Introduction to this overview

In a constantly evolving world, even a traditional sector such as real estate changes and innovates. In our view, the future of real estate is directly linked with innovation. The startups of today are the potential industry leaders of tomorrow. Incumbent firms that want to not only survive, but also thrive, should constantly follow developments and trends of these innovations and startups as there are numerous lessons to be learned.

This document provides examples and insights into the innovations and startups that might shape the future real estate landscape. Startups have been categorized by several innovation topics based on current market trends. A few examples include the role of real time data analytics, smart cities and the application of virtual reality to take the real estate sector to the next level.

The information provided for each startup includes key information such as name, country of origin, starting year and website details. Furthermore, the amount of FTE’s shown is an indication of the phase in which the startup is currently in. Not all startups are ‘live’ or in full production yet, leaving room for innovations that might disrupt the sector at a later stage.

In the key information we also distinguish between two types of innovation: radical and incremental. This categorization is not black and white, but indicates the degree of impact the innovation might ultimately have on the real estate sector. Apart from key information we provide a short summary of the company and the respective product.

With this document we aim to provide insight into the current innovative developments in the real estate market. We as KPMG monitor these developments closely in order to update our clients on the latest trends and to support them in their own search for innovation. At the end of this booklet (section 7) we explain how we can be of assistance in the different phases of the innovation process. In case you are interested in receiving a hard copy of the document or have any questions, please use the button on the right.

This booklet can never be complete due to the nature of its existence, as new innovations will continue to change the sector every day. In our attempt to keep up with market developments and trends, please inform us about any other innovations or startups, additional information about innovations or startups or when your company likes to be included to help us enrich this list. This can be done by pressing the button on the right.

Disclaimer: KPMG has no business interests in the innovations and startups that are included in this document and is not liable for the actions of these companies. KPMG did not assess their (financial) continuity, quality and credibility. The fact that they are included in this document does not imply recommendation by KPMG. This document is based on publicly available information only and as a result not exhaustive. All companies included in this publication have been requested for permission (opt-out).
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Virtual reality replicates an environment using computer technology. The ultimate goal of virtual reality is to create a user experience as real as possible. In the real estate sector, virtual reality opportunities arise in the field of brokerage for example. Without virtual reality, brokers need to either decorate a model home that cannot be sold or rented out or leave it all to the customer’s imagination. Designers and developers can also benefit from virtual reality because it assists them with translating design into reality. In addition, drones can map existing real estate which is then translated into 3D virtual reality.
KEY INFORMATION

Category: VR & 3D
Country: The Netherlands
Started: 2015
Size: 6 FTE
Type: Radical

www.bricksandgoggles.com

DESCRIPTION

Bricks & Goggles makes virtual reality useful for the real estate practice, by transforming construction designs into three dimensional images. This way, both potential clients and designers can walk around future developments as if they have already been built.

Bricks & Goggles works with several devices: standalone smartphones, VR-devices using smartphones as a basis such as Google Cardboard and Oculus Rift. Due to processing power, Oculus Rift enables a completely unlimited experience, while smartphone VR apps enable visitors to look around on a predefined route.
**DESCRIPTION**

Cube Cities is a software platform visualizing real estate data anywhere in the world using a 3D globe. Over the past 5 years Cube Cities has assembled a dataset of buildings in the world’s most dense urban areas. Cube Cities provides their customers with a hosted application which allows them to analyze their own data in 3D. Cube Cities maintains a set of application program interfaces (APIs) to make it easy for their customers to work securely and maintain privacy over their data.

**KEY INFORMATION**

- **Category**: VR & 3D
- **Country**: Canada
- **Started**: 2010
- **Size**: 11-50 FTE
- **Type**: Incremental

www.cubecities.com
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<tr>
<td>Category</td>
<td>Floored creates interactive 3D graphics and technology for the hospitality and commercial, residential, industrial, and retail real estate industries. Floored helps businesses map commercial spaces in 3D by piecing together photography and computer models. Users can furthermore add furniture to uncompleted spaces to get a better feel for what the place would look like.</td>
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**www.floored.com**
Matterport has developed an end-to-end 3D media platform that allows anyone to create, edit, and share 3D models of real-world spaces. Users include professionals in a variety of sectors, including real estate, hospitality, architecture, engineering, construction and location scouting. Matterport spaces are easy to share as anyone with a computer or mobile device can have the open house experience from anywhere. Dollhouse view allows users to see a whole property at once while a switch to floorplan view provides a traditional top-down perspective.
# Key Information

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## Description

Real5D transforms 3D models into virtual spaces, giving clients an immersive space experience. Users can personally show the virtual modelled space to clients, and can change the materials, textures according specific desires and make or close deals with clients. During the walk around in the virtual space - users can look around, speak and chat or invite clients to follow them in the model.
Virtual Xperience provides digital products and services enabling users to explore and experience real estate in innovative and efficient ways. Their first-person, interactive 3D renderings bring real estate professionals together with clients more frequently and efficiently to close more deals. Whether online or in the Oculus Rift, Virtual Xperience immerses users in new real estate experiences which are user-friendly, affordable, and challenge industry standards by delivering on the promise of virtual reality.
KEY INFORMATION

**Category**  VR & 3D

**Country**  The Netherlands

**Started**  2015

**Size**  1-10 FTE

**Type**  Incremental

www.zxy-builders.com

DESCRIPTION

ZXY Builders is a technology-based company that develops, integrates and operates small Unmanned Aerial Vehicles (UAVs or drones) for remote sensing applications. ZXY Cloud scans sites on a daily basis and sends the data to a secure cloud portal for immediate use. Their product can be used in construction, energy, utilities and governmental applications.

