

# Pilot courses in Practice Enterprise to implement the University-Enterprise Cooperation for the development of Caspian Area (PICASP)

617540-EPP-1-2020-1-IT-EPPKA2-CBHE-JP

Progress Report, VGTU

Prof. A. Kaklauskas, Vilnius Gediminas Technical University, Vilnius, Lithuania

# WP1:Preparation for the implementation of Pilot Courses Programmes

- ***Deliverable 1.3 Training tours of PC University staff***

Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Training of teaching staff	23/11/2022	25/11/2022	Baku, Azerbaijan	MOOC teacher training took place in Baku, Azerbaijan, on the 23rd–25th of November, 2022. During the training, the development of MOOCs was discussed in detail. VGTU introduced teachers to online education experiences at VGTU.	Number of trained academic staff

## WP2: Implementation of Pilot Courses and new Didactics in SMEs Entrepreneurship and Management

- VGTU participated in the implementation of new teaching methods by MOOCs.
- VGTU gave its qualified contribute to preparing the technical support and integrating hardware and software.
- VGTU contributing to implementation of interuniversity network for new didactics on SMEs entrepreneurship and management

Provided in the application	Value reached
Development of Curricula and Syllabi Due date: 30/04/2021	Done
Testing the technical premises for new didactics Due date: 31/10/2021	Done
Implementation of Interuniversity Network for New Didactics on SMEs Entrepreneurship and Management Due date: 31/12/2023	In process

# MODULE DESCRIPTION

<b>For new courses</b>	
What Practice Enterprise new courses will the PICASP project implement in your HEI?	Smart City and Analytics (with Course Project), 6 credits
<i>For each course please state:</i>	
Title	Smart City and Analytics (with Course Project)
Level of study	Hybrid studies, full time, 2 semester, 16 weeks, 1st year students
List of subjects and credits for each of them	Topics of the course (MOOC): Tourism 5.0, smart tourism, robots, chatbots and automation, personalization and customisation, tech-empowered travel, sustainable tourism, active ecotourism, transformative travel, experience tourism, wellness travel, staycation, virtual reality, voice search & voice control, artificial intelligence, Internet of Things, Recognition Technology, big data analytics, blockchain, digital twins. Total 6 credits.
Estimated date of accreditation and accreditation body	
Number of students to be accepted in the first year/ second year	
Number of teaching staff to be trained	1
Internship /placements ( if applicable )	n/a
List of equipment to be purchased for this course and for what purpose? ( if applicable)	
Date of submission to intra-university organs	
Date of accreditation	
Date of implementation (up and running)	Starting in 2023 February

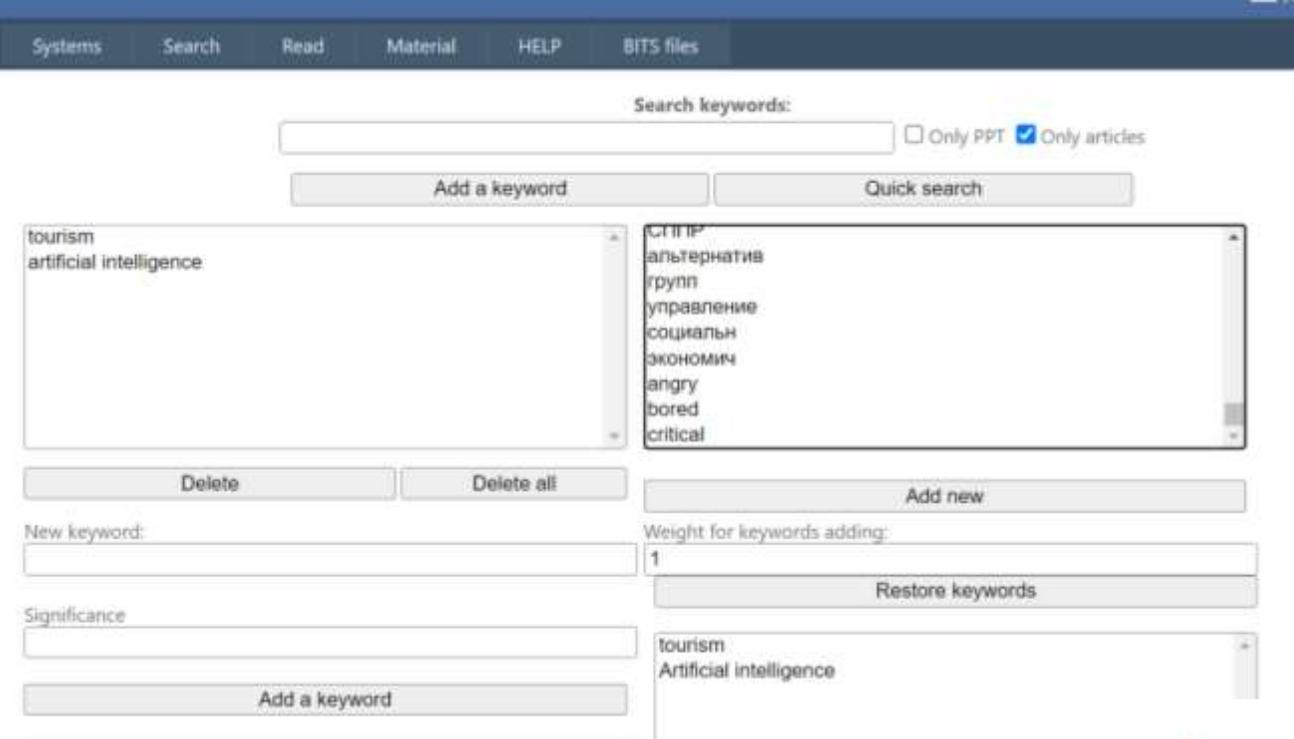
Any Other Activity/Output foreseen (e.g. development teaching material)			
Activity	Start Date – End Date (dd-mm-yyyy)	Output	Delivery Date (dd-mm-yyyy)
Development of teaching (learning) materials and adaptation to different learning contexts and different cycles of studies to different stakeholders		Smart MOOC (open source materials (video, text, games, simulators, calculators, best practices, software), text, intelligent computer learning systems): Tourism 5.0, smart tourism, robots, chatbots and automation, personalization and customisation, tech-empowered travel, sustainable tourism, active ecotourism, transformative travel, experience tourism, wellness travel, staycation, virtual reality, voice search & voice control, artificial intelligence, Internet of Things, Recognition Technology, big data analytics, blockchain, digital twins.	2023 January

Activity Title	Date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
Guidelines and accreditation rules for the quality assurance of MOOCs	2023	Azerbaijan, Kazakhstan, Lithuania	<p>VG TU developed guidelines and accreditation rules to ensure the quality of adaptive MOOCs. We apply the Manual for Quality Assessment for E-learning (2012) by the European Association of Distance Teaching Universities (EADTU) and OpenupEd quality benchmarks. Quality benchmarks for MOOCs ensure that courses show eight standard features at institutional and course levels:</p> <ol style="list-style-type: none"> <li>1) Openness to learners;</li> <li>2) Digital openness;</li> <li>3) Learner-centred approach;</li> <li>4) Independent learning;</li> <li>5) Media-supported interaction;</li> <li>6) Recognition options;</li> <li>7) Quality focus;</li> <li>8) Spectrum of diversity.</li> </ol>	Handbook with guidelines on quality assurance and accreditation rules of Practice Enterprise and MOOCs Modules
Assessment, recognition and certification of the developed BECK MOOC modules by universities in Azerbaijan and Kazakhstan	2023	Azerbaijan, Kazakhstan, Lithuania	Assessment, recognition and certification of the developed MOOCs.	Assessment, recognition and certification of 6 MOOCs Modules



VG TU analyzed the global best practice Guidelines for quality assurance MOOCs :

