



Workshop on Business Models of R&D Digital Marketplaces

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1. Summary

This workshop brought established businesses, start-ups and current EU projects together, and enabled discussions about the opportunities and challenges of digital marketplace business in the materials science space. Both the established and emerging marketplaces had in common that their main asset was to take barriers away, so that ...

- Suppliers can find Buyers everywhere in the world
- Knowledge is made accessible to everyone who requires it
- Non-experts become enabled to do things that were traditionally only accessible to the experts

The established marketplaces, Materials Square, OneAngstrom, IdeXlab and Matmatch do provide sophisticated infrastructure to enable this in a safe and stable environment. They offer simple payment options (often similar to plans provided by mobile phone providers) and give a transparent overview on service included. Support is provided to help suppliers to provide their products (APIs, etc.) and buyers are aided with how to operate the platforms. Marketplaces, that offer services to non-experts, offer information, training and case studies, to enable onboarding to an offered service. All these marketplaces had in common that they experienced and understood the barriers their buyers encounter, and they could reason well why their offerings can break these barriers. It is pertinent, to understand the market and gain business skills and investment to develop further.

The EU marketplaces, VIMMP, MarketPlace, MARKET4.0, DOME4.0, and WeldGalaxy are in the fledgling stages of becoming business. However, they could convey why they are developing their platforms and who could profit how. When comparing the technical effort that feeds into developing a marketplace, we can see that a consortium can match a professional setting with ease. When it comes to marketing, we can see a gap open. In fairness, many H2020^a projects lead to a technology readiness level (TRL)^b too low to embark on the practical side of business. However, the theoretical side of business is well covered with documentation of key exploitable results, innovation continuation plans, and business models. During the workshop it became clear, that the EU projects need to invest time in finding users for their platforms and each member of the consortium shall involve their networks. The projects may have to identify persons who wish to carry the idea further and put all the effort in to move from idea/prototype to business. 3rd party funding of some sort will be necessary and potential investors will want to see evidence that a marketplace will work.

2. Report of Workshop

Gabriele Moggi (Goldbeck Consulting Ltd.) set the scene of the workshop with his talk “Digital Marketplaces for science-based industrial R&D”. He introduced marketplaces as structures that bring together suppliers and consumers of goods and services. The old traditional “forum” or “agora” has long been digitised and is accessible to everyone from everywhere at any given time. There is a range of modern digital applications of day-to-day live that transformed the e-commerce even further. E.g., mobile GPS location may reveal the location of a consumer and can link them to goods or services nearby. Amazon, AirBNB and UBER were mentioned as well-known organisations which scaled to global presence. Amazon distributes often goods for 3rd party providers who have no stone and mortar shop, AirBNB does not own a single room and UBER does not employ the drivers or owns the cars. Out of 125 firms that have received market valuations of \$1bn or above (so-called unicorns), 26% can be categorized as digital marketplaces.

^a Horizon 2020 is the eighth framework programme funding research, technological development, and innovation, which ran from 2014–20.

^b https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf

The marketplaces make money from commission (brokerage), subscription (memberships), freemiums, listing (of high value products such as cars or properties), and featured adds.

As examples, Science Exchange^c, Scientist.com^d and Kolabtree^e were introduced (see also Appendix).

Finally, Gabriele Moggi was introducing VIMMP^f and MarketPlace^g and highlighted that both materials modelling marketplaces are aiming to offer people/experts, infrastructure, tools, software, data, computing, etc. under one roof rather than separately. This makes the marketplaces more holistic in comparison to the competition.

2.1. Current Businesses and their business models

We invited four representants of current business and asked them to share their experiences with all the budding marketplaces we would like to see emerging out of EU H2020 projects.