PRODUCT
Constructions technology has evolved over the last years. New building methods, 3D printing, special barriers, specialized gadgets and multifunctional paints are just a few examples of new innovation being applied to construction. With these innovations, construction has become less complex while offering cost savings due to efficiency and/or sustainability reasons at the same time.
The BuildEye digital platform allows construction companies and architects to compile information about their projects such as project planning and contact details of all stakeholders on a central location, the BuildEye website. Both customer and workforce can consult the latest information and communicate about the project via the BuildEye mobile app.
**KEY INFORMATION**

**Category**  Construction  
technology  

**Country**  The Netherlands  

**Started**  2014  

**Size**  1-10 FTE  

**Type**  Incremental  

**www.betonballon.nl**

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**DESCRIPTION**

The “BetonBallon” building technique allows vaulted structures for houses and tunnels to be made in an innovative and affordable manner. With this technique, construction time and CO₂ emission are significantly reduced. Cost savings of up to 50% and 70% can be realized for concrete and steel respectively. This is all possible due to form, process and materials being optimally aligned.

**PRODUCT**

[Image of the BetonBallon technology in action]

[Image showing the BetonBallon technology]
CyBe Construction B.V. has developed 3D print technology using concrete. The startup’s ultimate dream is to change the building industry by shifting from conventional construction methods to 3D concrete printing. This will deliver a faster and more effective construction process, with many other advantages such as sustainability, free form, lower cost of construction and ownership.
ECOR is an advanced sustainable building and design material designed to be 100% recycled and recyclable. It is completely non-toxic, 100% certified bio-based and can be used as an alternative for i.e. traditional wood, plywood and plastics. ECOR is replacing traditional wood-based and plastic materials in several applications including graphics/signage, packaging, construction, architecture and design, furniture, fixtures and consumer products.
**DESCRIPTION**

Fiction Factory offers microhomes made of layered cardboard with a long life span. The Wikkelhouse is made out of durable corrugated cardboard glued together with an eco-friendly adhesive. The cardboard is topped with a waterproof, breathable film called Miotex and finished with an open facade cladding system of pine slats.
**DESCRIPTION**

FlexSol focusses on the development of curved crystalline silicon photovoltaic cells. Using the patented technology, solar cells can be made into nearly any shape possible, while even realizing significantly improved efficiency of the cells. This allows for solar panels to be integrated into any construction. Currently FlexSol focuses on the development of an autonomous light pole and ceramic roof tiles with integrated solar cells.

**KEY INFORMATION**

- **Category**: Construction technology
- **Country**: The Netherlands
- **Started**: 2013
- **Size**: 1-10 FTE
- **Type**: Incremental

www.flexsolsolutions.com
Heijmans has developed their Solar Noise Barriers (SONOB), which not only protect the environment from excessive noise, but generate (renewable) electricity at the same time. SONOB utilizes the LSC (luminescent solar concentrator) technology, in which the light is absorbed by a visually appealing transparent dyed plastic sheet and then led to solar cells hidden in the frame of the barrier.
Incas³ has developed the “Xploring WiseMotes™”, which are designed to perform measurements such as movement, temperature and magnetic field, inside industrial infrastructures or inaccessible areas. The Xploring WiseMotes™ are robust, miniaturized mobile sensor systems perfectly suited to characterize the dynamic behavior of multi-phase flows in pipelines and/or physical and chemical reactors.
### KEY INFORMATION

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www.karbonik.nl

### DESCRIPTION

Karbonik produces thin (<0.5mm) innovative foil that can be applied to floors, walls and ceilings to provide warmth. The foil is 100% recyclable and environmentally friendly. Karbonik works on electricity and is therefore often more sustainable and beneficial than floor heating based on gas and/or oil. The product can easily be controlled when home or away from your house.
Novito provides a building system that makes it possible to adapt homes to the specific needs of homeowners. This can be done in several ways, from domotics to care facilities. Novito provides buildings that can be built within one day, and it takes another two weeks to make it ready to use. Novito’s buildings can be taken apart easily and rebuilt in a different location, making it a sustainable solution.
# Physee

## Key Information

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[www.powerwindow.nl](http://www.powerwindow.nl)

## Description

Physee’s Power Window is a window converting direct and indirect (sun)light into electricity in a cost-effective way. Their window is fully transparent, colorless and electricity-generating. The electrical efficiency, transparency and insulation capacity can be varied to fit the specific demands of the customer.

According to Physee a significant amount of the total energy demand of commercial buildings can be saved with its product (up to 50% for renovated buildings in combination with a thermal storage system, up to 100% for newly constructed commercial real estate). Power Window is already in production.
Pixelstone aims at bringing a new form of craftsmanship to the interconnected worlds of architecture and construction. This start-up has developed a 3D printer prototype that enables printing facades out of small cubic bricks. The cubic bricks are inserted in the 3D printer and are mixed and printed as 3D pixels – so called “Pixelstones”, constructing a facade. The aim is to print entire constructions using this technique.
**DESCRIPTION**

Quantibus is a platform that brings together construction professionals and homeowners. The platform lets homeowners find constructors based on several selected criteria. Furthermore, reviews and scores can be compared in an easy and comprehensive way, while construction professionals can improve on their services based on customer reviews.

**KEY INFORMATION**

- **Category**: Construction technology
- **Country**: The Netherlands
- **Started**: 2015
- **Size**: 1-10 FTE
- **Type**: Incremental
- www.quantibus.nl

**SERVICE**

[Image of the Quantibus platform]
**DESCRIPTION**

Renolution provides a method transforming existing houses into energy neutral houses by making use of roof and facade elements that will be consolidated with a light steel frame. Residents do not have to leave their home during renovations. Renolution gives advice on cost reduction and renovates houses into energy neutral houses.