Assessment and Recognition of MOOCs, The State of the Art	2022-11-20 07:48	Feed PDF Editor Doc...	629 KB
Australia	2022-11-20 07:47	Feed PDF Editor Doc...	1 385 KB
BECK Guidelines for the quality assurance of MOOCs	2022-11-20 09:09	Microsoft Word Doc...	71 KB
China	2022-11-20 07:17	Feed PDF Editor Doc...	468 KB
Criteria for Quality Assurance to Develop MOOC Courses	2022-11-20 06:47	Feed PDF Editor Doc...	415 KB
Elektra	2022-11-20 15:41	Feed PDF Editor Doc...	33 KB
Existing MOOC quality models	2022-11-20 03:07	Feed PDF Editor Doc...	1 047 KB
Guidelines for Quality Assurance and Accreditation of MOOCs	2022-11-20 06:45	Feed PDF Editor Doc...	386 KB
MOOCs accreditation 1	2022-11-20 07:42	Feed PDF Editor Doc...	179 KB
MOOCs accreditation 2	2022-11-20 07:35	Feed PDF Editor Doc...	888 KB
MOOCs accreditation 3	2022-11-20 06:48	Feed PDF Editor Doc...	312 KB
MOOCs accreditation 4	2022-11-20 06:44	Feed PDF Editor Doc...	586 KB
MOOCs accreditation 5	2022-11-20 07:58	Feed PDF Editor Doc...	878 KB
MOOCs accreditation 6	2022-11-20 07:51	Feed PDF Editor Doc...	1 977 KB
MOOCs accreditation 7	2022-11-20 06:47	Feed PDF Editor Doc...	378 KB
Nordic Approach	2022-11-20 06:22	Feed PDF Editor Doc...	2 021 KB
Quality assurance assessment recognition accreditation	2022-11-20 05:29	To Archive	32 639 KB
Quality assurance Case study	2022-11-20 06:21	Feed PDF Editor Doc...	612 KB
Quality assurance framework for MOOCs	2022-11-20 07:14	Feed PDF Editor Doc...	1 867 KB
Quality Reference Framework for the Quality of MOOCs	2022-11-20 06:46	Feed PDF Editor Doc...	2 752 KB
Quality_Assurance_checklists	2022-11-20 07:07	Feed PDF Editor Doc...	348 KB
Scandinavian Perspective	2022-11-20 07:55	Feed PDF Editor Doc...	734 KB
United Kingdom	2022-11-20 07:33	Feed PDF Editor Doc...	621 KB
USA and Europe	2022-11-20 06:23	Feed PDF Editor Doc...	520 KB
USA universities	2022-11-20 06:21	Feed PDF Editor Doc...	2 080 KB

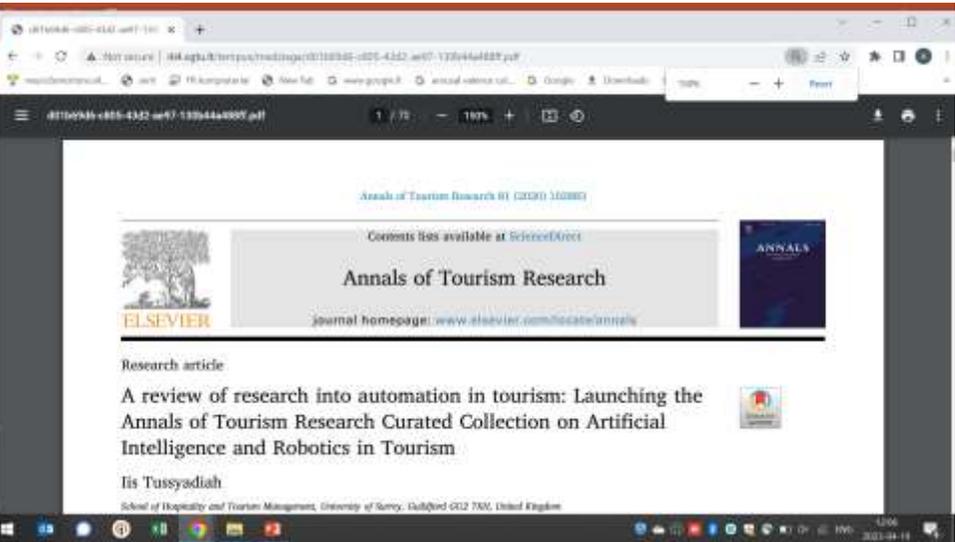


# Customized VilniusTech tourism text analytics and selection system

Pages 
  Time 
  Publications

Approximately  pages  
 Approximately  minutes  
 publications

[Search result document\(PDF\)](#)



The following factors determine a rational text:	Publication 1	Publication 2	Publication 3	Publication 4	Publication 5
<b>Citation of papers:</b>					
Citation of papers (Web of Science)	-	-	-	4	1
<b>Top 25 papers</b>	-	-	-	-	-
<b>Impact factor of journals</b>	0.1078	0.119	0.5051	0.357	-
<b>Density of keywords (% of a text):</b>					
tourism	1.54021177911963	0.106482772608574	1.31455399061032	0.0155735516596978	-
artificial intelligence	1.95276850566953	0.836650356210222	0.0276874924762249	0.464981756696625	0.44497323022010

# Tourism multi-criterion intelligent decision support system (TIDSS)



TIDSS are able to provide, in real-time, a multivariate design, multi-criteria analysis, and selection of the most rational tourism alternatives. Furthermore, TIDSS provide different and complex scenarios in real-time, which enables effective and informed tourism decision-making that is based on adequate, available and trustworthy data.

Decision matrix and assessment results of IEMR and MR alternatives from Kazuko Fair (on March 2) using the COPRAS method.

Criteria describing the alternatives	s	Units of measurement	Weight	Integrated emotional market rental (IEMR) compared alternatives		Market rental (MR) compared alternatives	
				Pilies St. $a_1$	Lukiskiu Square $a_2$	Pilies St. $a_1$	Lukiskiu Square $a_2$
<b>Physical criteria</b>				<b>Physical criteria</b>			
Accessibility of the location	+	Points	0.07	6 0.03	8 0.04	6 0.03	8 0.04
Number of visitors to the fair	+	Number of visitors	0.08	16410 0.0435	13750 0.0365	16410 0.0435	13750 0.0365
Widths of the street and sidewalk	+	m	0.03	28 0.0171	21 0.0129	28 0.0171	21 0.0129
Eye-catching views	+	Points	0.05	9 0.0321	5 0.0179	9 0.0321	5 0.0179
Hard landscaping	+	Points	0.02	6 0.0086	8 0.0114	6 0.0086	8 0.0114
<b>Economic criteria</b>				<b>Economic criteria</b>			
Rental value of a 3 x 3 m sales booth	-	Euros for three days	1	69.66 0.5	69.66 0.5	69.66 0.5	69.66 0.5
Housing prices	+	Points	0.06	9 0.0338	7 0.0262	9 0.0338	7 0.0262
Commercial property rental prices	+	Points	0.08	8 0.0427	7 0.0373	8 0.0427	7 0.0373
Real estate tax rates	+	Points	0.04	9 0.0212	8 0.0188	9 0.0212	8 0.0188
Attractiveness to small business enterprises	+	Points	0.07	8 0.0373	7 0.0327	8 0.0373	7 0.0327
<b>Social criteria</b>				<b>Social criteria</b>			
Popularity as a meeting place	+	Points	0.08	8 0.0492	5 0.0308	8 0.0492	5 0.0308

Table 2 (continued).

Criteria describing the alternatives	s	Units of measurement	Weight	Integrated emotional market rental (IEMR) compared alternatives		Market rental (MR) compared alternatives	
				Pilies St. $a_1$	Lukiskiu Square $a_2$	Pilies St. $a_1$	Lukiskiu Square $a_2$
<b>Emotional and biometrical criteria</b>							
Happiness	+	Points	0.1	0.158225 0.0551	0.129154 0.0449	-	-
Sadness	-	Points	0.1	0.200443 0.0558	0.158545 0.0442	-	-
Anger	-	Points	0.1	0.108799 0.0502	0.108075 0.0498	-	-
Surprise	+	Points	0.1	0.051358 0.0356	0.092899 0.0644	-	-
Fear	-	Points	0.1	0.042741 0.0618	0.026442 0.0382	-	-
Disgust	-	Points	0.1	0.036638 0.0487	0.038552 0.0513	-	-
Valence	+	Points	0.1	0.905851 0.0502	0.897404 0.0498	-	-
Arousal	+	Points	0.1	0.36 0.0537	0.31 0.0463	-	-
Respiratory rate	+	Respiration per minute (RPM)	0.1	14.506207 0.0485	15.3982 0.0515	-	-
Heart rate	+	Beats per minute (BPM)	0.1	76.00119 0.0505	74.61746 0.0495	-	-
Normalized weighted maximizing alternative indices, totals				0.6885	0.6215	0.3949	0.3151
Normalized weighted minimizing alternative indices, totals				0.8607	0.8293	0.6442	0.6458
Significance of the alternative				1.5178	1.4822	1.0407	0.9593
Priority of the alternative				1	2	1	2
Utility degree of the alternative (%)				100%	97.65%	100%	92.18%

# WP3: Quality plan and Accreditation

Provided in the application	Value reached
Report on Internal and External control of Quality Due date: 30/11/2023	In process
Report on quality procedures implementation Due date: 30/11/2023	In process

# WP4: Dissemination of results and its exploitation

Provided in the application	Value reached
Elaboration of Dissemination Plan Due date: 31/07/2021	Done
Websites establishment and updating Due date: 31/12/2023	In process
Meetings with stakeholder Due date: 31/12/2023	In process

# Project dissemination links

- VGTU website:

- <https://vilniustech.lt/universitetas/naujienos/vilnius-tech-prisides-prie-picasp-projekto-igyvendinimo/26671?nid=331096> (LT)
- <https://vilniustech.lt/about-university/news/vilnius-tech-will-contribute-to-the-implementation-of-the-picasp-project/73472?nid=331098> (EN)

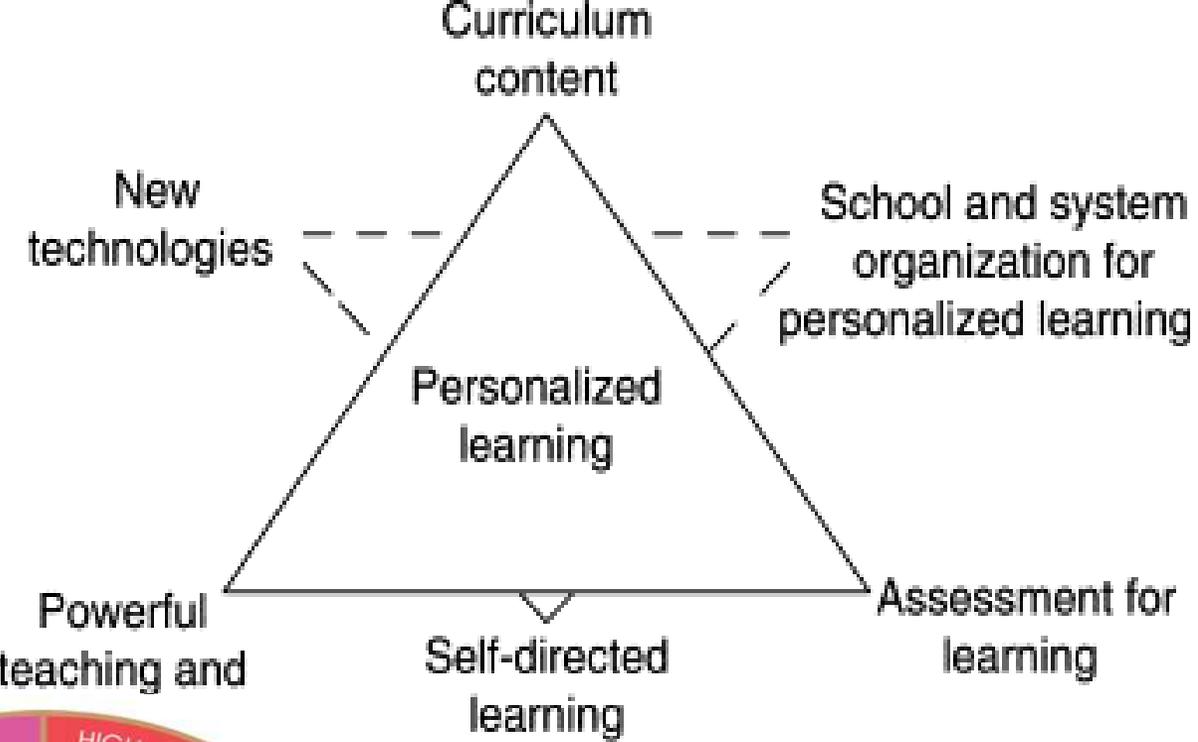
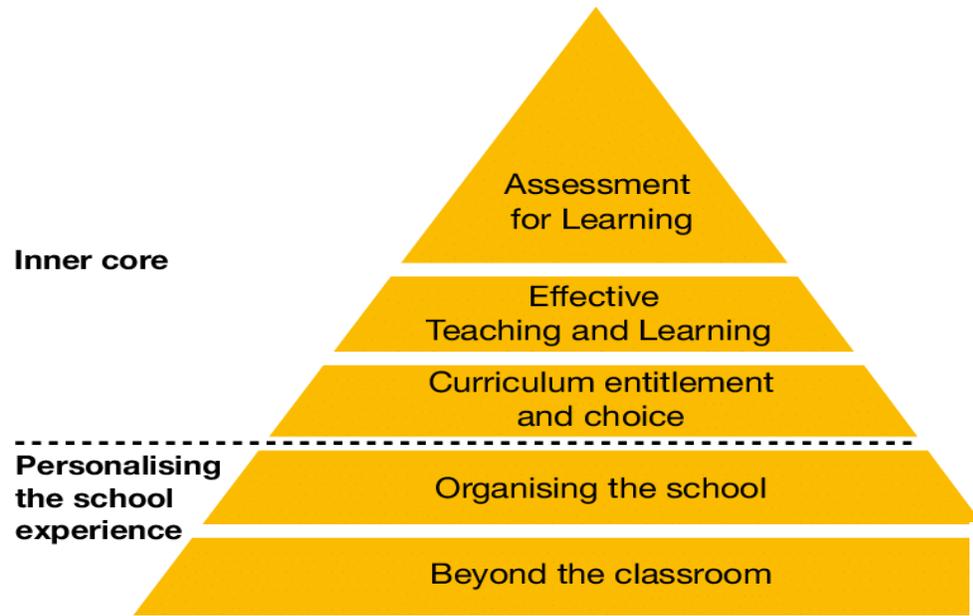
- VGTU LinkedIn:

[https://www.linkedin.com/posts/vilniustech\\_industry50-enviroment-qualityassurance-activity-6859789038891646976-x-EG](https://www.linkedin.com/posts/vilniustech_industry50-enviroment-qualityassurance-activity-6859789038891646976-x-EG) (EN)

- Nature Communications:

Soon, we will submit a manuscript "Developing a worldwide city science: synergies and trade-offs" to the journal "Nature Communications".

# Mass customised learning



### Personalized Learning

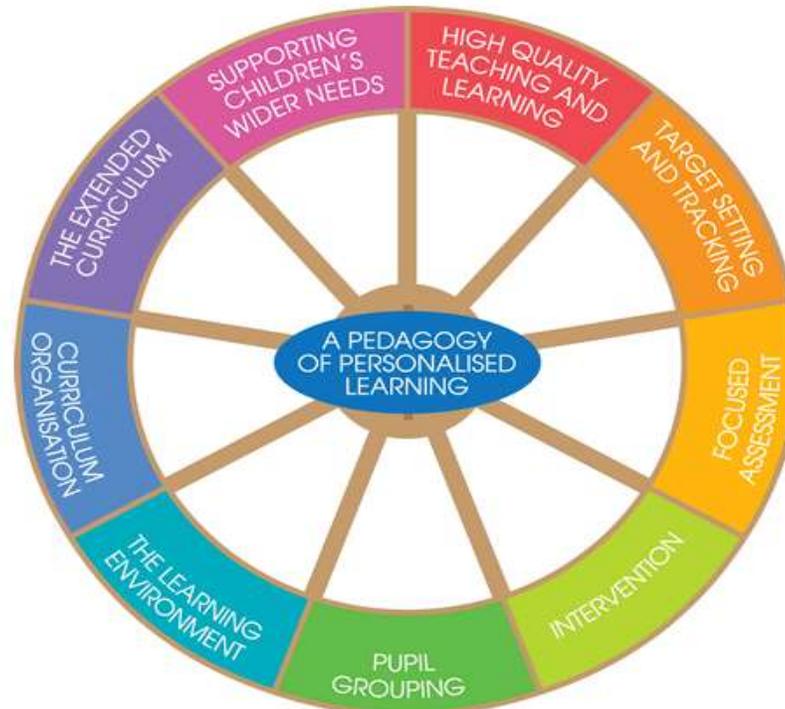
Maintains a complete Learning Profile on all items – not just content & instruction strategy; adapts & improves to enhance learning path & support retention & mastery

### Adaptive Learning

Uses large data pools & analytics to continuously update the learning path by adapting content & instructional strategy in real time.

