SAP Innovation Awards 2022
Entry Pitch Deck
Cultural Covid-19 Aid-Platform
Hamburg Ministry of Finance, Germany
Company Information

**Headquarters**  Free and Hanseatic City of Hamburg, Germany

**Industry**  Public Sector

**Web Site**  www.hamburg.de

Hamburg is one of the 16 federal states (Länder) in Germany. It’s administration provides services to approximately 1.9 million people. With more than 70k employees, the administration of Hamburg is one of the biggest employers in the area. Priorities of the authorities in Hamburg are the logistic industry and an environment orientated economic policy. Hamburg is the leading metropolis in Northern Europe regarding logistics and shipping with one of the largest port infrastructure.

The *digital factory*, as the digital innovation lab of Hamburg Ministry of Finance, is in charge of the project and took over federal responsibility for implementation and operational control of the Culture COVID-19 Aid-Application Platform on behalf of the German Federal Government in order to establish a standardized process for the payout of the federal financial funds publicly funded by the German government. Hamburg centrally provides the Cultural COVID-19 Aid-Application Platform and payout service for all Länder.
The Cultural Covid-19 Aid-Application Platform has been implemented as a Cloud Application on SAP Business Technology Platform (BTP) leveraging SAP Cloud Application Programming Model (CAP). It provides a Web-Page, a SAP UI5 based Application Platform and a SAP Fiori Elements based Backoffice Platform.

Implementation of an AI based and highly automated process by leveraging the SAP AI Business Services such as Document Information Extraction (DOX) and Business Entity Recognition (BER) in order to evaluate aid-applications automatically.

To ensure fraud prevention, the official German federal tax office authentication service (ELSTER) was integrated. ELSTER-certificates ensure that all applications are known to and authorized by the German federal tax authorities.

The payments to the aid applicants are processed on the existing SAP S/4HANA backbone of Hamburg which was integrated via Cloud Connector to the federal Cultural Covid-19 Aid-Application Platform.

Reporting to the authorities has been provided via SAP Analytics Cloud that connected to the live data in SAP HANA Cloud.

Hamburg was able to implement and operate a fully digital designed E2E process from the application to the final payment of the financial support. All documents- and process-related communication has been done on the platform without any paper based processing and automating different process -steps using SAP BTP AI Business Services.

Following the SAP Extension Suite to implement this process in a hybrid landscape as side-by-side extension, allowed the necessary implementation speed of 3 weeks until first Go-Live.

Positive Feedback of all stakeholders (applicants, local authorities concerned, politics) as well as media coverage underlines the reach and success of the platform which is described in detail on the following slides.

During the Covid-19 pandemic, the cultural industry in Germany has been widely affected by the governmental restrictions that have been taken to contain the pandemic. In order to compensate the negative impact regarding the cultural industry, short-term financial aid became necessary. Substantial challenges to this process have been:

- How to provide a digital E2E-process as fast as possible for the aid-program which would be applicable for all Länder?
- How to deal with the complexity to model this additional process manageable by the limited workforce in the decentralized concerned authorities?
- How to consider all relevant process regulations of the different 16 Länder in an usable and manageable structure?
- To provide important platform usage transparency of the aid-program through live data reporting in real-team.

3 weeks  
Go-Live of time critical aid-application platform within 3 weeks

47k  
47k aid applications have been filed via the platform so far

2.5 Billion €  
provided by German government to be paid via the Aid-Application Platform

1 Mio  
More than 1 million cultural event occurrences have been registered to the platform.

160k  
Documents automatically evaluated and classified with Business AI services

47k  
provided by German government to be paid via the Aid-Application Platform

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"Our country is colorful and it should stay that way. With the special fund, we are therefore supporting the restart of cultural events. The federal government is providing 2.5 billion Euros to help the cultural sector get back on its feet. This way we ensure that theater performances, concerts, readings and cinema screenings can take place again soon. This is important, because artists have a special burden to bear in this pandemic, the cultural organizers, the singers, the actors, the musicians and the stage builders. In addition, art and culture are of great importance for our community and for social cohesion. We want to ensure that citizens will soon be able to experience cultural diversity together again. The special fund for cultural events is the largest cultural funding program since the founding of the Federal Republic of Germany. And it comes at just the right time. I am confident that diverse cultural life in our cities and communities will soon be able to start again."

