents → Revenue Increase
Solution Design: Business Perspective (Highlight G2K)

2. How would the fully deployed solution create value for participants in the ecosystem? (2/3)

HOW DO THE SAB’S VALUABLE INSIGHTS **CUT COSTS?**

**VALUABLE INSIGHTS ALLOW THE MALL OPERATOR TO:**

- use building automation and control systems to achieve potential savings for heating energy of approx. 5-50% and for cooling of approx. 10-80%
- employ demand control ventilation to obtain energy savings of up to 40%
- use occupancy sensors, daylight sensors, dimmers etc. to save approximately **20-50% of total lighting energy consumption**
- employ overall building automation and energy management techniques to achieve up to **60% of annual energy savings**
- achieve added benefits of thermal comfort and safety
- use predictive / preventive maintenance methods to save cost
- **remove third party management dependencies** through smart building automation

AND THUS POSITIVELY INFLUENCE THE FOLLOWING:

- Efficiency ratio
- Operating costs
- Automation grade
- 3rd Party Fees
- Abrasion
- Operating costs
- Cost Reduction
What is your current revenue model based on? - Subscription

G2K Group

Monthly SAAS fee (includes SAB Software, third party licenses, support)

Technology Partner

Technologypartner paid by G2K

Eleven Capital ECE (ECE)

Technology Partner

What is your current revenue model based on? - Subscription

What is your current revenue model based on? - Subscription

G2K's provides ECE with the Software Platform Situational Awareness Builder (SAB) and the required add-ons to fulfill the use case. The business model is Software-as-a-Service.

2. G2K is cooperating with selected technology partners for all software related services. Software related services are part of the G2K package offering, while hardware provision is handled via ECE and its partners.

3. The integrator / installer will be selected by the client or by G2K on demand through our partner network. In any case, is the prime contractor for software related activities.

4. ECE subscribes the services and receives support from technology partners. (On demand, G2K can also act as a centralized prime contractor, including hardware and software.)

5. Using insights generated by our solution, ECE is able to offer new business models to tenants generating new revenue streams for ECE (e.g. optimized rent models and improved shopping mall design / product placement).
3. Pricing

Pricing Overview

The offer includes G2K's standard solution **Customer Insights Management** that covers all use case related functionalities. Above that we offer two different options of sensor implementation.

**STANDARD COMPONENT**

SAB Platform and Standard Modules

Holistic IoT Platform that allows for integration of any sensor (e.g. camera, Wi-Fi tracker, temperature, air conditioning etc.), software platform (SAP Hana, Microsoft Dynamics, Facebook, Twitter, etc.) or contextual data (economic data, weather, population etc.)

**Use-Case Solutions**

Video-based add-ons

Functionality is based on Bosch cameras and people counters

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**FUNCTIONALITIES**

- Dwell time
- Capture Rate
- Conversion Rate
- Cross-Conversion (Customer Journey)
- Age Detection
- Gender Detection
- Analytics Dashboards

*Standard Modules: Maps (Country Map, City Map, Site Map), Alarms (Recent Alarms, Alarms Stack, Standard Operating Procedures), BI Dashboards (Live Dashboard, Historical, Dashboard, Alarms Dashboard), Historical Trail (Browse Alarms, Reports, Dashboards)*

Removed before publication.

Our sales team will be happy to advise you on individual application possibilities, price models and profitability of the use case. After agreeing the general conditions together, we can calculate a binding offer that meets your needs.
INTELLECTUAL PROPERTY

- Data sovereignty belongs to the customer
- Anonymized data is shared with G2K to provide the customer with benchmarking information
- IP that belongs to the software, stays property of G2K
- IP based in Germany
### Solution Design: Business Perspective