Minkyu Park (CSO) took the stage for his company **Materials Square**^h, which is based in South Korea. Minkyu sees the necessity to bring computer aided research to break the habit of the “Edisonian approach” to innovation which follows the path of “trial and error”. He could evidence that with in-silico screening of materials for an electronic device only 4 out of 29 were deemed relevant and should be taken further for experiments. This approach would drastically lower the costs and time an organisation had to invest into their R&D. This raised the question, if the success of computer aided research is so evident, why do people not adopt it too readily? Minkyu identified three main barriers:

- Expensive equipment: HPC and software are expensive and require staff and infrastructure
- Physics Background: it would take 1 year to learn enough about computation for experimental scientists
- Linux is a complex environment and may put people off

Materials Square does remove some of these barriers. It is web/cloud-based and easy to use and reliable. To the customer, there is unlimited server time (no queuing) and there are “fancy” analysis tool to aid users with the postprocessing of their calculations.

Their offering is clearly stated on their website and comprises “pay only based on server usage”, “pay per phase diagram”, and two subscription plans for unlimited cloud computing resource use and for support, respectively.

Materials Square is well aware of their competitors and researched the value they can bring to their customers by offering case studies and knowledge how much money a user can save when using their services as opposed to a traditional setup. Their software is free and open source and they are offering LAMMPSⁱ, Quantum Espresso^j, and OpenCalphad^k on their platform.

Minkyu sees no problem with their customers using the cloud as their company are using Amazon which comes with a branding and data security.

^c <https://www.scienceexchange.com/>

^d <https://www.scientist.com/>

^e <https://www.kolabtree.com/>

^f <https://cordis.europa.eu/project/id/760907>

^g <https://cordis.europa.eu/project/id/760173>

^h <https://www.materialsquare.com/>

ⁱ <https://lammms.sandia.gov/>

^j <https://www.quantum-espresso.org/>

^k <http://www.openalphad.com/>

Stephane Redon (Co-founder and CEO) introduced his company **OneAngstrom**^l which is based in France. They develop SAMSON^m, an integrated platform for molecular design. The idea to the platform emerged again due to barriers to readily adopt modelling. Modelling covers many domains and thus requires experts, who do not necessarily speak the right language to onboard non experts. Also, the market is very dispersed and each modelling method comes with its own specific file formats. Hence, SAMSON is universal and offers a toolkit to build extensions to other software. It connects developers of modelling software to potential users. The developers would use the provided software development toolkit (SDK) to integrate their software to SAMSON. Tutorials how to do this, are provided and it may take software vendors only a few hours to integrate their software to the platform. The commercial suppliers then can earn money by selling the access to their module or they can sell cloud services via computing credits. OneAngstrom generate their revenue from selling computing credits on the cloud and offer a freemium and subscription plans. To finance their venture, OneAngstrom received national government funding but also attracts private sources who like their concept.

IdeXlabⁿ, an open innovation platform, was introduced by its co-founder and CEO, Jean-Louis Liévin. They bring together people who seek to find information and people who can provide it. It takes less than 24hrs to establish a contact. They can offer around 14m experts on any topic and they serve many industry sectors, e.g., Telecom, Health, Constructions, etc. their platform is simple to use and hosts a richness of information and also scientific publications and patents can be searched. This search is meta data driven but may require the user to purchase publications if they are not open access. Their web search is based on smart algorithms.

The idea to manifest this platform emerged in 2010 and a first release happened in 2017. IdeXlab used consulting to better understand the market they are serving and in 2021 they plan to optimise their services even more. A customer can explore, validate idea, recruit experts and there are also sources to look into business intelligence, marketing, etc. Individual subscription service may start from €50-€200/month and experts can be hired on a pay-as-you-go scheme. IdeXlab sees knowledge as an asset and encourages experts to charge an appropriate fee. Marketing is key for the platform and the advent of new services can lead to even more international interest in their service. Investor funding requires the presentation of clear KPIs to relate opportunities to investors.

At this time, IdeXlab has 10 FTEs and is self-funded. ideXlab is planning a Series A this year to increase their marketing effort to drive business forward.

