

Gaming &
virtual reality

Value added food

Industry 4.0

Advanced business
solutions & fintech

Smart home &
working
environment

High-tech
agriculture

New age (bio)tech
solutions in personalized
medicine

Clean and green
tech solutions
for sustainable
development

New
generation
electronics &
optics

Smart
mobility

Summary



**NEW AGE (BIO)TECH
SOLUTIONS IN
PERSONALIZED MEDICINE**



VALUE-ADDED FOOD



HIGH-TECH AGRICULTURE



**CLEAN AND GREEN TECH
FOR SUSTAINABLE
DEVELOPMENT**



INDUSTRY 4.0



SMART MOBILITY



**NEW GENERATION
ELECTRONICS AND OPTICS**



**SMART LIVING AND
WORKING ENVIRONMENTS**



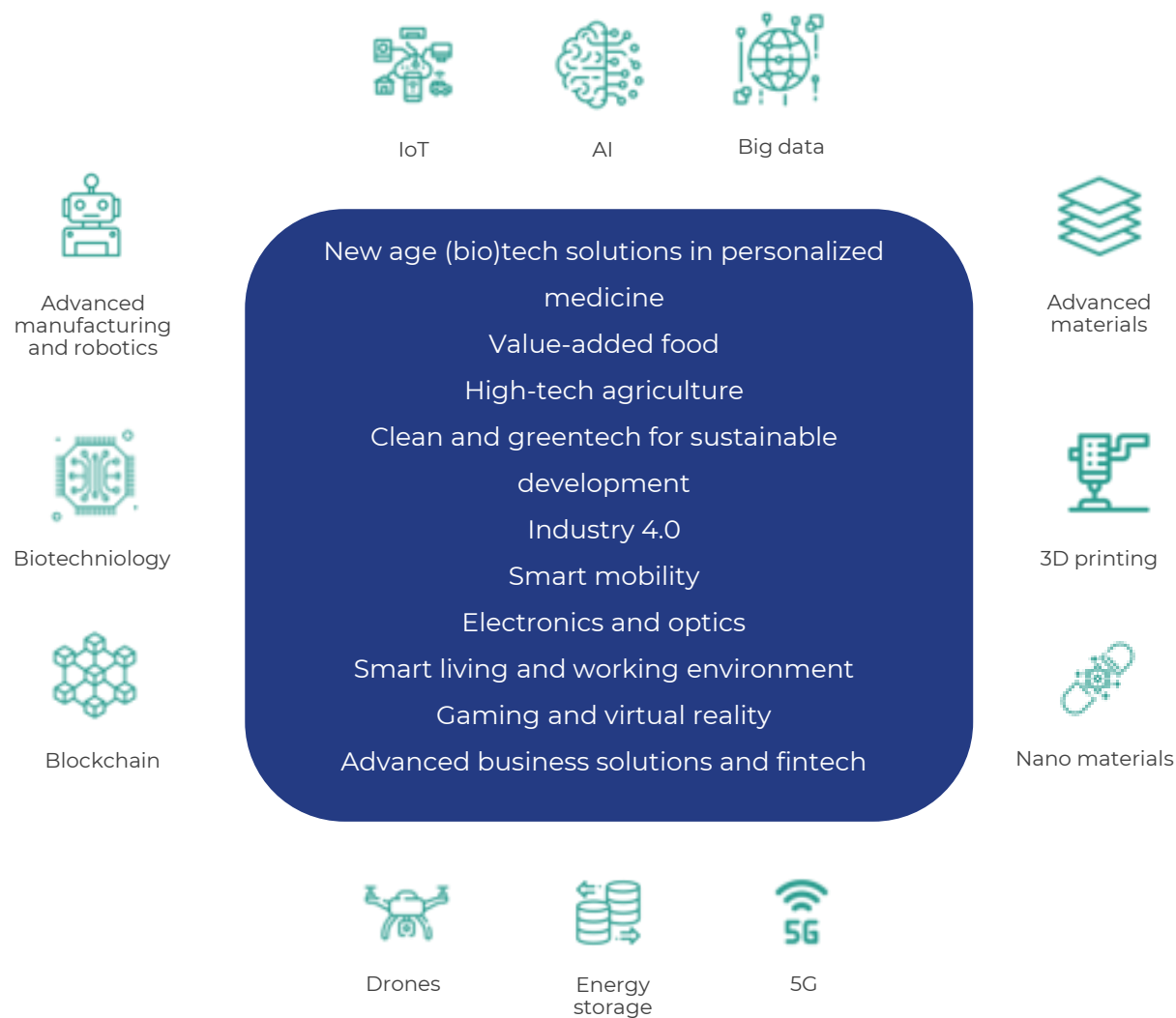
**GAMING AND
VIRTUAL REALITY**



**ADVANCED BUSINESS
SOLUTIONS AND FINTECH**

Serbia's 10 most promising domains

Snapshot: 10 selected domains and main supporting technologies



Serbia's 10 most promising domains

Technologies: A brief guide



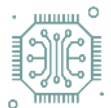
Description



Artificial intelligence (AI) is the ability of machines and systems to acquire and apply knowledge and carry out intelligent behavior.



The **internet of things (IoT)** is a fast-expanding network of digitally connected objects - devices, vehicles and more - embedded with different sensors enabling new functionalities of "traditional" objects.



Biotechnology is best known for its role in medicine and pharmaceuticals, but the science is also applied in other areas such as genomics, food production, and the production of biofuels.



Big data analytics is defined as a set of techniques and tools used to collect, storage, process and interpret large volumes of data from different sources.