Olaf Scholz – Federal Minister of Finance (now Chancellor of the Federal Republic of Germany)
"The current easing of Corona measures enables a powerful restart of the Hamburg economy. Nevertheless, not only a few companies are still hit hard economically by the consequences of Corona. It is therefore a task and obligation for the Hamburg Senate that we now leave the Hamburg Corona protective shield open and promote the new start with many measures in a targeted manner. Digital-Bonus, Hardship-Aid and Restart-Funds are available for application…"

Dr. Andreas Dressel – Minister for Finance, Free and Hanseatic City of Hamburg
“In a joint effort from the beginning of the pandemic, the Hamburg Senate did everything possible to keep the consequences as low as possible. It was always important to us to develop the aids programs in close dialogue with the industry. The federal culture special fund for cultural events builds on Hamburg’s expertise and helps the entire cultural scene - from the artists to the stage technicians. We can celebrate the success of the Corona aid and the restart of culture with a diverse cultural program, among other things, as part of the Hamburg Cultural Summer. “

Dr. Carsten Brosda – Minister of Culture & Media in Hamburg
“With this project, which is unique in Germany, we at SAP are not only realizing a heart project by helping cultural workers get back on their feet. We can also continue our success story with Hamburg and further intensify our cooperation. Thanks to the successful migration of their accounting systems to SAP S/4HANA in 2020, those responsible for the Free and Hanseatic City of Hamburg were able to lay an important foundation for innovative digitization projects. As a pioneer in the field of e-government, Hamburg is thus ideally equipped for the requirements of this project as well as for future digital projects. “

Niklas Hagl – Lead Public Sector & Energy & Management SAP Deutschland SE & Co KG:
Dataport

IT service provider for the City of Hamburg

Dataport is an IT service provider for six Länder and one IT association of local authorities. Our mission is to promote digital change whilst being user-oriented and secure.

Dataport delivered implementation support and realized the backend integration.

By now, Dataport is responsible for running the solution and technical customer support.

https://www.dataport.de
Participating Partner Information

D-LABS GmbH

The experts in human centered design and digital engineering

D-LABS is an innovative design and consulting company for the digital industry. Since 2006 the team of experts creates outstanding digital solutions by living the principles of human centered design.

D-LABS was in charge to design and build the complete user experience of the information and help portal. The result enables creative artist to understand and master the official application process for public grants.

https://d-labs.com/
SAP Deutschland SE & Co. KG

Leading the technical project and responsible for design, implementation and Integration of the Aid-Platform

SAP Services supports customers transforming to the intelligent enterprise. With their expertise, SAP Services path customers way into the cloud.

SAP Services was leading the project as prime partner. They designed the overall architecture and implemented major parts of the Aid-Application Platform as well as supported the ramp-up of the operation team.
## Business Challenges and Objectives

### Business Challenges

- Provide the cultural industry an easy to use self-service to apply for money out of the **2.5 billion € special fund for cultural events** of the **German government**, that scales with **thousands of creative artists accessing the platform**.

- Implementation and roll-out of a **flexible and scalable** solution within 3 weeks.

- Support federal authorities to process **thousands of aid-applications** with **limited workforce in short-term perspective**.

- **Avoid paper-based processing** of requests and fully digitalize the application process.

- Provide live date reporting in real-time of important KPIs as the amount of budget requested, process status and further information to concerned authorities in the different Länder and the federal government.

- Ensure **fraud prevention** on the entire platform.

- Fulfill necessary **data privacy and security** regulations, such as the DSGVO.

### Project Objectives

- Implementation of an **Aid-Application Platform** bringing all process stakeholder together.

- Cloud native approach with **incremental deployments to achieve essential Go-Live** of **Aid-Application Platform within 3 weeks** and continues Go-Lives of further deployment steps afterwards.