**KEY INFORMATION**

- **Category**: Construction technology
- **Country**: The Netherlands
- **Started**: 2014
- **Size**: 1-10 FTE
- **Type**: Incremental

www.renolution.nl

**PRODUCT**
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<tr>
<td><strong>Category</strong></td>
<td>SolarSwing focuses on building making use of the sun. Two examples of their products are SolarSwing</td>
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<td>Reflect and SolarSwing Energy. Reflect is an interior shading system consisting of transparent vertical</td>
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<td>blinds that reflect direct sunlight while diffuse daylight is transmitted. SolarSwig Energy is planned to</td>
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<td>be introduced in 2017 and is a transparent solar panel converting sunlight into electricity and heat,</td>
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<td>while diffuse daylight is transmitted into the building.</td>
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<td><strong><a href="http://www.solarswing.nl">www.solarswing.nl</a></strong></td>
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SolarSwing Reflect is an interior shading system consisting of transparent vertical blinds that reflect direct sunlight while diffuse daylight is transmitted. SolarSwig Energy is planned to be introduced in 2017 and is a transparent solar panel converting sunlight into electricity and heat, while diffuse daylight is transmitted into the building.
Stonecycling produces “WastedBasedBricks”, which are bricks that give a building a unique and sustainable look and feel by composing them of different waste components. Waste material is collected in a 150 kilometre radius of the factory. Combining various waste materials opens up a range of new possibilities for these bricks.
Terracaza is an online marketplace for the real estate sector, connecting supply and demand of reusable raw materials and equipment in the Netherlands. Terracaza enables users to find when and where recyclable materials are available. Users decide with whom and how they negotiate.
**DESCRIPTION**

ThermoShield is an environmentally friendly paint that saves up to 10% on energy costs. ThermoShield can be applied to stone, wood and metal floors. Furthermore it provides numerous benefits as the paint prevents mold, reflects the sun, absorbs noise and is elastic.

**KEY INFORMATION**

- **Category**: Construction technology
- **Country**: The Netherlands
- **Started**: 2013
- **Size**: 1-10 FTE
- **Type**: Incremental
- **www.thermoshield.nl**
View Inc. is the first company to successfully advance the large-scale commercialization of dynamic glass. Situated at the intersection of human wellness, smart technology and energy efficiency, View manufactures View Dynamic Glass, a new generation of architectural glass that intelligently transitions through multiple tint states to control the sun’s energy, providing an enhanced occupant experience and optimum natural light and thermal comfort.

View is shaping the future of occupant-focused building design from its headquarters in Silicon Valley and its high-volume manufacturing facilities in Olive Branch, Mississippi.

http://viewglass.com/
Viloc is the solution for Tool Tracking and Automated Tool Management. Viloc provides smart, ruggedized transmitters for construction tools (such as: drills, grinders, safety equipment, etc.).

Via their customized software, their customers can easily follow the status and location of their tools, online.

Viloc enables you to:
- keep in control of your equipment,
- minimize unused equipment
- minimize theft, and unnecessary renting,
- easily manage, prepare and register inspections,
- save time searching, waiting for tools and keeping inventory.
KEY INFORMATION

Category  Construction  technology
Country  The Netherlands
Started  2013
Size  2-10 FTE
Type  Incremental

http://www.wellsun.nl

DESCRIPTION

Wellsun has developed the Lumiduct, a transparent sun screen that enables complete glass facades to generate more energy than conventional solar panels and at the same time create a perfect indoor building climate.

The ‘holy grail’ is a sun screen that only allows the right amount of daylight to pass and shields and harvest the surplus as useful energy. The Lumiduct does just that.

The Lumiduct provides access to the future era of energy neutral building - The Lumiduct creates perfect daylight conditions and combines full transparent facades with high energy performance.
**Key Information**

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[www.windowsketch.eu](http://www.windowsketch.eu)

**Description**

Windowsketch transforms large window surfaces into profitable products by showing automated advertisement sales on windows of retailers. It combines the best of physical and digital communication, offering convenience to a new generation of customers. This way retailers can utilize their windows as a platform to earn advertisement incomes, creating specific, personal and local content for retailers at any moment at any display. Retailers can sell their products 24/7 while the shops are closed.

**Product**

Windowsketch transforms large window surfaces into profitable products by showing automated advertisement sales on windows of retailers. It combines the best of physical and digital communication, offering convenience to a new generation of customers. This way retailers can utilize their windows as a platform to earn advertisement incomes, creating specific, personal and local content for retailers at any moment at any display. Retailers can sell their products 24/7 while the shops are closed.
Zigzagsolar specializes in energy harvesting facades. The facades include three prime qualities: they produce energy, they can be integrated with insulation, and they offer design flexibility. The system transforms vertical walls into solar power generating surfaces, while decorative panels face the urban surroundings.

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www.zigzagsolar.com

www.athom.com
Smart homes are fitted with technologically advanced electronic products that enable homeowners and commercial property managers to control in-house traditional devices in an easy and centralized way. In most cases, this is made possible by means of an app. The list of traditional devices made smart is non-exhaustive, but current applications are often aimed at smart heating systems, security systems and lightning control.
30MHz developed a platform for smart home data analytics. The ready to use platform is easily accessible on their dashboard. Sensors that can be implemented include temperature, humidity, ozone, vibration and more, which can be installed in consumers’ homes. By combining several sensors users can understand their home or office environment helping them increase productivity and learn how overhead (or i.e. energy) costs can be reduced.
Athom has produced “Homey”, a device which connects with all other devices, and makes them approachable at one central place. Devices can subsequently be voice-controlled, controlled by smartphone, or can be programmed to automatically follow specific rules. As a result, users have a home without remote controls, that listens and does exactly what they want.
Bleeve is an online platform that connects homeowners with providers of sustainable energy solutions. Tailored to a specific address, solutions such as improved insulation, energy efficient glazing or solar panels are shown, including potential savings. Installers can be compared and booked on Bleeve.

