

## JOURNAL

## PROJECT

A2UFood - Avoidable  
and Unavoidable Food  
Wastes: A Holistic  
Managing Approach for  
Urban Environments

Heraklion, Greece

## TOPIC

Circular economy

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# A2UFood Journal 5: The progress of Heraklion during COVID-19

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website



Digital tools, bioplastics laboratory trials, composting, awareness raising, dissemination and tendering have progressed. Heraklion is getting ready for construction work. Journal 5 documents the progress in the last period and discusses challenges.

## 1. Executive Summary

This 5th Journal on the A2UFood project of the city of Heraklion in Crete, funded by the Urban Innovative Actions initiative of the European Commission, focuses on the project's progress in the period March 2020 to March 2021.

The A2UFood addresses the issue of food waste and aspires to design and implement a holistic food system involving food waste prevention, optimal use and composting with the aim to divert food waste from the waste stream and to feed the circular economy (and society) of the city. It adopts a holistic approach, addressing both environmental and social concerns.



Pic.1: Valuable food should not end into food waste

The project has significantly been impacted by the Covid-19 pandemic, augmenting delays that have warranted a prolongation of its duration. The period this Journal covers coincides with the three waves of the pandemic and is reflecting the difficulties that ensued from the inevitable changes in socio-economic practices and administrative modes of working. A pivotal concern of the project in this period has been its feasibility and resilience in these

challenging times.

The main activities in this period revolved around licensing and tendering, concluding bioplastics laboratory trials, and enhancements of digital tools. The home composters were distributed to 100 households, while the tendering for the two institutional and 6 neighborhood Autonomous Composting Units is expected to be concluded in April. The engineering studies and the tendering processes for the Second Opportunity Restaurant and the Bioplastics Unit progressed and are almost complete. The digital tool for food waste reduction for the public has been enhanced but has not been shared with the Supermarket customers yet due to some concerns of the Supermarket team.

Due to the serious impacts of the pandemic on the tourist industry, the second trial of the RESOURCEMANAGER-FOOD (RMF) tool in hotels was postponed, while communication was also circumscribed as lockdowns limited the usual – and preferred in this corner of the world – face-to-face interactions. A virtual international conference is being organised for May 2021. Construction and full operation of the project activities remain to be done in the future.

The project partners are now called to persist on their efforts to conclude the licensing and tendering procedures and the construction phase efficiently, in order to ensure some time for the demonstration phase within the new project time frame. Flexibility, effective collaborations, and creativity are needed in times of crisis.

## 2. Act 5: Covid shock wave and resilience: Prolongation and tight schedule

The A2UFood “play” is now virtual. This last year of the project coincided with the Covid-19 pandemic and its three waves so far. Work, meetings, social and economic activities are determined by the lock-down measures taken by the State and are dressed in masks. The tourist industry has been significantly impacted as international mobility has been circumscribed by official restrictions and fear.

The project team adjusted their activities to this new reality, which challenged and slowed down the project’s work. However, the project was granted a one-year long prolongation, thus making its schedule feasible but tight. This journal presents the project’s progress and obstacles in the last 12 months, and discusses challenges that lie ahead, while it highlights lessons for innovative initiatives aiming at sustainable societies based on a circular economy logic.

