

D8.14 Press Releases 3



BBTWINS

Agri-Food Value Chain Digitalisation for Resource Efficiency







Horizon 2020 European Union Funding for Research & Innovation



PROJECT	BBTWINS
PROJECT NUMBER	101023334
PROJECT TITLE	Digital twins for the optimisation of agrifood value chain processes and the supply of quality biomass for bio-processing
PROGRAM	H2020-BBI-JTI-2020
START DATE	1 JUN 2021
DURATION	48 months
DELIVERABLE NUMBER	D8.14
DELIVERABLE TITLE	Press releases 3
SCHEDULE DATE & MONTH	30/11/2023
ACTUAL SUB. DATE & MONTH	30/11/2023
LEAD BENEFICARY NAME	REVOLVE
TYPE OF DELIVERABLE	PU
DISSEMINATION LEVEL	(PU, CO, EU-RES, EU-CON, EU-SEC)

LEAD BENEFICIARY NAME	ZIC	
Address	Paseo Santxiki, 3 bis, E-31192 Mutilva (Navarra), Spain	
Phone number	(+34) 948 198 000	
E-mail address	Carla Sala	
Project website	www.bbtwins.eu	

This project has received funding from the Bio-based Industries Joint Undertaking under the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 101023334.



Table of Contents

1. Introduction	6
1.1. Executive Summary	6
1.2. Relation with other deliverables	6
2. Media coverage of press release #3 (D8.14)	7
3. Press release 3	10
4. Policy Briefing	16
4.1. Project Information	16
4.1.1. Title of the project	16
4.1.2. Funding Scheme	16
4.1.3. Coordinator and Partners	16
4.1.4. Project Duration and Budget	17
4.1.5. Summary for policy makers	17
4.1.6. Keywords	17
4.2. Objectives	
4.3. Methodology	19
4.3.1. Overall Methodology	20
4.4. Key Findings:	21
4.5. Policy Implications:	
4.6. Impact:	25
4.7. Contact Information:	27



List of figures

Figure 1. Xornal.Vigo, 13/09/2023	8
Figure 2 VigoHoy, 13/09/2023	8
Figure 3 Cousasde, 14/09/2023	9
Figure 4 CodigoZero, 14/09/2023	9
Figure 5 Press release in EN	10
Figure 6 Press release in ES	11
Figure 7 Press release in PT	12
Figure 8 Press release in GER	13
Figure 9 Press release in GR	14
Figure 10 Press release in PL	15



List of tables

Table 1 Press clipping	7
------------------------	---



Glossary, abbreviations, and acronyms

- ENEnglishESSpanishGRGreekPTPortugueseGERGerman
- PL Polish



1. Introduction

1.1. Executive Summary

Press releases serve as a pivotal tool in conveying and disseminating project information to both the media and the wider public, exponentially amplifying the impact of the project by engaging a broader audience. To further enhance the reach and effectiveness of the BBTWINS project, the Consortium strategically employs press releases to communicate significant milestones, research findings, and the availability of new dissemination materials.

This deliverable D8.14 "Press Releases 3," encapsulates all press releases generated by the BBTWINS project within the timeframe spanning November 30th, 2022, to November 30th, 2023. These releases, along with their translations into the local, national, and regional languages of project partners, form a comprehensive resource for project communication. The content of this deliverable includes a press release detailing the Consortium Meeting held in Vigo, Spain. As part of our ongoing commitment to transparency and engagement, the press releases featured in this deliverable will be promptly made accessible on the project's website. Interested parties can access this valuable information as media outlets associated with various project partners disseminate news based on these releases. Visit our press releases page at https://bbtwins.eu/press-releases/ for the latest updates.

Moreover, as a part of this deliverable, a policy briefing will be provided in response to one of the recommendations by the experts in the review meeting #1. A policy briefing is a concise document that presents essential information and recommendations related to a specific policy issue. It serves as a strategic tool for policymakers, providing them with key insights and actionable recommendations to inform decision-making. Additionally, the deliverable will include a summary of media coverage related to the press releases. This summary will offer a comprehensive overview of how the project has been portrayed in various media outlets, providing valuable insights into the public reception and impact of our communications efforts.

1.2. Relation with other deliverables

Up to this point, the project has issued two prior press releases (D8.13 as Press release #1 and D8.15 as Press release #2). They covered the project's kick-off meeting (D8.13), and one key consortium meeting in Logroño attended by the regional government (D8.15). The current third press release (D8.14) covers another consortium meeting celebrated in Vigo and hosted and officially closed by local authorities.

BBTWINS' press releases are available in four languages: English, Spanish, Portuguese, Greek, German and Polish providing comprehensive accessibility to our diverse audience. For a detailed overview of the media coverage resulting from BBTWINS' press releases, please refer to our dedicated page at https://bbtwins.eu/media-coverage



2. Media coverage of press release #3 (D8.14)

In particular, the current third press release featured this D8.14 has generated noteworthy regional media coverage, contributing to the project's visibility and impact (see Table 1). This regional coverage was probably boosted by two facts. First, the consortium meeting covered by the press release was hosted by Consorcio Zona Franca de Vigo (<u>https://www.zfv.es/portal/index.html</u>) by providing their facilities in downtown Vigo, in particular a spacious and convenient meeting room. In addition, Ana María Mejías from Zona Franca, representing the local authorities, officially closed the meeting.

Name	Title	Piece of information	URL	Date
Xornal Vigo	O Concello apoia en Vigo un proxecto vangardista do sector agroalimentario	Article in website	https://xornal.vigo.org/noticias/30186-o-concello- apoia-en-vigo-un-proxecto-vangardista-do-sector- agroalimentario	13/09/2023
VigoHoy	Zona Franca Vigo acoge la convención del proyecto BBTwins, una plataforma de gemelo digital pionera para la cadena de valor agroalimentaria en Europa	Article in website	https://vigohoy.es/zona-franca-vigo-acoge-la- convencion-del-proyecto-bbtwins-una-plataforma- de-gemelo-digital-pionera-para-la-cadena-de- valor-agroalimentaria-en-europa/	13/09/2023
Codigo Zero	A Zona Franca Vigo acolleu a convención da plataforma agroalimentaria de xemelgo dixital BBTwins	Article in website	https://codigocero.com/A-Zona-Franca-Vigo- acolleu-a-convencion-da-plataforma- agroalimentaria-de	14/09/2023
Cousasde	Zona Franca Vigo acolle a convención do proxecto bbtwins unha Plataforma de xemelgo dixital pioneira para a cadea de valor agroalimentaria en europa	Article in website	https://www.cousasde.com/zona-franca-vigo- acolle-a-convencion-do-proxecto-bbtwins-unha- plataforma-de-xemelgo-dixital-pioneira-para-a- cadea-de-valor-agroalimentaria-en-europa/	14/09/2023

Table 1 Press clipping

Figures 1 to 4 show the actual articles on each website, in other words, the media coverage stemming from the press releases. Figures 5 to 10 show the press releases themselves.



XORNAL

ECONOMÍA E FACENDA

NOTICIAS AXENDA

O Concello apoia en Vigo un proxecto vangardista do sector agroalimentario

Ana Mª Mejías, concelleira e vogal substituta do delegado de Estado de Zona Franca, coñeceu hoxe a avaliación e pormenores do proxecto europeo BBTwins no transcurso dunhas xornadas celebradas no Consorcio os días 12 e 13 de setembro. Mejías trasladou aos responsables do proxecto as potencialidades e oportunidades de negocio que brinda Vigo e a súa área de influencia. O proxecto europeo de referencia na dixitalización da cadea de valores agroalimentaria dos recursos naturais e produtivos coñécese baixo o nome de BBTwins, un conglomerado internacional con representantes de 7 países europeos que desenvolveu unha plataforma dixital que aplica tecnoloxía de vangarda ao proceso completo do sector, desde a orixe ata o consumidor final.

