

Drone Powered Solutions

The new digital reengineering

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pwc

Main technological trends streamlining business world



Digitalization – computerization of systems and jobs for better ease and accessibility. It also means the process of converting information into digital format in order to provide new revenue and value-producing opportunities



Robotization – application of technology that allows companies to replace human employees in performing repetitive and dangerous tasks. It enhances not only manufacturing processes but also administer business, IT and workflow processes a view to achieving higher efficiency and productivity



Machine learning – process that provides machines with the ability to learn without being explicitly programmed. It focus on development of computer algorithms that can teach themselves to grow and change when their exposed to new data.

Drones technologies – business respond to upcoming technological transformations



Drone technologies combine and apply breakthroughs from digitalization, robotization and machine learning fields into powerful business tools

UAV (Unmanned Aerial Vehicles) called also drones were used commercially for the first time in Japan at the beginning of the 1980s, when unmanned helicopters proved to be an efficient way of supplementing piloted helicopters to spray pesticides on rice fields.

Nowadays, unprecedented technological progress provide many new possible applications for drones not only in agriculture but also infrastructure, security, transport, media & entertainment, telecommunications, mining and insurance sectors.

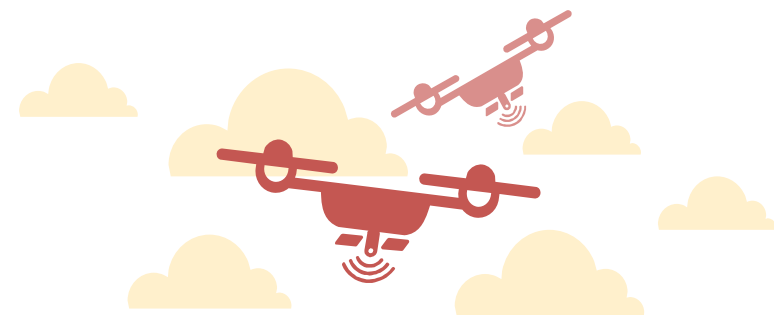
Drone Powered Solutions – Global centre of excellence in Poland

Established in Poland – uniquely comprehensive legal and regulatory framework

Drones as tool for collecting data – greater efficiency and unprecedented level of quality

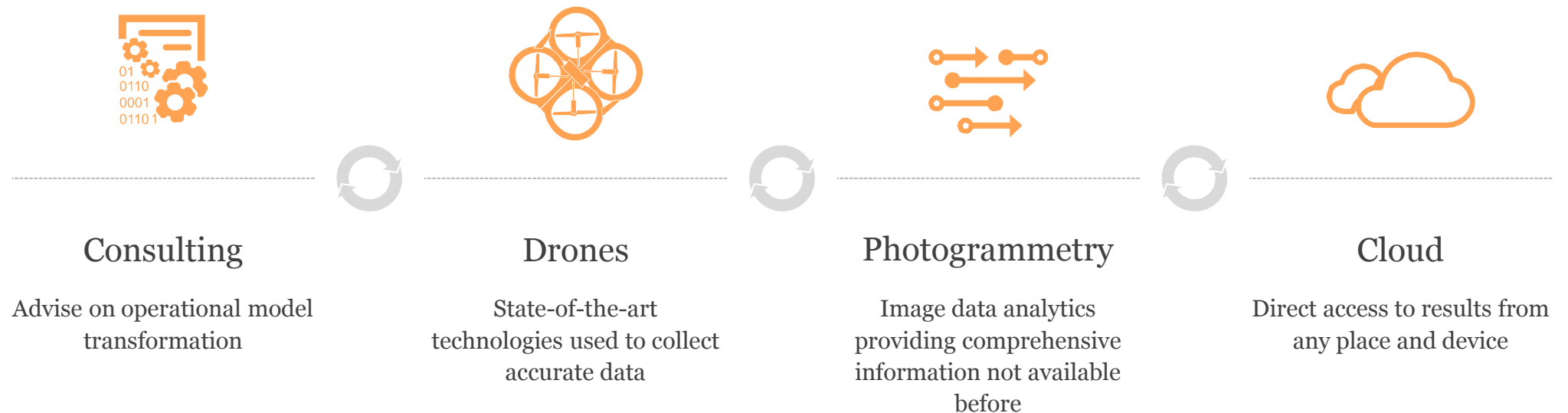
Business insights through data analytics, presented on software we developed: PwC Geospatial.App

First PwC team of its kind – commercial projects completed in Poland and growing global involvement