- Integrate into existing SAP S/4 HANA backend to **leverage existing payout process** of Hamburg.

- Provide **decision support and automation** to reduce efforts in local authorities concerned.

- Ensure **communication and document upload capabilities** within the platform to **fully digitalize** the process end-to-end (incl. objections handling, payment errors, etc.)

- Implement **SAP Analytics Cloud** with **live-connection** to SAP HANA Cloud to provide **real-time transparency** on the aid-applications and payout volume.

- Ensure that **all applicants** on the platform are providing **validated business partner data**.

- Ensure implementation of the **Aid-Application Platform** in an **EU-only access scenario**.
Based on the business challenges it was decided to build a flexible and scalable Aid-Application Platform on SAP Business Technology Platform (BTP). Due to the deployment speed of the cloud based platform by leveraging SAP BTP and the innovate service design it was able to deliver a fully digitalized process in a very challenging timeline. The subsequent table summarizes the applied case aspects and what helped addressing them:

<table>
<thead>
<tr>
<th>Use Case aspect</th>
<th>How it was adressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure a digital process without paperwork.</td>
<td>Uploaded documents of the aid-application are checked by Malware Scanning Service. Generation of official notice documents and providing secure access to it was achieved via the application and Object Store.</td>
</tr>
<tr>
<td>Ensure an integrated process with all stakeholder communication within one system.</td>
<td>Leverage Notification Service and application to allow text based communication with the applicants and employees of the public authorities.</td>
</tr>
<tr>
<td>Ensure the process considers specific requirements in 16 different Länder.</td>
<td>Implementing a flexible CAP application allowing state based aid-application handling ensuring 4-eye-principle within the approval process.</td>
</tr>
<tr>
<td>Provide AI-based decision support to make the process by the manageable limited workforce of the authorities.</td>
<td>Leverage SAP AI Business Services (Document Information Extraction and Business Entity Recognition) to analyse uploaded documents making the user aware of potential inconsistencies to the aid-application.</td>
</tr>
<tr>
<td>Fraud prevention ensuring that tax payer money is paid out to a valid entity with a validated bank account.</td>
<td>Integration to ELSTER authentication service ensures that all applicants are known to and authorized by the German tax authorities.</td>
</tr>
</tbody>
</table>
Besides the applied case specifics, the project also had to deal with special challenges. Some of these challenges could be addressed by technical solution provided by SAP BTP. But to deliver the project at that speed and quality was a major achievement of the project team and the persons involved in the project on customer, partner and SAP side.

<table>
<thead>
<tr>
<th>Project aspect</th>
<th>How it was addressed</th>
</tr>
</thead>
</table>
| **Challenging timeline** of 3 weeks to initial Go-Live. | Go-Live of the Aid-Platform was executed in 3 phases to meet the delivery goal of 3 weeks:  
Phase 1: Aid-ApplicationPlatform finalized to apply for financial aid by cultural industry  
Phase 2: Backoffice-Platform targeting the users in the authorities  
Phase 3: Reporting targeting the users in the authorities  
Leveraging **Feature Flag Service** allowed agile development with frequent deployments of new features.  
**SAP BTP provisioning** ensured to start development on day one with all necessary services which would be required. |
| Staying flexible and agile on changing requirements as the Covid-19 pandemic dynamically changed. | The **SAP Cloud Application Programming Model (CAP)** allowed to flexibly adapt to changing requirements. Rules of the aid program have been implemented in a way to be flexible enough to be customized quickly. |
| **Stay open for 3rd party technologies** to provide high flexibility to the website designers. | By allowing **flexibility to the developers** making use of the technology they prefer, was important to focus on delivering the solution. Our partner developers were very familiar with **REACT** and **STRAPI**, and therefore could make use of them on SAP BTP. |
| **Security and Data Security** | Important for the project success was, that the 16 Länder joined forces to have Hamburg implement and operate a common solution that is used in each of the states. Security and Data Security topics only needed to be addressed once.  
Having SAP BTP operated in **Data Center EU11 with EU-only-access** was also helping to address data security requirements. |
| **Educate Employees** in the concerned authorities to use the Backoffice-Platform. | Having an **AI Business Service** for automated document evaluation providing decision support to the users helped to speed up the onboarding of new employees that temporarily had to support this aid-program. |
Business Process Details

