



VANGUARD INITIATIVE

New growth through smart specialisation

Annual Report 2022



Introduction from the Chair

During 2022 East Netherlands, consisting of the provinces of Overijssel and Gelderland, was honoured to chair the Vanguard Initiative for the second year in a row. We are proud to have been active as chair in two consecutive years and look back on a year full of successes and new milestones that we have achieved together. This annual report provides an overview of the network's results and activities over the past year.

As a network, we again embodied and strengthened our profile of 'leading by example' in 2022. The interregional collaboration on new industrial value chains remains at the core of the Vanguard Initiative and is a unique selling point. Through the project "SME success stories" and our new pilot on hydrogen, we have given our regional SMEs, field labs and knowledge institutes new opportunities to be visible at the EU level and make the necessary interregional connections.

In order to further accelerate these innovations, we started the preparatory work to launch our own Interregional Funding Mechanism by 2024, laying the ground for developing interregional value chains. This mechanism will allow us to invest, within our pilots, in solutions close to the market. Together, we have taken the steps towards strengthening these pilots in 2023. We remain proud of having Wales and Scotland as active members in our network and pilots, allowing us to connect with regional innovation ecosystems beyond EU borders.

Furthermore, as a partner in the Committee of the Regions' and the Joint Research Centre's Partnerships for Regional Innovation, we are at the forefront of shaping the European Regional Development Fund for the next funding period 2028-2035. Through our partnership with Made in Europe/EFFRA, we are connecting our regional innovation ecosystems to this European partnership and are given the opportunity to provide input into relevant EU funding programmes.

Last, but not least, we were successful as regions individually and as a network in winning a large number of I3 projects. A very good result and the capstone of years of successful lobbying. Let's aim to give these projects the opportunity in the coming years to generate regional impact among our companies and capitalise on the power of the I3 instrument.

The list of people contributing to the Vanguard Initiative is too long to thank everyone individually. The East Netherlands region would like to thank all our colleagues and friends we have worked with these past two years: from Brussels-based representatives to employees, businesses and stakeholders in our regions. And finally, a special thanks and appreciation for this year's board, the secretariat, VPM and other Task Group-members, who in multiple ways have become our partners.

While the chairmanship of East Netherlands has come to an end, we will remain active members committed to bringing the work of the Vanguard Initiative forward. Only together we can succeed, so let's continue intensifying our cooperation in the years ahead.

Eddy van Hijum – Regional Minister of Economy, Finance and European affairs



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Task Groups' Activities

Policy Influencing Task Group

The main target of the TG is to influence the EU policy agenda by providing policy input material and organising policy influencing activities in those areas of policy that are most important to creating the conditions that enable our pilot projects to flourish. Several activities were developed along those lines in 2022, with the new European innovation agenda as focal point.

Collaborations with other networks have been pursued with a view to develop joint positions and mutually reinforcing activities, notably regarding the I3 instrument and the technology infrastructure topic (collaboration with EARTO).

As member of the I3 expert group which assist the EC in the I3 work programme preparation, VI has developed several inputs to feed in the discussion about the work programme preparation and the continuous co-design of the tool. 3 meetings of the expert took place in 2022, and the contribution of the VI were prepared within the PITG subgroup supporting the VI representative in his assignment. Inputs were also elaborated in close coordination with VPM, with the feedback of pilots involved in the first calls.

Another key EU priority for VI is the renewed EU innovation agenda. Ahead of the publication of the communication of the Commission, the PITG developed an input paper. It was sent as contribution to the call of evidence opened by the Commission. This paper also fed the content of the *Vanguard Initiative Innovation Policy Conference "Shaping an Ambitious EU Innovation Agenda to accelerate the twin green and digital Transitions"* organised in June 2022, as well as the policy discussion at the High Level Directors meeting.

In the context of the EU industrial Strategy, VI is member Industrial Forum. Ms Cristina Oyon from the Basque Country is the VI representative in this expert group. The Policy Influencing TG is supporting the VI representative for its active participation in this Forum. The VI is represented in different the sub-groups, dealing with different topics such as cross-border and cross-ecosystem investment needs, transition pathways, strategic dependencies, or the uptake of advanced manufacturing processes by EU industry. In 2022, the VI representative has pursued the follow-up of the work in this forum.

The PITG is also involved in the PRI project, participating in the activities organised by the European Commission. Finally, the VI supported in 2022 the [Research Manifesto](#).