Advanced materials generally mean materials that have new or enhanced properties that improve performance over conventional materials, products and processes.



Energy storage technology can be defined as a system that absorbs energy and stores it for a period of time before releasing it. Renewable energy is a big target for advanced energy storage technologies as it is produced in an intermittent way and without stable and steady input of energy.

Application

Environment, health, robotics in the world of AI public sector, transport, law, enforcement, migration and asylum and agriculture

Healthcare, manufacturing (any type of production), energy systems, transport systems, network industries, smart cities, smart government

Bio technologies have been identified as a key technology in terms of the number of funded and implemented projects.

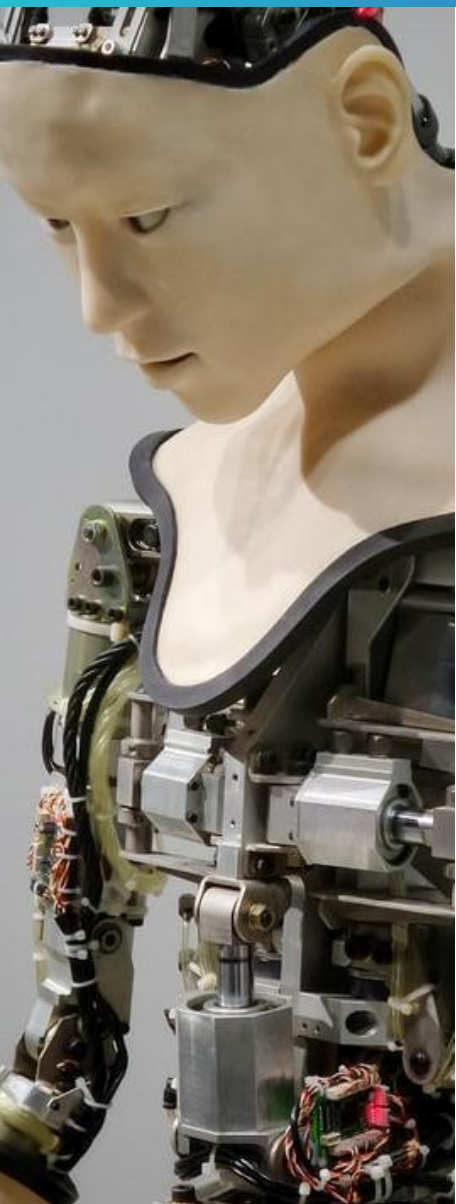
Data-driven innovation: health data, mobility data, environmental data, public administration data

3D printing, bio tech chemicals, construction, consumer goods, electronics, energy, environment, manufacturing, medicine, packaging, pharmaceuticals, process industries

Mobility, energy, environment, manufacturing, public sector, smart city/home, transport

Serbia's 10 most promising domains

Technologies: A brief guide (Cont'd)



Description



Advanced manufacturing plays a key role in research and innovation, being responsible for 64% of private sector research development expenditure and 49% of innovation expenditure in Europe.