Process Before

Before the Covid19 pandemic, usually such e-Governance processes often:

- Have been implemented separately in each of the 16 Länder
- Have not or only partially been digitalized (mainly paper based)
- Had no transparency on the payout and processing progress
- Long processing time

Specifically, no process has been existing before the introduced COVID-19 Aid-Application Platform.

Process After

- **Application-Process**
  - Applicants can file their requests online, uploading all necessary documents. Communication with the authorities take place via the platform.
  - Applicants can always check current status of aid-application processing.
  - In the authorities, user of local authorities concerned can process the aid-applications without any paperwork or system breaks.
  - Checking uploaded documents of the aid-applications for correctness is done with AI Business Services to reduce manual effort in the local authorities concerned.
  - Integration of additional data such as relevant Covid-19 incidence numbers from Robert-Koch-Institute.
  - Notifications for user of local authorities concerned help prioritizing applications that require their action.

- **Objection-Process**
  - In case of objections, user of local authorities concerned can process changes to the request accordingly.
  - All communication as part of this process are recorded audit-proof within the platform.

- **Revision-Process**
  - In case of corrections to the decision by the authorities, payouts can be corrected requesting partial or full payback.

- **Reporting**
  - Stakeholders of the Aid-Program can report on live data.
  - Map based visualization of relevant data.
Benefits and Outcomes

Business or Social

• Cultural industry with many artists, etc. could financially survive the pandemic related restrictions such as lockdowns

• Enable cultural events to take place with reduced capacities

• Provide confidence in planning cultural events

• Reuse / multiply the Aid-Platform to a similar program for industrial fairs driving efficiency

IT*

• Instant SAP BTP provisioning ensured to achieve the timeline compared to hardware provisioning process in onPremise world

• Highly scalable platform with 99.95% uptime

• Secure integration between Cloud and onPremise Systems to ensure seamless process

• Putting AI to use in a relevant process in public sector to analyze more than 160k documents so far

Human Empowerment

• Applicants have full transparency on aid-application processing status incl. communication and notice documents issued in one platform

• Fully paperless process ensuring short processing time for all process stakeholders

• Reducing workload and increasing quality by AI based decision support and automation for authority employees

* IT benefits are required if you are using SAP Business Technology Platform products
Architecture

SAP Business Technology Platform

End Users

Backoffice (Authorities)

HTTP

Everyone

HTTP

Backoffice (Authorities)

HTTP

SAML

SAP IAS

Launchpad Service

SAP Fiori Elements

Aid-Application-Platform

SAPUI5 Application

ELSTER-Verification

JavaApp

Content Management System

strapi

Web-Page

React

Reporting Dashboard

SAP Analytics Cloud

Development Tools

Business Application Studio

UI Theme Designer

PostgreSQL (Hyperscaler Option)

Credential Store

SAP HANA Cloud

Object Store

Core NodeJS Application

End-User Service

Admin Service

Tech Service

Enrichment Service

Misc

Auto Scaler

Cloud Foundry Runtime

Application Logging

Feature Flags

Job Scheduler

Custom Domain

Alert Notification

AI Business Services

Document Information Extraction

Business Entity Recognition

SAP Integration Suite

Connectivity Destinations

Cloud Integration

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Additional Information

The SAP BTP services shown in the architecture slide have all been used productively in our project. With this architecture we believe to be one of the most comprehensive SAP BTP projects in 2021. Some features that have been implemented can be highlighted:

<table>
<thead>
<tr>
<th>Feature</th>
<th>How it was implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision support through AI based</td>
<td><strong>Document Information Extraction Service</strong> has been used to check for specific Data such as cost and revenue which the applicant had to provide proof for. The automatically extracted information is checked against the data, the applicant provided in the aid-application form which is basis for payout calculation.</td>
</tr>
<tr>
<td>automated document analysis</td>
<td><strong>Business Entity Recognition Service</strong> has been used to check if certain documents such as ID Card or Backaccount Statements have been uploaded and if these match the data provided on the aid-application.</td>
</tr>
<tr>
<td>Security &amp; Malware prevention</td>
<td>We limited the possible data types that the applicant can upload to the <strong>Object Store</strong>. Further we used the <strong>Malware Scanning Service</strong> to scan all uploaded documents.</td>
</tr>
<tr>
<td>Flexibility to change and adapt quickly</td>
<td>To ensure an agile development process we used the <strong>Feature Flag Service</strong> to keep a short frequency of deployments without the risk and effort of heavy branching.</td>
</tr>
<tr>
<td>Modern, state of the art web-page for</td>
<td>Using openSource technology on top of SAP BTP such as <strong>React</strong>, <strong>Strapi</strong> and <strong>PostgreSQL</strong>.</td>
</tr>
<tr>
<td>external facing stakeholders</td>
<td></td>
</tr>
<tr>
<td>Ensured scalability</td>
<td>By leveraging <strong>Autoscaler</strong>, we ensured the necessary robustness to cope with unexpected workload due to an increase in active users.</td>
</tr>
<tr>
<td>Decision support through live</td>
<td><strong>REST-Service integration</strong> of live data from <strong>Robert Koch Insititute</strong> into our <strong>HANA Cloud DB</strong> to support Authorities regarding plausibility check of Aid-Applications.</td>
</tr>
<tr>
<td>Pandemic-Statistics</td>
<td></td>
</tr>
</tbody>
</table>
Deployment Details 1 of 2

Deployment status  Live
Date  June 15th 2021

Number of end users  7000
Number of customers  2500
Transaction Volume  7500 aid-applications/month

SAP® technologies used:

<table>
<thead>
<tr>
<th>SAP product</th>
<th>Primary product</th>
<th>Deployment status</th>
<th>Contribution to project</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Business Technology Platform</td>
<td>X</td>
<td>Live</td>
<td>SAP BTP was the foundation for this Extension project. We leverage SAP BTP as great toolbox that provided us many helpful services to address our requirements. It allowed us to flexibly grow the technical footprint on the platform as requirements evolved.</td>
</tr>
<tr>
<td>SAP Analytics Cloud</td>
<td>X</td>
<td>Live</td>
<td>The second major building block of the solution is a real time reporting based on SAP Analytics Cloud. With map based visualization of the data, a appealing reporting dashboard has been provided.</td>
</tr>
<tr>
<td>SAP S/4HANA</td>
<td></td>
<td>Live</td>
<td>Existing Finance Core System of Hamburg has been integrated by the custom Cloud application. This existing backbone was integrated “Plug&amp;Play”. The Aid-Application Platform can be considered a viable side-by-side Extension use case.</td>
</tr>
<tr>
<td>SAP Business Integrity Screening</td>
<td></td>
<td>Live</td>
<td>Payments and Business Partners created by our Aid-Application Platform are been check for business integrity. This existing solution was integrated “Plug&amp;Play.”</td>
</tr>
</tbody>
</table>
The following offerings from SAP Services and Support were utilized during the implementation or deployment phase

- SAP MaxAttention™
- SAP ActiveAttention™
- SAP Value Assurance
- SAP Advanced Deployment
- RISE with SAP for Industries
- Other:
- SAP Advisory Services
- SAP Customer Experience Solutions
- SAP Innovation Services
- SAP Innovative Business Solutions
- SAP Preferred Success
- SAP Enterprise Support
- SAP Solution Manager
- SAP Cloud ALM

Contribution to the project

SAP Innovation Services delivered the **implementation project as prime partner.**

**Architecture Design, Project Lead** as well as **major implementation parts** have been delivered by the SAP Experts.

They furthermore **coordinated and enabled** the implementation **partners** of the project as well as **ramping up operations.**
The following **advanced technologies** were part of the project.