### Differentiated Instruction

Assessment to determine a fixed set of content and a fixed learning path



# Mass customised learning

## THE CORE FOUR ELEMENTS OF PERSONALIZED LEARNING



### Personalized Learning

**The Learner...**

- Drives the learning
- Connects learning with interests, talents, and passions
- Actively participates in the design of their learning
- Aims to become a self-directed learner who can self-monitor and adjust
- Takes assessments AS and FOR learning, minimally OF learning



### Differentiated Instruction

**Both Learning Styles...**

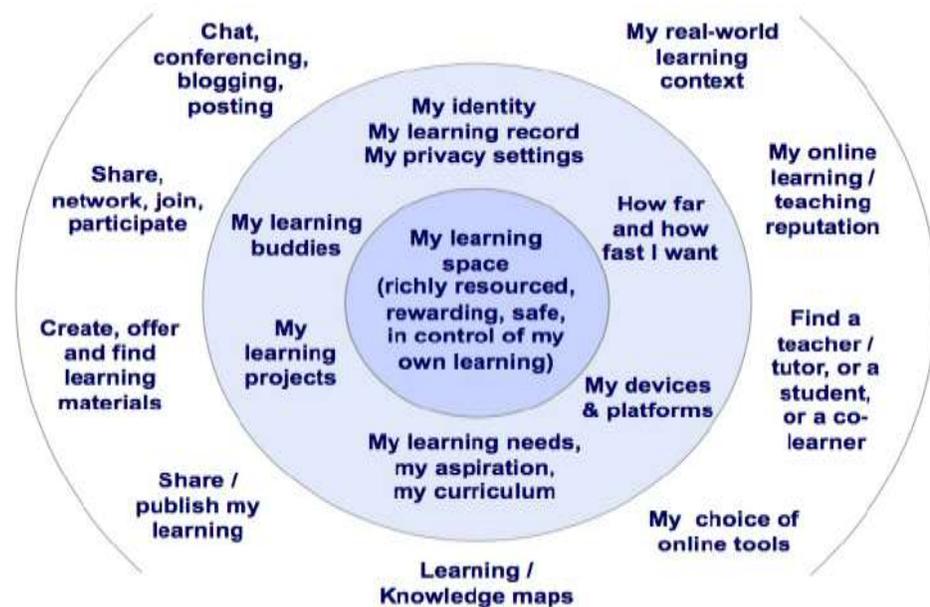
**The Teacher...**

- Drives the learning
- Adjusts teaching for different groups of learners
- Designs instruction with the needs of different student groups in mind
- Uses data and assessments to modify instruction and provide feedback
- Gives assessments FOR and OF learning

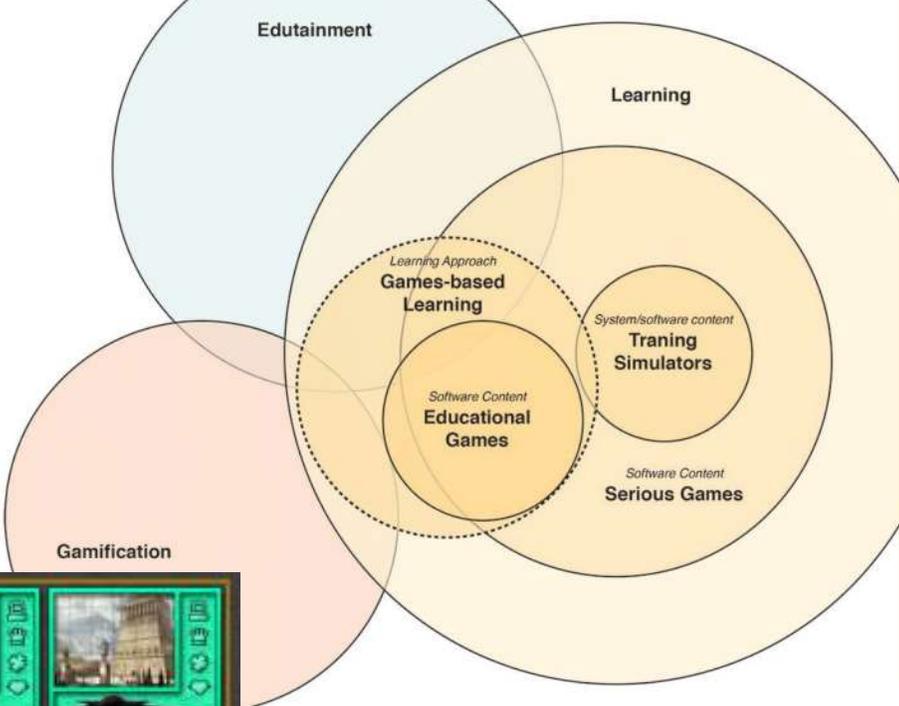
- Cater instruction to different learning needs
- Utilize technology for effective implementation



**Edulastic**  
Adapted from Barbara Bray and Kathleen McClaskey's Chart



# Open Games



6 FACTORS OF CLASSROOM GAMIFICATION

- Learning Spaces
- Processes and Routines
- Learning Goals
- Play
- Roles
- Badges and Rewards

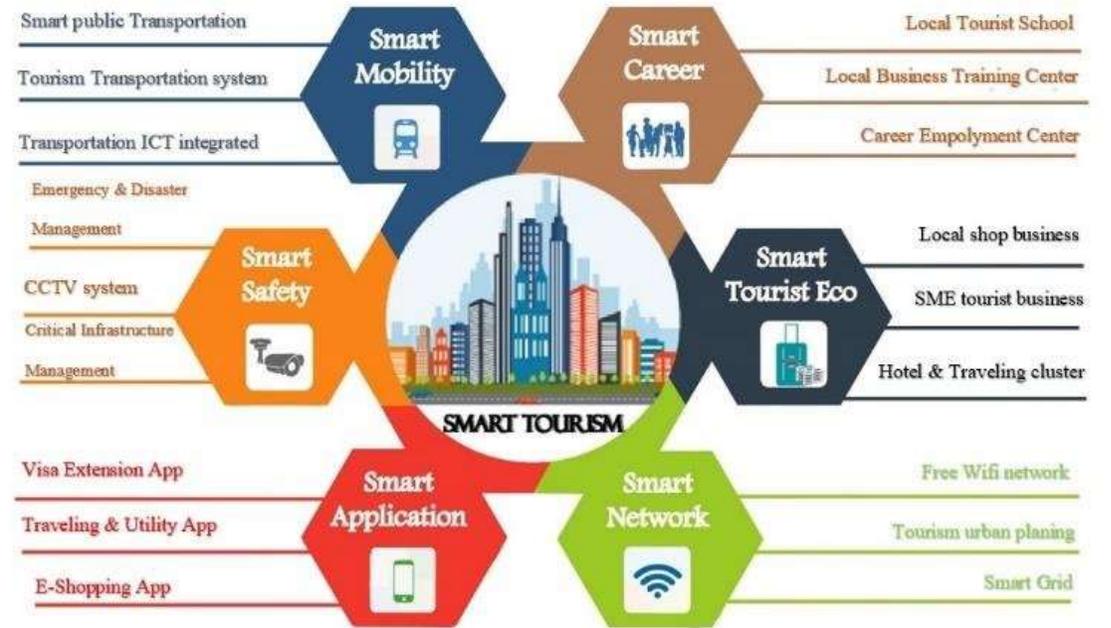
<p><b>ROUSSE QUEST</b></p> <p><i>Rousse Quest</i> Visit some famous Ruse town monuments.</p>	<p><b>GREAT PYRAMID OF GIZA PUZZLE</b></p> <p><i>Great Pyramid</i> Online puzzle of The Great Pyramid of Giza.</p>	<p><b>TEMPLE OF ARTEMIS PUZZLE</b></p> <p><i>Temple of Artemis</i> 40 pieces online puzzle with ancient world wonder.</p>	<p><b>TAJ MAHAL PUZZLE</b></p> <p><i>Taj Mahal Puzzle</i> Fun online puzzle with Taj Mahal world wonder.</p>	<p><b>MAUSOLEUM AT HALICARNASSUS PUZZLE</b></p> <p><i>Halicarnassus</i> Rotating puzzle with Mausoleum at Halicarnassus.</p>
<p><b>PORCELAIN TOWER PUZZLE</b></p> <p><i>Porcelain Tower</i> 5x8 pieces puzzle of the Porcelain Tower of Nanjing.</p>	<p><b>COLOSSEUM PUZZLE</b></p> <p><i>The Colosseum</i> 5x8 pieces puzzle with picture of the Colosseum of Rome.</p>	<p><b>HAGIA SOPHIA PUZZLE</b></p> <p><i>Hagia Sophia</i> Short online puzzle with wonder of the world.</p>	<p><b>STONEHENGE PUZZLE</b></p> <p><i>Stonehenge</i> 40 pieces square rotating puzzle with a world wonder.</p>	<p><b>CHINA WALL PUZZLE</b></p> <p><i>Wall of China</i> 40 squares puzzle with picture of the Great Wall.</p>