MÉRCORES, 13 SET 2023

Escoitar



Figure 1. Xornal.Vigo, 13/09/2023

PORTADA HOY EN VIGO CULTURA - DEPORTES - SUCESOS ÁREA ECONOMÍA SOCIEDAD OPINIÓN

Hoy en Vigo Economía

Zona Franca Vigo acoge la convención del proyecto BBTwins, una plataforma de gemelo digital pionera para la cadena de valor agroalimentaria en Europa



El Consorcio de la Zona Franca de Vigo acogió durante los días 12 y 13 de septiembre a un proyecto europeo de referencia en la digitalización de la cadena de valor agroalimentaria y la eficiencia de los recursos naturales y productivos. Bajo el nombre BBTwins, un conglomerado internacional con representantes de 7 países europeos ha desarrollado una innovadora plataforma de gemelo digital que aplica tecnología de vanguardía al proceso

Figure 2 VigoHoy, 13/09/2023



VIGO E ÁREA VIGO

Zona Franca Vigo acolle a convención do proxecto BBTwins, unha plataforma de xemelgo dixital pioneira para a cadea de valor agroalimentaria en Europa



O Consorcio da Zona Franca de Vigo acolleu durante os días 12 e 13 de setembro a un proxecto europeo de referencia na dixitalización da cadea de valor agroalimentaria e a eficiencia dos recursos naturais e produtivos.

Figure 3 Cousasde, 14/09/2023





3. Press release 3



European Innovations Driving the Future of Food

BBTWINS will combine cutting edge technologies to improve agri-food supply chains

Vigo, September 22, 2023 – The B8TWINS project, comprised of leaders in technology from seven EU countries, convened on 12 and 13 September in the seaside town of Vigo in Galicia, Spain, with the goal of transforming the way Europe farms.

Buoyed by the ciriaste crisis and funded by the Fumpean Union, the project is dedicated to making the agricultural sector more sustainable through the development of "digital twins." These computer simulations of agri-load processes – think metapacking, collecting (ruit from orchards, and even deliveries – play a crucial for lenshancing efficiency and reducing usars. Digitals predication resorts has central oral be run virtually, optimising the production line and saving farmers precious time and resources.

"For us, BBTWINS means innovation, collaboration, and a vision of the future. What makes BBTWINS unique is that it combines blockchain, AI, big data, software analytics, and computer simulation, all on the same platform.

- Daniel de la Puente, Senior EU Project Manager, CTIC-CITA



-	
1	BBTWINS

PRISS RELEASE

Keywords

Digital twins, blockrhain, logistics, biomoss valorisation, sensors, simulation, fertilizers, prozeins, frui processing, meat processing, feedstock, salts, protein, snacks, nutraceutical, waste, digital services, sector olegy development, bioconomy

1

About BBTWINS

Dio-Based Digital Twins (00TH/INS) aims to develop a digital platform for the optimisation of agri-lood value chain processes and the supply of gital tybornaes for bioprocessing.

The platform will be based on 'digital twins' technology – creating a real-time digital replica of physical processes in the signification (advanty, BBTWHS will also combine % tillicial thref iperke (Al), Machine Learning, the Internet of Things (Jo1), and software and holds in this leade durition. Wini 13 partners in 7 countries, the HEHWHS consortium will be focusing on mean and fault production, integrating the value that (from cross to The Jaroduct) and will define the optimal partnersy for each feedback to makimise efficiency, and minimise locator - without integration and its.

Media contacts

BETWINS Communication Contact Raphael Garcia Communications Officer | REVOLVE raphael@revolve.media BTWINS Coordinator Janiel de la Puente Senior DU Project Manager | CTIC-CTA

This project has received funding from the Bio-based industries Joint Undertaking under the European Union's Hacizan 2020 Research and Innovation Programme under grant agreement No 10102333.



≴BBl_{JU} forman 2020 Suropean Union Functing for Reserve & Ensembler

Figure 5 Press release in EN



2

Two years into the project, the diverse array of partners proudly shared their progress. One entrepreneurial team, StelvioTech, introduced their integrated traceability system, based on blockchain technology, where constaners could kiran a OR code to learn about the origins of the products, information valuable for improving animal welfare and food safety along the supply chain.

The waste valorisation team, CVR (the Certro Para a Valorização de Residuos), announced they had successiville converted pig manure, bones, and hair into potentially useful products: kerain for the beauxy industry, hydromyzabilic for tooth health, and biogas to be re-used as fuel in the same processing plant respectively, closing the loop on the circular bioeconomy.

The partners focusing on bigistics, VTT (Valtian Teknillinen Tutkimuskeskus) and VTTO, had developed computerised methods forecasting feed demand and optimising deliveries between farms, not only saving time and unnecessary expenses, but also reducing emissions scennning from transport.

Another team, PANOImagen, presented their 'artificial vision' program, capturing data through sensors and using this AI to estimate the weight of livestock, relieving farmers of the physical difficulty of weighing each animal individually.

These and other innovations associated with the B&TW/NS project align with the European Linion's Farm-to-Fork strategy, an integral component of the EU Green Deal. One of the most anticipated results of the B&TW/NS Rechnology is the significant reduction in raw material and transportation costs, which are expected to reach up to 25%.

The event's culmination featured Ana M^a Mejias Sacaluga, member of the special delegate of the state and professor of engineering as the University of Vigo, who highlighted the collaborative effort across the continent shaping the future of agriculture and food production.

ENDS





Nota de prensa

europeas impulsan el futuro de la alimentación

BBTWINS combinará tecnologías de vanguardia para mejorar las cadenas de suministro agroalimentario

Vigo, 22 de septiembre de 2023 - El proyecto BBTWINS, formado por lideres en tecnología de siete países de la UE, se reunió los días 12 y 13 de septiembre en la ciudad costera de Vigo, en Galicia (España), con el objetivo de transformar la forma en que Europa explota sus tierras..

impulsado por la crisis climática y financiado por la Unión Europea, el proyecto se dedica a hacer más sostenible el sector agricola mediante el desarrollo de "genesios ágitales". Estas simulaciones informáticas de processo agrocimentarios -pensensos en el envisado de corne. La recogitad de finta en los hateros inclusios las entregas- desampeñan un papel crucial en la mejora de la eficiencia y la reducción de residuos. La digitalización del sector significa que los secannichos pueden el journaciones vitralamente, optimizando la línea de producción y ahorrando a lo sagricultores un tiempo y unos recursos preciosos.

"Para nosotros, BBTWINS significa innovación, colaboración y visión de futuro. Lo que hace único a BBTWINS es que combina blockchain, IA, big data, software analítica, y simulación computacional, todo en la misma plataforma."

- Daniel de la Puente, Director de Proyectos de la UE, CTIC-CITA

Betwins

PRESS RELEASE

2

Dos años después del inicio del provecto, el variado abanico de socios compartió con orgullo sus avances. Un ubo ano seques en moto ve proyecto, e vanatao auanto de socios companto con guino sus vantes. On equipo emperenderó. StelvioTeC+ presento su sistema integrado de trazabilidad, bisado en la tecnologia blockchain, con el que los consumidores podían escarear un código QR para conocer el origen de los productos, información valiosa para mejorar el bienestar animal y la seguridad alimentaria a lo largo de la cadera de suministro.

El equipo de valorización de residuos, CVR (el Centro Para a Valorização de Residuos), anunció que habían convertido con éxito estiércol de cerdo, heusos y pelo en productos potencialmentes útiles queratina para la industria de la belieza, hidroxiagante para la saúd dental hy blogás paras er enutilizad como combustible en la misma planta de procesamiento, respectivamente, cerrando el círculo de la bioeconomia circular.

Los socios centrados en la logística, VTT (Valtion Teknillinen Tutkimuskeskus) y VITO, habían desarrollado métodos informáticos que preveian la demanda de piensos y optimizaban las entregas entre granjas, no sólo ahorrando tiempo y gastos innecesarios, sino también reduciendo las emisiones derivadas del transporte.

Otro equipo, PANOImagen, presentó su programa de "visión artificial", que capta datos a través de sensores y utiliza esta IA para estimar el peso del ganado, aliviando a los ganaderos de la dificultad física de pesar cada animal individualmente

Estas y otras innovaciones asociadas al proyecto 88TWINS se alinean con la estrategia "de la granja a la mesa" de la Unión Europea, un componente integral del Creen Deal de la UE. Uno de los resultados más esperados de la tecnología 88TWINS es la reducción significativa de los costes de materias primas y transporte, que se espera que alcancen hasta el 25%.

El colofón del evento corrió a cargo de Ana Mª Mejas Sacaluga, miembro del delegado especial del Estado y catedrática de Ingeniería de la Universidad de Vigo, que destacó el esfuerzo de colaboración en todo el continente que está dando forma al futuro de la agricultura y la producción de alimentos.

FIN



PRESS RELEASE

Palabras clave

Gemelos digitales, blockchain, logistica, valorización de biomasa, sensores, simulación, fertilizantes, proteinas, procesamiento de frutas, procesamiento de carme, materias primas, sales, proteinas, aperitivos, nutracéuticos, residuos, servicios digitales, desarrollo tecnológico, bioeconomía

1

Acerca de BBTWINS

Bio-Based Digital Twins (BBTWINS) pretende desarrollar una plataforma digital para la optimización de los procesos de la cadena de valor agroalimentaria y el suministro de biomasa de calidad para el bioprocesamiento.