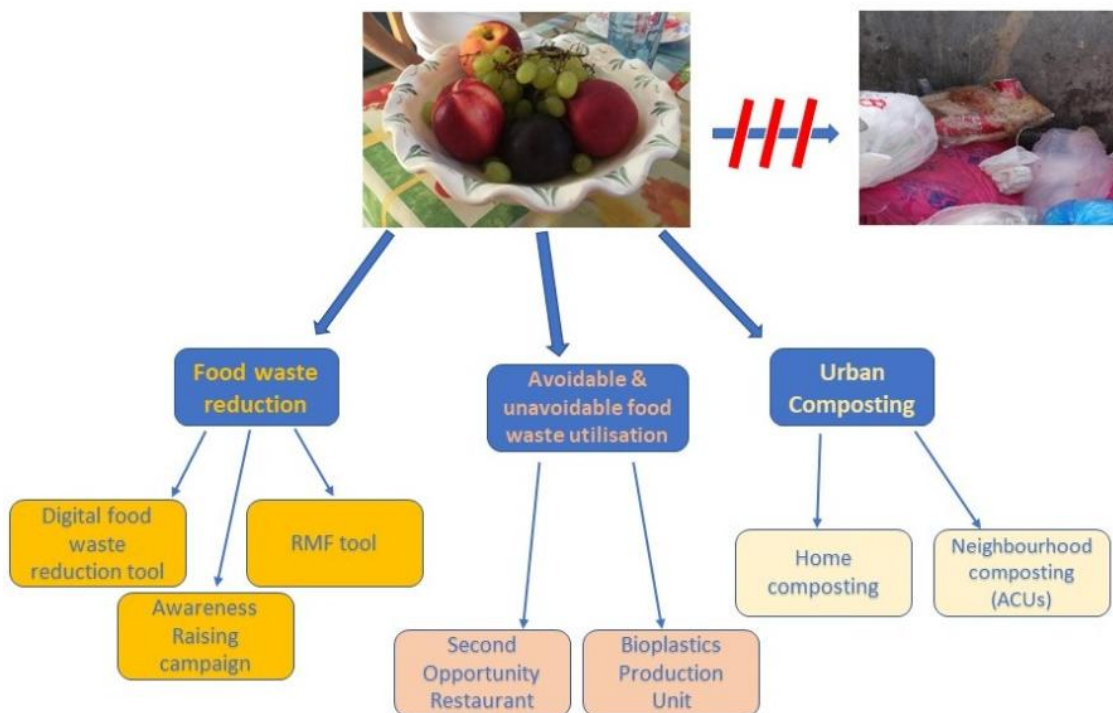


Figure 1: A2U Food Scheme

## 2.1. Food waste prevention

The Food waste reduction set of actions includes an information campaign and a couple of digital tools, one for supermarket customers and another one – the RESOURCEMANAGER-FOOD (RMF) tool – for hospitality units.

### 2.1.1. Digital tools for food waste prevention

The digital tool (currently available only for Android) that was prepared for supermarket customers in the previous period was intended to be connected with the supermarket chain Chalkiadakis' loyalty program. The digital tool has been beta tested with Chalkiadakis loyalty cards and all features work without problems. Selected features of this standalone app (i.e. product expiration tips and related functionality) will be adopted in the official app of Chalkiadakis for a selected but significant user base (over 1,000 families). The leaflet for the digital tool has been prepared and printed.