<table>
<thead>
<tr>
<th>Technology or use case</th>
<th>Product *</th>
<th>Contribution to project and how product used integrates with SAP products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Intelligent technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Machine learning or artificial intelligence</td>
<td>Document Information Extraction Service</td>
<td>Document Information Extraction Service has been used to check for specific data such as cost and revenue which the applicant had to provide proof for. The automatically extracted information is checked against the data, the applicant provided in the aid-application form which is basis for payout calculation.</td>
</tr>
<tr>
<td></td>
<td>Business Entity Recognition Service</td>
<td>Business Entity Recognition Service has been used to check if certain documents such as ID Card or bank account statements have been uploaded and if these match the data provided on the aid-application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>With more than <strong>160k analyzed documents</strong>, we have been the customer with the highest use of the AI Business Services in 2021.</td>
</tr>
<tr>
<td>B) Blockchain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) Internet of things</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> Intelligent data management</td>
<td>EU-Only Access (EU11) on multi-cloud (AWS)</td>
<td>As a e-governance platform providing services to the public, <strong>data privacy and compliance</strong> was a crucial topic. As such, the project was the first productive solution in <strong>Data Center EU11 with EU-only access</strong> operated as <strong>multi-cloud deployment</strong> on AWS.</td>
</tr>
</tbody>
</table>

*If this is not an SAP product, explain how it integrates with SAP products.
The following advanced technologies were part of the project.

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</tr>
</thead>
</table>
| **Advanced cloud integration**                             | **SAP Integration Suite** | Integration of external APIs from public service providers:  
1) With the integration of public data from Robert-Koch-Institute (RKI) visualizing COVID-19 incidence data in the context of aid-applications allowed additional decision support to authority employees.  
2) With the integration of ELSTER authorization service, validated business partner data was directly consumed from German tax authority |
| **Advanced and augmented analytics**                       | **SAP Analytics Cloud**  | Geo-spatial data in SAP HANA Cloud have been leveraged to enable map-based reporting on live data. The map-based reporting dashboards have been implemented leveraging SAP Analytics Cloud.                                                                                                                                                      |
| **Combined transactions and analytics on single data set** | **SAP Analytics Cloud**  | By leveraging HANA-live-connection to access business data for reporting, we could reduce data latency allowing decision support within the business processes. Officials that had to report to the Government or the press could always rely on current data from the operating system.                                                                                   |

3 Advanced cloud integration  
- New business models using API’s, Connecting business partner(s) with API’s, Integration Advisor, Digital integration hub architecture, Event Mesh

4 Advanced and augmented analytics  
- Real-time and streaming analytics, spatial analytics, natural language processing, machine learning to identify trends, patterns, and outliers, predictive analytics and planning

5 Combined transactions and analytics on single data set  
- Reduce data latency and footprint from dedicated data marts, data warehouses and data lakes (>1TB)
Additional Information

As shown in the Architecture Slide we make use of many SAP BTP Service. As such we already gained high attention in the various SAP Product Management teams that own the services. To spread the word across the globe, we agreed to have SAP produce a podcast regarding the general benefits of this architecture which did help in many similar projects through out the pandemic:

**Episode 76: SAP TechEd & SAP BTP for the public sector / COVID-19 aid program – SAP Integration & Extension Talk (opensap.info)**

The successful implementation of this project also has high visibility within the Hamburg authorities. **Show & Tell sessions are conducted** internally to reveal additional potential for further process digitalization. Also in other Länder, further opportunities are evaluated to implement similar general purpose Aid-Application Platforms. One specific follow up project was the implementation of the **Aid-Application Platform for Industrial Fairs** effected by the COVID-19 pandemic.

The Finance Department of Hamburg has **more than 20 years relationship with SAP**. With the implementation of SAP ECC in 2000, we also apply to the 50th Anniversary Legend category.
Additional Information

Screenshots illustrating the end-users look & feel (Applicant):
https://sonderfonds-kulturveranstaltungen.de/index.html
Additional Information

Screenshots illustrating the end-users look & feel (Backoffice & Reporting):

User of local authorities concerned