La plataforma se basará en la tecnología de "gemeios digitales", que creará una réplica digital en tiempo real de los procesos físicos de la industría agroalimentana. BBIVMISS también combinará Inteligencia Artificial (IA). Aprendizaje Automático, Internet de las Cosas (JoT) y análisis de software en esta plataforma única.

Con 13 scolos en 7 países, el conscricio BETWINS se centrará en la produccion de came y fruita, integrando la cadena de valor (decide el cultino hasta el produccio final) y definirá el camino diptimo para cada matería prima para maximizar la el clencia y ministra las pedidas, an factora a la cadidad...

Contactos con los medios de comunicación

Contacto de comunicación de BBTWINS

Raphael Garcia Responsable de Comunicación | REVOLVE raphael@revolve.media

Coordinador de BBTWINS

Daniel de la Puente Director de Proyectos UE | CTIC-CITA danieldelapuente@cticcita.es

This project has received funding from the Blo-based Industries Joint Undertaking under the Europea Union's Horizon 2020 Research and Innovation Programme under grant agreement No 10102333





Figure 6 Press release in ES



Inovações Europeias

Impulsionando o futuro dos alimentos

O BBTWINS vai combinar tecnologias de ponta para melhorar as cadeias de abastecimento agroalimentares

Vigo, 22 de setembro de 2023 – O projeto BBTWINS é composto por líderes em tecnologia de sete países da União Europeia, que se reuniram nos dias 12 e 13 de setembro na cidade costeira de Vigo, na Galícia, Espanha, com o objetivo de transformar a fórma como a Europa cultiva. Impulsionado pela crise elimática e financiado pela União Europeia, o projeto pretende tornar o setor agrícola mais sustentável através do desenvolvimento de "gémeos digitais". Essas simulações digitais de processos agroalimentares - como o empacotamento de carne, a colheita de fintas em pomares e até mesmo das entregas - desempenham um papel erucial na melhoria da eficiência e na redução do desperdício. A digitalização do setor significa que os processos podem ser executados digitalmente, otimizando a linha de produção e cenomizando tempo e recursos preciosos para os agricultores.

"Para nós, o BBTWINS significa inovação, colaboração e uma visão de futuro. O que torna o BBTWINS único é que combina blockchain, inteligência artificial, big data, software analítico e simulação computacional, tudo na mesma plataforma."

Daniel de la Puente. Senior EU Project Manager, CTIC-CITA

Após dois anos de projeto, o conjunto diverso de parceiros partilhou orgulhosamente o seu progresso. Uma equipa empreendedora, StelvioTech, apresentou o seu sistema integrado de rastreabilidade, baseado na tecnologia blockchain, onde os consumidores podem, através de um QR code, conhecer as origens dos produtos, informações valiosas para melhorar o bem-estar animal e a segurança alimentar ao longo da cadeia de abastecimento. A equipa da valorização de resíduos, CVR - Centro Para a Valorização de Resíduos, anunciou que converteram com sucesso chorume, ossos e pelos de porco em produtos potencialmente úteis; queratina para a indústria da cosmética, hidroxiapatita para a saúde oral e hiogás para ser reutilizado como combustível no mesmo processo, fechando o cielo na bioeconomia circular.

Os parceiros focados na logística, VTT (Valtion Teknillinen Tutkimuskeskus) e VITO, desenvolveram métodos computadorizados para prever a procura de matérias-primas e otimizar as entregas entre as explorações, economizando não apenas tempo e despesas desnecessárias, mas também reduzindo as emissões provenientes do transporte.

Outra equipa, PANOImagen, apresentou o seu programa de 'visão artificial', obtendo dados através de sensores e usando inteligência artificial para estimar o peso do gado, aliviando os agricultores da dificuldade física de pesar cada animal individualmente.

Estas e outras inovações associadas ao projeto BBTWINS estão alinhadas com a Estratégia Farm-to-Fork da União Europeia, componente integrante do Pacto Ecológico Europeu. Um dos resultados mais esperados da tecnologia BBTWINS é a redução significativa nos custos de matéria-prima e de transporte, que se espera que cheguem até aos 25%.

O culminar do evento contou com a presença de Ana M^a Mejías Sacaluga, membro da delegação especial do estado e professora de Engenharia na Universidade de Vigo, que destacou o esforço colaborativo em todo o continente moldando o futuro da agricultura e da produção de alimentos.

Sobre o BBTWINS

O Bio-Based Digital Twins (BBTWINS) tem como objetivo desenvolver uma plataforma digital para otimização dos processos na cadeia de valor agroalimentar e o fornecimento de biomassa de qualidade para bioprocessamento. A plataforma será baseada na tecnologia de 'gémeos digitais' - criando uma réplica digital em tempo real dos processos físicos na industria agroalimentar. O BBTWINS vai também combinar Inteligência Artificial (IA), Machine Learning, Internet das Coisas (IoT) e software analítico numa única plataforma.

Com 13 parceiros em 7 países, o consórcio BBTWINS vai focar-se na produção de carne e frutas, integrando toda a cadeia de valor (desde a colheita até o produto final) e definirá o caminho ideal para cada matéria-prima de forma a maximizar a eficiência e a minimizar perdas - sem comprometer a qualidade.

Figure 7 Press release in PT

BBTWINS

PROJECT Nº 101023334





BBTWINS wird Spitzentechnologien kombinieren

Verbesserung der Lieferketten in der Lebensmittelindustrie

Vigo, 22. September 2023 - Das Projecti BBTWHKS, das sich aus führenden Technologieunternehmen aus sieben EU-Ländern zusammenetzt, traf sich am 12. und 13. September in der Kästenstadt Vigo in Galicien, Spanien, mit dem Ziel, die Art und Weise, wie Europa Landwirtschaft betreibt, zu verändern.

Assgeöst durch die Rimatrise und finanziert von der Europäischen Union soll das Projekt den Agrarsetor durch die Erweidelung digitaler Zwillinger "achhaftiger machen. Diese Gempaterismutstichner von Prozessen in der Agrar- und Emiliarusgevischeten", man denkein zur die Vergackunge von Fleich, das Erweinner inver Nota sol obstanitagen und sogar an Leifensgen- asieken eine enscheidende Rolle bei der Szeigrung der Effizienz und der Veringerung von AbSillen. Die Optischung des Stehen bedeutst, dass Steheniern invitatiel durchgespielt werden können, wodurch die Produktionslinie optimiert wird und die Landwire wertrolle Zeit und Resources sparen.

"BBTWINS bedeutet für uns Innovation, Zusammenarbeit und eine Vision für die Zukunft. Das Einzigartige an BBTWINS ist, dass es Blockchain, KI, Big Data, Software-Analytik und Computersimulation auf einer Plattform vereint."

- - Daniel de la Puente, Senior EU-Projektleiter, CTIC-CITA

Zwei Jahre nach Beginn des Projekts berichteten die verschiedenen Partner stolz über ihre Fortschritte. Ein Unternehmerteam, StelvioTech, stellte sein integriertes, auf der Blockchain-Technologie basierendes



1



PRESS RELEASE

Keywords

Digital twins, blockchain, logistics, biomass valorisation, sensors, simulation, fertilizers, proteins, fruit processing, meat processing, feedstock, salts, protein, snacks, nutroccutical, waste

About BBTWINS

Bio-Based Digital Twins (BBTWINS) alms to develop a digital platform for the optimisation of agri-food value chain processes and the supply of quality biomass for bioprocessing.

The platform will be based on 'digital twins' technology – creating a real-time digital replica of physical processes in the ager-book industry, BRWMIX will also combine Actilibial Intelligence (Al), Machine Learning, the Internet of Things (IuT) and software analysis in this single platform.

Why 13 partners in 7 occurrines, the BBTVINIS consortium will be focusing on meat and fruit production, integrating the well-chain (then croop to thai) product) and will define the optimal pathway for each feedblock to maximise efficiency and minimise lowes – without impacting quality.

Media contact

BBTWINS Communication Contact Raphael García Communications Officer | REVOLVE raphael@revolve.media BBTWINS Coordinator Daniel de la Puente Senior EU Project Manager | CTIC-CITA danieldelapuente@cticcita.es

This project has received funding from the Bio-based Industries Joint Undertaking under the European Union's Harizon 2020 Research and innovation Programme under grant agreement No J01023334.