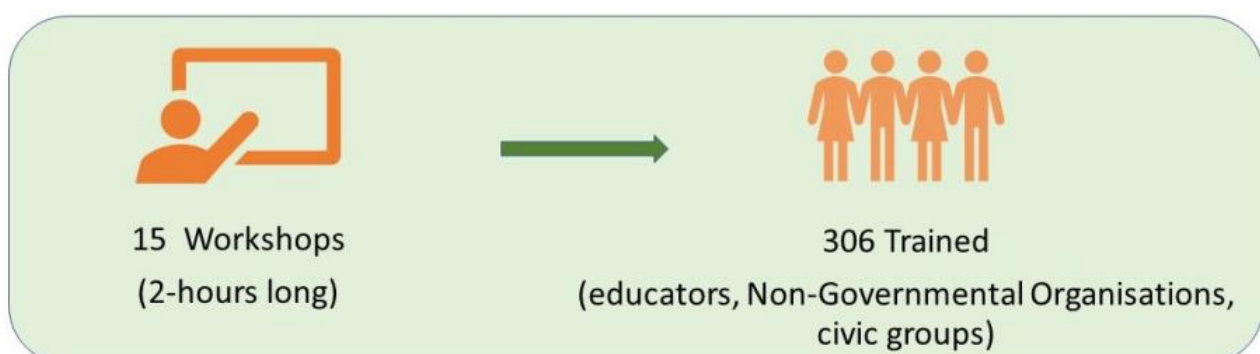


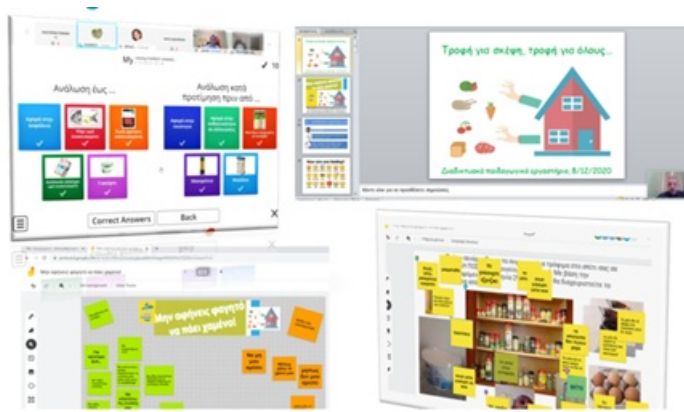
Pic.2: The RMF mobile app design

As the tourist sector was severely affected by the Covid-19 pandemic, the second trial of the RESOURCEMANAGER-FOOD (RMF) tool in hotels and student canteens, planned for 2020, had to be postponed to 2021. The team is presently contacting hotels and other catering services to identify possible interested parties. However, in this period, the USTUTT team developed a mobile smart app for the RMF tool which will connect with the smart kitchen of the future. The smart app makes the RMF tool more flexible, cheaper (as they can use their mobile phones and their own weighing scale if they wish) and easier to use, while it can collect information from all use locations at once. The app is in German, as it was tried in German hotels first, and is now being translated to Greek.

### 2.1.2. The awareness raising campaign

In the context of the Information Campaign Plan, the partners have organised fifteen workshops, four in this period as webinars, for environmental educators, people from Non-Governmental Organisations and civic groups.





Pic. 3: Communication and educational material on food waste prevention

Awareness raising and communication activities become increasingly important in the last stages of the project, especially given the tight schedule, as well as more challenging in the electronic-communication era imposed by the pandemic. Such activities should mobilise and incite stakeholders to participate and change their daily habits.

## 2.2. Avoidable and unavoidable food waste utilization

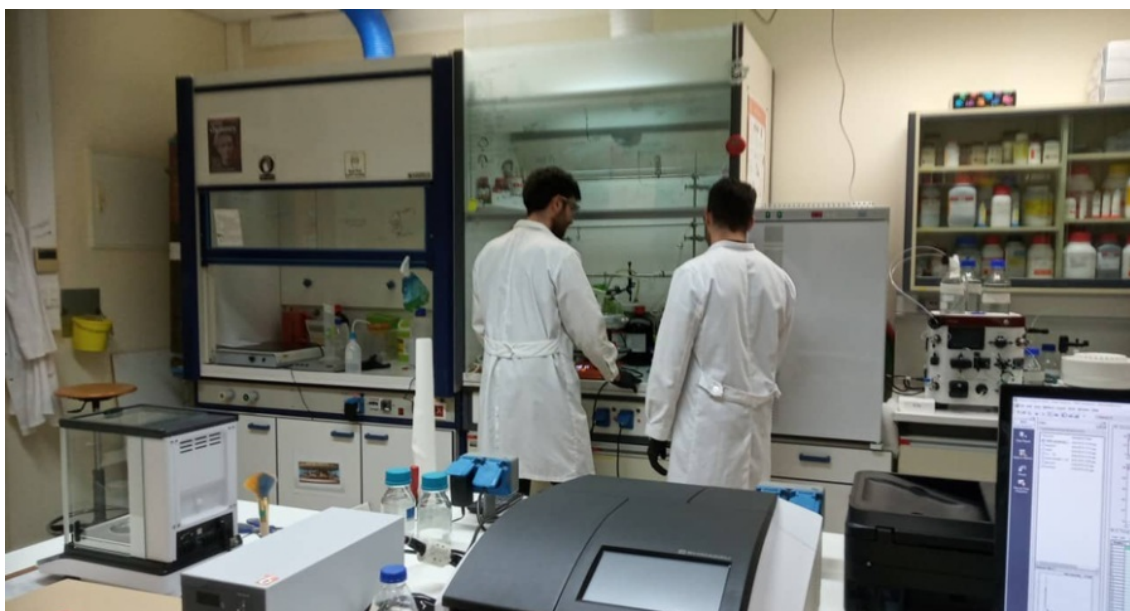
Aside of food waste reduction, the utilisation of avoidable and unavoidable food waste has been planned via the establishment of a 2nd opportunity restaurant for the unused good quality food, a bio-plastics production facility for the unavoidable food waste, and the design of a source separation collection scheme.