Last but not least, **Matmatch**, was presented by Manuel Geitner, the Chief Product Officer. Matmatch enables their clients to find and evaluate materials in their all-in-one platform. Their vision is to offer a comprehensive database and provide their users with the best materials for their goals. Matmach has 2-2.5m uses per year out of which 30% are registered users and 70% are unique visitors. They partner with suppliers (listing model) and offer in return useful data about the buyers with the intend to match supplier and customer even better. The knowledgeable user can find materials via the input of certain properties and the less-expert user is provided with mouse-over help and can self-educate with an “education block”, and study information provided by technical writers and case studies. A big trend is to look into sustainability of materials and thus, substituting current materials.

Suppliers are very interested in buyer’s behaviour and deduct therefrom insights of how a user can be best served. Also, it is of interest to see, how many competitors are contacted – suppliers aim to make their businesses smarter and findable. Matmatch have APIs and could be interested to see how their service could integrate to other suitable environments.

^l <https://www.oneangstrom.com/>

^m <https://www.samson-connect.net/>

ⁿ <https://www.idexlab.com/>

2.2. Emerging marketplaces and business models

The next section is dedicated to Marketplaces that are emerging from EU H2020 projects.

Gerhard Goldbeck, the managing director of Goldbeck Consulting Ltd., introduced the two virtual materials modelling market places, **VIMMP**^f and **MarketPlace**^g, which he introduced as materials modelling marketplaces for increased industrial innovation. (Goldbeck & Court, 2016) evidenced in their paper that materials modelling has a large ROI for manufacturing and materials industry, which is documented in many project examples. One can accelerate the time a project takes, save R&D costs, and profit from a lower attrition rate. Thus, there is a strong motivation to making modelling, data (Goldbeck & Simperler, 2019), expertise, etc., more accessible. There is an appetite to access applications and disparate databases and to search databases of experts, translators, software solutions, show cases and use cases. Some industrial users advocate a seamless integration of existing materials modelling solutions, open simulation platforms (OSP) and materials data from disparate databases into advanced materials modelling workflows.

There is substantial market size for Materials Modelling which was estimated to be about €340m. (Goldbeck & Simperler, 2020) In comparison, the Computer Aided Engineering (CAE) market size is about €6bn and if add Computer Aided Design (CAD) to the mix, we reach about €18bn. On the materials modelling software market there are more than 70 providers out of which 80% are small enterprises. The latter represent nearly half of discrete market by value. In addition, there are about 50 free and open-source Software codes, which are costing about €30m/a and are funded by grants etc.

The problems, potential user may face, are:

- Exploring materials modelling information and options is arduous, as the information is scattered.
- Access to new software requires high effort for research, purchase and installation, often inadequately high when only tested within a study.
- Setting up and managing complex simulation workflows requires high effort, especially with codes from different providers
- Access to computational resources and running simulations when not available internally has high contractual and technical barriers (code installation, simulation set up, etc.)

The problems, potential providers may face, are:

- Lack of marketing and distribution channels.
- Lack of hosted environment for novel APPs, also for academic providers.
- Going beyond point solutions is difficult for small providers.
- Translator/consultant – lack of industry collaboration space.

MarketPlace and VIMMP aim to offer knowledge apps so users can search for modes, tools, experts and data. These marketplaces also will offer support for databases exploration and multiple simulation services. Basically, their currently value proposition lies in overcoming the scattered landscape of modelling (and data and training) resources and be a true “One stop shop”. A customer looking for modelling resources will be able to find dockerised and cloud deployed ‘ready to go’ software and workflows. Collaboration with experts is key, so the marketplaces will be places to find experts and work with them. It also will be an asset if the can server as places to deposit and pick up workflows. In the long term, future value proposition could/should include the removal of barriers to trials, installations and licensing of software and the removal of purchasing and admin barriers.