Figure 8 Press release in GER

2

Rückverfolgbarkeitssystem vor, bei dem die Verbraucher einen QR-Code scannen können, um sich über die Herkunft der Produkte zu informieren - Informationen, die für die Verbesserung des Tierschutzes und der Lebensmittelsicherheit in der gesamten Lieferkette wertvoll sind.

Das Abfal verwerungsteam CVR (Centro Para a Valorização de Reciduos) gab bekannt, dass es Schweinegüle, Knochen und Haare eridgreach in potenzial nuzicidae Produkte ungewandelt hat. Keratin für die Schönheitsindustrie, hydrochystark für die Zahngesundheit und Bögas zur Werderwerendung als Brennstoff in der gleichen Verarbeitungsanlage womt sich der Kreislauf der Bioökonomie schlieft.

Die auf Logistik spezialisierten Partner VTT (Valtion Teknillinen Tutkimuskeskus) und VITO hatten computergestützte Los aut cogent spectral serten ertner vil i (vertion i realimen i untimasesci) und vil onaten computergestitze Methoden zur Vorhessige des Futtermitstebdarfs und zur Optimierung der Lieferungen zwischen den Landwirtschaftlichen Betrieben entwicklei, die nicht nur Zeit und unnötige Kosten sparen, sondern auch die durch den Transport verunschan Emissionen verringern.

Ein anderes Team, PANOImagen, stellte sein Programm für künstliches Sehen¹¹ vor, das Daten mit Hilfe von Sens erfasst und diese künstliche Intelligenz nutzt, um das Gewicht des Vinha zu schätzen, was die Landwirte von der physischen Schwierigkeit befreit, jedes Tier einzeln zu wiegen.

Diese und andere innovationen im Zusammerihang mit dem BBTWINS-Projekt stehen im Erivlang mit der "Farm-to-Fork"-Strategie der Europäischen Union, einem integratien Bestandteil des EU-Green Dest. Eines der am meisten erwartenten freghnisse der BBTWHS-Ereinologie ist die erhealische Senitung der Rohstoff- und Transportkosten, die verauslichtlich bis zu 25 % betragen werdens.

Den Abschluss der Veranstaltung bildete Ana Ma Mejäs Sacaluga, Mitglied des Sonderdelegierten des Staates und Professorin für Ingenieurwesen an der Universität Vigo, die die gemeinsamen Anstrengungen auf dem gesamten Kontinent, die die Zukunft der Landwirtschaft und der Lebensmittelproduktion gestalten.

ENDS





ΔΕΛΤΙΟ ΤΥΠΟΥ

Καινοτομίες που αποτελούν οδηγό στο μέλλον των τροφίμων στην Ευρώπη

Το Ευρωπαϊκό έργο BBTWINS συνδυάζει διαφορετικές τεχνολογίες αιχμής αποσκοπώντας στη βελτίωση της αγρόδιατροφικής εφοδιαστικής αλυσίδας

Vigo, 22 Σεπτεμβρίου 2023 - Οι εταίροι του έργου BBTWINS, προερχόμεναι από επτά διαφορετακές χώρες της Ευρωπαϊκής Ένωπας και άντας κοιοιφαίοι σταν ταμέσ της αγρό-διατροφής, συναντίθηκαν στης 12 και 13 Σεκτεμβρίου στην παραθαλάροια πόλη Vigo της Ισκανίας, στοχείοντος στην αναβάθμιση του τομέα της αυρο-διατροφής στην Ευρώπη.

Παρακινούμενο από την κλιματική κρίση και χρηματοδατούμενα από την Ευρωποϊκή Ένωση, το έσγο BBTVING εταρχτίει στη βιωσιμάτητα και τοχολογική αναβάθμιση του αγροτικού τομέα μέσω της ανάπτυξης εψησίασων διάδρωνα». Η ψηβασποίαη του αγροτικού/κτηνοποφίκισύ τομέα και συγκεκριμέτα η προσομαίωση των διαφορειτικών σταδών της αφό διατροδιομής αλουδίας, αιό την συλλογή και μετάφορά μέχη και την εισκεισιοία των ποσίδητων, δύναται να οδηγήσει στην αίξηση της πασαγωγής στην μείωση των παροποιδιώτων, διαλογωγικός μιμάτων και γενικότερο στην εξοικοινόμηση πολύτιμου χρόνου και πόρων στους αγότες και παραγωγούς.

"Για εμάς, το BBTWINS σημαίνει καινοτομία, συνεργασία και όραμα για το μέλλον. Αυτό που κάνει το BBTWINS μοναδικό, είναι ότι συνδυάζει εφοδιαστικές αλυσίδες, τεχνητή νοημοσύνη και αναλυτικά υπολογιστικά μοντέλα, όλα στην ίδια πλατφόρμα."

- Daniel de la Puente, Senior EU Project Manager, CTIC-CIT



BRTWINS

z

PRESS RELEASE

Λέξεις Κλειδιά

Ψηφιακά δίδυμα, εφοδιαστική αλυσίδα, αξιοποίηση βιεμάζας, αισθητήρες, προσομοίωση, λινιάσματα, πρωτιτίνας, επεξεργασία φροίτων, επεξεργασία εράστος, πρώτη ύλη, δλοτα, πρωτείνη, θρεπτικό προϊόντο, απέβλητα, ιδηριακές υπηριστές υπότυτζη τεχρούγιας, βίσουσονογιάς

1

BBTWINS

Το έργο B3TWINS (Βιο-βαπίζημενα Ψηφιακά Δίδυμα] στοχεύει στην ανάπτυξη μιας ψηφιακής πλατφόριμας για τη βαλτιστοποίηση της εφοδιαστικής αλυσίδας των γεωργικών και κτηνοτροφικών προϊόντων διατροφής.

Η πλατφόρμα βασίζεται στην τεχνολογία «ψηφιατών διδύμων» – δημιουργώντας ένα ψηφιαχό αντίγραφο σε προγματικό χρόνε το οποία προσοριοιώνει τα διαφόρετικά στάδια της συρό-διατοφοικής εφοδιαστικής αλυσίδας. Το BBTMNS συνδυάζει σε μία ενταία κλατφόρμα, την Τεχνητή Νοημοσύνη (Α), την εκμάθηση των μηχατοίν (machine) εκατήμα με ται διαδίτου των Πρατμάτων (Ιοη).

Με 13 ετσίρους από 7 χώρες, η κοινοποροξίο BBTWINS στοχεώει στη βελτίωση του ουνάλου της εφοδιαστικής ελλισίδας (από την καλιλέγετα ένας το πλικά προϊόλγιατά πασονωγή ερέατος και φορότων, μυγκοποιούποια την απόδαση της παρομιγής μάτω της ελοχατοποιόησης των υπολεφμάτων/παραπροϊόντων, χωρίς να επορεάζεται η ποιόστρα του τελικού προϊόντος.

Στοιχεία υπευθύνων του έργου

Υπεύθυνος επικοινωνίας BBTWIN

Raphael Garcia Communications Officer | REVOLVE raphael@revolve.media

Διαχειριστής έργου BBTWINS Daniel de la Puente Senior EU Project Manager | CTIC-CITA danieldelapuente@cticcita.es

> This project has received funding from the Bio-based Industries Joint Undertaking under the European Union's Harizon 2020 Research and Innovation Programme under grant agreement No 10102333





Figure 9 Press release in GR

PRESS RELEASE

δύο χρόνια μετά την έναρξη του, το έρνο παρουσίασε σημαντική πρόοδο. Συγκεκοιμένα, η εταιρία Sevisiofech, παροισίασε ένα ολοκλησωγένα σύστημα αγκλοποιμάτητας βασισμένο στην τεχνολογία τορόσιοστικώ σλουδών. Ιδικώ, αι νόλφιν λαταξούραι ποσοξετο τουτος κατανολικές τη δυνατότητα πρόσβασης σε πληροφορίες όπως η προέλευση των προϊόστων οι συνθέκες δαρίμουης των Τώρα. Απάρεματα που χρησιμοποιήθηκαν επά την καλλιέσμαι ενός άροφταν και ο μάνας τε σφολιαστικές ένων δίωδα.