In this period, efforts to complete licensing and tendering procedures for these three actions constituted a main focus of the project group, while several obstacles were faced, and several revisions were needed.

The designs and tendering documents for the **Second Opportunity Restaurant** were prepared but they had to be revised again in this period, following requests from the Decentralised Regional Authority, before they are approved. The revisions are being finalised. It is expected that the tender for the construction of the Restaurant will be published in May 2021. Thus, the time plan for its construction and operation (9 months foreseen in total) is extremely tight.

The designs for the **Bioplastics unit** were finalized and submitted in December 2020, while the environmental permit was acquired in February 2021. The team is now working to obtain a building license. The remaining operation license will be obtained during the construction phase so that time is used efficiently and delays are minimised. The tendering process for the construction, equipment acquisition and operation of the bioplastics unit combined was published in March 2021 and will be concluded in mid-April 2021. The bioplastics unit is expected to operate for approximately two months and to produce the polymer in the form of a powder, which will then be directed to a local plastics company or a 3-D printer to make the bioplastic bags. In this period, the UOC completed the laboratory polymerisation testing with good results and characterised the produced heavy weight polymers.





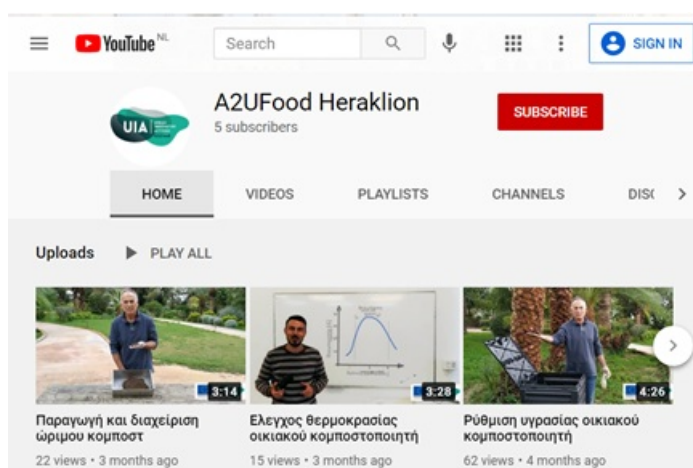
Pic. 4: Laboratory work for the production and characterization of the polymer

For the **collection scheme**, the tender that was published in fall 2020 for the two trucks – a regular and a refrigeration truck – is being concluded; however, the tender for the refrigeration truck proved infertile. Thus, it will have to be repeated as a brief tendering procedure soon after the completion of the running procurement procedure. The tender for the bins also proved infertile and will be republished in May 2021. The partners should actively disseminate the tenders and inform/attract possible bidders.

## 2.3. Urban composting

The third set of actions of the A2UFood project relates to home and neighbourhood composting. It foresees that 100 home composters, 6 neighbourhood Automatic Composting Units (ACUs) and 2 large ACUs in 2 big institutions will be installed.

In this period, the Municipality of Heraklion delivered the 100 home composters to the interested households in November 2020, along with face-to-face practical training on composting and the use of the composters.



Pic. 5: Videos on composting at the A2U Food YouTube channel

Pic.6: Digital thermometers

In addition, five educational videos on composting, how to compost, how to use the composter, how to use the thermometer etc. were produced and they are available at the project's YouTube channel, <https://www.youtube.com/channel/UCn14FU3iyryYfZAN2wH7Hw>.

Twenty-five of the households that received home composters agreed to receive



the app and the electronic thermometer for the monitoring of the composting process. Data is collected by HMU, but it has been scant so far and not encouraging. HMU is presently enhancing the app by adding a functionality that documents the amount of food waste fed into the bin and intends to undertake an information campaign to enhance the composting practice and results.



Pic. 7: Distribution of home composters and training

The tendering for the 6 neighborhood and 2 institutional Autonomous Composting Units (ACUs) is in progress and will be concluded in April 2021. The ACUs should be installed by August 2021.

