Australian Pork Limited

eNVD creation & Real-time tracing for pig movements through the PigPass 2.0 app

August 2024

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Project background:

PigPass is a consignment-based livestock traceability system covering the pig production system from the property of birth to the point of slaughter and all movements in between. Australian Pork Limited (APL), as the administrator of the PigPass Database, provides relevant movement data to the National Livestock Identification System (NLIS) database. APL collects and administers the data on behalf of the industry and forwards appropriate identification and traceability data to Integrity Systems Company (ISC) as the managers of the NLIS database. This ensures jurisdictions can access multiple species identification and movement data from a single database to meet the National Livestock Traceability Performance Standards (NLTPS). The PigPass system issues PigPass National Vendor Declarations (NVDs) in pre-printed books and online through the PigPass website. The books are expensive for users, subject to errors as they are completed by hand, and do not allow for real-time traceability. Alternatively, the sender can generate electronic NVDs (eNVDs) from the PigPass Portal. The eNVDs offer instant data capture, including knowledge of commencement of movement and flexibility for APL in making changes and validating user input. They are also free for users to access. Many users are reluctant to use eNVDs because they cannot easily access a PC and printer at the point of completion (i.e., when pigs are being loaded) and prefer to use book NVDs. Other users report limited internet access at production sites.

To help overcome these issues, the PigPass App v1.0 for Android and iOS smartphone and tablet devices, which enables the completion of PigPass NVDs and lodging of movement reports, was developed. This app links with the existing PigPass database (Microsoft Dynamics CRM, version 9.1 On Premise with IFD enabled) and issues valid PigPass NVDs to users. For users out of coverage, the app "caches" all generated data so that it can still be used offline. Data is then uploaded to CRM when data coverage is returned. The original scope for developing the PigPass App v1.0 focussed on replicating the paper-based process and overlooked opportunities to optimize the operation and maximize value for all stakeholders. This has led to a low adoption rate. APL believes these issues can be overcome by redesigning the app solution from the ground up, using the latest technology, and being informed by extensive stakeholder consultation to define the technical specifications, which were recently completed. APL's research activities identified straightforward ways the PigPass digital formats could be refined to simplify usage, enhance user experience, and improve data capture and quality.

Project aim and outputs:

This project aims to develop a PigPass mobile app that can trace animal movements in real-time (geo-location tracking of the vehicles carrying the pigs in real time) and replicate the processes of eNVD lifecycle as in current PigPass website. Building an API to connect the new

app to existing system and building real time vehicle tracking dashboards for integration in new mobile app and existing web portal. This will reduce the industry's still significant reliance on a paper-based traceability system and help move to electronic and mobile PigPass NVDs and activity reporting. This new App will address key issues that have impacted the uptake and usage of digital PigPass formats to date, including challenges related to connectivity (cellular and internet) and digital readiness (workforce digital skills and technology availability).

The activities that may be required for the project's successful completion are listed below but are not limited to as follows:

1. Technical documentation refinement

- Undertake detailed source code analysis and documentation of the existing codebase for the PigPass backend and PigPass web app, for the development of the new mobile app and API.

2. UX Refinement and scaled user testing

- Undertake additional UX design and scaled iterative user testing of the visual concept to finalize workflow design and details, screen layouts, and confirm pre-populated field values.
- Undertake an additional evaluation of saleyard and showground workflows to confirm additional functionality requirements for other user personas (if any).

3. Engineering and build

Undertake a process of agile, iterative software development and continual user testing of the identified functionality, including:
- New mobile app with Apple iOS and Google Android builds.
- Mirror PigPass web app eNVD creation, transit and submission process flow across the PigPass 2.0 app, and make sure that both apps sync to backend and can be used simultaneously. The transfer of the eNVD from sender to transporter and transporter to receiver needs to function without internet. Would expect the proposed solution for this outlined in the response. Any further offline capability in the app will be good to have in addition.
- Integration with current backend (D365 On prem 9.1 with IFD), including the development/management of the API.
- The API created for integration needs to be loosely coupled and re-usable for future integrations.
- Implement features for user authentication and authorization.
- Integrate the mobile application with Dynamics 365 On-Premises via API with IFD enabled.
- Implement CRUD operations for the relevant entities in Dynamics 365.
- Ensure secure data transmission between the mobile app and Dynamics 365.
- Implement live GPS tracking for vehicles transporting animals.

- Display real-time location of vehicles on a map within the new mobile application and existing Web portal.
- The real time tracking should have three dashboards one for sender, one for receiver and one for admins showing all the live vehicles in transit.

- Store and retrieve historical location data for reporting and analysis.

4. Technical Requirements

- Platforms: iOS and Android
- Backend Integration: REST API with Dynamics 365 On-Premises (IFD enabled)
- Tracking: GPS-based real-time tracking
- Data Security: Ensure data encryption in transit and at rest
- Authentication: Support for modern authentication like OAuth2.0
- Azure Integration: Ensure compatibility with Azure cloud services and existing Microsoft-oriented applications.