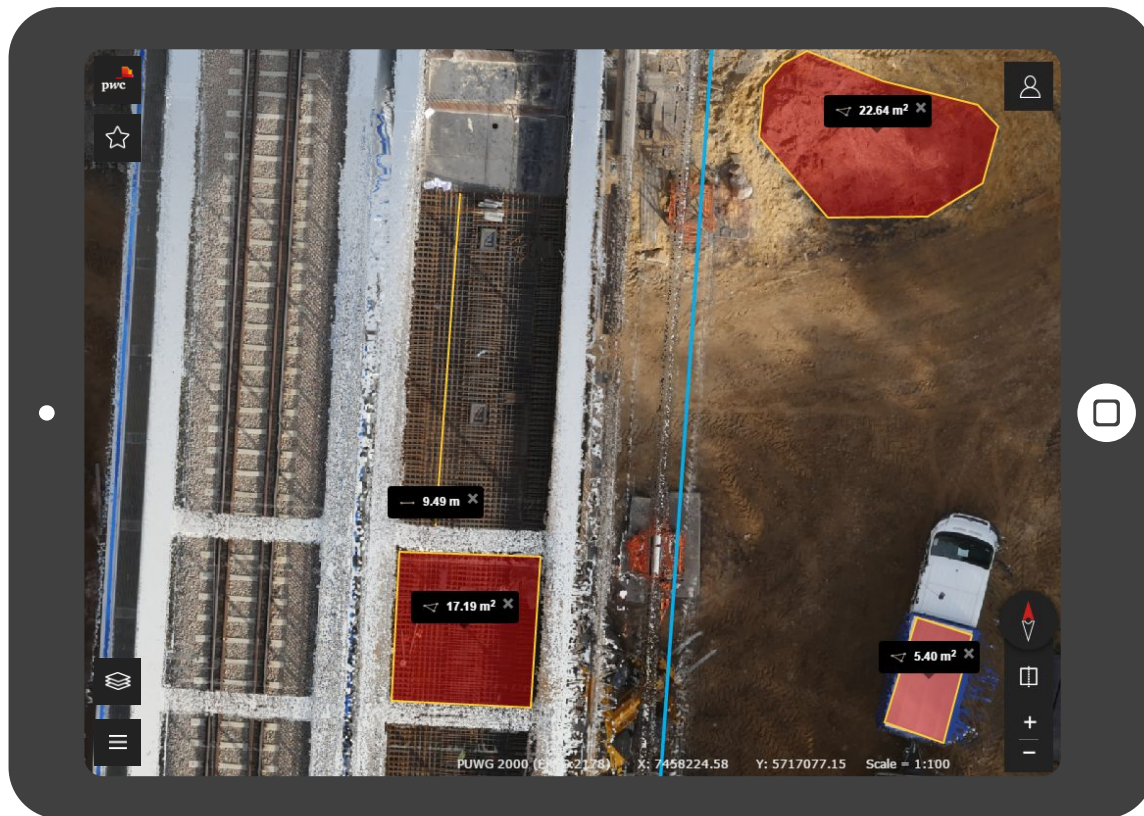


So how does it work?

We converge cutting-edge technologies and know-how to deliver the PwC brand promise



In order to provide end-to-end solution to our clients we have built something more...



PWC GEOSPATIAL.APP

Interactive measurements of different states of the same object

Flexible and modular

Integration with client data

Drone Powered Solutions applications in various industries (1/2)



Construction & Infrastructure

Capital projects monitoring and supervision

Maintenance management process

Asset inventory



Rail

Capital projects monitoring and supervision

Maintenance management process

Asset inventory



Agriculture

Fields monitoring

Spraying process

Compensation



Insurance

Claims handling

Cyclical monitoring of the capital projects

Underwriting



Telecommunication

Maintenance and asset inventory processes

Line-of-sight testing process



Energy

Capital projects monitoring and supervision

Maintenance management process

Asset inventory

Drone Powered Solutions applications in various industries (2/2)



Oil and Gas

Maintenance management process

Asset inventory

Vegetation supervising



Chemicals

Capital projects monitoring and supervision

Maintenance management process

Asset inventory

Data digitalization



Legal

Investment and construction supervising

Litigation and evidence support



Banking

Support of investment and construction supervising

Litigation and evidence support



Mining

Production process monitoring and early detection of deviations and threats

Support in investment supervision and infrastructure monitoring



Security

Security & emergency process

Maintenance management process



Transportation

Quick transport of medical needs

Value we bring for our clients



Situational awareness

Minimization of project delays and cost overruns that appear in **50%** of capital projects and equal **40-200%** of the initial budget



Safety

Limitation of the number of accidents that happened **15 times** each day in construction sector in Poland and caused loss of **260k** man-days of work in 2015



Litigation support

Unparalleled evidence in construction investments disputes with average global value of **\$48 mln** and **over \$1,5 bn** in extreme cases



Penalty avoidance

Limitation of penalties for environmental violations noted for example in one of the Polish regions in **70%** of local land-use plans

What is the global value of
drones based solution market?