Towards an integrated EU approach for interconnected innovation ecosystems and industrial value chains¶

The case for an ambitious and assertive EU industrial policy is stronger than ever. The urgency to achieve the twin transition can be found as cause of this need, alongside the weaknesses and dependencies of the EU competitive position that were shed light on by the Covid-19 crisis and the war in Ukraine.¶

Building on the updated EU industrial strategy from May 2021, the European Commission has proposed a set of new initiatives giving concrete expression to its revamped approach of industrial policy, e.g. Industrial Alliances, IPCEIs, the Chips Act, the Carbon Border Adjustment Mechanism, the regulation on Foreign subsidies, the [HERA](#)... The European Council leaders

Vanguard Pilot Monitoring

The Vanguard Pilot Monitoring (VPM) Task Group acts as a coordination mechanism providing horizontal support and oversight to the ongoing (more vertical) activities of the current VI Pilot Projects. VPM activities can be distinguished between those having a more internal dimension, and those with a predominantly external orientation.

On the internal side, VPM serves as a “safe space” for trusted mutual learning between co-lead regions who report on the progress of their Pilot Projects and on the difficulties they face in the further development. In 2022, VPM shifted from extensive Pilot updates to discussing each meeting one single targeted and clearly defined pilot management topic of common interest.

The Task Group now serves as a good platform between the association and the Pilot Projects to ensure all formalities (reporting, payments, etc.) are organized in a smooth way. A special point of attention has been the improvement of the communication with the regions’ representatives, aiming at providing a better insight in the participation of the regions’ stakeholders in the Pilots’ activities.

The new Pilot Projects on “Artificial Intelligence” and “Smart Health” are now fully integrated in VPM, who has also welcomed the latest addition to the VI Pilot landscape, i.e. the “Hydrogen” Pilot Project.

VPM plays a prominent role in the Vanguard Initiative’s overall activities on funding, both internally (looking at possibilities offered by the VI regions themselves) and externally (looking at possibilities offered by third parties, predominantly the European Institutions). The work related to the mobilisation and creation of financial solutions to support the Pilots and the implementation of their company oriented activities and demonstration facilities’ investment plans is key. This ever increasingly important horizontal issue for the Pilots, that needs to be completely aligned with the real needs of the Pilots, has taken much of VPM’s attention in the last year:

- VPM delivers the VI representative in the European Commission Expert Group linked to the “I3-Interregional Innovation Funding” funding programme. Pilots contribute to the positions defended in the Expert Group meetings, together with the colleagues in the Policy Influencing Task Group
- VPM actively supporting, via the Steering Group, the important work by the TG Cofunding & Cofinancing on the set-up of a “Interregional Funding Mechanism” between VI regions.

After having delivered an active support in the process leading to the signing of a Cooperation Agreement between VI and EFFRA (the association uniting the private partners of the Made in Europe partnership) – a collaboration so important for our Pilot Projects and their strategic positioning – VPM has continued in 2022 talks with other the European Partnerships such as “Processes4Planet” and “Data, AI and Robotics”.

In 2022 VI associated itself with the (winning) consortium of partners bidding for the tender to organize the “S3 Smart Specialisation Community of Practice” (S3 CoP). VPM has contributed to that effort. S3 CoP will be supporting the EC’s Smart Specialisation Platforms and their Partnerships, and therefor is of huge importance for VI – both practically and in terms of policy influence – who, via its Pilots, has been at the origin of these EC tools and instruments. S3 CoP will start activities in 2023.

Lead: South Netherlands

Pilot Lead Members: Auvergne Rhône-Alpes, Baden-Württemberg, Basque Country, Catalonia, East Netherlands, Emilia Romagna, Flanders, Lombardy, Malopolska, Norte, Randstad Region, Scotland, Skane, Slovenia, South Netherlands

Meetings 2022 : 7

Future of Vanguard

Year 2022 was a quite active one. The VI Board was very keen to put out strategic directions for VI for some years forward, and the Future or VI Task Group helped it in focusing on some specific activities, including preparing some brainstorming sessions focused on important issues for the future of the network. These sessions were particularly open and as the whole network was invited to participate. The turn out was significant - between 20 and 30 participants – and was higher than expected, meaning that the VI regions did and do care about the future of the VI.

Through these sessions, VI members attempted to find out a focus for VI, and to answer matters such as how to sharpen corporate VI governance, what is a long term goal for VI, how should VI be organized to be more effective, how can interregional fund(ing) be achieved, how many VI pilot should be in place, when to close one, etc. on the basis of all these questions and dilemmas discussed within the group, The Future of VI Task Group lead moderated a high-level quality discussion amongst the VI Directors during the High Level Directors Meeting 2022. The outcomes of the discussion were put among other ingredients in the VI Board’s strategic directions which were later discussed and adopted by the VI General Assembly.

All in all, a good exercise altogether resulting in good outcomes helping the VI regions to better care and direct the future of the VI. The next task for the VI FTG is to go through the VI Statutes and Internal Rules and open a discussion on some potentially necessary changes in order to make the VI functioning even more efficient.

Task Group Funding & Financing

In 2022, the main activity of this Task Group was the creation of the necessary conditions for the launch of the Interregional Funding Mechanism (IFM) project, subcontracted to IDEA Consult, aiming at the implementation, in 2024, of a new interregional funding instrument (or instruments) capable of supporting the core activities of VI's Pilot Projects.