Η υπεύθυνη ομάδαι για την αξοποίητη των υπολεμμάτων, CVR, αναποίνωσε ότι πατάφερε να μετατριψέει με επιτωξία την κοπρά, το οισά και τα μαλλά χοίου σε προϊόντα υψηλής προσιθέμωνης αδίας διπως κρατινή και τη βουηγανός αμοροάζιας σόσξουπατείτη για την ωνεία των δοκτών και βοσίερι για την κάλυψη των εκρεγεταιείνα πατιτότεων της μονάδας, λειτουργώντας με αυτό τον τρόπο στα πρότυπα της καλινής ποικορισμός.

Οι εταίροι που επικεντρώνονται στην εφοδιαστική αλωσίδα, VIT και VITO, κατάδεραν να αναπτύξουν μεθόδους κράβλεψης της ζύτησης των ζωστροφών και βόλτατοποίησης του χρόνου παράδοσης μεταξύ αφοσταιχούν και αιναιταιρισμού. Να αυτά του τρόποι οι συρό-πηντοροικές μονάθες μιαροφία εξοικονομήσεων χρόνα και περιτά ξέρδο, αλλά και να μικώσουν τις εκπομπές αερίων που προξοχονται από τις μπαφάρεις

Μια άλλη ομάδα, η PANOImagen, παρουσίασε το πρόγραμμά της «τηχνητής όρασης», όπου αξιαποιώντας δειδομένα μέσω αισθητήρων και χρησιμοποιώντας τηχνητή νοημοσύνη για την ιστόμης του βάρους των ζώων, απαλλάσεια τους κηνοτράφους από τη δυσκαλία ζύγισης κάθε ζώου έχομειστά.

Οι καινοπομίες που σχετίζονται με το έργο B8TWINS κυθωγραμμίζονται με τη στροτηγική ΄΄ Farm-to-Fark ΄΄ της Ευρωπαϊκής Ένωσης. Ένα από τα αναμιούμωνα αποτελίσματα του B8TWINS κίναι η σημαντική μείωση του κόστους μεταφοράς και πρώτων υλών, που αναμένεται να ότάσει έως και 25%.

Κατά τη διάρκεια της εκδήλωσης, η Απα Μ€ Μεζίας Sacaluga, μέλος του ειδικού εκτροπώπου της πολιτείας και καθηγήτρια του Πανεπιστήμιου του Vigo, τόνικει ότι η συλλογική προσπάθεια θα διαμοσφώσει το μέλλον της γεωργίας και της παραγωγής τροφίμων σε ολόκληρη την Ευρώπη.

TEAO2

BBTWINS

PROJECT № 101023334



KOMUNIKAT PRASOWY



Komunikat prasowy

Europejskie Innowacje Kształtujące Przyszłość Żywności

BBTWINS bedzie łaczyć najnowsze technologie, aby usprawnić łańcuchy dostaw w przemyśle agro-spożywczym.

Vigo, September 22, 2023. Projekt B8TWINS, złożony z liderów technologii z siedmiu krajów UE, zebrał się 12 i 13 września w nadmorskim miasteczku Vigo w Galicji, Hiszpanii, w celu przedysłutowania sposobu transformacji Europejskich gospodarstw rolnych.

Motywowany kryzysem klimastycznym i finansowany przez Unię Europejską, projekt ma na celu symulację procesów agro-spotywczych – uwzgledniając procesy pakowania mięsą, zbierania owoców z sadów, oraz lańcuch dostaw - odgrywają kluczową rolę w zwiększaniu efektywności i redukowaniu mamotrawstwa. Cyfryscja skłona omacza madluwoś wirtutalnej realizacji scenariuszy, które umożliwiają optymalizacją limit. produkcyjnych przynosząc oszczędności czasu i zasobów dla Europejskich rolników.

"Dla nas BBTWINS oznacza innowację, współpracę i wizję przyszłości. To, co czyni BBTWINS wyjątkowym, to połączenie Blockchain, Al, Big Data, oprogramowanie do przeprowadzenia analiz (eng. software analytics) oraz symulacji komputerowej, wszystko na tej samej platformie.

- Daniel de la Puente, Senior EU Project Manager, CTIC-CITA

Dwa lata od rozpoczęcia projektu, partnerzy z dumą podzieli się swoimi osiągnięciami. Zespół StelvioTech, przedstawił swój zintegrowany system śledzenia oparty na technologii blockchain, w którym konsumenci mogli skanować kod QR, aby dowiedzieć się o pochodzeniu produktów, informacje cenne dla poprawy dobrostanu zwierząt i bezpieczeństwa żywności w całym łańcuchu dostaw.

Zespół zajmujący się waloryzacją odpadów, CVR (Centro Para a Valorização de Resíduos), ogłosił, że udało im się skutecznie przekształcić świńską gnojowicę, kości i włosy w potencjalnie użyteczne produkty: keratynę dla przemysłu kosmetycznego, hydroksyapatyt dla zdrowia zębów oraz biogaz, który miał być ponownie używany jako paliwo w tej samej instalacji przetwórczej, zamykając pętlę w obiegu biogospodarki.

Partnerzy specjalizujący się w logistyce, VTT (Valtion Teknillinen Tutkimuskeskus) i VITO, opracowali skomputeryzowane metody prognozowania zapotrzebowania na paszę i optymalizacji dostaw pomiędzy gospodarstwami, co nie tylko oszczędza czas i eliminuje niepotrzebne koszty, ale także redukuje emisje pochodzące z transportu.

Zespół PANOImagen, wykorzystując sztuczną inteligencję stworzył system do szacowania wagi zwierząt hodowlanych, uwalniając rolników od fizycznego wysiłku związanego z ważeniem każdego zwierzęcia indywidualnie.

Te oraz inne innowacje związane z projektem BBTWINS są zgodne z strategią "od pola do stołu" (eng. Farm-to-Fork) Unii Europejskiej, będącą integralną częścią Zielonego Ładu UE. Jednym z najbardziej oczekiwanych rezultatów technologii BBTWINS jest znaczące obniżenie zużycia surowców i ilości transportu, które spodziewane sa na poziomie do 25%.

Kulminacyjnym momentem wydarzenia było wystąpienie Anny Ma Mejias Sacaluga, członkini specjalnej delegacji państwa oraz profesor inżynierii na Uniwersytecie w Vigo, która podkreśliła współpracę na całym kontynencie kształtującą przyszłość rolnictwa i produkcji żywności.

KONIEC



Słowa kluczowe

Digital Twins, blockchain, logistics, valoryzacja biomasy, sensorsy, symulacja, nawozy, białka, prztwórstwo owoców, przetwórstwo mięsa, surowce, sole, białko, przekąski, nutraceutyk, odpady, usługi cyfrowe, rozwój technologi, biogospodarka

O BBTWINS

O BETWINS Bie daard bijzin Twins (BITWIS) ma na ee'u opracowania cyfrawej platformy do optymalizetji procesów lakicacha waności agro-społywczego orza dostarczania wysościji jakości biomary do bioprzetwarzania, tworzęc w czesie tracejwilym cyfromy resilke flycznych procesów w przemnike za o spozywczym. BDINIO błodze równie bieczył Skouczuj histegrawy (BJ), aczerie mazarowenia kie tenti Razzył Z 13 partnezemi w Zwrajach, konorcytym BBTWITS biotecniaty do biotymety mowina ja biotyci wantości do uczywa do przeduku tokorcegoji i oceriel oprawnia gladziegi do kasiego surowca, a policyci jakowa wantości do uczywa do przeduku tokorcegoji i oceriel oprawnia gladziegi do kasiego surowca, a policyci majimali oswa eteisywności i minimalizować straty - bez wpływu na jakości.

Kontakt dla Mediów

BBTWINS Communication Contact Raphael Garcia Communications Officer | REVOLVE <u>raphael@revolve.media</u>

BBTWINS Coordinator Dariel de la Puente Senior EU Project Manager | CTIC-CITA <u>danieldelapuente@ciitcita.cs</u>

Projekt ten atrzymał finansowanie z Bio-based Industries Joint Undertalning w ramach Europejskiej umowy datacji Nr 10102333





Figure 10 Press release in PL



4. Policy Briefing

4.1. Project Information

4.1.1. TITLE OF THE PROJECT

The project is known as "BBTWINS" or "Digital Twins for Agrifood Value Chain Optimization and Quality Biomass Supply for Bio-Processing," and it aims to enhance agrifood value chain processes and ensure the provision of high-quality biomass for bio-processing.

4.1.2. FUNDING SCHEME

The funding has been provided under grant agreement No 101023334 by the Bio-Based Industries Joint Undertaking (JU), with support from the European Union's Horizon 2020 research and innovation program and the Bio-Based Industries Consortium. This backing underscore's the project's alignment with the EU's innovation and sustainability goals, marking it as a pivotal contributor to a greener and more efficient agrifood value chain.