**HOW TO GAMIFY YOUR CLASSROOM**

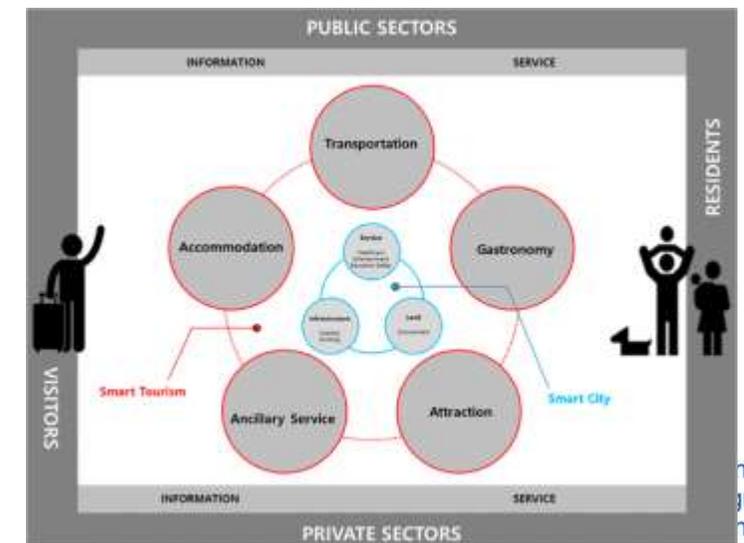
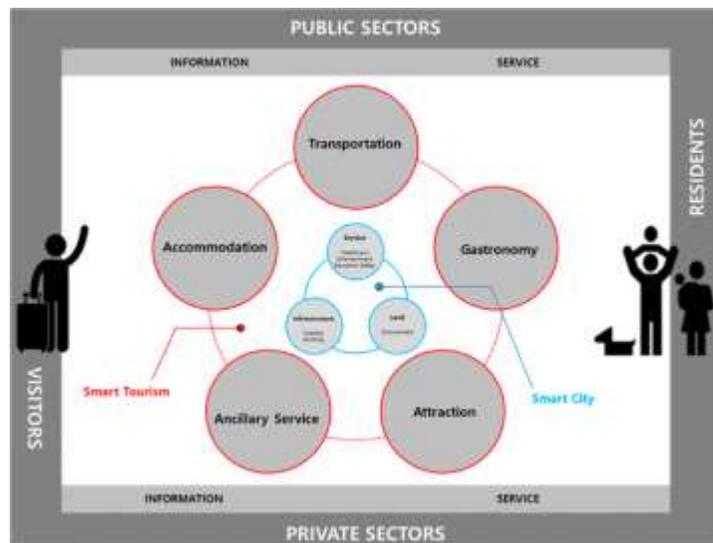
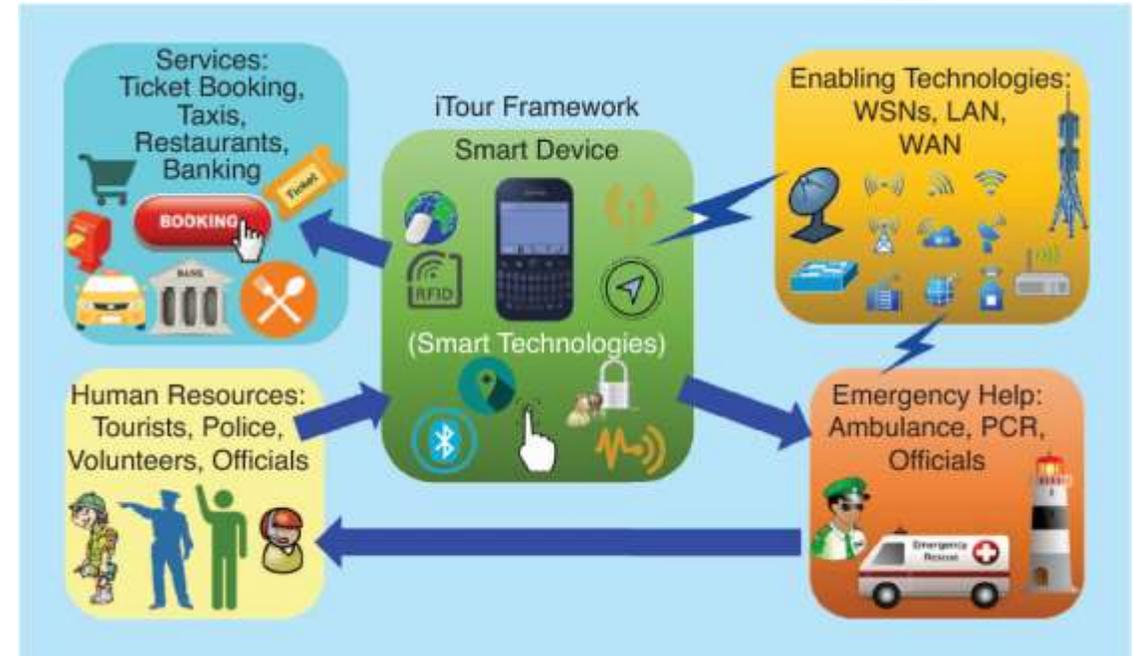
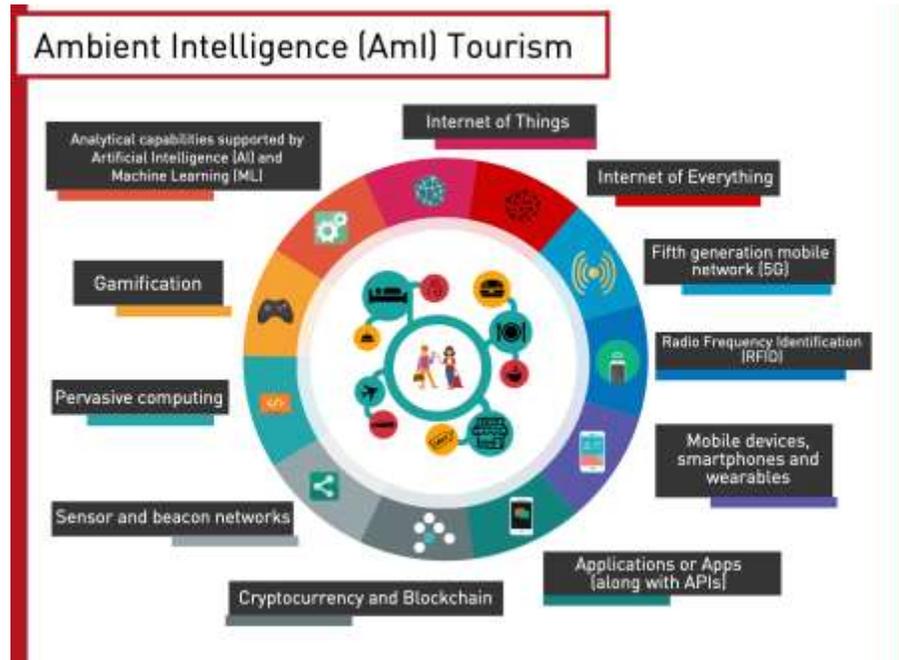
By, [EDTECH4BEGINNERS.COM](http://EDTECH4BEGINNERS.COM)

- Try apps such as: Kahoot! Class Dojo & Typeform.
- Set frequent class competitions.
- Challenge individuals using SMART targets.
- Display cumulative scoreboards with weekly prizes.
- Send online badges/awards/certificates to students.
- Create levels of learning which students are encouraged to climb.