This included the following tasks (among others):

- Define the objectives and scope of the project.
- Develop its terms of reference.
- Secure the respective funding.
- Support the launch of a call for a secondment to develop the project, among VI regions (with no success).
- Support the launch a public consultation to subcontract the project development.
- Support proposal evaluation and contract negotiation.
- General coordination of the project (together with VPM and the Board).
- Mobilization of the VI Pilots and the VI Regions to an active participation in the project (particularly the core regions). It was possible to mobilize 9 regions to be part of the core implementation group, plus 6 other regions that will follow the developments closely.
- Dissemination of information about the project and its main preliminary developments and results, internally and externally.

TG F&F also continued its work of identifying success stories and good practices of funding and financing policies, programmes and instruments, particularly at regional level.

Using also the work developed under the IFM project, the TG continue developing VI own « Big Picture » concept of the European funding and financing landscape.

Complementary, the TG actively engaged and collaborated with the VI Board and the other TG's, particularly with VPM and PITG, in all areas considered relevant to the VI objectives and action plan.

Pilot activities

ADMA Energy

The long-term goal of the ADMA Energy Pilot is the creation of new value chains in the growing offshore energy industry. ADMA pilot involves the following Regions: Asturias, Basque Country, Dalarna (and Mid North Sweden area), Emilia-Romagna, Flanders, Lombardy, Scotland. During 2022, new Regions decided to join the pilot: Friuli Venezia Giulia and Maloposka.

Lombardy and Emilia-Romagna regions are the new co-leaders of the pilot; the changes of leadership caused delays in the preparation and approval of the action plan 2022, which was finally launched in late spring. For the 2022 the financial management of the pilot has been assured by Vanguard Secretariat. External providers for technical assistance and coordination assistance have been appointed.

During the year 2022, several on-line coordination meetings have been organised to facilitate the implementation of the three demo-cases (Power transfer in the Sea; Joining of large-scale components; Next generation materials) and the organisation of other activities. ADMA partners also met the 9th of May in Santander (hybrid meeting) to define a common vision for ADMA.

In 2022, ADMA members took part to both online and face to face events. In particular: the meeting in Santander has been combined with the EU Brokerage Session Organised by DG MARE and the Atlantic Assistance Mechanism the 10th of May and the seminar on EU perspective on the Sustainable Blue Economy and EU Maritime Energy Strategy; ADMA partner presented the experience and contributed to moderate the matchmaking session. Moreover, ADMA participated at EWRC in October 2022 presentation given by Emilia-Romagna Region and Asturias (FAEN). Finally, ADMA pilot and Vanguard Initiatives were presented to a group of entrepreneurs interested to join the Vanguard Initiative, organised by the Urban Forum Association, which is an institution operating for Malopolska Region (Poland) at the beginning of December 2022.

ADMA members have investigated possibilities to design and submit projects proposals in the framework of the Interregional Innovation Investments (I3) Instrument (connected to two demo-cases: next generation materials and power transfer in the sea).

A first matchmaking activity to involve SMEs and large companies in I3 calls has been organised. 8 companies expressed potential interest and a collaboration fiche have been prepared and circulated among partners to verify collaboration potentials.

The first ADMA technical webinar was organised on December 14th, 2022, online. The main focus of the webinar was to discuss emerging challenges of the sector, to address transnational value chains and identify funding opportunities for demo case developments. The webinar served to exchange ideas and foster cross-pollination among involved participants within ADMA but also open the dialogue with new stakeholders within Vanguard Regions.

In the last part of the month, ADMA partnership started to collect manifestations of interest for the Study visit organised by Scottish on the topic “from fossil to renewable” in May 2023.

Artificial Intelligence

The Pilot has implemented a range of activities in 2022 along the lines of its strategic objectives as defined in the Action Plan 2022.

As one of the youngest Pilot of the Vanguard portfolio, the Pilot has used 2022 to better structure its activities and outreach. During 2022 the AI Pilot has supported three demo cases which have developed within the Pilot’s perimeter. This Demo-Case driven approach was instrumental to get regions onboard and stimulate interest during the pilot’s startup phase (2020 – 2022), during which additional two demo cases have been added to the Portfolio, while the number of participating regions increased during this time..

The detailed list of the activities is available in Section 3 of the present document. From a more general perspective, the main achievements of 2022 were:

- Organisation of the first in-person AI Pilot Annual Event on 29.09 and 30.09.2022 hosted by Steinbeis and with the presence of the AI Pilot booth at the Startup Summit BW 2022

- Finalisation of one successful project proposal (AI REDGIO 5.0) under Horizon Europe topic HORIZON-CL4-2022-TWIN-TRANSITION-01-06 which was initiated in the perimeter of the Pilot from Politecnico di Milano (Lombardy Region)

- Initiation of I3 proposal under the lead of Oost NL, originally planned to be submitted during the second cutoff date of 2022 and postponed to April 2023

- Initiation of Project Development Matrix to facilitate the inputs collection and the creation of consortium within the Pilot but also cross-pilot

- Organisation of more than 30 meetings, including the following three Steering Committee. A detailed list of the meetings organized is available in Section 2.2.