**DESCRIPTION**

**KEY INFORMATION**

- **Category**: Smart homes
- **Country**: The Netherlands
- **Started**: 2015
- **Size**: 1-10 FTE
- **Type**: Incremental

www.bleeve.nl
Capacity Energy Storage (CES) is an energy service provider for flexible energy management. Their focus lies on providing solutions for unbalance issues, frequency control and congestion management. Additionally, CES is looking to develop storage and aggregation solutions for households to allow them to benefit from dynamic market prices for power, as well as optimization of own use of self generated power, if and when market conditions allow.
KEY INFORMATION

Category       Smart homes
Country       Switzerland
Started       2015
Size       1-10 FTE
Type       Radical

www.comfylight.com

DESCRIPTION

ComfyLight makes light bulbs that are able to learn how people move around at home and then simulates movements perfectly when people are out. The presence sensor detects unexpected movements in homes and alerts owners what is happening through an app. Comfylights have continuously variable dimming to ensure perfect light quality. When entering a room, ComfyLight automatically switches the light on and off again when leaving.
DoBots applies robotic software to indoor localization. DoBots offers an interesting component to a Smart Building, the crownstone. This is a Bluetooth device that can be embedded everywhere in a building in the power socket. The device can be implemented in an existing socket (bottom image), but is also available as plug-in socket (top image). The crownstone enables people to use their smartphones to control all electrical units in a building and can at the same time localize people inside, all through Bluetooth.
ENGIE has developed an intelligent energy analysis called the Energy Navigator. With the Energy Navigator property owners and tenants receive rapid insights into the energy consumption of their home and cost savings actions they can take. The Energy Navigator measures the amount of electricity, gas and heat consumed.
FocusCura specializes in home healthcare innovations. Their products revolve around home monitoring, video care, medication support, alarms and giving nurses access to patients’ homes. One example, AccessSolutions gives patients the ability to determine who is allowed to enter their home without having to physically get up to open the door. This gives nurses rapid access to the homes if needed.
### KEY INFORMATION

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### DESCRIPTION

Gociety has developed products like the GoLivePhone and the GoLiveAssist that increases the self-reliance of older people. Gociety solutions provides a user-friendly approach for remote care and early indication and prevention of acute incidents. Solutions include (in-)activity monitoring, automatic fall detection, fall risk analysis, geo fencing, informal caregiver integration and remote management.

www.gocietysolutions.com
Indoo.rs is a technology development company that creates state of the art indoor mapping, localization, and routing technology as well as SDK for application developers and device manufacturers. The indoo.rs solutions are developed by signal processing and navigation experts to offer highest accuracy and availability for both, iOS and Android.

Example use cases are tracking security guards or high value inventory, enabling building visitors to orient themselves immediately (especially important for people with impairments), providing retailers with valuable insights into customer behaviour or managing meeting room bookings. indoo.rs helps reduce stress while increasing efficiency, security, satisfaction and the ROI.
**DESCRIPTION**

The Nerdalize Cloud is a sustainable and affordable high-end compute platform (server) that heats buildings by using computer power. Servers are distributed over many homes meaning users do not have to pay for the overhead of a datacenter. This way, the server acts as a radiator. This reduces the heating bill for the consumer, the cost of computation for industry and academics and energy use for our society.

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**KEY INFORMATION**

- **Category**: Smart homes
- **Country**: The Netherlands
- **Started**: 2013
- **Size**: 1-10 FTE
- **Type**: Incremental

www.nerdalize.com
Nest produces programmable, self-learning, sensor-driven, Wi-Fi-enabled thermostats, smoke detectors, and other security systems. The Nest Learning thermostat learns the temperatures users like and schedules around this. The Nest Protect is a smoke detector that tells users when something is wrong and alerts them by phone. Furthermore, the Nest Cam is a security camera that uses phone locations to know where users are, allowing it to turn on and off automatically.
DESCRIPTION

Niles is a smart home service which enables customers to operate the entire home with an app, transforming it into a smart home. The service connects smart lighting, heating, alarm systems to provide as much comfort and automation as requested by the customer. The system consists of a computer installed in the house, that connects existing smart home solutions into one integrated customized pack, allowing for expansion when needed.

KEY INFORMATION

Category        Smart homes
Country         The Netherlands
Started         2015
Size            1-10 FTE
Type            Radical

www.hello-niles.com
<table>
<thead>
<tr>
<th>KEY INFORMATION</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Category</td>
<td>Movin’s technology allows its users to navigate through buildings or find their assets (via apps). The technology allows users to highlight important Points of Interest, show nearest bathrooms, check out the restaurants daily special, search through destinations and more. Combined with their intuitive indoor maps, routing and positioning, no one will get lost at venues again.</td>
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<tr>
<td>Country</td>
<td>The Netherlands</td>
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<tr>
<td>Started</td>
<td>2012</td>
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<tr>
<td>Size</td>
<td>1-10 FTE</td>
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<tr>
<td>Type</td>
<td>Incremental</td>
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<tr>
<td><a href="http://www.movin.io">www.movin.io</a></td>
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</table>
Nowi is a startup developing WiFi powered sensors. The Nowi climate sensors are able to use the energy available in WiFi, 4G and GSM signals to power themselves.

As a result they do not require impractical cables or frequent battery changes. The startup has emerged from the TU Delft and is part of the Yes!Delft incubator. They are focusing on climate sensors such as temperature, humidity and light. Thousand of these are needed per building and changes the batteries of such sensors every year is simply not feasible and too expensive.

Nowi aims to change the paradigm from the old ‘plug and play to something that fits better with the Internet of things, ‘plug and forget’.

**KEY INFORMATION**

**Category**  
Smart homes

**Country**  
The Netherlands

**Started**  
2015

**Size**  
1-10 FTE

**Type**  
Incremental

https://www.nowi-energy.com/
Qwiksense has developed an algorithm that makes office buildings a healthier and more efficient place to work at. Qwiksense correlates data sets generated from i.e. measuring and adapting CO2 levels, temperature, air quality and occupation, giving insights in health and comfort on workplace level. Qwiksense strives to make buildings more ‘energetic’.
**Radiator Labs**

**DESCRIPTION**

Radiator Labs, winner of the 2012 MIT Clean Energy Prize, the 2014 Popular Science Innovation Award, and the 2014 Verizon Powerful Answers Award, has developed a product that addresses two critical problems in steam heated buildings: energy waste and tenant comfort.

The Radiator Labs system features the Cozy™, a wireless, low-cost, and easily installed retrofit that drops on top of radiators. The Cozy™ provides room-level temperature control for management and tenants via web and mobile apps and offers savings of up to 35% in heating costs. The Cozy is an insulating enclosure that is installed over existing radiators.