It is recommended that the API be focused early so that integration and testing can commence before the mobile app is completed.
Handover to APL should consist of the following:
- Solution design and deployment documentation (HLD and LLD).
- Code walkthroughs.
- Full access to any SaaS tooling dependencies.
- Publish the code base to APL code repository (Azure DevOps) wherever applicable.
An additional important consideration will be the long-term solution maintenance to identify components of the PigPass solution that will be developed. It is also necessary to include Emergency animal disease-permitting functionality by building necessary fields that could be hidden outside the outbreak situation.

4. Work with APL's Extension team to develop simple, visual user guide materials to support onboarding, adoption, and extension of the PigPass followed by app updates.

Work with APL's extension team to develop simple, visual user guide materials to support onboarding and user adoption of the v2.0 PigPass design into the industry, including user guides to walk users through app functionality and process steps, including for use on the desktop, web app workflow, and app workflow. This could consist of targeted materials focused on crucial user groups, including:
- Producers or PigPass initiators,
- Transporters, in particular drivers.
- Receivers, including processes for receivers of property-to-property transport and abattoirs.
- System engineers and developers

Finally, work with the APL extension team to conduct workshops for pork producers, processors, transporters, and state regulators to drive the adoption of the PigPass app 2.0. based on stakeholders' feedback, app updates will need to be provided.

Expected project output:

The overall output of the project will be the development of a ready-for-use PigPass app that allows users to trace pig movements in real time. This may include the following project deliveries:

- Successful development of technical specification documents (HLD and LLD) outlining the solution architecture for unified, logical access from the mobile, and incorporating feedback from potential third-party integrators as key stakeholders.
- Successful development of an open specification for the QR code format (or any similar format, the paper NVD uses BAR code format), encoding the essential PigPass fields into the limited space available, which would enable the transfer of eNVD from sender's app to transporter and then finally to receiver without internet.
- Completion of UX design and user testing and acceptance of the UX design by stakeholders.
- Complete Mobile app, and API development and testing. Sign Off received from all stakeholders.
- Build an Integration solution connecting the mobile app and API to Dynamics CRM (Version 9.1 On premise with IFD enabled)
- Support extension and adoption of PigPass App 2.0 in the pig industry.
- Provide app maintenance for 2 years.

Proposal Requirements

Company Information
- Provide company name, address, and contact details.
- Brief company history and experience in mobile app development

Technical Approach
- Describe the proposed technical approach for developing the mobile application.
- Detail the approach for integrating with Dynamics 365 On-Premises using REST API with IFD enabled.
- Explain the method for implementing live vehicle tracking.
- Describe how the mobile application will integrate with the existing Azure cloud environment and Microsoft-oriented applications.

Project Plan
- Provide a detailed project plan, including milestones and deliverables.
- Outline the timeline for each phase of the project.

Team Composition
- List the project team members and their roles.
- Include resumes or profiles of key team members.

Budget and Cost Estimates

- Provide a detailed breakdown of costs, including development, testing, deployment, and maintenance.
- Include any licensing or third-party service costs.

References and Case Studies
- Provide references from previous clients with similar projects.
- Include case studies of similar projects completed.

Specific terms of reference

The providers who successfully tender for this project will be responsible for:

- Assembling expertise from within or between organisations to deliver one or more of the project output identified earlier
- Securing the necessary approvals for the conduct of the project
- Developing a comprehensive project plan that includes detailed methodologies and budgets, stop/go milestones and describes the cash and in-kind contributions to the project from different parties, and subsequently delivering the research within budget
- Analysing and reporting all data generated in formal reports to APL; and

Specific outputs required

Specific outputs required by APL will include:

- Progress reports against milestones/decision points agreed with APL that detail project findings from individual milestones.
- A comprehensive final report (following approval of a draft by APL) detailing all aspects of the research conducted, submitted on the APL Final Report template; and
- Materials support the extension of the PigPass app eg. Scientific papers, conference presentations, producer talks and trade articles approved by APL.

Timetable

Date	Action
5th August 2024	Application submission opens
1st September 2024	Deadline for research proposals to be received by APL
1st October 2024	Project commencement

General conditions of contracts

Research contracts entered into with APL will require:

- Confidentiality to be maintained with disclosure only with approval of APL
- Copyright of all documentation and intellectual property to be vested with APL
- Applicants to provide their own insurance cover for the risks pertaining to the project

-   Applicants to identify any areas of potential conflict of interest during the application process, or during the course of any supported project
-   Opportunities for variation to the project objectives and work schedules subject to mutual agreement; and
-   Any material provided by APL to be used only for work specific to the project

Lodgement of response

-   All submissions are to be lodged as full proposals addressing all criteria as detailed in this RFP and submitted via email to Vaibhav.gole@australianpork.com.au by COB 01/09/2024.
-   Finalised submitted proposals will be reviewed and assessed and all respondents notified of the outcome regarding their proposal following this process.

Contact

If you are interested in applying, please contact:
Dr Vaibhav Gole
Manager, Integrity Systems
0436934763
vaibhav.gole@australianpork.com.au

Jagbir Singh
Senior Systems Developer
0436 673 338
jagbir.singh@australianpork.com.au