- 07.03.2022 Steering Committee I

- 21.07.2022 Steering Committee II

- 29.09.2022 Steering Committee III (Hybrid)

- Participation to the VI cross cutting project 3DP-AI-Nano "Challenge-Solution Camp" promoted by 3DP Pilot and supported by AI Pilot and Nano Pilot

Bioeconomy

Since its start in 2014, the Bioeconomy Pilot has been engaging in interregional cooperation to develop new value chains, shared innovation and regional economic strengthening opportunities by unlocking the potential of biobased resources.

Led by the Randstad and Lombardy regions, the Pilot promotes the acceleration of demo projects (TRL 7-8) focused on the production and commercialization of chemicals (e.g. coatings, adhesives, glues, lubricants), biomaterials (e.g. resins, plasticizers, fibers, bitumen, biopolymers) and biofuels (Bio-LNG) from the enhancement of circular bio-based raw materials.

During 2022, the Pilot devoted greater effort to validate the technical feasibility and the economic profitability of demo cases products (resins, fibres, polymers, biofuels) obtained from raw materials such as lignin pulp&paper streams, agricultural by-products as promising alternatives to fossil ones. The main achievement of 2022 could be summarized as follow:

Organization of matchmaking and partnership events brought together a community of experts in the field of bioeconomy across VI regions attended by 970 participants.

Deployment of the strategic business plan of the SMBio-LNG business model in Slovenia demonstrates the feasibility and profitability of the model tested in Lombardy and offers indications for attracting public and private investments.

Expansion of the biopolymers partnership by leveraging the Interregional Innovation Investment Program.

Developing a technical-economic analysis of the biopolymer business model demonstrating its sustainability in an interregional dimension.

Stimulate the creation of partnerships around Horizon Europe for upscaling the demo cases and the market uptake of their products.

Launching three new EU-funded initiatives (HempClub, RuralBioUp and Forest EcoValue projects) and cooperation with the Value Chain Generator Platform paves the way for systematically mapping the most promising business models in the Vanguard regions.

Validate at the industrial scale of two new pilot installations for the co-production of BTX (benzene, toluene and xylene) through biomass gasification and for the thermochemical depolymerization of lignin in combination with stepwise condensation.

Launch of four new European projects to implement demonstration and technological upscaling: Biorecepy, Life Viable, Lignicoat, Bright Coatings.

Enhance the lignin depolymerization pilot plant (LignoValue) toward the further scaling-up

Commercialized the first product, MPA, suitable for coatings, biocomposites and insulation foam, by the startup Relement of functional biobased aromatics.

Increase collaborations within the Chaplin program to drive the development of biobased asphalt and demonstrate the lignin bio asphalt at a large scale by building 25 road test sections with different asphalt compositions.

Contribute to the definition of a new cross-regional circular economy alliance and promote the visibility of the Pilot at the European level («Policy analysis of COVID-19 measures about the chemical sector in EU programmes» in Limburg, Asturias, Catalonia, Lombardy, Mazovia, Saxony-Anhalt and Wallonia).

Efficient and Sustainable Manufacturing

Since its start in 2014, ESM Pilot is working on conceiving and developing a European networked infrastructure of pilot plants in key-areas, dedicated to advanced manufacturing. During 2022, ESM activities will be managed in continuity with the previous years, exploiting the results of previous projects to start new ones and consolidating the ongoing activities, enlarging the industrial participation and commitment.

The main achievements of 2022 could be summarized as follow:

- *Consolidation of ESM demo-cases and related use-cases*

De- and Remanufacturing demo-case prepared and submitted an I3 proposal on batteries under the second call, continued its activities on the granted DigiPrime project and started the activities of the submitted and just started I3 DeremCo project, that exploits the results of H2020 FiberUse project. Digital Transformation demo-case progressed thanks to the activities developed within AIREGIO project and promoted the related Open Calls. It also started the preparation of the HE new project AI REDGIO5.0, in collaboration with AI Pilot, and started the HE project Circular TwAI. Polymer-based functional products demo-case organized the annual Smart Plastics International Congress and created the IPC 3D Plastronics Steering Committee to promote inter-regional collaborations. They are also working on the development and launch of the Global Polymers Platform. Finally, EFREFO demo-case worked inside the use-cases presented in the final 2021 ESM event, in particular identifying synergies and promoting collaborations among different projects and facilities.