Revenue streams may be based on:

- Commission: Typical for science R&D marketplaces is 5-10% commission, depending on service level provided by marketplace (e.g., purchasing integration)
- Membership: Simplest model to administer, annual fees to enable a certain level of functionality for a company.
- Advertising fees: Possible income stream once marketplaces are widely used
- Listing fees: rather unlikely since marketplace requires as many providers as possible
- Grants: Potential for further EU projects involvement
- In-kind contributions: Technology partners to marketplaces may contribute no-fee background IP

Hence, if these virtual materials modelling market places take a 5% market share of €340m, we are looking into €17m; if 5% commission is charged on these €17m, one is looking into an income of €850k/a. Marketplaces will need staff to run them so one has to consider 1FTE for platform development and maintenance, 1 FTE for services and support, and one 1 FTE for business development, membership maintenance, legal issues, etc. If we assign €150k per person (including overheads) the minimum staff costs will be about €450k/a. Of course, the actual infrastructure such as servers, etc. will add more expenses.

For these particular business venture, there are the following challenges:

- Bridging Valley of Death after project ends
- Legal entity required (need to identify partners)
- Relatively small market size
- Many codes to support
- Persuading providers to trade and license on the marketplace.
- Retaining business on the marketplace (after initial contact is made, no more need for marketplace)
- Cloud based systems not yet widely accepted

The current solutions for combating the challenges could be:

- Find supported by several project partners' organisation
- Use established entities, such as EMMC ASBL^o, as a bridge.
- Widening market to data and into engineering
- Become a 'library of codes': Public support (PPPs)
- Going from 'many to one' supplier to industry increases the market for providers that participate
- Purchase integration (see ScienceExchange example in Appendix 2) means businesses prefer transactions via marketplace.
- Cost of ownership drives cloud solutions, which can also install behind firewall and thus more palatable to sceptics.

MARKET 4.0^p, a multi-sided business platform for Plug and Produce Industrial Product Service Systems was presented by Lorenzo Sutton (Senior Researcher at Engineering Group^q). The idea is to enable production equipment and service providers to connect (B2B) and work together with manufacturing companies. Three production equipment marketplaces are connected, and these are Metal Processing (marketsize of about \$254.7 bn), Plastics and composites processing (marketsize of about €15-18 bn) and high-tech production equipment (electronics manufacturing, marketsize of about \$602bn with an expected growth to \$897bn by

^o <https://www.emmc.eu>

^p <https://cordis.europa.eu/project/id/822064>

^q <https://www.eng.it/>

2026). 10 SMEs are invited to participate and ‘connect and produce’ through the MARKET4.0 and they can have a share of €2.35m funding.

The challenge is to find a joint centralised exploitation strategy, but still cater for an individuals’ exploitation vision. They target SMEs and want to help them to globalise and expand their horizon. The issue is to gain the trust of the individuals for MARKET4.0, They follow the Industrial Dataspace Guidelines (IDS)^r and GAIA-X^s. They use APIs to enable the onboarding of new partners and develop and support APPS for both suppliers and customers. MARKET4.0 has to offer IPR management to monitor and enable agreements between two businesses. All these efforts shall keep the marketplace open, flexible, and easily accessible, facilitate value chain creation and have a transparent digital ecosystem.

DOME 4.0^t, an ecosystem for data prosumers^u and data service providers was presented by Amit Bhawe (CEO of CMCL Innovations^v). The idea is to semantically enrich data which are abundant in data lakes or warehouses and make them ready for IoT. The marketplace shall enable interoperability and offer ML and data curation tools. It is of course possible to access data in a silo, but different APIs would have to be developed. This is similar to accessing a power socket using a variety of adaptor plugs. DOME 4.0 will develop the universal API to access data and enable a digital collaborative ecosystem, where data providers, owners and users find knowledge and intelligence. Nine showcases will demonstrate how the developers envisage DOME4.0 to functions. CMCL has developed Marie^w, a proof-of-concept Question Answering system for accessing chemical data, for example. DOME 4.0 will monetise transactions but will have to carry the costs for the processing and the managing of data. Also, a decentralised solution for data IP has to be found.