#### 5. Differentiation

<table>
<thead>
<tr>
<th>PRODUCT / TECHNOLOGY</th>
<th>PARTNER NETWORK</th>
<th>FLEXIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>All information and decision templates in one holistic platform → one single point of view</td>
<td>Strong network of technology partners, hardware partners, implementation partners and consulting partners</td>
<td>Intelligent and modular platform that can serve multiple use cases simultaneously</td>
</tr>
<tr>
<td>Sustainable, future-proof platform through simple extension with additional use cases</td>
<td>The strong partner network also ensures 24/7 service and maintenance capabilities</td>
<td>The benefit of the SAB platform increases significantly once multiple add-ons are combined in the solution (e.g. parking lot management &amp; customer insights for in-depth demographics)</td>
</tr>
<tr>
<td>By operating several applications, the individual costs are reduced while the overall benefit of the platform is multiplied</td>
<td></td>
<td>Hardware- / vendor independent → open architecture allowing for flexible integration into any IT landscape</td>
</tr>
<tr>
<td>Proven technology based on global technology and security standards (GDPR, 1-2 ISOs)</td>
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</tbody>
</table>
SOLUTION DESIGN: OVERVIEW / ARCHITECTURE
Solution Design: Overview

HOW WOULD YOUR PROPOSED SOLUTION DIFFERENTIATE ITSELF FROM OTHERS IN THE MARKET?

SOLUTION CATEGORY (PLEASE SELECT ONE OF THE FOLLOWING):

1. Standard Product* (solution is already mature and applied in diverse projects)
2. Customized Product** (on demand if use case is economically beneficial)
3. Component***
4. Technology Portfolio/Concept****

OVERVIEW

- Please provide an overview of the proposed solution design (approx. 1 slide), e.g. using a solution architecture diagram or verbal description

*) ready to use, end2end solution - e.g. SaaS - is intended to be applied/transfered to a fast number of clients, cannot be changed to specific requirements

**) ready to use, end2end solution - e.g. SaaS - is intended to be applied/transfered to a fast number of clients, can be customized/changed for specific requirements

***) Solution, which needs to be integrated/built in in a larger scope (e.g. IaaS/PaaS, single sensor technology) - is built/integrated somewhat specific to ECE use cases

****) single components, which needs to be integrated / built into a specific solution for ECE
Solution Design: Overview & Architecture (1/2)

Software Architecture

**G2K ACT layer**
- Touchpoints Management
- Risk Scenario Management
- Events Correlation Management

**G2K KNOW layer**
- Situation Definition
- Knowledge Dashboard

**G2K GET layer**
- Alarm Management
- Smart Action Scripting
- Data Visualization
- Data Prediction

**G2K AI Algorithms**
- Data Transferring & Simulation
- Descriptive Analytics
- Data Cleaning
- Data Loading
- Predictive Analytics
- Prescriptive Analytics

**Dynamic Integration Module**
- Smart Action Scripting

**3rd Party**
- Algorithms: e.g. intrusion detection, document authentication, restricted area, voice analysis, emotion recognition, etc.
- Sub-Systems: e.g. video management systems, identity management, social media and web portals, or people counting, etc.
OPTION 1: EXEMPLARY SYSTEM ARCHITECTURE FOR ETTLINGER TOR

For further details on a possible setup for your use case please contact our team!

1 People Counting; 2 Gender classification; 3 Heatmapping; (4 CCTV)
TECHNOLOGY OVERVIEW

1. **Describe your proposed solution from a technology perspective, listing key technologies used**
   Please refer to the detailed drawings on p. 15-16. Key technologies in our proposed solution are video analysis (option 1) and WIFI tracking (option 2). Both solutions have in common that collected data is correlated by our AI-engine and analysed by our business intelligence mechanisms to derive most valuable insights.

2. **Deployment models: Cloud vs. on-prem**
   G2K’s solutions can be provided on prem / cloud-based / or as hybrid dependent on the specific client needs.

3. **Highlight use of emerging/deep tech: Please describe in how far emerging technologies such as IoT, AI and blockchain/DLTs will be used**
   Please refer to next slide (p.19 “Continuation p.17 (answer 3: differentiation IoT / AI / DLT)"

SYSTEM DEPENDENCIES

1. **Is the solution system agnostic in general?**
   Yes we are independent of hardware and software vendors. Fully flexible solution function with different other solutions. Please refer to integrated sensors in appendix C.

2. **Mobile: App required?**
   App is not required for our solution to run properly. However, if a client requires an app to be integrated into the use case, the SAB can be easily implemented.