4.1.3. COORDINATOR AND PARTNERS

With 13 partners in 7 countries from various sectors, BBTWINS has formed a dynamic consortium dedicated to enhancing resource efficiency in the bio-based industries. The consortium will focus on meat and fruit production, integrating the entire value chain from crop to final product, and determining the optimal approach for each feedstock to maximize efficiency while minimizing losses, all without compromising quality.

The consortium partners are as follows:

- 1. Coordinator: Asociacion para la Investigacion Desarrollo e Innovacion del Sector Agroalimentario Aidisa (Ctic-Cita)
- 2. Soltec Ingenieros (Soltec)
- 3. Panoimagen SI (Panoimagen)
- 4. Zabala Innovation, S.A. (ZIC)
- 5. Blaszczyk Aneta (Angaz)
- 6. Cluster Viooikonomias Kai Perivallontos Dytikis Makedonias (Clube)
- 7. Stelviotech Ug (Haftungsbeschrankt) (Stelviotech)
- 8. Porcino Teruel Sa (Portesa)
- 9. Teknologian Tutkimuskeskus Vtt Oy (VTT)
- 10. Agrotikos Synetairismos Velventou H Dimitra (Dimitra)
- 11. Vlaamse Instelling Voor Technologisch Onderzoek N.V. (Vito)
- 12. Centro para a Valorizacao de Residuos Associacao (CVR)
- 13. Revolve Media (Revolve Media)



4.1.4. PROJECT DURATION AND BUDGET

The project lasts for 48 months and has a total budget of € 5,258,380.50

4.1.5. SUMMARY FOR POLICY MAKERS

The EU agri-food sector is a key contributor to the European economy. Small company losses and inefficiencies in this sector accumulate, resulting in significant economic and environmental burdens. <u>Agriculture accounts for</u> <u>nearly one-third of all greenhouse gases (GHG)</u> and with the world population estimated to reach 10 billion by 2050, the system efficiencies of crop and livestock production must increase by 40% to meet this demand. Cutting edge technology presents an opportunity to advance the sector's sustainability through increasing efficiency and optimising value chains, helping to overcome these challenges.

<u>BBTWINS</u>, a Bio-Based Industries Research and Innovation Action project, has received €4.7 million with the aim of reforming the sector. The project will contribute to the EU's <u>Farm-to-Fork strategy</u>, a key component of the <u>EU</u> <u>Green Deal</u>, by developing **digital twins** or digital representations of agricultural value-chains to increase resource efficiency, reduce waste and enable a more resilient agri-food sector.

Coordinated by CTIC-CITA, BBTWINS will run for four years (2021-2025) with 13 partners from seven countries including research organisations, cooperatives, bioeconomy clusters and businesses – working together to optimise the food value chain.

The two innovative digital twins will cover use cases in Spain and Greece, for pork and peach production, respectively. These digital twins will follow a multi-actor approach, integrating all processing steps – from farm-to-fork – into a single platform. Work on these use cases will follow a holistic approach, including an environmental, social, and economic assessment. The digital twins developed will integrate technologies such as artificial intelligence (AI), Internet of Things (IoT), and software analytics, together with blockchain and strategic logistic solutions – creating a clear representation of how to optimise the full value chains.

BBTWINS will support Europe's fight against climate change by creating replicable technologies that improve agrifood efficiency while bolstering the EU's bioeconomy.

4.1.6. KEYWORDS

Digital twins, blockchain, logistics, biomass valorisation, sensors, simulation, fertilizers, proteins, fruit processing, meat processing, feedstock, salts, protein, snacks, nutraceutical, waste, digital services, technology development, bioeconomy



4.2. Objectives

The project's primary objectives are closely aligned with EU policy objectives and address pressing challenges within the agri-food sector. The EU agri-food sector has encountered significant losses in crop and livestock production due to natural disasters in developing countries, leading to inefficiencies in the food system. The demand for agricultural production is projected to increase by 40% between 2012 and 2050 to accommodate a growing global population, changing consumption patterns, and a shift towards sustainable and traceable high-value-added products. Furthermore, the sector faces economic challenges, an unbalanced value chain, and heightened societal expectations related to environmental protection and the provision of secure, nutritious, and healthy food.

The EU agri-food sector is of paramount importance within the European economy, being the world's largest producer of food and drink products and a significant industrial employer. To overcome the challenges it faces, the sector must undergo a transformation.

The project seeks to address these issues by advocating for a transition towards the bioeconomy and circular economy, which have the potential to create more sustainable and productive agri-food systems. The bioeconomy is recognized as a key element for contemporary and future society, and it represents one of the most thriving sectors within the European bioeconomy.

The agri-food and bioeconomy sectors are closely intertwined, and the quality and potential of the feedstock for bio-based operations are subject to the same unpredictable factors affecting the agri-food sector. Bio-industry players rely on biological resources to create innovative, greener value-added products, but the journey from concept to commercial product involves numerous actors, steps, and challenges that necessitate the integration of agri-food processes with biobased operations in a single value chain. Consequently, developing and commercializing innovative bio-based products and processes requires substantial Research & Innovation efforts and is influenced by factors such as feedstock availability.

Digitization has also entered the agri-food sector, though its adoption and use remain in the early stages. Technologies like artificial intelligence (AI) and the Internet of Things (IoT) are considered promising tools to enhance productivity, competitiveness, and the sustainable use of biomass and energy resources. Digitization holds the potential to address critical global issues, including climate change and biodiversity loss. However, the rapid pace of innovation in this field has led to a fragmented landscape of partial solutions, rather than comprehensive coverage of the entire value chain.

One pivotal innovation introduced by the project is the concept of a Digital Twin (DT). A DT is a digital representation of a physical system that allows for analysis, alteration, and testing without real-world interactions, avoiding negative consequences. It can replicate and monitor various aspects of the agri-food sector, from precision agriculture through IoT to the sensorization of crops and processes, and enhanced connectivity through satellite technology. Moreover, AI, big data analytics, digital twins, and distributed ledger technologies (DLTs) such as blockchain are used to optimize processes and enhance traceability in bio-based operations.



The BBTWINS project focuses on developing and validating two digital twins for meat and fruit production, following a multi-actor approach. These digital twins aim to integrate the agri-food value chain, from crop to final product, with the feedstock generated at every step. The project's key outcome is a logistical and technological scheme designed to increase the supply of quality feedstock, optimizing bio-processing operations throughout the year.

The digital twins developed in the project will incorporate IoT, AI, machine learning, and software analytics, along with spatial information and blockchain integration, creating a realistic digital simulation model. These digital twins will rely on the modelling and correlation of the quality and quantity of intermediate products and feedstock generated. Additionally, they will be capable of predicting optimal pre-treatment and paths for feedstock based on unpredictable conditions.

Overall, BBTWINS, combined with advanced enabling technologies, aim to increase biomass availability, resource efficiency, and sustainability for the bio-based industry, reduce biomass losses in the value chain, and enable more efficient pre-treatment and storage methods, thereby preserving valuable components.

The project's industrial commitment is underscored by a consortium consisting of research organizations, SMEs, a large industry player, and a cluster. This diverse partnership is dedicated to achieving the project's ambitious goals.

4.3. Methodology

The research methods and approaches used in the BBTWINS project involve a multi-disciplinary and integrated approach to optimize agri-food value chains in the meat and fruit sector.

- 1. Value Chain Optimization: BBTWINS focuses on optimizing two value chains, from crop production to the valorisation of residual biomass waste. The project aims to increase resource efficiency and follow a circular economy approach to ensure the continuous operation of bio-based processes throughout the year. This involves innovative processing of biomass, process optimization through digitization and enabling technologies, traceability using blockchain, and logistics optimization.
- 2. Interdisciplinary Collaboration: The project brings together a consortium of partners with expertise in various fields, including cultivation, food processing, mathematical modelling, Lean Manufacturing, logistics, and waste processing. The collaboration aims to enhance productivity at all levels of the value chains.
- 3. Lean Manufacturing Philosophy: Lean Manufacturing principles are applied for process optimization, which involves eliminating production processes that do not add value to the agrifood chains. This methodology includes the analysis and application of optimization techniques to reduce costs and processing times, with a focus on digital twins as a tool for digitalizing Lean Manufacturing.
- 4. **Multi-Actor Approach**: BBTWINS follows a multi-actor approach involving farmers, feedstock producers, technical partners for technology implementation, clusters, and final users of pre-treated residual biomass. This approach ensures collaboration throughout the research project period.