3D printing uses additive manufacturing techniques to create three-dimensional objects based on digital models by layering or 'printing' successive layers of materials.



Blockchain is a distributed database and replaces the need for third-party institutions to provide trust for financial, contract and other activities requiring authentication and verification.



The fifth generation of wireless networks, **5G**, represents an evolutionary process of previous generations of wireless networks (2G, 3G, and 4G).



A **drone** is not a technology but a product, a result of different technologies combined.

Application

Manufacturing, transport, logistics, healthcare, automotive, consumer goods, process industries, engineered products, and the technology sector.

Notable impact on the manufacturing sector, consumer electronics, motor vehicles, medical, dental, aerospace, and the public sector.

Widely used in financial transactions and record and verification systems, as well as for smart contracts.

Energy, transport and mobility, healthcare, agriculture, industry, public safety, environment, tourism, and culture.

Transportation and logistics, forestry and agriculture, engineering and construction, and extractive industries.

Serbia's 10 most promising domains

Domain 1: New age tech solutions in personalized medicine



About domain 1

Development and application of software, hardware, biotech and pharmacogenomic solutions used for prevention, diagnosis, monitoring, and personalized treatment of diseases, to protect and improve health and effectively address health problems.

Innovative products, services and processes (illustrations)

Medicines and therapeutical devices such as prosthetics covers, smart gloves for the sight impaired, EEG devices for monitoring neural activity; smart health monitoring software; telemedicine; advanced pharma and veterinary products, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈200
Number of
firms



≈8.000
Number of
employees



≈€650 mil
Total revenues

Illustrative list of players in the field

- Pharmanova
- Abela Pharm
- LMB Soft
- Otto Bock Sava
- Prizma
- Visaris
- Hemofarm
- mBrainTrain



Illustrative list of startups in the field

- Wellbit
- Anora
- Motivate to move
- Heart Care Platform
- Kardio Pal
- BobbyFM



Serbia's 10 most promising domains

Domain 2: Value-added food



About domain 2

Advanced food and beverage processing, biotech food production, and smart packaging for these products requiring minimal use of natural resources with the aim of reducing emissions, waste, and pollution from manufacturing.

Innovative products, services and processes (illustrations)

Biotech food solutions; organic products; high-quality fruit and vegetable products based on proprietary encapsulation technology; smart packaging, such as smart cans showing when food has expired; 3D-printed plant-based burgers, home-based food production, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈4.900
Number of
firms



≈96.000
Number of
employees



≈€7.4bil
Total revenues

Illustrative list of players in the field

- Imlek
- Rubin
- Jaffa
- Bambi koncern
- Midi Organic
- Desing doo
- Drenovac doo
- Eko Fungi



Illustrative list of startups in the field

- Herbelico
- Truff truff bvs
- Food Group
- Sweatfit



Serbia's 10 most promising domains

Domain 3: High-tech agriculture



About domain 3

Combined application of advanced technologies in sustainable agricultural production to ensure energy efficiency and employ chemical processes and products that do not pollute the environment and are healthy for humans.

Innovative products, services and processes (illustrations)

Novel cultivation methods and growing techniques such as vertical and aerial gardening; precision agriculture and remote sensing with internet of things solutions, drones, etc.; remote control systems of animal husbandry and grazing and automated agriculture ("robotic shepherd", berry picker); data management and agricultural support systems (weather forecasting apps, digital advisors for smart sowing), etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈2.900
Number of
firms



≈27.000
Number of
employees



≈€2.6bil
Total revenues

Illustrative list of players in the field

- Sojaprotein
- Delta Agrar
- Greensoft
- Agremo
- Midi Organic



Illustrative list of startups in the field

- Berry-bot
- Winessense sensor node
- Smart sowing strategy
- Bacillomix



Serbia's 10 most promising domains

Domain 4: Clean and green tech solutions for sustainable development



About domain 4

Development and use of new materials and sophisticated, environmentally sustainable technological and biotechnological solutions in waste management, efficient production, energy storage and use, and green building.