**KEY INFORMATION**

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<tr>
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<tr>
<td>Country</td>
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<td>2-10 FTE</td>
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<td>Type</td>
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http://www.radiatorlabs.com
Semiotic Labs predicts when and why assets fail. It is a decision support tool for maintenance professionals that monitors sensory data to report anomalous behavior. You can use the platform to improve operational safety, increase availability of your assets, reduce the costs of unplanned downtime and optimize the efficiency of maintenance teams.

The startup takes raw data and turns it into valuable insight. Whether it’s sensor data, control data, or environmental circumstances, once it’s connected to their machine learning technology, they can provide you with real time information about the health and performance of your equipment.
**DESCRIPTION**

Sensara is a remote monitoring system that uses small, unobtrusive sensors to help users keep an eye on elderly or ill family members and friends living on their own. The company is specialized in understanding life by using sensor technology, while respecting privacy. It uses sensors that track user’s movements and habits. Deviations will cause messages to be sent to caretakers or family members. The installation of the sensors is quick and affordable.

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www.mysensara.com
Simaxx is a software platform to improve building for everyone in the future. Owners, users and property managers will profit of more comfort, less maintenance and continuous monitoring. Because day and night, seven days a week Simaxx gives insight in the performance of the buildings installations.

Simaxx brings your building to life. It continuously checks the data from your building control system, it checks the energy consumption and your technical installations. It sees how your building can save, on average, twenty percent of energy. If senses how failures and complaints can be prevented. Simaxx listens to your real estate.
Shifft’s online platform EnergyShifft enables customers to become energy smart by means of social interaction, gamification and energy insights. The platform makes use of data from readily available energy meters, and offers guidance for users to become smart about energy usage. Shifft is a flexible platform both in functionality and looks.
Sustainer Homes builds off-grid, sustainable and self-sufficient homes. Using several different designs, the homes are completely independent from existing grid connections and the modular building technique makes these homes suitable for differing living standards. There are three different designs that customers can choose from: a modular model which can be extended, an organic model and a mobile model, of which the mobile model has a shipping container as a basis.
DESCRIPTION

Tado is a smart thermostat for consumers’ heating and cooling systems. Tado is able to help customers save energy and heating/cooling costs. By combining the smart thermostat, the app and optional extension kits for radiators and hot water, the system can automatically detect when users are home, leave or are on their way home. Combined with using outside weather conditions information, Tado adapts the heating or cooling system accordingly.

KEY INFORMATION

Category  Smart homes
Country   The Netherlands
Started   2014
Size      51-100 FTE
Type      Radical

www.tado.com
DESCRIPTION

Twingz’ eCoach helps users reduce energy consumption and save money. The eCoach identifies those devices with abnormally high consumption, and coaches users with suggestions on how to save energy. Intelligent monitoring, control and optimization of energy consumption in homes and office are all part of Twingz’ value offering.

KEY INFORMATION

Category  Smart homes
Country   Austria
Started   2010
Size      1-10 FTE
Type      Incremental

www.twingz.com
Ubiqu provides technology which makes it possible to secure and access a house, car or office by a mobile phone. The system consists of an access reader, online dashboard and requires a mobile device for unlocking. Ubiqu provides a q-key which makes it easy to enter a home, car or office. One of the possibilities with Ubiqu is easy and temporary access for home health care professionals to homes of clients that have mobility issues.
VIRIDOM offers several smart energy home solutions.
The Thermostat Service models in-house heating and cooling behavior and can measure HVAC energy needs. It builds on existing hardware and combines in-house data with external information. The Solar service provides software to optimize the balance between PV-generated energy usage and purchased energy usage.
Smart cities are categorized as cities that make use of ICT solutions in order to improve the quality of life of inhabitants in every possible manner. Improving the quality of life can be achieved by looking at cost reduction, resources or urban flows. The term is used in a broad sense, but recent examples often include Internet of Things (IoT) solutions to connect devices throughout cities and let them communicate.
Anker Stuy’s Ceramic Lightcoating is a luminous paint improving road safety while simultaneously being 100% energy-neutral. Ceramic Lightcoating is a uniquely modified coating which absorbs natural or artificial light during daytime. During night this light is emitted. Apart from its luminous capacity Ceramic Lightcoating is highly reflective and therefore perfectly suited for i.e. dangerous crossings.
CHAINELS is a business to business online communication service for retailers. By using the CHAINELS platform and app, companies can efficiently share information, i.e. on fake currency or burglars.

CHAINELS offers solutions for retailers located in a certain shopping area, for mall retailers and mall property managers, and for park managers on business parks.

The company is currently active in 18 cities and connects over 6,000 companies. Current areas include i.e. 9 Straatjes, P.C. Hooft and Koopgoot.

**KEY INFORMATION**

- **Category**: Smart cities
- **Country**: The Netherlands
- **Started**: 2012
- **Size**: 11-50 FTE
- **Type**: Incremental

www.chainels.nl
COMPSTAK

KEY INFORMATION

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www.compstak.com

DESCRIPTION

Compstak is a platform used by brokers, appraisers and researchers to trade transaction records. Compastak is free, anonymous and provides a complete record of lease transactions that have taken place. Information includes; tenant name, address, starting rent, square footage, broker names and landlord concessions. The platform is based on a 1-for-1 principle, in which users get information when they provide information. Currently the service is only available in certain parts of the United States.

SERVICE

www.compstak.com
Crumbbase provides objective insights of conversion, duration of stay or the effectiveness of staff policy and marketing for shops. With their real-time analysis solution, Crumbbase helps retailers to make better decisions and to improve the performance of their shops, based on objective visitor measurements. Crumbbase senses mobile phone Wi-Fi signals, captures and records these Wi-Fi signals, processes them and finally delivers an analytic report.
Easypath develops different kinds of innovative bicycle paths, of which Solarpath is the most innovative.

Together with Spanish company OTEM2000, Easypath has developed prefab concrete bike lane elements with solar panels integrated. The energy generated can be used for the surrounding urban infrastructure. Ongoing research focusses on harvesting energy of bike movements and footsteps.