- 5. **Enabling Technologies**: The project integrates various enabling technologies, including digital twins, data modelling, artificial intelligence (AI), edge AI, big data, Internet of Things (IoT), blockchain, and virtual reality (VR). These technologies are used to visualize the entire value chain generated by the digital twin and to process data efficiently.
- 6. **Data Collection**: Data is collected from various sources, such as ERP systems, MES, MOM, on-premises data, and near real-time data. Crop-related data is collected using in-situ sensors, sensors on farming machinery, and remote sensing, including satellite data.
- 7. **Digital Twins**: Digital twins are developed and used in combination with other enabling technologies to optimize the entire agrifood value chains, covering aspects like crops, fruit processing, feed production, and meat processing. Digital twins are instrumental in improving process efficiency and traceability.
- 8. **Blockchain Integration**: Blockchain technology is used to ensure traceability and transparency of biobased operations and products. This technology is integrated into the digital twin framework to optimize waste management and logistics, track carbon footprints, and improve sustainability.
- 9. **Experimental Validation**: The project involves experimental validation in real scenarios, focusing on the meat and fruit sectors. The aim is to validate digital tools and innovative processes for treating feedstock, such as biomass stabilization and nutrient extraction.

4.3.1. OVERALL METHODOLOGY

The project is organized into phases, including data collection, value chain modelling, design and implementation of digital tools, and experimental validation. The methodology is aimed at achieving the project's goals and advancing the technology readiness levels (TRLs) of various components.

The overall methodology of the BBTWINS project consists of four main phases:

1. Phase I: Data Collection

- Conduct audits of processes and assess the needs of the value chains, involving site visits and gathering feedback from end users.
- Implement sensorization in livestock/feedstock stages and additional processes identified.
- Develop prediction models using AI/deep learning for fruit/crop yields and livestock weight.
- Characterize biomass at various stages of the value chains through physicochemical analysis.
- Create a data lake to store all collected information, integrating data from existing systems such as ERPs, MES, and MOMs.

2. Phase II: Value Chains Modelling

- Develop mathematical models for different processes within the meat and fruit value chains using data collected in Phase I.
- Focus on modelling aspects like heat and mass transfer, product quality, and reactions during processing and storage.
- Create models that describe the quality and phenomena occurring during the raw material reception, processing, storage, and final feedstock.



3. Phase III: Digital Tools Design and Implementation

- Develop digital twins of the value chains, integrating process models to simulate manufacturing and business processes.
- Create a shared interface for configuring process parameters and generating scenarios based on mathematical-statistical models.
- Implement a blockchain network to ensure secure, transparent, and reliable data exchange throughout the value chains.
- Integrate supply chain optimization tools, including route optimization models, into the digital twins.

4. Phase IV: Experimental Validation in Real Scenarios

- Validate the digital tools and processes in real-life scenarios, focusing on two use cases in Spain (pork meat processing) and Greece (fruit processing).
- Apply various treatments for feedstock processing and valorisation in these value chains.
- Achieve real-world validation of BBTWINS developments.

4.4. Key Findings:

Summary of the main results of the project and their significance.

Digital Integration: BBTWINS has been actively integrating advanced technologies like AI, IoT, and Digital Twins into agri-food processes. While the project is ongoing, early indicators show a notable enhancement in productivity and competitiveness. The digitization of processes is already reducing operational bottlenecks and improving real-time decision-making.

Resource Efficiency: By implementing circular economy principles, BBTWINS has seen initial improvements in biomass utilization and a reduction in waste and losses. These early results suggest a move towards a more sustainable and optimized resource use in the agri-food value chain.

Transparency & Traceability: The deployment of blockchain technology by BBTWINS is ensuring enhanced traceability of products, from farm to fork. Early consumer feedback indicates a growing trust in the transparent verification of food product origins, although these results are preliminary.

R&D Investment: BBTWINS has already made significant strides in advancing research in the bioeconomy sector. While the project continues, early findings include several novel research studies and innovative patents, contributing to the European bioeconomy knowledge base.

Capacity Building: Throughout the ongoing project, numerous stakeholders, including farmers and industry professionals, have engaged in targeted training sessions. Initial surveys post-training show improvements in digital proficiency and adaptability among participants.



Sustainable Practices: BBTWINS's promotion of sustainable farming practices is beginning to show a decrease in carbon footprint. Furthermore, early models suggest a meaningful impact in reducing waste directed to landfills, aligning with the EU's sustainable objectives.

Collaboration & Partnerships: BBTWINS has already established partnerships with multiple external organizations across various sectors and countries. The ongoing collaborations are yielding innovative solutionsPolicy Implications:

4.5. Policy Implications:

Digital Integration: The BBTWINS project emphasizes the importance of digitization in the agri-food sector. Adopting technologies like AI, IoT, and Digital Twins can enhance the sector's productivity and competitiveness. Policy frameworks must encourage the seamless integration of these technologies.

Resource Efficiency: Policies promoting resource efficiency and circular economy principles within the agri-food sector can lead to sustainable and productive systems. By maximizing the use of biomass and minimizing losses, policy initiatives can support projects like BBTWINS in their efforts to streamline the agrifood value chain.

Transparency & Traceability: The integration of blockchain technology ensures the transparency and traceability of the agrifood value chain. Regulations could be developed that mandate the use of such technologies to improve consumer trust and verify the origins of food products.

R&D Investment: Recognizing the bioeconomy as a thriving sector within the European bioeconomy, there's a need for continued investments in Research & Innovation. Encouraging cross-sectoral collaboration and funding similar projects can accelerate the shift towards a bio-based economy.

Capacity Building: The multi-actor approach of BBTWINS suggests that different stakeholders, from farmers to industry players, need training and capacity-building initiatives. Policies that emphasize education and upskilling within the agri-food sector can prepare the workforce for an increasingly digital future.

Sustainable Practices: The project's goals resonate with the global emphasis on sustainability. Policies that incentivize sustainable farming practices, reduce waste, and promote the circular economy can help the EU maintain its position as a leading producer of food and drink products.

Collaboration & Partnerships: The project underscores the importance of interdisciplinary collaboration. Policies promoting partnerships between sectors, countries, and industries can lead to innovative solutions addressing the challenges faced by the agri-food sector.

Data Collection & Security: With the increasing reliance on data for optimizing processes, it's essential to develop policies that protect the data's integrity and security while ensuring its free flow across the value chain.

BBTWINS

PROJECT Nº 101023334



The BBTWINS project, which focuses on the development of digital twins for meat and fruit production in the context of the agri-food and bioeconomy sectors, has the potential to significantly influence and inform policy in several ways. These findings can be instrumental in shaping policies related to agriculture, sustainability, innovation, and economic development within the European Union and beyond.

One key area where the project's findings can inform policy is sustainability and circular economy. BBTWINS aims to promote a transition towards the bioeconomy and circular economy. The project's findings can inform and reinforce existing policies or inspire the creation of new policies that support sustainable agricultural practices, reduced waste, and the efficient use of resources. Policymakers may need to address potential challenges related to regulatory changes and incentives to encourage the adoption of sustainable and circular practices in the agrifood sector. Policies can be developed to provide financial incentives, tax breaks, or grants to businesses that adopt circular and sustainable practices. Additionally, regulations that encourage the development of digital twins and the use of technologies like IoT and AI can be considered.

Another important policy area is research and innovation. The BBTWINS project emphasizes the importance of Research & Innovation (R&I) in the agri-food and bioeconomy sectors. Policymakers can use the findings to emphasize the need for increased R&I investments and collaborations in these areas. Ensuring sufficient funding and collaboration among research organizations, SMEs, and industry players may pose challenges. Policymakers can allocate funding and create platforms that encourage public-private partnerships and collaborations. This can include research grants, innovation hubs, and technology transfer programs.

Additionally, the project highlights the potential of digitization, including the use of technologies like IoT, AI, and blockchain, in the agri-food sector. Policymakers can support the adoption of these technologies to enhance productivity and sustainability. However, they may need to address issues related to data privacy, cybersecurity, and the digital divide, ensuring that all stakeholders can benefit from these technologies. Policies can encourage the responsible use of digital technologies while safeguarding data privacy and cybersecurity. They can also promote infrastructure development to bridge the digital divide in rural areas.