- *Fostering new demo-cases or use-cases initiatives*

ESM organized a dedicated meeting on Circular Economy in textile sector in collaboration with Slovenia region and De- and Remanufacturing demo-case coordinator. The objective was to group all the relevant stakeholders interested to the topic, explicating the business case, describing the addressed products, identifying the available technologies and possible outputs, in order to set up a proper framework to exploit inter-regional synergies and align all the interested stakeholders. Within Digital Transformation demo-case, through the AI REGIO Open Calls, new possible use-cases have been explored.

- *Promotion and rationalisation of the participation to other EU initiatives*

ESM continuously monitored the activities ongoing in other synergic initiatives, in particular the S3Platform through the AI&HM, Wireless ICT and AMBP partnerships. ESM Pilot also worked to establish new collaborations, for example those with EEN and EIT Manufacturing, and supported the VI for the MoU with EFFRA ed P4P. The Pilot carefully monitored and supported demo-case actions related to the new I3 tool, also dedicating a proper space to this funding opportunity within the 2022 ESM plenary event. In addition, through AI REGIO and the new HE project AI REDGIO5.0, the EDIH initiative is continuously monitored.

- *Ensure an efficient and effective governance and outreach*

ESM facilitates the dialogue among new interested Regions and demo-case coordinators for their formal inclusion in the network. ESM also presented a SME Success Story for VI Communication Task Force, in order to attract and maximize SME involvement in the VI.

High-Performance Production Through 3D Printing

*"In 2022, the 3DP Pilot confirmed its ability to enable the **implementation of SMEs-led cross-regional projects in strategic fields, securing approximately 10.5 million grants for our projects !**"*

A. 3DoP - a 8 million € grant for SMEs' investment projects. The 3DP Pilot I3 proposal '3DoP' was selected for funding ! The Grant Agreement has been signed in November 2022. The project was kicked-off in January 2023. The submission of the proposal followed a 'bottom-up and open process', framed by general principles ('Packages of Investment Projects', 'supply-chain driven', 'addressing major bottlenecks and leading companies' needs'). The 3DoP project is:

- An approx. 14 million € project, with a grant of around 8 million € dedicated to directly fund SMEs-led innovation investment activities.
- A direct collaboration among 35 partners – out of which 24 SMEs and OEMs – originating from 15 EU regions (out of which 10 VI region members), with additional services to be provided to a broader set of partners in participating regions.
- 21 Letters of "Intentions to Invest" post-project (around min. 10M additional investments)

B. Other grants secured ! The VI 3DP Pilot was able to secure in 2022 additional grants for the development of projects within our democases/structural projects: e.g. IRA SME (Electronics), Trinity (Large parts), Cornet (Post Processing). In addition, relying upon our 'VI 3DP Pilot Funding Support Service', at least 8 distinct proposals for selected Horizon Europe IAs and RIAs have been submitted (results still pending) in 2022 as a direct consequence of the activities organised in 2022.

C. Deployment of 3DP-based solutions by SMEs. 9 SMEs-led demonstration projects have been implemented (i.e., prototypes being printed and tested) in 2021 and fully finalised in 2022: very positive results were achieved (which will ensure progress being made in our demo cases associated to the projects as well as, for the SMEs involved, in the deployment and commercialisation of innovative solutions)! More information (including results obtained) about the projects can be found [here](#).

“Through its revised structure of tools and services, the Pilot is generating more and more productive connections in the community.”

A. New features for the ‘Gateway to the EU 3DP market’. Our [online tool](#), offered to all our members, has been upgraded in 2022, with new features being included (*incl. a description of selected funding opportunities and matchmaking tools towards co-development of proposals*).

B. Other successful ‘connections-building’ activities. Various events¹ offered our members the opportunity to pitch ideas and generate connections, leading in some cases to bilateral activities privately funded.

“Relying upon its unique set of data, identifying strategic needs and gaps in the EU

demonstration services’ (relying upon the work done in the context of the 3DP Pan EU project), and is taking these insights into account when shaping pilot activities, towards the implementation of grounded strategies and visions.

New Nano-enabled Products

The mission of the Nano Pilot is to build new interregional value chains, as well as strengthening existing ones, that bring nanotechnology-enabled products or manufacturing processes to the market.

The pilot project aims to further develop open research facilities and to connect them with industrial actors for establishing high-TRL pilot production of nano-enabled materials, systems, and products.

During 2022, the Nano pilot activity was focused on two main goals: to support the ongoing demo-cases and carry out a study to identify new value chains starting from the innovation challenges and real needs of business actors in specific industrial sectors in the nano pilot member regions. The study identified 3 main sectors: Industrial electronics; Medical devices and Packaging. The next steps will be to intergrate these sectors in the pilot.

There are four active demo-cases in the Nano Pilot:

1. Nano-enabled Microsystems for Bioanalysis (NeMs4Bio), led by Flanders and East Netherlands
2. Printed Electronics on metallic 3D objects (Shapetronics), led by Wallonie

¹ Pitching session during plenary event in June 2022 (around 60 ‘in-person’ participants, 2 Webinars organised jointly with CECIMO (around 200 registered participants), etc.