3. **Describe potential hardware dependencies (backend, field components)**
   Our solution generally is agnostic and independent of specific types of hardware, however for analysing situations with a certain level of complexity, image quality is required to reach certain standards for optimal results.
CONTINUATION P. 18 (ANSWER 3: DIFFERENTIATION IOT / AI / DLT)

IOT
We consider the SAB to be an IoT Platform as it uses several physical and digital sources of information (e.g. cameras, microphones, sensors, subsystems) as “sensory organs”. Our platform facilitates communication, data flow, device management, and the functionality of applications. Additionally we supply a centralized User Interface.

AI:
The platform has a strong degree of artificial intelligence as it is logically linking the information retrieved from various touchpoints, to achieve a comprehensive awareness of its entire operating environment. The platform understands how to handle different types of data and analyse them in order to independently initiate corrective or improving actions.

DLT:
The suggested solution does not require Distributed Ledger Technologies. However DLT can be used if wished by the client e.g. to create a tamper-proof audit trail for log files.

SCALABILITY

AT WHAT SCALE DO YOU EXPECT THE SOLUTION TO WORK
- **Number of clients:** ~30.
- **Throughput:**
  No limitations ascertained in prior projects.
- **Transaction execution / avg. response times:** <0,5s.

SLAs
- **What kind of SLAs will be supported?**
  We offer first-, second, and third-level support.
<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the solution GDPR compliant?</td>
<td>Yes</td>
</tr>
<tr>
<td>Which mechanisms are implemented to secure sensors?</td>
<td>The recommended cameras are featured with Intelligent Video Analytics (IVA). By deploying these, the cameras security policies are applied.</td>
</tr>
<tr>
<td>Does the solution have effective protection against corrupt sensors?</td>
<td>From our experience, integrated sensors have protection included internally (e.g. Bosch cameras). Our SAB platform is also fulfilling all required IT security standards. The data transfer can also be encrypted using our partner technologies.</td>
</tr>
<tr>
<td>What kind of mechanisms are implemented to secure the interfaces?</td>
<td>We secure communication with HTTPS and authentication with access token</td>
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</table>
### Solution Design: Deployments & Data Handling

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER</th>
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</thead>
<tbody>
<tr>
<td>How flexible is the platform basis?</td>
<td>The solution is based on scalability concepts. Therefore, the amount of touchpoints/sensors and data/events can be easily increased. Furthermore, the solution can be functionally upgraded.</td>
</tr>
<tr>
<td>Is multitenancy supported?</td>
<td>Yes, the backend supports multitenancy while communicating with sensors. Each sensor requests tenant ID and credentials.</td>
</tr>
<tr>
<td>How complex is the installation of hardware (sensors)?</td>
<td>Bosch IP Cameras need to be connected to a Windows PC via Ethernet cable. The software comes with an installation package.</td>
</tr>
<tr>
<td>Is a rollback possible at any time?</td>
<td>Yes, regarding the cloud mode we can switch off the VM or the subscription. Regarding on-premise mode we use the installation package for uninstalling.</td>
</tr>
<tr>
<td>Are different storage paths available? (hot, warm, cold)</td>
<td>Yes all of them are supported (real-time, semi and historical)</td>
</tr>
<tr>
<td>Are analytical methods and models described?</td>
<td>No</td>
</tr>
<tr>
<td>Is it possible to terrain analytic models?</td>
<td>No</td>
</tr>
<tr>
<td>QUESTION</td>
<td>ANSWER</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Is a detailed description of the APIs available?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are API definitions available (Swagger, Odata, etc.)?</td>
<td>Yes, Swagger API</td>
</tr>
<tr>
<td>Are standard protocol like HTTP, MQTT, AMQP, CoAP or WebSockets supported?</td>
<td>We communicate with the Bosch cameras using Bosch SDK</td>
</tr>
<tr>
<td>Is the data exchange format described?</td>
<td>Yes, as we integrate with the camera using the Bosch SDK (data streams)</td>
</tr>
<tr>
<td>Are standard formats for the data exchange supported (JSON, XML)?</td>
<td>Yes, we use JSON formats</td>
</tr>
<tr>
<td>Which fieldbus-protocols are supported? (OPC UA, BACnet, M-Bus, Modbus, KNX/EIB, Profinet, Profibus)</td>
<td>n/a</td>
</tr>
<tr>
<td>What kind of standards for wireless communication is supported? (LoRa, WiFi, NB-IoT, Bluetooth, EnOcean, 5G, Thread)</td>
<td>The suggested cameras do not support wireless connection</td>
</tr>
<tr>
<td>QUESTION</td>
<td>ANSWER</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>What kind of logging is implemented (info, warning, fatal, etc.)?</td>
<td>System errors and warning, user actions, system actions, system evets.</td>
</tr>
<tr>
<td>What kind of monitoring solutions are implemented or supported?</td>
<td>MS-Access is used for logging</td>
</tr>
<tr>
<td>Is it possible to implement logging and monitoring into existing solutions?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the concept describe a general exception handling?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the solution still work (at least partially) while an exception executes?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Tentative Timeline & Deployments