WeldGalaxy^x, a scalable B2B online platform that connects global buyers with the EU sellers of welding equipment (arc welding) and consumables, was presented by Xenia Beltran Jaunsarás (Senior Project Manager and Head of Big Data at Universidad Politécnica de Madrid^y). The product and the in-depth knowledge are an asset of the EU sellers and the data-driven platform will offer “innovation as a service”. The platform itself is in the cloud and is using blockchain technology (Conway, 2020). Several tools have been developed, such as blockchain tenders, a chatbot, smart services, simulations for non-specialists, and metadata-based templates. A specially developed ontology aids with providing a framework for welding concepts and materials. The platform also comprises data analytics to learn about trends the buyers are following. Welding is a complex process; it does not only require the core equipment and the materials, but also safety equipment, life cycle management, or information about the carbon footprint of the welding process. The process requires also electricity; thus, by providing relevant data, WeldGalaxy can aid with saving energy and costs. The consortium sees their strength in serving a niche market, but offering all assets in one place. During the WeldGalaxy Project, the service provided is free of charge.

2.3. Venture Capitalist perspective, Kurt Stokbro (Stokbro Invest)

Kurt Stokbro, based in Denmark, gave insight into his curriculum that led him from an academic career to becoming an investor. Kurt recognised quite early that Semiconductors became smaller and smaller and that modelling could provide vital information to the industry. He educated himself about business in general and entered a competition. He won it, and got access to mentors. His first company, Atomistix, had €0.5m seed funding, €1m Series A, and €3M Series B financing. It became obvious, that with higher funding volume equity had to be given up. However, his venture was short lived as the company concentrated on growth rather

^r <https://opcfoundation.org/markets-collaboration/ids/>

^s <https://www.data-infrastructure.eu/GAIA/Navigation/EN/Home/home.html>

^t <https://cordis.europa.eu/project/id/953163>

^u A prosumer is an individual who both consumes and produces data, in this case.

^v <https://cmclinnovations.com/>

^w <https://kg.cmclinnovations.com/services/marie>

^x <https://cordis.europa.eu/project/id/822106>

^y <https://www.upm.es/>

than rentability. Kurt, still believing in his idea, learned from his past and started a company called QuantumWise, build it up to 35 employees and sold it in 2017 to Synopsys.^z He states, that *“5% of the success lies in your idea, but 95% is in the execution.”* QuantumWise was set up as a lean organisation^{aa}, concentrated on license sales rather than services. He advises to be 90% sure that one is ready to sell their company. Acquisitions require patience, leadership, exchange of proprietary information, money.

After being a successful entrepreneur Kurt is, at the time of this report, investing in six companies. To get him interested, companies should ...

- ... have a business area he understands
- ... have a product he can try
- ... ideally be B2B
- ... enter a growing market
- ... be unique
- ... have patents
- ... have knowledge about their competition
- ... have a clear owner, with a clear vision he could believe in
- ... have customer traction
- ... have similar ideas about the amount of investment.

Typical investments can be €50k as seed funding or several €100k for more mature companies with a well-documented revenue stream over several years. Kurt has close contacts to universities in his home country and follows development there, and he also is part of an investor group, to whom business ideas can be showcased.

Kurt gave some sound advice to the emerging marketplaces from EU H2020 projects. He sees EU funding as very good for reaching a low technology readiness level (TRL) and manifest an idea, but then the project consortium had to agree on persons, who are willing to start a business and take on these 95% of execution. As an investor he would then need to see a critical mass of users. Thus, the consortium members of such a marketplace project should activate their networks and get users on board. He believes in the well-tried approach of phoning up people and talking directly to prospective users. He also advised to concentrate on a niche market, and to go *“deep not broad”*. This may reduce the competition. The EU marketplaces also should keep in mind that building it will be the lesser cost; the highest cost will be the marketing to get the critical mass of people to make it viable.