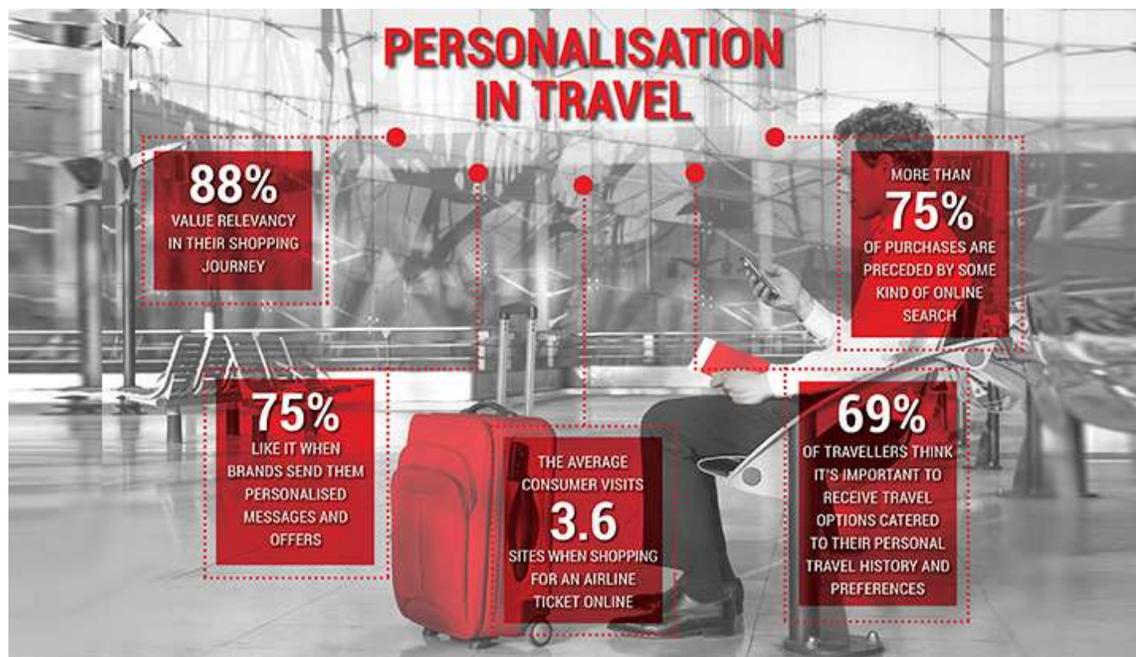
# Smart tourism



# Smart tourism



# Personalisation in the tourism



# Personalisation in the tourism



## 3 TIPS TO MARKETING PERSONALIZATION

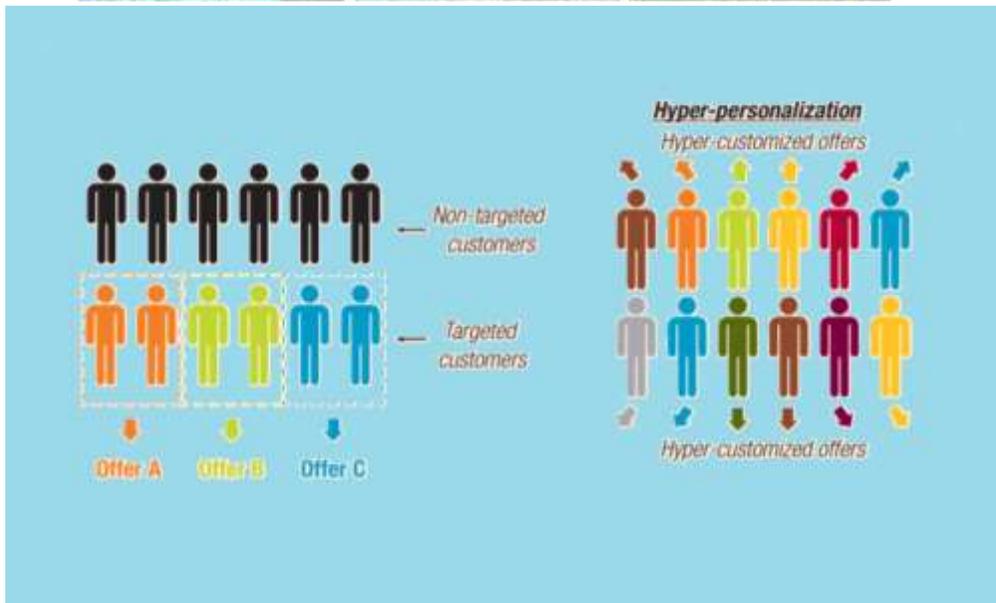
- 1 Offer what users wants**

Ask your users for personal data of create more personalized experiences. Netflix is great at using machine learning for personalization, with 80% of their views coming from their recommendations (Medium).
- 2 Create better content**

Gathering personal data allows you to create tailored content. 58% of users are more likely to convert when they receive content based on their previous behaviour (HubSpot). Give your content an advantage by collecting personal data.
- 3 Humanize your business**

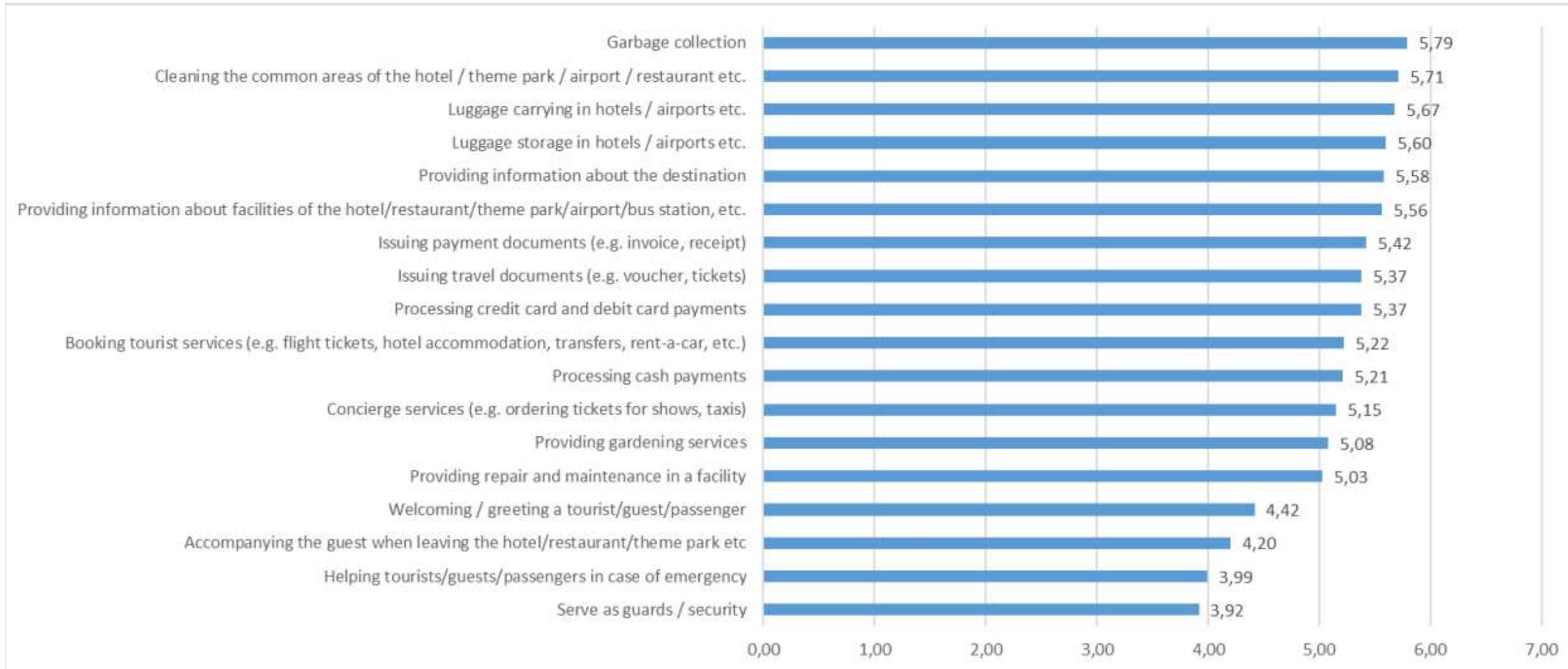
80% of consumers are more likely to make a purchase when personalization is involved (Epsilon). They want to be able to put a face(s) behind a brand. Personalizing your brand can help give customers friendly experiences that are humanized.