**KEY INFORMATION**

- **Category**: Smart cities
- **Country**: The Netherlands
- **Started**: 2012
- **Size**: 1-10 FTE
- **Type**: Incremental

**DESCRIPTION**

www.easypath.nl
Honest Buildings is an intuitive, data-driven project management and procurement platform built for commercial real estate owners and managers. Founded in 2012 by Riggs Kubiak, the platform serves industry leaders which use Honest Buildings to centralize project data, increase transparency, automate bid management, and standardize reporting. Commercial and multifamily owners rely on the platform to manage over $1.5 billion in total project value.
**KEY INFORMATION**

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**www.housinganywhere.com**

**DESCRIPTION**

HousingAnywhere.com is Europe’s leading booking platform for student accommodation. Working closely together with over 120 universities worldwide, Housing Anywhere helps their students to easily find and securely book accommodation abroad - and connects those students with trusted landlords on its platform. In such a way, Housing Anywhere offers students, private landlords and commercial housing operator a platform to advertise their rooms to – and get them booked by – a global audience of over 3 million students annually.
**DESCRIPTION**

LOEK! is an online platform for managing and maintaining buildings, which brings together all stakeholders involved in one place. The platform enables property managers, maintenance companies and tenants to cooperate and interact in an easy and quick manner. This way, property maintenance can be made more efficient, smarter and easier for all users.

**KEY INFORMATION**

- **Category**: Smart cities
- **Country**: The Netherlands
- **Started**: 2015
- **Size**: 1-10 FTE
- **Type**: Incremental

www.loekonline.nl
The company’s “Movves” gives users insights into consumer movements by providing location analytics services. Suitable for any retail environment, from a store or supermarket to a large department store or shopping center, Movves provides real time information about the way customers shop. A few use examples of Movves are forecasting business peaks as well as measuring the value and impact of anchor stores.
OmgevingsAlert Pro makes environment management for the users’ real estate portfolio more efficient and real estate management more effective. Users will have insights into what is happening near their properties, such as building permits, zoning plans or other government announcements that could affect the value of your properties. OmgevingsAlert Pro is ideal for property managers, asset managers, appraisers and professionals in development, risk analysis and government functions.
Orange Pear provides real estate owners and managers with a system that automates tasks when possible and gives them a complete overview of the financial status of their portfolio(s) and tasks to be performed. Orange Pear is built for everyone renting out any type of real estate. Different stakeholders realize different advantages. For example, private real estate investors save time managing their real estate portfolio while real estate managers manage several portfolios effectively.
**KEY INFORMATION**

- **Category**: Smart cities
- **Country**: Netherlands/UK
- **Started**: 2013
- **Size**: 11-50 FTE
- **Type**: Radical

**DESCRIPTION**

ParkBee makes private parking accessible to the public. There are sufficient vacant parking locations that are not accessible to the general public. One example is an office building with parking garages that are occupied during working hours, but vacant at night time when the city has a shortage of parking spaces. ParkBee has developed smart technology to make these parking locations accessible. The startup cooperates with Parkmobile and Parkline in the Netherlands and with RingGo in the UK.

**SERVICE**

![Service Image]

www.parkbee.com
### KEY INFORMATION

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www.parkyourcar.com

### DESCRIPTION

Parkyourcar brings providers of parking spaces and parkers together in an online marketplace. Sharing parking spaces through Parkyourcar lets both parties earn money: providers receive a compensation, and drivers save money because the offered spaces are more affordable than conventional parking spaces. Providers can offer parking spaces when they are not used, allowing people searching for a parking spot to find one more easily.
Pavegen has pioneered a flooring tile that converts the wasted kinetic energy from footsteps into renewable electricity. Each tile is equipped with a wireless application program interface (API) that transmits real-time movement data analytics, whilst directly producing power when and where it is needed. Pavegen is also able to connect to a range of mobile devices and building management systems.
Description

Readaar is in essence a Real Estate Radar. The startup specializes in datamining from aerial photographs, satellite imagery and LiDAR (Height information). For example, the company maps existing solar panels for grid operators and asbestos roofs for multiple governments. Among Readaar’s customers are also insurance, construction, marketing and engineering companies.

Key Information

Category: Smart cities
Country: The Netherlands
Started: 2015
Size: 1-10 FTE
Type: Incremental

www.readaar.strikingly.com
DESCRIPTION

Rooming markets itself as the Airbnb for long-term rentals. Users can create a free account by signing in and use the site to message potential roommates and landlords. Rooming also shows users any connections they might have to people renting a room making the search process more trustworthy.
Roost is an online platform at which people with storage space to rent out can connect with people with searching or a storage facility. The idea is to avoid the high cost and hassle of self-storage, which often requires monthly commitments and costings hundreds of dollars, by maximizing the privately owned storage space already out there. It can be seen as the new Airbnb for storage.
SolaRoad is a pioneering innovation in the field of energy harvesting. SolaRoad converts sunlight on the road surface into electricity, transforming it into an inexhaustible source of green power. The electricity generated can be used for street lighting, traffic systems, households and electric vehicles.

http://en.solaroad.nl
Storage Share is the marketplace where individuals and real estate owners can list their vacant space and rent it out to individuals or businesses looking for storage. Whether it be a garage, a spare room or a vacant office, Storage Share is the ‘Airbnb’ for temporary storage, providing an alternative to the expensive self-storage market.

By specifically targeting the storage market via the platform of Storage Share, real estate owners are able to attract a new type of renter for their vacant garages, offices or other type of real estate and thereby they can easily start making a return.

**KEY INFORMATION**

**Category**  Smart cities

**Country**  The Netherlands

**Started**  2016

**Size**  2-10 FTE

**Type**  Incremental

https://storage-share.nl/
STUDIO ROOSEGAARDE

KEY INFORMATION

Category | Smart cities
Country  | The Netherlands
Started  | 2008
Size     | 1-10 FTE
Type     | Incremental

DESCRIPTION

Studio Roosegaarde has developed the “Smart Highway”, an interactive and sustainable road. These roads use light, energy and information that interact with the traffic situation. For example, the roads’ “glowing lines” are lines that charge at day-time, and glow at night for eight hours. The first pilot has been realized, and will be further launched internationally.