1. **PROJECT START (APRIL 2020 EARLIEST)**
   - Handover of the system
   - Training of the user
   - Pilot- and test phase by the client
   - Ends with acceptance by the client

2. **TECHNICAL ASSESSMENT (2 WEEKS)**
   - System definition and specifications
   - Procurement of hard- and software
   - Ends with accepted specification and receipt of hard- and software

3. **INTERNAL SET-UP & TESTING (2 WEEKS)**
   - Set-up and testing of the SAB
   - Ends with successful Factory Acceptance Test (FAT)

4. **SET-UP AND IMPLEMENTATION (2 WEEKS)**
   - Sensor/camera installation
   - SAB installation (if on-premise)
   - Integration of cameras / sensors
   - Ends with successful Site Acceptance Test (SAT)

5. **COMMISSIONING (2 WEEKS)**
   - Handover of the system
   - Training of the user
   - Pilot- and test phase by the client
   - Ends with acceptance by the client
What do you see as the potentially biggest risks / challenges to successful deployment in this project?
- Lack of information about the infrastructure and existing IT landscape (preinstalled hardware, cabling) could delay project implementation

What do you propose as mitigation strategies?
- Side inspection and kick-off workshop with client to gather information and clarify open question
Contributions To The Smart Buildings Challenge

G2Ks CONTRIBUTIONS TO SMART BUILDINGS CHALLENGE

Please describe the contributions your team has made to help building the challenge community:

- Participation in workshops and networking events
- Refinement of use cases together with the team
- Proactive engagement with other teams e.g. building minds, limitless insight
- Promotion of challenge activities on social media
- Raising awareness for partnerships between companies (e.g. G2K / Bosch)
- Scheduling calls with other teams for future collaboration
Appendix A: Current Projects With Bosch

- **FORUM SCHWANTHALERHÖHE**: AI-based security solution
  ![Image of FORUM SCHWANTHALERHÖHE](image1)

- **CONTINENTE SUPERMARKETS**: Intelligent queue & cash desk mgmt.
  ![Image of CONTINENTE SUPERMARKETS](image2)

- **GUESS**: Holistic customer insights mgmt.
  ![Image of GUESS](image3)

- **DEUTSCHE BAHN**: AI-based passenger safety solution at train stations
  ![Image of DEUTSCHE BAHN](image4)

- **MAX-SCHMELING-HALLE**: AI-based security solution
  ![Image of MAX-SCHMELING-HALLE](image5)

- **GRAND EGYPTIAN MUSEUM**: E-ticketing & identity & access mgmt.
  ![Image of GRAND EGYPTIAN MUSEUM](image6)
### Appendix B: Recent References

<table>
<thead>
<tr>
<th>CLIENT</th>
<th>MARKET</th>
<th>PROJECT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Madinaty Luxury Compound</strong>&lt;br&gt;Development of city with 600,000 inhabitants near Cairo</td>
<td>Smart &amp; Safe City</td>
<td>SAB-based intelligent integration of smart city infrastructure</td>
</tr>
<tr>
<td><strong>Project (Impressions)</strong>&lt;br&gt;Image 1-3: command centre&lt;br&gt;Bild 4: system screenshot</td>
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</tbody>
</table>

| **Zed El-Sheikh Zayed Central Park**<br>Entertainment & living compound with 693,000 m² area in Cairo | Smart & Safe City | SAB-based intelligent integration of parking structure |

| **Africa Smart City Eco-Alliance**<br>Initiative to accelerate the development of Smart City projects in Cairo | Smart & Safe City | Provision of software solutions for the digital transformation of public safety |