Information extracted from HubSpot



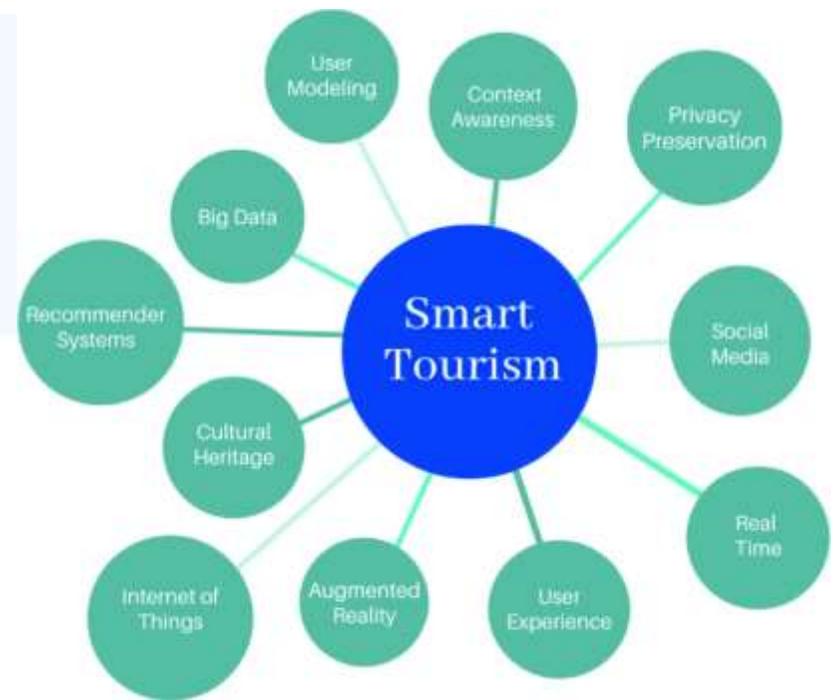
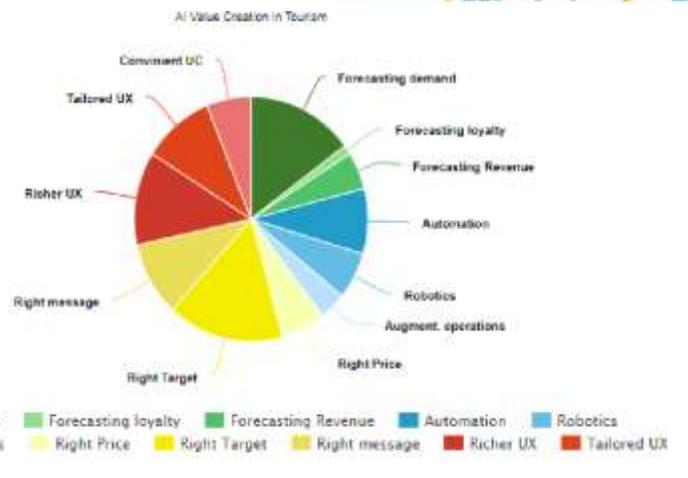
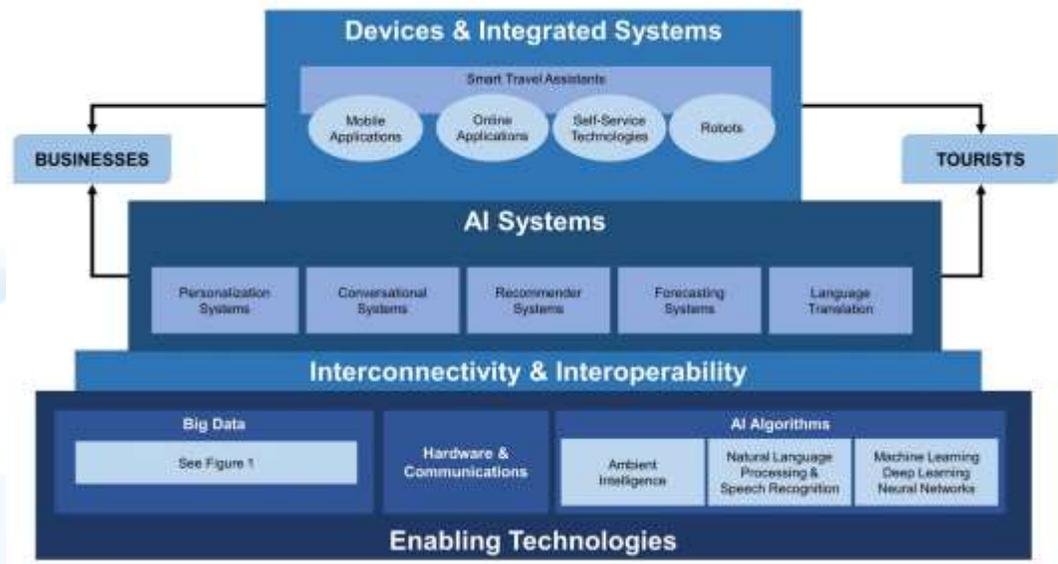
# Robots in tourism

Perceived appropriateness of robot application in travel, tourism and hospitality – common activities



# AI Use Cases in the Travel Industry

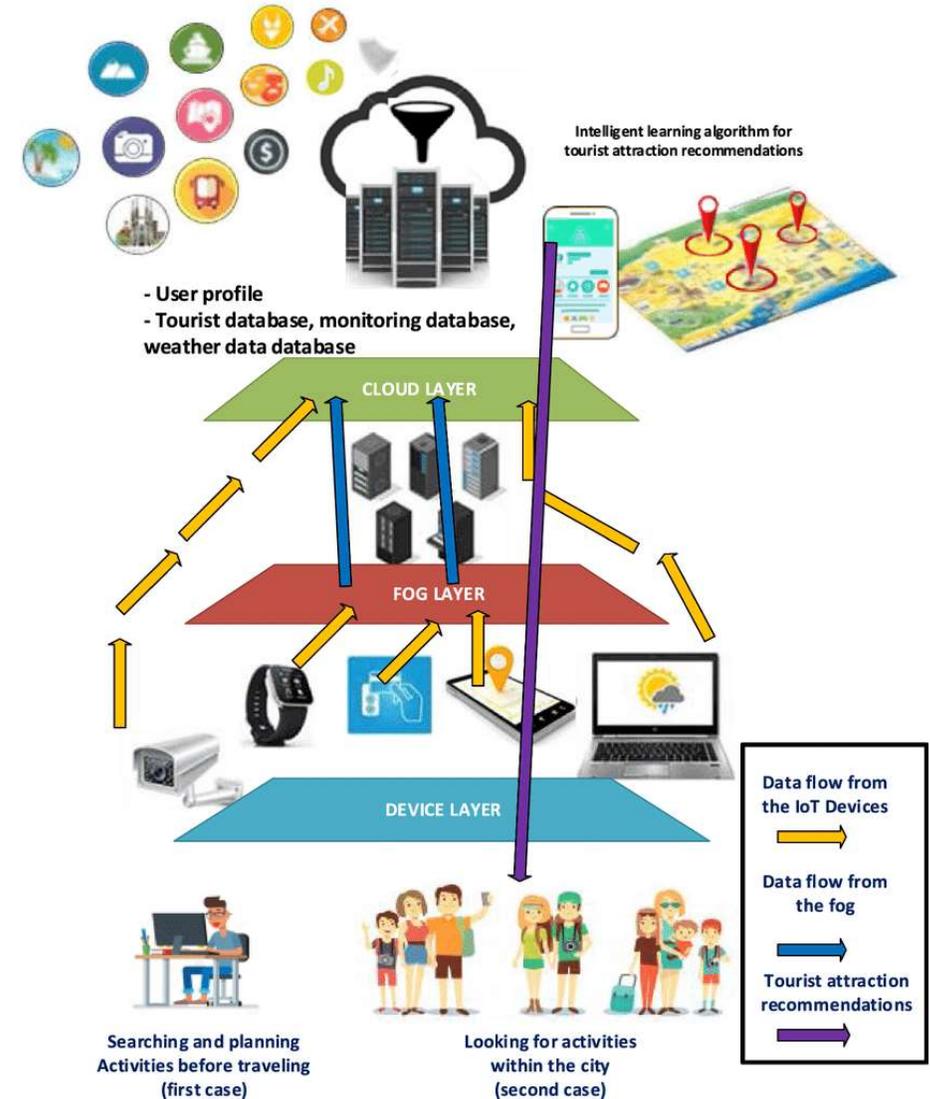
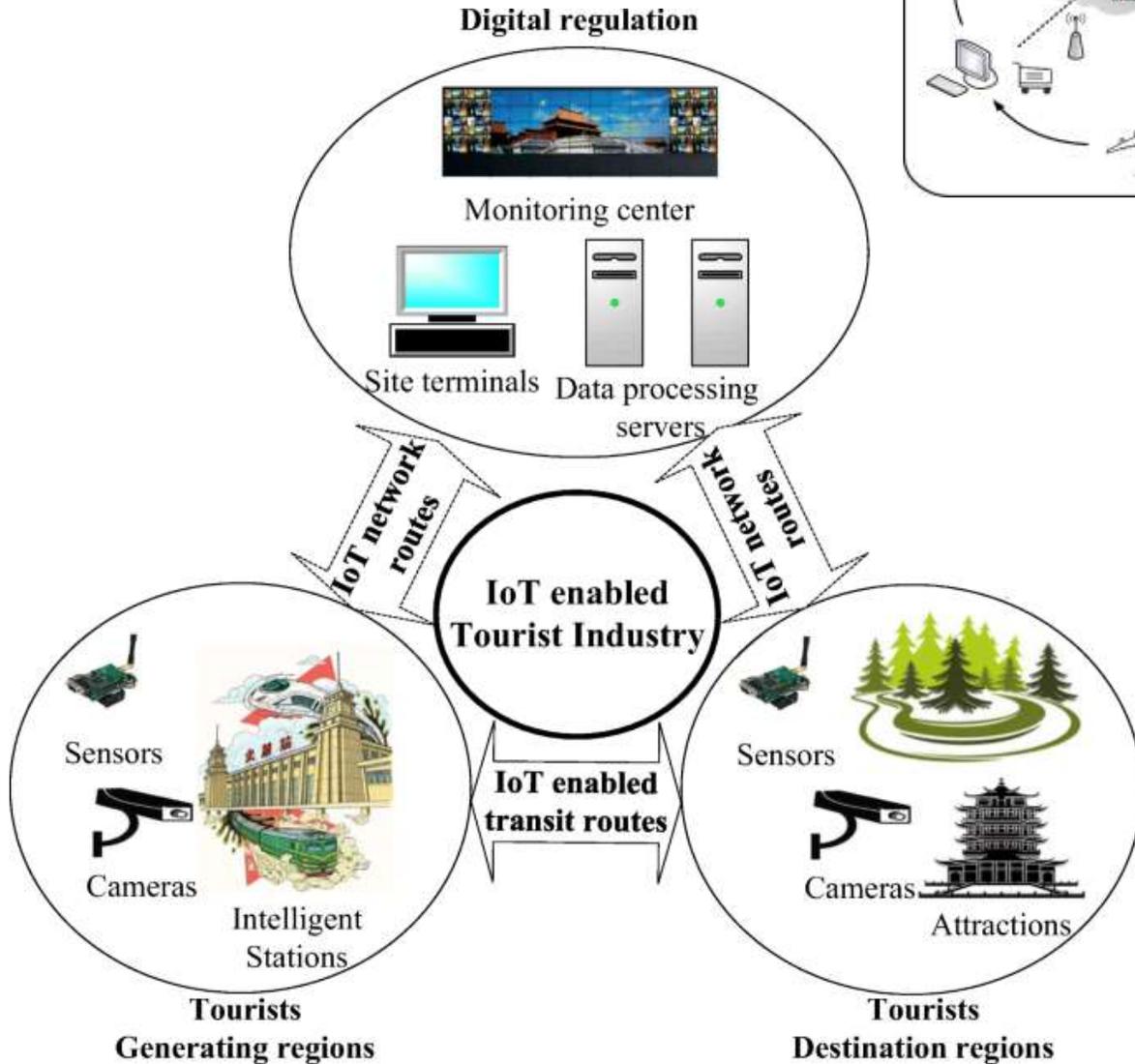
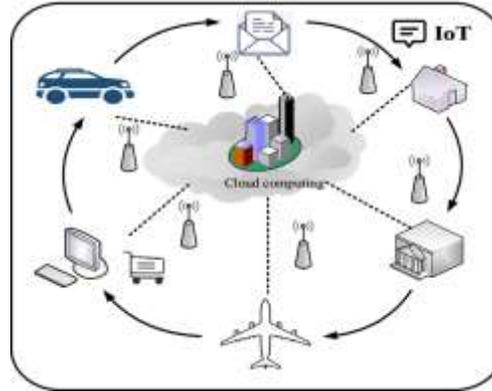
- ✓ AI-driven travel chatbots
- ✓ Voice-based digital assistants
- ✓ Automatic facial recognition
- ✓ Personalized recommendations for tourists
- ✓ Profound sentiment analysis
- ✓ AI baggage handling solution
- ✓ Robotic technologies for self-service
- ✓ AI-empowered flight forecasting apps