3. Conclusions and Outlook

From the workshop we can derive the following to-do list for emerging marketplaces:

- Find users during the project duration, as infrastructure alone will not be seen viable by an investor.
- Be aware that there are established marketplaces who have infrastructure that sellers and buyers got used to. They will expect you to offer the same in terms of professional APIs, training, payment schemes, support, easy onboarding, etc.
- Understand the market and your competitors well, and find a niche you will thrive in.
- Define a clear owner of the marketplace as investors are not likely to talk to a whole EU consortium.

^z <https://news.synopsys.com/2017-09-18-Synopsys-Strengthens-Design-Technology-Co-Optimization-Solution-with-Acquisition-of-QuantumWise>

^{aa} <https://www.lean.org/whatslean/>

Some workshop participants voiced a need for a marketplace of marketplaces for materials modelling, materials data, data, processes, etc. so that a single-entry point could lead a buyer to several services.

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Disclaimer

All information contained in this study and any opinions expressed in it are intended to convey the status of and some insights into current marketplaces, the visions of EU projects and the insight of an investor but not to comment on an organisations' (financial) performance. All statements of fact, opinion, or analysis expressed in the report are those of Goldbeck Consulting Ltd. The information used and statements of fact made are not guarantees, warranties or representations as to their completeness or accuracy. Goldbeck Consulting Ltd assumes no liability for any short term or long terms decision made by any reader based on analysis included in this report.

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Acronyms

API – Application Programming Interface

ASBL - Association sans but lucrative (non-profit Organisation)

B2B – Business to Business

CAD – Computer Aided Design

CAE – Computer Aided Engineering

CEO - Chief Executive Officer

CSO – Chief Scientific Officer

EMMC – European Materials Modelling Consortium

FTE – Full-time Employee

GPS - Global Positioning System

H2020 - Horizon 2020

OSP – Open Simulation Platform

PPP – Public Private Partnership

R&D – Research and Development

SDK – Software Development Kit

TRL – Technology Readiness Level

VC – Venture Capitalist

Appendix 1: Workshop Agenda

Online, 25th March 2021

9:30 – 9:45 Welcome and introduction of participants

9:45 – 10:00 Digital Marketplaces for science based industrial R&D presented by Gabriele Mogni (Consultant at Goldbeck Consulting Ltd)

10:00 – 11:00 Current Businesses and their business models (10 min presentation + 5 min discussion)

- Materials Square, presented by Minkyu Park (CSO)
- OneAngstrom/SAMSON, presented by Stephane Redon (Co-founder and CEO)
- ideXlab, presented by Jean-Louis Lievin (Co-founder and CEO)
- Matmatch, presented by Manuel Geitner (Chief Product Officer)

11:00 – 11:15 Break

11:15 – 12:15 Emerging marketplaces and business models

- VIMMP and MarketPlace, presented by Gerhard Goldbeck (MD of Goldbeck Consulting Ltd)
- Market 4.0, presented by Lorenzo Sutton (Senior Researcher at Engineering Group)
- DOME 4.0, presented by Amit Bhave (CEO of CMCL Innovations)
- WeldGalaxy, presented by Xenia Beltran Jaunsarás (Senior Project Manager and Head of Big Data at Universidad Politécnica de Madrid)

12:15 – 12:45 VC perspective, Kurt Stokbro (Stokbro Invest)

12:45 – 13:30 Discussion on key topics: funding, business models that work in materials science, size of market etc.

Appendix 2: Marketplace businesses not represented at the workshop

The following marketplace businesses have also been looked into for the purposes of the workshop.