3. Memes for nano-analitiX (M4NA), led by Emilia-Romagna
4. Structural Health Monitoring for composite materials (SHM), led by Navarra

The **NeMs4Bio demo case** aims to simplify the development for nano-enabled bio-sensor applications through lab-on-chip technology platform modules: standardized microfluidic and electronic building blocks that allow for engineering on demand into tailored applications for the bio-medical and agrofood sectors. The demo collects the interest from business actors on five potential use-cases to develop a project application under the I3 call. The topics of the use-cases are the following:

1. Gut-on-a-chip systems
2. Therapeutic antibody Production and development
3. Multiplex real time label free cell analysis
4. Exosome production purification
5. Point of care (PoC) liquid sample multiplex diagnostic

The **Printed Electronics on metallic 3D objects (Shapetronics) democase** is working on the development of technologies to integrate functionally printed structures directly onto 3D objects. It aims to develop a technology platform dedicated to benchmarking and exploring new printed fabrication process (subtractive and additive methods) to integrate electronics on large-area curved objects.

The **M4NA demo** aims to deploy Micro-Electro-Mechanical Systems (MEMS) technology for the integration of analytical functional nanomaterials in miniaturized innovative sensing systems. They are aiming to extend the use of the proposed technology to other partners interested in adopting MEMS technology and nanomaterials inside their R&D activities or product lines, fostering wider use and higher impact of the proposed MEMS/NEMS devices.

The **SHM demo** aims to integrate flexible micro/nano electronics within composite parts during the manufacturing process. The demo aims to overcome the limitations of size, derived from standard mounting technologies, by means of digital printing and innovative mounting approaches, and to create a network of manufacturers of composite materials, nanomaterials and printed electronics companies, to establish a workflow for the fabrication of new products.

Both demo-cases, with the external support of RINA, have elaborated their possible value chains and identified potential partners in VI regions, according to different fields of application, to further scale-up their technologies and to develop the business models for market uptake.

The total number of companies that was identified in the report elaborated for the M4NA democase is 33 from 12 VI Regions (Scotland, Saxony, Navarra, Wallonia, Tampere, Rastatt, South

Netherlands, Lombardy, Emilia-Romagna, North Rhine-Westphalia, East Netherlands, Baden-Wurttemberg).

The study that was developed for the SHM democase identifies 49 companies from 17 VI regions in total (Autonomous Province of Bolzano, Catalonia, Navarra, Pays de la Loire, Tampere, Asturias, Baden-Wurttemberg, East Netherlands, Friuli Venezia Giulia, South Netherlands, Wallonia, Lower Saxony, Flanders, North Rhine-Westphalia, Randstad, Lombardy, Emilia-Romagna).

Smart Health

The Smart Health pilot represents the direct follow up action to the Interregional Partnership for Smart Specialisation Strategies for Personalised Medicine (S3P4PM). Launched in April 2021, it is led by the same co-leading – Flanders, East Netherlands and South Netherlands – and bears the same ambition: To bring personalised medicine to the next level. More precisely, it aims to **transform the connected European value chains on personalised medicine and smart health, by combining biomedical, technological and data-driven expertise.**

The partner regions already established solid ecosystems. By bridging these ecosystems, a higher added value will be reached and the implementation of personalised medicine will be boosted, which will ultimately pave the way for an innovative approach for health and care in Europe.

During 2021, the pilot's efforts were primarily put on involving more regions – 13 member regions to date – and updating the scoping note created during the S3P4PM with the goal to provide a framework for the pilot activities and future developments.

During its second life of existence, the Smart Health Pilot focused on supporting the development of its four historic demo cases:

- We Are: Providing a personal digital safe for individuals' health data
- Topfit/ Diabetes on Return: European wide living lab for PM measures in different (chronic) diseases
- Mobile Health (r)evolution: Continuous, personalised health professionals' support through mobile health management for better self-management of chronic diseases and quality of life
- TRACE-MED: Inter-regional platform of translational research for new radiotracers synthesis and characterization, in the view of personalized medicine

In addition, the pilot also welcomed one new demo case:

- RegMed XB: Translational platform bringing regenerative medicine solutions to patients and creating a new industrial sector in the participating regions

Out of these five demo cases, two participating regions successfully applied for an I3 funding application, namely East Netherlands and Slovenia.

Building more visibility for the pilot was another key objective of 2022. In this regard, the smart health pilot partnered with the [JRC's Science Meets Region initiative](#) and organised a series of 5 physical and online events focused on the acceleration of the digital transition in health for the 2022 edition.

2022 as also the occasion to organise the smart health pilot's [first physical plenary meeting](#) on April 16th in Brussels, as a back-to-back event to the Horizon 2020 project [SAPHIRE's final event](#) coordinated by the Flanders region.