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## 2.4. Operation, evaluation, scale up and supporting transferability of the A2U Food Scheme

Although only the operation of home composting has begun, HUA has started the evaluation effort in order to minimize observed delays. For the Life Cycle Assessment (LCA), they have started the literature review, the determination of the boundaries, as well as data collection for all the three important activities of the project: prevention of food waste at household and hospitality unit level, utilisation of food wastes for the Second Opportunity Restaurant and the bioplastics unit, and composting. To be effectively completed, the LCA and the social LCA (sLCA) need data from the actual operation of the foreseen activities. Thus, given the very tight schedule for several of them and the short operation period within the context of the project, there is a risk that the LCAs will not have sufficient real data from the project to incorporate in the analysis.

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## 2.5. Communication and knowledge transfer



In this period too, partners continued their communication activities, but primarily via virtual means and at a slower pace due to the pandemic restrictions. The project was presented at the European Week of Regions and Cities 2020 in October 2020, and lessons for food waste reduction and management – based on this and other relevant projects – were analysed in the 8th World Sustainability conference in September 2020 by the external expert. The team is presently organizing a virtual international conference, entitled RETASTE: Rethink Food Waste, that will take place on 6-8 May 2021 (postponed from 2020 due to the pandemic) and will include three scientific presentations on the project. Four of the conference sessions (Awareness and prevention, Technology in Food Waste Management, Food Waste Utilization, and Policy Perspective) acknowledge A2UFood (see conference program: <https://retaste.gr/conference-program/>) and are intended to function as an interface between the A2UFood Project and other initiatives with common ambitions.

A cinematographer has been contracted to produce 5 videos on home composting, the Autonomous Composting Units, the 2nd Opportunity Restaurant, the Bioplastics unit and a general one. So far, the video on home composting (available at <https://youtu.be/j356OpTdlQo>) has been produced and includes guidelines on how to compost at home, how to use the monitoring equipment, as well as general information on composting. They are presently adding the final touches (e.g. subtitles) on this first video.

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## 2.6. Challenges faced and lessons learnt

At this stage, the project is basically completing the preparation stage, with the only technical action that has started operation being home composting. Licensing and tendering were the main activities of this period, but often with delays and sometimes without success. The pandemic has significantly affected the operation of public authorities, but also the market as revealed in the tendering procedures, where few if any bidders apply sometimes. The recently introduced public procurement law may pose some further delays as the public services need to be sufficiently informed and need to adjust to it.

The prolongation that was granted to the project provides some breathing space to the partners, but the project schedule continues to be very tight allowing for a short operation – demonstration period for most of the actions.

The coronavirus pandemic, which is still with us one year after its beginning, has caused significant changes in the daily lives of people aggravating poverty, the human institutions, the economy and its different sectors (tourism included), the environment and more. It has also highlighted the significance of the key lessons identified in the previous A2U Food journal:

- Change is continuous and at times abrupt. Planning should be forward-looking, with proper milestones, and buffer time for addressing unforeseen circumstances.
- Flexibility, creativity and adaptability – by thinking individuals and learning organisations – are required.
- Effective collaboration and coordination of all the different departments and bodies of state bureaucracies is a challenge that needs to be addressed.
- Everything – everyone is interconnected in life. The organic coordination of them towards a common goal is time consuming and complex. Thus, familiarisation with the context of the project should be a first step in the project implementation, with a sufficient time frame.

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### 3. Future challenges and risks

With the continuing pandemic and despite the granted prolongation, several challenges lie ahead for the A2U Food team.

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## Challenges and level of risk

### Challenge


### Observation

Leadership  
Challenge level



The Municipality's leadership supports the project, within the context of its policy for the promotion of the Circular Economy. The development of the Circular Economy Park, which will concentrate all waste management activities (e.g. reuse, source separation, recycling, research) and will promote the waste hierarchy, is in progress. The Municipality's dedication to the project is also evidenced by the fact that it has committed further own funds for the renovation of the building for the Second Opportunity Restaurant. In addition, support of social groups in need is a priority for the Municipality. Furthermore, the MoH is a financially healthy municipality and has the financial resources and the willingness to support the project after its end date. Finally, the Municipality's present leadership will be in power for two more years, which guarantees the uninterrupted support to the project during its lifetime and one year afterwards. Leadership support for the sustainability of such innovative projects is important.