Innovative products, services and processes (illustrations)

Bioengineering solutions; solar, wind, biomass, and hydrogen-based electricity generation; development of new age batteries; biodegradable materials and products (plant walls and plant-based packaging); new biodegradable materials from agricultural waste; passive fire protection ribbons made from recycled and bio-based raw materials, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈12.000
Number of firms



≈178.000
Number of employees



≈€16.5bil
Total revenues

Illustrative list of players in the field

- Knauf
- Toza Markovic
- Beorol - Prima
- Lafarge
- Tetragon
- Mont Stubline



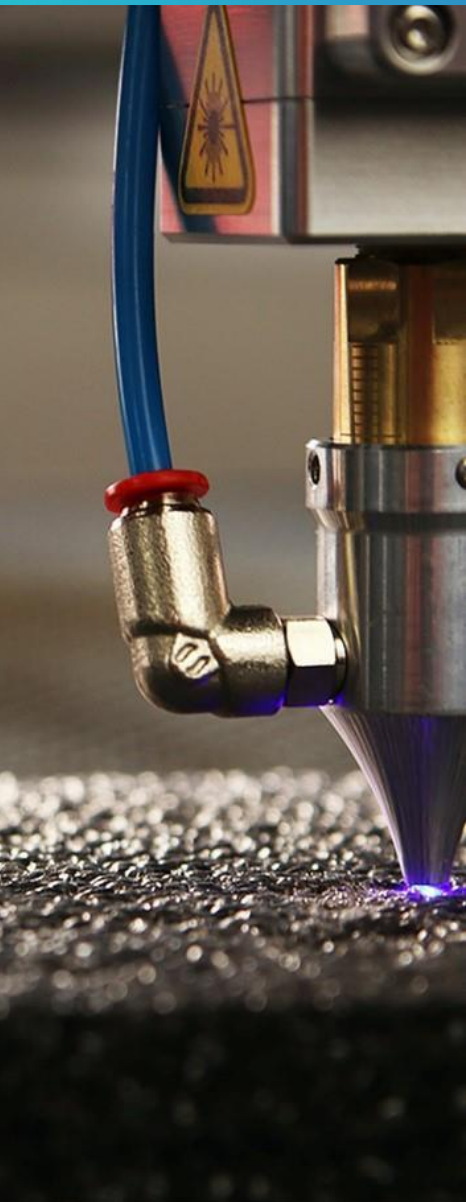
Illustrative list of startups in the field

- Optimus Power
- Smart Fire Block
- White Lemur: SOMA Bioworks



Serbia's 10 most promising domains

Domain 5: Industry 4.0



About domain 5

Intelligent networking between devices and (industrial) processes in (traditional) manufacturing by implementing cutting-edge technological automation and robotization solutions.

Innovative products, services and processes (illustrations)

Tech solutions to improve efficiency and utilization rate of CNC and CAM machines; robots and cobots (e.g. easy-to-use, ergonomic and affordable devices for manipulating ceramic, uPVC and fiberglass pipes); software for digitalized information sharing and usage that enables maintenance management teams to efficiently lead multiple execution teams in the field; software to design and model production lines that enables faster operation and automation of production.

Potential reach in official classification of sectors (NACE2, NACE4)



≈2.900
Number of
firms



≈63.000
Number of
employees



≈€4.8bil
Total revenues

Illustrative list of players in the field

- ICM Electronics
- NS Radijatori
- Siemens
- DMITEH
- Schneider Electric DMS
- Iva 28



Illustrative list of startups in the field

- Digital Worx
- Mehanik Patent
- Smart Power
- Starglass



Serbia's 10 most promising domains

Domain 6: Smart mobility



About domain 6

Novel approach to development of transportation and mobility using advanced technologies to produce elements and assemblies of (smart) vehicles, manage all types of vehicles, and intelligently use transportation infrastructure.

Innovative products, services and processes (illustrations)

Motor vehicle components, ICS or otherwise powered; powertrains for electrical vehicles; drones and other aircraft; radars and communication devices; GIS providers and related products; combination of artificial intelligence and machine vision technology to improve vehicle and passenger safety.