In addition, the smart health pilot organised an info day event to provide an opportunity to EU regions interested in joining the Pilot to learn about the Pilot demo cases and collaboration opportunities related to Personal Medicine. The pilot further participated in many events and workshops organised by other projects and initiatives such as ICPeMed and recently launched its dedicated [LinkedIn page](#).

Finally, in October 2022, the contract with G.A.C. Group to help with the management of the Smart Health pilot was reconducted for another year, until end of September 2023.

Hydrogen

The Hydrogen Pilot is a new development within the Vanguard Initiative ecosystem as it was formally established only in mid-2022. The Pilot, led by Lombardy, Małopolska and Slovenia, was able to encourage 21 other European regions to cooperate on hydrogen technologies and hydrogen solutions. The growing interest in hydrogen as a fuel of the future and its popularization in the context of alternative and eco-friendly source of energy have been reflected in this international project. The basic idea behind the Hydrogen Pilot is to lay strong foundation for European hydrogen economy and pool the knowledge, skills, and capacities of stakeholder to accelerate the transition to a more sustainable energy systems for industrial companies, including small and medium enterprises.

In the first half-year of its operation, the Pilot's administration structure was determined with the Steering Committee emergence as a governance body. Steering Committee members have decided to launch four demo cases which constitute the axis of the project: Standardization of *hydrogen* pipelines and vessels in *HYDRO-COMP*, Replacement of Fossil Fuels for Hydrogen in Industrial Processes, H2 Network and Portfolios and H2 in Shipping. The first phase of their development include organization of so-called kick-off meetings. During these online meetings demo case leaders present their vision and ideas how to develop a specific technology or knowledge project and how it can contribute to European hydrogen value chain. One kick-off meeting both for Replacement of fossil fuels for hydrogen in industrial processes and H2 Network and Portfolios were

finalized in 2022. The ultimate goal is to inform and enlist all interested regions before the next phase of demo case developments starts in 2023 which is a detailed mapping of activities and identification of possible interregional collaborations as well as funding instruments that would support these collaboration efforts.

In the context of HYDRO-COMP demo case regional parliament of Malopolska Region decided to establish a new interdisciplinary institution – Center of Innovative Hydrogen Storage Technologies to animate cooperation between representatives of science and business and to guarantee support for entrepreneurs who are interested in developing hydrogen technologies.

The most important event integrating all the Pilot's Partners was its [official inauguration](#) which was held in Kraków in September. The meeting attracted representatives of regions, research centers and think-tanks from the Vanguard Initiative regions. During the meeting the regions presented their hydrogen portfolios or strategies, thus it was possible to diagnose the points of contact for interregional, in-depth cooperation. The event was also combined with an international conference of "[Accelerate the process...](#)" series.

In the meantime, aimed at building expertise and network towards submitting proposals for different regional and international funding opportunities (e. g. I3, Horizon), the Pilot has started cooperation with a professional company which provides services related to preparing applications for above mentioned mechanism.

Vanguard Activities

Pilot Action on Partnership for Regional Innovation (PRI)

In 2022, the Vanguard Initiative successfully applied to the Pilot Action on Partnership for Regional Innovation (PRI), which is being run in cooperation between the European Committee of the Regions and the Joint Research Centre (JRC) of the European Commission. The application process to the initiative was led by the Basque Country, acting as a VI Board member 2022. The launch event of the PRI initiative took place on 17 May 2022, under the aegis of the European Commissioner for Innovation, Research, Culture, Education and Youth, the European Commissioner for Cohesion and Reforms, and the President of the European Committee of the Regions.

The Vanguard Initiative is now strongly involved in the next steps of this scheme, together with 38 other successful applicants; the VI Policy Influencing Task Group – represented by Wallonia, North Brabant and the Basque Country – recently met with the JRC about the VI experience in interregional collaborations : concrete examples, bottlenecks and needs. This interview was organised in the framework of a mapping exercise carried out by PRI experts led by Christian Saublens and Antonio Andreoni. Another interview of the VI with the JRC is already scheduled in March 2023.

SME Success Stories

The SME Success Stories is a support scheme launched by Vanguard in 2022 and managed by Steinbeis 2i GmbH with the goal of identifying and supporting strong and compelling SME interregional success stories across the Vanguard regions. The support scheme aim at creating significant and relevant SME and industry participation in Vanguard, as well as creating awareness for Vanguard Initiative among SMEs looking for interregional cooperation.

The SME Success Stories programme aimed at selecting the most promising interregional cooperation proposals thematically in line with the Vanguard Initiative pilots. Only proposals submitted by SMEs registered in Vanguard regions seeking cross-border cooperation with organisations located in other Vanguard Regions were considered eligible for the call.