## Public procurement & licensing

Challenge level 

Licensing and tendering are still in progress and continue posing serious risks to the project. The licensing and public procurement processes are complicated and slow; at present, with the pandemic-imposed teleworking, they are even slower. In addition, the recently introduced legislation on procurement (although it simplifies processes) will require some adjustment on the part of public services and this may lead to additional delays. However, due to the tight project timeline, there is no leeway for further delays. Effective communication among involved public services and stakeholders may prove helpful.


Finally, there is the possibility for delays in the construction phase of the Second Opportunity Restaurant due to the required structural works in this old building, which may reveal archaeological findings that will need assessment by the Archaeological Service. Historical sites are challenging.

## Integrated cross-departmental working

Challenge level 

Cross-departmental collaboration and communication need to be seamless now as there is no leeway for further delays. However, this is particularly challenging at the Covid times. The Project Working Group, which involves representatives of several implicated Municipal departments, and the continuous commitment and support of the Municipality's leadership to the project are positive influences in this regard.

## Monitoring & evaluation

Challenge level 

The team has the tools for monitoring and evaluating the project implementation (e.g. excel sheets), but they have limited data as many actions relating with the implementation are still not completed and the actual operation of the different actions is anticipated to be short. Also, the setup of the LCA and sLCA work is in progress anticipating the operation phase.

## Financial stability


Challenge level 

The MoH appears to have the financial capability to support the continuation of the project; other partners though will struggle to find funds to support the continuation of project activities after the project end date (e.g. UOC to support the operation of the bioplastics unit).

Furthermore, tendering processes are more likely to prove infertile as the financial viability of the companies that are potential bidders has been shaken during the pandemic. This is a considerable socio-economic issue the consequences of which will become evident in the next months, after the end of the pandemic.




Communicating with target beneficiaries

Challenge level 

Communication actions have been slow in the covid-19 months. The timely and effective implementation of foreseen communication activities will be needed in the coming months as the different actions of the project will start being implemented (e.g. composting, 2nd Opportunity Restaurant, bioplastics unit) in order to reach the stakeholders and mobilise them to participate.

Upscaling

Challenge level 

MoH shows positive signs in terms of wanting to maintain project activities after the completion of the project. However, the issue of upscaling remains unclear as the main technical activities have not been implemented yet.

An additional challenge the project will face relates with the timing of the completion of project activities and the coordination with the involved stakeholders. More specifically, the anticipated beginning of the operation of the Second Opportunity Restaurant and the Bioplastics unit in late fall or early winter coincides with the off-season period for most hotels. So, the A2U Food team needs to consider where good quality food remnants to supply the Second Opportunity Restaurant, or food waste for the Bioplastics unit will be found in the winter months. The team should be creative and plan for alternative sources of wasted food for the short operation period within the project time frame, if the participating hospitality units are not in operation at that time.

## 4. What next?

These are the last months of the project. The feasibility of a meaningful operation period for the Second Opportunity Restaurant or the bioplastics unit is precarious and depends on the smooth completion of all pending actions.

In the next period, the Digital Food Waste Prevention tool should be deployed and the second round of the RMF tool piloting at selected (available) hospitality units in Heraklion is expected. Will Supermarket customers adopt the tool and use it effectively to limit their food waste? Will there be sufficient hotels and hospitality units to participate in the second pilot phase of the RMF tool?

The licensing, tendering and construction of the Second Opportunity Restaurant and the Bioplastics unit and the collection scheme should be completed without any further delays to allow for a minimum operation period within the project duration. Home composting should be enhanced, while ACUs should be installed by August 2021. Will the project team manage to avoid further delays? Will they manage to resolve any unforeseen obstacles swiftly and effectively? Will they manage to promote more effective composting? Suspense is mounting as the project is approaching its end date in a particularly challenging environment.

However, there is dedication and there is hope, although the hurdles are noteworthy. In all cases, the work done in the project constitutes a promising foundation for future reduction of food waste in the Municipality of Heraklion and for social solidarity towards people in need, if project outputs are sustained after the project's official completion date.

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