PRODUCT

www.studioroosegaarde.net
SweepBright helps making real estate brokers more effective by creating and managing real estate advertisements. Due to SweepBright, real estate professionals are provided with a faster and more efficient sales process. Their mobile application simplifies intake, matching and communication with buyers & sellers!

Sweepbright works together perfectly with third parties, evolving the sales process into a digital transaction by integrating several real estate systems such as DotLoop, WebMerge and DocuSign.

Description

KEY INFORMATION

Category
Smart cities

Country
Belgium

Started
2016

Size
2-10 FTE

Type
Incremental

https://sweepbright.com

SERVICE
**KEY INFORMATION**

**Category**  
Smart cities

**Country**  
The Netherlands

**Started**  
2012

**Size**  
11-50 FTE

**Type**  
Incremental

**DESCRIPTION**

Tvilight offers intelligent solutions for the adaptive control of street lighting. Through a unique combination of physical products and control/management software, Tvilight offers end-to-end solutions for the control and management of street lighting. Municipalities and businesses can save up to 80% of energy costs, reduce maintenance costs by up to 50% and significantly reduce CO2 emissions.

**PRODUCT**

Tvilight offers intelligent solutions for the adaptive control of street lighting. Through a unique combination of physical products and control/management software, Tvilight offers end-to-end solutions for the control and management of street lighting. Municipalities and businesses can save up to 80% of energy costs, reduce maintenance costs by up to 50% and significantly reduce CO2 emissions.
Undagrid has been chosen as best Internet-of-Things startup of Europe. It provides several services revolving around location analytics and positioning. The company makes use of several types of sensor and other hardware and techniques to determine the position of both assets and people, which can be used for i.e. indoor positioning in real estate, logistics and aviation.
Underground Power (UP) is the innovative Start-up creator of LYBRA: a system for automatic decelerations of vehicles, capable of absorbing their speed and transform it into energy. In a decelerating lane with an average of 10,000 vehicles/day a power plant composed by 10 LYBRA modules is able to produce up to 100,000 kWh/year, generating an Internal Rate of Return on the Investment (IRR) between 10% and 15% in 20 years without any incentive. With respect to ordinary speed bumps or traffic signs LYBRA does something more: it imposes a natural speed reduction to vehicles (10 km/h in 15 meters) which cannot be neglected or missed by driver attention.
Vastgoeddata offers a service that provides Dutch real estate professionals with information about commercial properties combined from several databases. The information can be accessed through a clear database that links among others government, Cadastre, broker and credit provider data. By linking all data in one integrated system new insights and opportunities become available for real estate professionals.
**DESCRIPTION**

VTS is a cloud-based leasing and portfolio management platform providing brokers and owners with real-time access to everything happening throughout their portfolio. The platform enables tracking and analytics across live, active deal flow. Users get their portfolio and team onto a single platform to interact with data, identify trends, highlight opportunities and quickly raise red flags when necessary. The platform is supported on mobile or desktop.
The new workplace is flexible and on demand. This contrasts the traditional view of real estate being immobile. In the new workplace, real estate is transformed from being a fixed asset into a flexible service. Office spaces are available in any given district, city or country and can be booked for an hour, a week, 10 years or anything in between, while all necessary services are included.
Deskbookers offers a trusted platform where people around Europe can easily find and book unique and inspiring working spaces, online, via a mobile device or over the phone. Whether it’s a meeting room for an hour, a flexworking space for a day or a coaching room for a fixed period of time, Deskbookers brings people together for a unique working experience. The locations on the Deskbookers website are available in every price category, in more than 1,500 cities in 4 countries. More than 25,000 customers have already used the platform, whose founders believe that in order to be successful you should choose the workspace that fits best with the activities of that moment.
Het Nieuwe Kantoor (Dutch for “the new office”) or HNK is a concept that allows for a combination of flexible working and full-service. HNK offers work spaces, office, parking and other services to freelancers and multinationals. Facilities can be booked whenever, wherever, for however long the customer wishes. The concept of HNK replaces traditional long-term office rental contracts.
LONE ROOFTOP

KEY INFORMATION

Category The new workplace
Country The Netherlands
Started 2014
Size 11-50 FTE
Type Incremental

www.lonerooftop.com

DESCRIPTION

Lone Rooftop develops technology that prepares buildings for the future: efficient, sustainable and optimized for hospitality. Their technology is called PIE - the Position Intelligence Engine. PIE is a platform that calculates the position of people inside buildings based on Wi-Fi and sensors. A growing number of Apps are being developed on top of this platform. One example is the Building Intelligence Dashboard, which provides 24/7 occupancy data and instantly shows how a building is utilized and which rooms, zones and floors can be optimized, allowing a real estate manager to increase occupancy.

SERVICE

www.lonerooftop.com
**KEY INFORMATION**

<table>
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**DESCRIPTION**

Spaces offers flexible working, office spaces, offices, networking, meeting rooms, hot desks, conference rooms, meeting location. They offer offices for companies of all sizes. All contract terms are based on flexibility, whether a customer needs a 25 square meter office or 700 square meters for a studio.

**SERVICE**

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www.spacesworks.com
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www.tribes.nl

**DESCRIPTION**

Tribes offers flexible office spaces as a service. Customers are able to choose from several membership options, varying from a membership for one Tribes office to access to all Tribes. Currently, Tribes has 11 locations spread over Belgium and the Netherlands. Memberships can include access to cafes, gyms and meeting rooms.

**SERVICE**

We go where the business is.

**LOCATIONS NEAR YOU**

- Rotterdam
- Capelle
- Eindhoven
Traditionally, real estate was financed through specific funds with a minimum investment of several thousands of euros. Alternative funding methods result in a more accessible financing of (inter)national real estate projects. Alternative funding has been coined frequently in the context of banking. Applying this concept to real estate means that individuals, rather than solely institutional investors, are now able to participate in funding projects.
BOUWAANDEEL

KEY INFORMATION

Category  Alternative funding
Country    The Netherlands
Started    2014
Size       1-10 FTE
Type       Radical

www.bouwaandeel.com

DESCRIPTION

Bouwaandeel uses crowdfunding as a basis for financing real estate projects. The Bouwaandeel platform offers project developers and real estate investors access to funds of private investors and private companies.