Potential reach in official classification of sectors (NACE2, NACE4)



≈6.400
Number of
firms



≈130.000
Number of
employees



≈€6.9bil
Total revenues

Illustrative list of players in the field

- Continental
- Minel General Electric
- Novelic
- RT-RK
- ZF
- Konelek Engineering



Illustrative list of startups in the field

- WooBox
- Composite Technology Team
- Machine Can
- CarSync
- NTL Ship
- Kov Technology



Serbia's 10 most promising domains

Domain 7: Electronics and optics



About domain 7

Application of modern technologies to collect, process, and use data to produce sophisticated electronic/optical components, and development of new generation systems and integrated solutions based on these.

Innovative products, services and processes (illustrations)

Sophisticated electronic products, hardware, and software; innovative electronic products (such as portable solar battery chargers); smart monitoring and controlling solutions for electronic devices and appliances, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈1.400
Number of
firms



≈27.000
Number of
employees



≈€2bil
Total revenues

Illustrative list of players in the field

- Mikroelektronika
- Bioirc
- IntuiS
- CAM Engineering doo
- Euroicc
- Avantech Electronics
- Vlatacom Institute



Illustrative list of startups in the field

- Strawberry energy
- The Gait Master
- DUALITY



Serbia's 10 most promising domains

Domain 8: Smart home and working environment



About domain 8

Use of software and/or hardware solutions in building and furnishing residential and business spaces. Includes connecting and operating automation, remote control, and facility management solutions.

Innovative products, services and processes (illustrations)

Smart home appliances and furniture; smart systems designed to monitor, control, measure, and optimize energy consumption in buildings, factories, or other facilities; novel approaches in construction (such as 3D printing of homes, green walls, etc.); AI-powered apps for autonomous control and optimization of district heating networks; novel heat exchangers, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈1.100
Number of
firms



≈25.000
Number of
employees



≈€1.7bil
Total revenues

Illustrative list of players in the field

- BUCK Lighting
- Intra Lighting
- Aling Conel
- Tarkett
- Termovent
- Hisense



Illustrative list of startups in the field

- DotLab
- .nanobile
- Smartfire block
- Euro Heat



Serbia's 10 most promising domains

Domain 9: Gaming and virtual reality



About domain 9

Video game development and application of VR/AR technologies to create and apply virtual and augmented reality in fields including, but not limited to education and training, motion pictures and the arts, and automotive, aerospace and other transport industries.

Innovative products, services and processes (illustrations)

Mobile, PC, and console games and gamification; AI-powered VR and AR; 3D medical animation videos for the pharma, biotech and healthcare industries; simulation showrooms (such as in museums); 2D and 3D technologies to improve audio and video products, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈120
Number of
firms



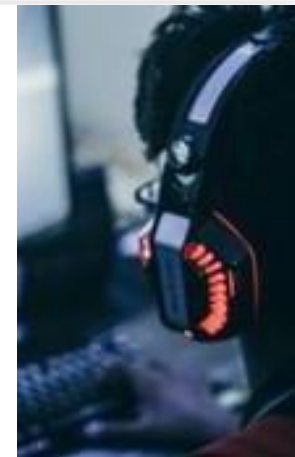
≈2.100
Number of
employees



≈€1.20mil
Total revenues

Illustrative list of players in the field

- 3Lateral
- Nordeus
- Eipix
- 2Desperados
- Frontmen Studios
- Fortuna Esports



Illustrative list of startups in the field

- Karate Do
- Clash of Chefs World
- Going Medieval
- Cryptic Legends
- Mobile Game Race Duels



Serbia's 10 most promising domains

Domain 10: Advanced business solutions and fintech



About domain 10

Application of advanced software solutions that aim to improve and automate business processes, specialized software and algorithms, such as SaaS, PaaS, and IaaS, especially in service industries including the financial sector, marketing, sales, etc.

Innovative products, services and processes (illustrations)

Software products and services; e-commerce software, SaaS, PaaS, & IaaS, AI risk management in banks and insurance companies, e-banking and m-banking solutions; business development software (e.g. smart ERP solutions); smart consumer behavior monitoring and prediction, etc.

Potential reach in official classification of sectors (NACE2, NACE4)



≈3.600
Number of firms



≈32.000
Number of employees



N.A.

Illustrative list of players in the field

- Microsoft
- Vega IT
- Devtech
- Comdata



Illustrative list of startups in the field

- Blinking
- IdeaBuddy
- Beyond42