- QuestPair
- Kolabtree
- Materials.zone
- ScienceExchange
- Scientist.com

QuestPair

- QuestPair^{bb} describes itself as a platform “where companies and organisations can exchange knowledge, equipment, data and materials with scientific experts”. It enables “companies to post scientific needs, invite experts and start projects.”
- It is estimated^{cc} that QuestPair could potentially facilitate around 6000 years of project work within the next 6 years, while reaching yearly revenues of ~€40 million.
- Payments and Fees^{dd}: Signing up for an account is free of charge. In addition to the free subscription also a premium subscription is offered which offers lower commission fees on projects. After a client and scientific experts have completed negotiations, the client can pay project funds into a secure project account (escrow account). It is also possible to split the amount in multiple tranches with a date for each when the funds can be released to the expert, for example when certain milestones are reached. Both clients and the expert(s) pay a project fee that is a percentage of the project budget. The amount of the fee depends on the project budget and the subscription type and ranges from 1.25% to 10% for both client and expert.

Kolabtree

- Kolabtree^{ee} is a platform, where freelance scientists can offer their services and a transaction fee is charged.
- Over 6,000 freelance scientists from 131 countries have registered with Kolabtree. These freelancers offer a broad range of advanced services, including data analytics, scientific writing and experiment design, to provide small businesses and research organizations with the specialized skills and experience required for their projects. Based in London and established in 2015, Kolabtree has supported a total of 2,400 projects which, in many cases, resulted in the development of a new innovative product or arrival a reliable research conclusion.

Materials.zone

- Materials.Zone^{ff} addresses data management and collaboration bottlenecks in materials research. By creating a platform to automatically index and secure lab data, and the intellectual property (IP) rights related to its discoverers, vast amounts of research data that would be otherwise lost or hidden in exclusively academic publications, has become accessible to industry users and clients. The unique data the platform offers allows users to cut down on time and R&D costs for new innovative materials development efforts.
- A marketplace is being built to allow labs to monetise their data easily. The data can already be uploaded and indexed with the current platform, but the value of the platform as a whole will be

^{bb} <https://questpair.com/>

^{cc} <https://cordis.europa.eu/project/id/876127>

^{dd} <https://questpair.com/faq/>

^{ee} <https://www.kolabtree.com/>

^{ff} <https://www.materials.zone/>

exponentially increased when that same data can be searched by potential buyers, and purchased instantly through the platform itself. In order to establish and implement these capabilities, Materials.Zone is building on the wave of innovation surrounding the blockchain technology, which will eventually allow the company to achieve its original goal: the establishment of an Open Science Economy.

ScienceExchange and Scientist.com

- Science Exchange^{gg} and Scientist.com^{hh} are scientific research outsourcing platforms mainly focussed on the Life Science industry. A customer can either offer a service or is looking for a service. Say, a customer is looking for 3rd party lab facilities, then they choose the most suitable one, and request a quote. If the lab facility confirms the order, the customers pay for the service through the website. Thus, the platform providers can then take a cut from the transaction. A key feature of these marketplaces is their strong payment system integration, so-called Source-to-pay systemsⁱⁱ.
- ScienceExchange offers their mainly pharma and biomedical customers a quick search, order, manage, pay service and consolidates all legal terms and conditions into a standard one. For undecided customers a concierge service can be employed to aid with the selection process. Science Exchange would then take a certain percentage of each transaction as their commission.
- Scientist.com (formerly known as Assay Depot) is a network of public and private e-commerce marketplaces that connects buyers to sellers of scientific research services. In 2020, it saw a 55% increase in orders from last year and they earned the #1 Fastest-Growing Company in San Diego.

^{gg} <https://www.scienceexchange.com/>

^{hh} <https://www.scientist.com/>

ⁱⁱ A next-generation operating model for source-to-pay | McKinsey. <https://www.mckinsey.com/business-functions/operations/our-insights/a-next-generation-operating-model-for-source-to-pay> .