The BBTWINS project also underscores the importance of the bio-based industry and supply chain. It aims to increase the supply of quality feedstock and optimize bio-processing operations. Policymakers can develop policies to promote the growth of the bio-based industry and strengthen supply chain resilience. Ensuring the availability of feedstock and optimizing supply chains can be complex, requiring coordination among various stakeholders. Policymakers can facilitate access to financing for bio-based businesses, promote sustainable agricultural practices, and develop regulations that enhance supply chain efficiency and traceability.

Finally, the project involves a diverse consortium of stakeholders, emphasizing a multi-actor approach and collaboration. Policymakers can emphasize the importance of multi-actor collaboration and provide support for similar partnerships. However, ensuring effective collaboration and knowledge sharing among research organizations, SMEs, industry players, and clusters can be challenging. Policymakers can create incentives for collaborative projects, establish platforms for knowledge exchange, and facilitate cross-sector partnerships.

In summary the project's findings can influence or inform policy in several ways, including:



- **Providing evidence for the need for change**: The project's findings on the challenges facing the agri-food sector and the potential of the bioeconomy and circular economy to address these challenges can provide evidence for the need for policy change. This evidence can be used to advocate for policies that support the transition to a more sustainable and productive agri-food system.
- Identifying specific areas for policy intervention: The project's findings can also help to identify specific areas where policy intervention is needed. For example, the project's findings on the potential of digital twins to improve the supply of quality feedstock and optimize bio-processing operations can inform policy makers about the need to support the development and deployment of these technologies.
- **Providing guidance on policy design**: The project's findings can also provide guidance on how to design effective policies. For example, the project's findings on the importance of multi-actor collaboration and the need to integrate the agri-food value chain with bio-based operations can inform policy makers about the need to design policies that are inclusive and that promote collaboration across different sectors.

Potential benefits of the project's findings for policy:

- Increased sustainability and productivity of the agri-food sector
- Reduced reliance on fossil fuels and other non-renewable resources
- Creation of new jobs and economic opportunities
- Improved food security and nutrition

Challenges to implementing policy changes based on the project's findings:

- Overcoming vested interests and resistance to change
- Ensuring that policies are designed and implemented effectively.
- Securing adequate funding for the transition to a more sustainable agri-food system

Recommendations for policy makers:

- Support the transition to the bioeconomy and circular economy through policies that promote innovation, investment, and collaboration.
- Invest in research and development of new technologies and practices to improve the sustainability and productivity of the agri-food sector.
- Promote the adoption of digital technologies across the agri-food value chain.
- Create an enabling environment for multi-actor collaboration and the integration of the agri-food and bioeconomy sectors.
- Ensure that policies are inclusive and that they consider the needs of all stakeholders.

Overall, the project's findings have the potential to inform and influence policy in several ways. By providing evidence for the need for change, identifying specific areas for policy intervention, and providing guidance on policy design, the project can help to create a more sustainable and productive agri-food system.



4.6. Impact:

The BBTWINS project is poised to have a significant impact on policy, society, and the economy, aligning with EU objectives in various critical areas. This project focuses on improving feedstock availability and sustainability for the bio-based industry using enabling technologies. Here's a comprehensive overview of the expected impacts:

Policy Impact:

- **Contributing to EU Objectives**: BBTWINS directly supports EU goals in multiple domains, including economic growth, job creation, the circular economy, resource efficiency, climate change mitigation, security, agricultural modernization, and regional development.
- **KPI Contribution**: The project aligns with key performance indicators (KPIs) set out in the BBI JU's 2020 Annual Work Plan, such as creating new cross-sector interconnections, establishing new bio-based value chains, and validating innovative processing technologies.
- Environmental Sustainability: BBTWINS employs life cycle assessment (LCA) methodology to evaluate sustainability, specifically addressing greenhouse gas reduction in transport and raw material loss reduction.
- **EU 2050 Long-Term Strategy**: The project supports the EU's long-term strategy for a climate-neutral Europe by replacing fossil-based materials with bio-based, renewable alternatives.

Societal Impact:

- **Job Creation**: BBTWINS is expected to create new job opportunities, particularly in rural, coastal, and urban areas, contributing to economic growth and rural revitalization.
- **Skills Development:** The project enhances the integration of digital applications and human activities, improving safety, efficiency, and training in the agri-food sector.
- **Resource Efficiency**: BBTWINS will significantly increase resource efficiency, benefiting both society and the environment. This includes reducing raw material loss, improving sustainability, and optimizing resource consumption in agriculture and food processing.

Economic Impact:

- **Reducing Transportation Costs:** By integrating transport optimization models and digital twin technology, BBTWINS aims to reduce raw material transportation costs by up to 25% when operating at scale.
- Income Opportunities: The project is expected to increase income opportunities for biomass producers and stakeholders in the supply chain, fostering economic development and knowledge-intensive rural economies.
- **Market Expansion**: BBTWINS accelerates the market uptake of bio-based products and applications, contributing to the growth of the bio-based industry in Europe.
- **ICT Growth**: The project's success can position ICT providers as pioneers in the agri-food sector, tapping into the growing digitalization trends in the industry.

BBTWINS

PROJECT Nº 101023334



BBTWINS promises to make substantial contributions to the achievement of EU policy objectives, the betterment of society through job creation and skills development, and the stimulation of economic growth and sustainability. It stands to play a pivotal role in advancing the bio-based industry, promoting resource efficiency, and fostering rural development and economic resilience. Additionally, the BBTWINS Project will make an impact on the Agri-Food Sector and the Digitalization Trend.

The success of the BBTWINS project will not only bring about significant advancements in the agri-food sector but also set a precedent for the integration of digitization technologies. This will have far-reaching implications for the future, as detailed below:

- 1. **Digital Transformation in Agri-Food Sector**: BBTWINS serves as a pioneering initiative in the agri-food sector by showcasing the technical and economic feasibility of integrating digitization technologies such as IoT, blockchain, digital twins, and data analytics. This project demonstrates that ICT technologies can be instrumental in driving innovation and sustainability within the primary sector.
- 2. **ICT Market Opportunities**: The project opens a highly attractive market niche for European ICT providers, positioning them to lead the way in catering to the evolving needs of the agri-food industry. As a result, European ICT developers associated with BBTWINS can establish themselves as pioneer ICT providers for the agrifood sector, driving innovation and growth in this space.
- 3. **Growth Potential**: The increasing adoption of digital twins and related technologies in large industrial companies is a testament to the growing trend of digitalization. GARTNER, a reputable consulting firm, predicts that by 2021, 50% of such companies will use digital twins. Additionally, the Simulation and Virtual Reality market is expected to reach \$329 billion in 2022, registering a compound annual growth rate (CAGR) of 16.8% in the coming years. BBTWINS is well-positioned to capitalize on this growth, especially considering that traditional sectors like agri-food are just beginning to embrace digitalization.
- 4. Enhanced Waste Management: BBTWINS goes beyond its primary objectives by addressing waste management effectively. It introduces innovative stabilization, conversion, and down streaming processes for feedstock derived from meat and fruit processing waste. This not only contributes to resource optimization but also leads to the creation of new bio-based products, including bioactive compounds, nutritional foods, nutraceutical products, fertilizers, protein concentrates, and snacks.
- 5. Market Opportunities for Bio-Based Products: BBTWINS accelerates the market uptake of bio-based products and applications. It enhances the competitive landscape for knowledge-intensive rural economies, aligning with the strategic objectives outlined in the SIRA Strategic Innovation & Research Agenda (2017). This includes the goal of having 25% of chemicals and materials produced in Europe be bio-based by 2030, compared to 10% in 2010.
- 6. **Contribution to Sustainability and Inclusive Growth**: BBTWINS plays a pivotal role in building a more sustainable and inclusive future for Europe. By promoting the use of biomass in integrated biorefineries and the innovative utilization of side streams and bio-waste, the project aligns with the Circular Economy Package and the European Bioeconomy Strategy. It fosters resource efficiency, sustainability, and contributes to a renewable circular economy.



7. **Policy and Strategy Alignment**: BBTWINS aligns seamlessly with several EU policies and strategies, including the EU Bioeconomy Strategy, Farm to Fork Strategy, EU's 2050 long-term climate-neutral strategy, Green Deal, Food 2030 policy, and the Circular Economy Action Plan. This alignment ensures that the project contributes to the fulfilment of critical policy objectives in the European Union.

4.7. Contact Information:

BBTWINS Communication Contact Raphael Garcia Communications Officer | REVOLVE raphael@revolve.media

BBTWINS Coordinator Daniel de la Puente Director of EU projects | CTIC-CITA danieldelapuente@cticcita.es