Our report on full range of commercial drones applications



Explores commercial applications of drone technology by key industries as well as provides an overview of the drivers and barriers to applying drone technology in a given market

Examines roles of the stakeholders, such as regulators, manufacturers and researchers in commercial drone applications

Presents first comprehensive **calculation of global market size**

For more, see our global report: <http://www.pwc.pl/en/publikacje/2016/clarity-from-above.html>

The total addressable market of commercial drone applications exceeds \$127 bn



PwC's report on drones sparked global media reaction

FORTUNE

„Consultants PwC are launching a new service this week to help clients in construction and real estate development survey land and buildings.”

Bloomberg

„With Poland leading the way in drafting laws for the commercial use of UAV, non-military applications may revolutionize thousands of industries.”

CHINADAILY 中国日报网 CHINADAILY.COM.CN

„The global market for drones, valued at around \$2 billion today, will replace up to \$127 billion worth of business services and human labour over the next four years.”



„Drones, with their high-resolution cameras and sensors, send images and data which are analysed to assess any structural defects or errors in construction.”

THE INDEPENDENT

„Drone technology could soon become part of our everyday lives, monitoring problems with crumbling infrastructure.”

BUSINESS INSIDER

„It was obvious that drones would be able to take over some jobs that humans currently perform, but a new study from PwC expects that drones could replace \$127 billion worth of existing business services and labour.”

Case study

Deep dive in our sample case study (1/2) – Investment monitoring project description and its benefits

Client situation



- Plan to build ~2000 km of linear infrastructure throughout the country
- Over 60 separate construction sites spread all over the country
- Financing institutions expect reliable progress reporting
- Challenging environmental legislation
- History of previous legal disputes lost due to lack of proper documentation (evidence)

Solution



- Replacing in-person surveillance with drone supported end-to-end investment monitoring process
- Weekly investment sites HD images capture from drones
- Geospatial data analysis and real time data processing to produce 3D models (dedicated software)
- Reports delivered to the client within 48h over a simple web browser based interface

Value delivered



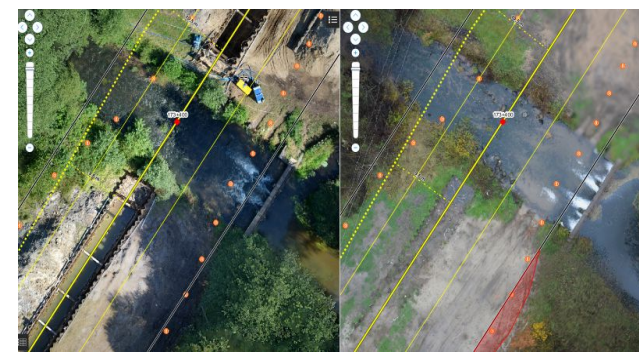
- Full view of the construction site and real time progress monitoring
- Systematic information about number of working employees, machinery and used materials
- Early warning – delays & deviations from the project with 1 cm accuracy
- Detection of environmental protected zone trespassing
- Reduction of monitoring cost
- Reliable reporting to financing institution
- Full documentation in case of future litigation

Deep dive in our sample case study (2/2) – Investment monitoring deliverables with dedicated software

Images, 3D models and reports available to the client through web browser



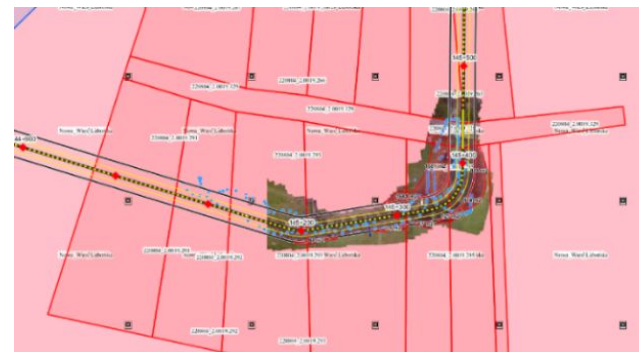
Construction progress monitoring



Verification of conformity with construction plans



Systematic documentation gathering



Thank you