A key distinguishing factor of the platform compared to traditional real estate funds is that investments are possible starting from EUR 200,-. Propositions up to EUR 300.000,- can be placed on the platform and the to be financed object always serves as collateral.

SERVICE

WONEN IN EEN STADSPARADIJS

DUURZAME UPGRADE HERENHUIS
**KEY INFORMATION**

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www.brickfund.com

**DESCRIPTION**

Brickfund offers a new method of (transparent) investing in real estate. Brickfund selects appealing properties for investments and offers a transparent platform. Investors receive personalized online access, which provides detailed information regarding investments. Users are furthermore empowered to make their own decisions and can make investments starting at EUR 5,000.-.
Crowdestate is a crowdfunding platform for real estate linking project developers and investors. Prior to a project being published, screening is performed to ensure that the quality is up to par and the project is feasible. Crowdestate offers Dutch and international projects to allow for investors to build a diversified real estate portfolio.
**KEY INFORMATION**

**Category**  
Alternative funding

**Country**  
The Netherlands

**Started**  
2010

**Size**  
1-10 FTE

**Type**  
Radical

www.windcentrale.nl

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**DESCRIPTION**

The Windcentrale facilitates households and companies to become joined owners of a large wind turbine. All electricity produced by the wind turbine is deducted from the energy use of the individual owners which leads to a lower energy bill. It is a simpler and cheaper alternative for solar panels. Currently 15,000 households and companies are producing their own green electricity with their own wind turbine. With the Windcentrale App users can check the production of their turbine real time.
Blockchain

In a mostly paper-record based industry, blockchain real estate allows for a significant gain in efficiency in how records are stored and recorded. The real estate industry as a whole historically lags in adopting new technology, with many paper based documents exchanged. Should the real estate industry choose to adopt blockchain technologies for essential functions such as payment, escrow, and title, this could create unprecedented efficiencies and cost savings.
Blandlord offers consumers the possibility to partly take ownership in a real estate object. By dividing the ownership, investing in properties becomes feasible for people who normally don’t have the resources to invest because of the size, risk or complexity associated with the investment.

Starting from EUR 100,- people can buy a ownership in an object, however most people are interested in investing in 1%-3% of the current value of the property. The economic ownership of the properties is administrated in block chain technology to provide openness to all parties involved.
KEY INFORMATION

Category  Blockchain Technology
Country  Sweden
Started  2014
Size  1-10 FTE
Type  Radical

http://chromaway.com/

DESCRIPTION

Combining great blockchain experts ChromaWay provides a platform for smart contracts and issuing and transferring assets through a blockchain. The company has partnered with LHV Bank—the largest of Estonia’s domestic banks—to create a blockchain-based payment platform.

ChromaWay uses blockchain technology for both smart asset transfer and the development of smart contracts. Smart contracts are technology-based protocols to enforce the terms or performances of a given financial agreement. Built on an open source platform, the product is meant to handle security, network problems and offers cloud-based tools.
Big data is transforming commercial real estate into a more transparent industry. It becomes a partner for real estate brokers, lenders, investors and owners. Furthermore, it changes how buildings are managed, i.e. by making use of ‘the Internet of things’.
Calcasa is an automated property valuation model provider. The Calcasa automated valuation model (AVM) provides an estimation of the current open market and foreclosure value of properties based on comparable sales and hedonic regression techniques. Home valuations can be delivered in a matter of seconds and are accessible via a variety of sources.

**KEY INFORMATION**

- **Category**: Smart cities
- **Country**: The Netherlands
- **Started**: 1996
- **Size**: 11-50 FTE
- **Type**: Radical

**DESCRIPTION**

www.calcasa.nl
GeoPhy is an independent provider of objective data and analysis for the real estate sector. The firm applies cutting-edge technology to an ever-growing amount of data from a range of sources. Users can check, monitor, structure, analyze and export the data as required. The quality score offers an objective and holistic international standard and enables users to make data-driven property decisions.
**ImmoWise** is the smart new way to sell or buy your home. They use relevant data, an algorithm and client reviews to find the best real estate agent for home sellers and buyers in a specific area.

**Service:** They advice and connect home sellers - buyers when it comes to the biggest transaction of their lives, for the best real estate experience and with the best agent.

- **Category:** Smart cities
- **Country:** The Netherlands
- **Started:** 2016
- **Size:** 2-10 FTE
- **Type:** Incremental

[https://www.immowise.nl/](https://www.immowise.nl/)
KPMG is actively involved in supporting their real estate clients in all aspects of the innovation process. KPMG recognized three major innovative interventions aimed at organizing, activating & execution and creating.
KPMG support clients with all elements of innovation

1. Organising innovation
Develop and expand innovative capabilities by developing competences that fit your organization’s challenges. Interactive workshops, trainings and guidance supporting creativity and execution guarantee a robust innovation method.

3. Innovation Factory
Accelerate innovation by supporting a digital platform
We offer our clients digital solutions to speed up the innovation process. By using our award winning social software platform to support crowdsourcing and innovative project- and knowledge management within the organization we accelerate the innovation process.

Focus on knowledge and expertise
Our software supports the discovery of ‘hidden’ knowledge and expertise, it creates knowledge networks and offers innovative project management. The concept is based on the crowdsourcing of ideas; the fundamental first step in the innovation process. Not only can the organization be included in the innovation process, but also in the full innovative ecosystem.

Advantages for organizations
- Include the organization and external parties in the innovation process;
- Idea generation and collaboration regardless geography, function and time;
- Create an innovative culture in the organization;
- Discover hidden knowledge and expertise, create knowledge networks;
- Manage and track the innovation process from a digital platform.

2. Doing innovation
Lean innovation track
KPMG supports Real Estate Clients to embed innovation in their organization

KPMG support clients with all elements of innovation
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