In order to facilitate this strategic cooperation, the selected applications were offered the following:

- One-off innovation support voucher of 11.000€ to support their innovation process
- Dedicated matchmaking support leveraging Vanguard's Regions innovation ecosystems, if necessary
- Access to the VI Success Stories Portfolio and showcase of a unique alliance that gathers 39 of the most advanced industrial regions in Europe

The SME Success Stories 2022 in numbers:

- 14 eligible applications from SMEs located in Vanguard Regions
- The applications came from SME registered in Sachsen (1), South Netherlands (2), North Rhine-Westphalia (2), Emilia-Romagna (1), Norte (1), East Netherlands (2), Malopolska (1), Baden-Württemberg (3), Slovenia (1)
- The applicant SMEs are seeking collaboration with organisations located in the following regions: Autonomous Province of Bolzano/Bozen – South Tyrol; Autonomous Province of Trento / Trentino; Catalonia (2) East and North Finland; East Netherlands/Gelderland (2); Emilia-Romagna; Flanders, Malopolska, Saxony, Slovenia. Two application has no partner preidentified.
- The applications targeted the following Vanguard Initiative Pilots: 3DP Pilot (3), AI Pilot (3), Bioeconomy (1), ESM Pilot (2), Nano (2), Smart Health (3)

The following companies were awarded in the first edition of SME Success Stories:

Name of the Company	Region of the applicant company	Name of the project	Region of the partner company:	VI pilot area
Hydrumedical S.A.	Norte (PT)	Hydrumedical	Catalonia	Smart Health Pilot

Bond High Performance 3D Technology BV	East-Netherlands/Geelderland (NL)	Classification of Long Term Behaviour	East and North Finland (FI)	3DP Pilot
Remembrance srls	Emilia-Romagna (IT)	Generation of a ready-to-use Lipid Mixture able to boost the yield of recombinant protein manufacturing in Bacillus subtilis large-scale fermentations	Slovenia (SI)	Bio-Economy Pilot
AddCat B.V.	South Netherlands (NL)	Improved 3D metal printed catalysts	Autonomous Province of Trento / Trentino (IT)	3DP Pilot

One of the five selected companies (incontext.technology GmbH) has dropped out from the support programme. The 4 remaining applicants are due to submit their final progress report at the time of writing this report.

Events

To support the Vanguard Initiative's presence as well as strengthen the impact and visibility of the Vanguard Initiative's work in its member regions, in 2022 one regional conference and a Policy Conference took place in hybrid mode:

Vanguard Initiative Regional Conference on Hydrogen

The event was organised on 7 June by Małopolska with the support of Saxony and Lombardy. Hydrogen and related technologies were proposed as a response to the global crisis in the energy sector, rising electricity prices, and environmental pollution associated with obtaining energy from conventional sources.

[The recording is still available to watch.](#)

VI Policy Conference: Shaping an Ambitious EU Innovation Agenda to accelerate the twin green and digital Transitions

The conference held on 15 June, facilitated an expert panel discussion to reflect on how the urgent need to accelerate the green and digital transition calls for an ambitious and comprehensive EU innovation agenda. The conference put in light the pivotal role of EU Innovation ecosystem development and its fundamental interregional dimension and how it can be enhanced through an ambitious EU innovation policy aiming at building a successful EU industrial policy. [More information is available here.](#)

In 2022 Vanguard Initiative participated in two additional projects:

Science Meets Regions - VI Innovation Networking Initiative on the Acceleration of the Digital Transition in Health

In the framework of the “Science Meets Regions” initiative and with the support of the Joint Research Centre (JRC), a VI consortium made of East Netherlands, Lower Austria, and North East Romania coordinated by the VI Secretariat, organised a series of 5 international conferences (1 launch event, 3 regional conferences, 1 closing event) following the JRC’s Innovation Camp methodology. The events enabled to reflect on how to reduce the burden of traditional healthcare services and to assure the interoperability of medical data. The closing event, aimed at highlighting the results and delivering key takeaways from the 3 regional conferences.

[More information is available here.](#)

European Week of Regions and Cities 2022

The Vanguard Initiative boosting the EU Digital Transition by connecting Regional Innovation Ecosystems

The Vanguard Initiative workshop, held on 12 October, provided a valuable opportunity to discuss how European Regions are key drivers in the **digital transition** giving an insight into the importance of regional collaboration at the European level to accelerate the scaling of new digital technologies, products and services.

[More information is available here](#)

The Vanguard Initiative leading by example in the Green Transition

The seminar which took place on 13 October presented how Vanguard Regions lead by example in achieving the Green Transition and in supporting the EU Green Deal, as they collaborate on the basis of their S3 to develop their innovation ecosystem and new sustainable technologies. It provided a platform for VI regions to showcase some of their collaborative activities in the framework of the pilots in the sectors of Hydrogen, BioEconomy, and offshore wind Energy.

[More information is available here](#)



In addition, a Vanguard Academy on the **"New European Innovation Agenda: Fostering connected regional innovation valleys"** and **"State Aid on Important Project of Common European Interest (IPCEIs)"** was held in December 2022.