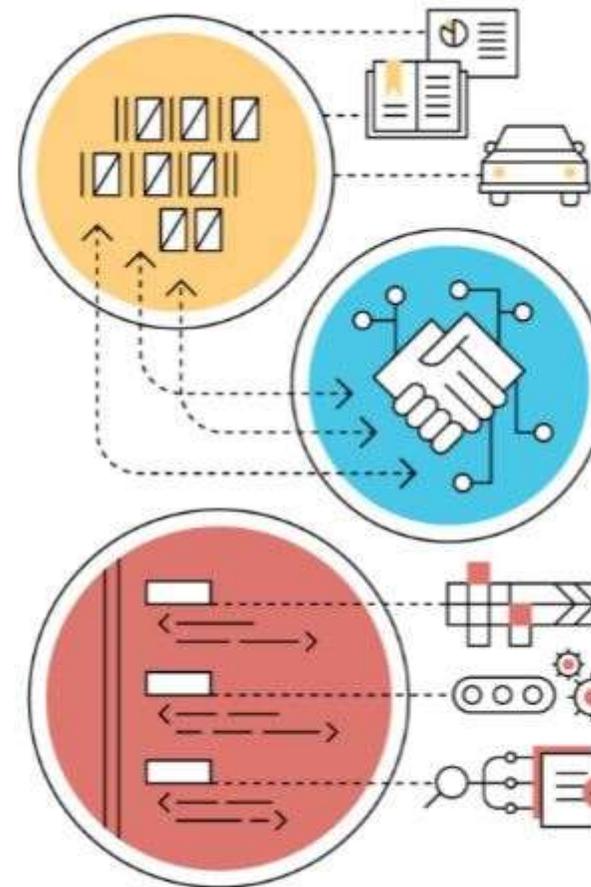
# How will augmented reality support the tourism experience?



# IoT in tourism



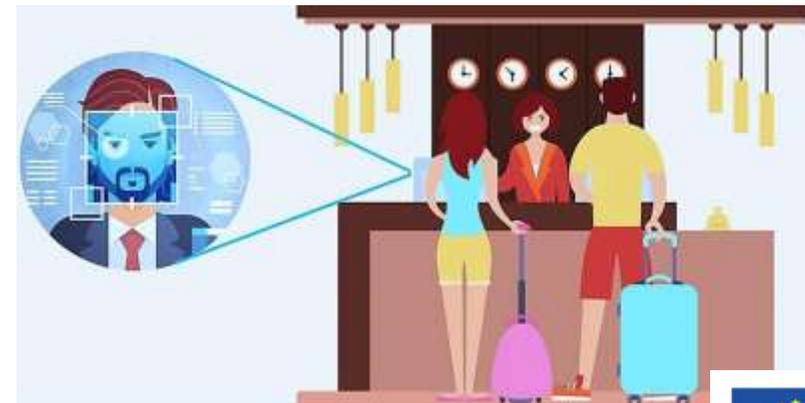
# Blockchain in tourism



- 1 Storing digital records**  
Blockchain allows unprecedented control of information through secure, auditable, and immutable records of not only transactions but digital representations of physical assets.
- 2 Exchanging digital assets**  
Users can issue new assets and transfer ownership in real time without banks, stock exchanges, or payment processors.
- 3 Executing smart contracts**  
Self-governing contracts simplify and automate lengthy and inefficient business processes.  
**Ground rules** Terms and conditions are recorded in the contract's code.  
**Implementation** The shared network automatically executes the contract and monitors compliance.  
**Verification** Outcomes are validated instantaneously without a third party.

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# Recognition technology in tourism

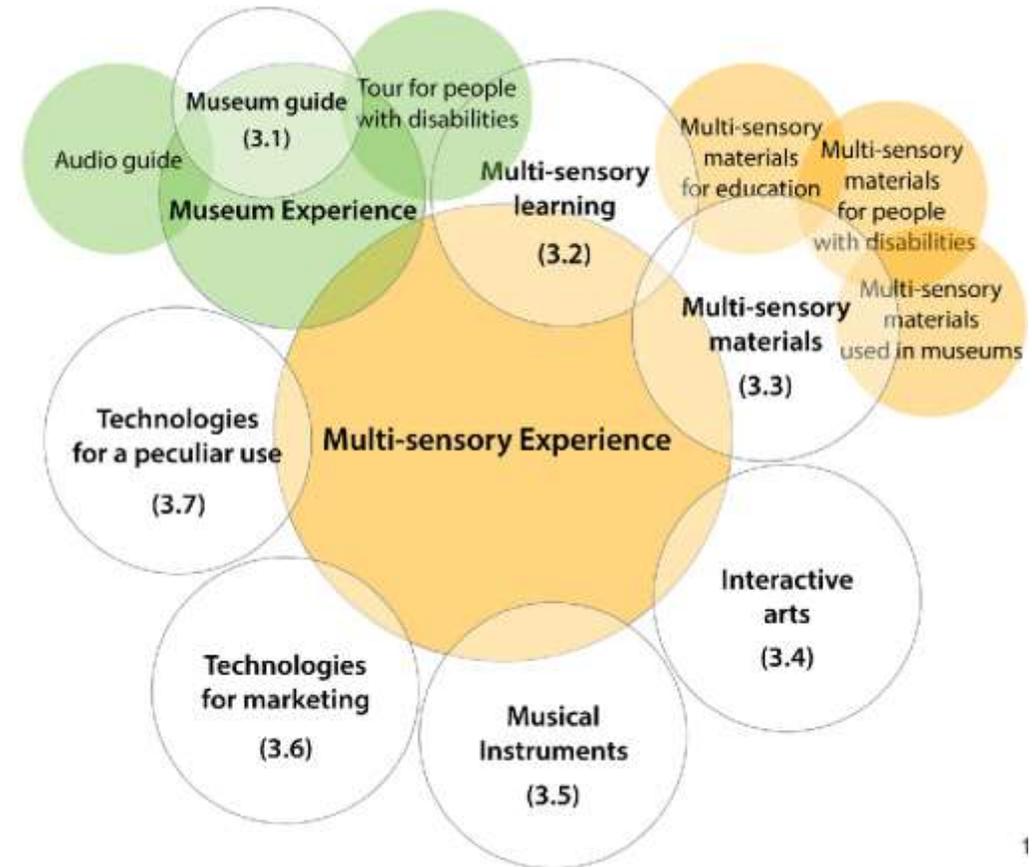
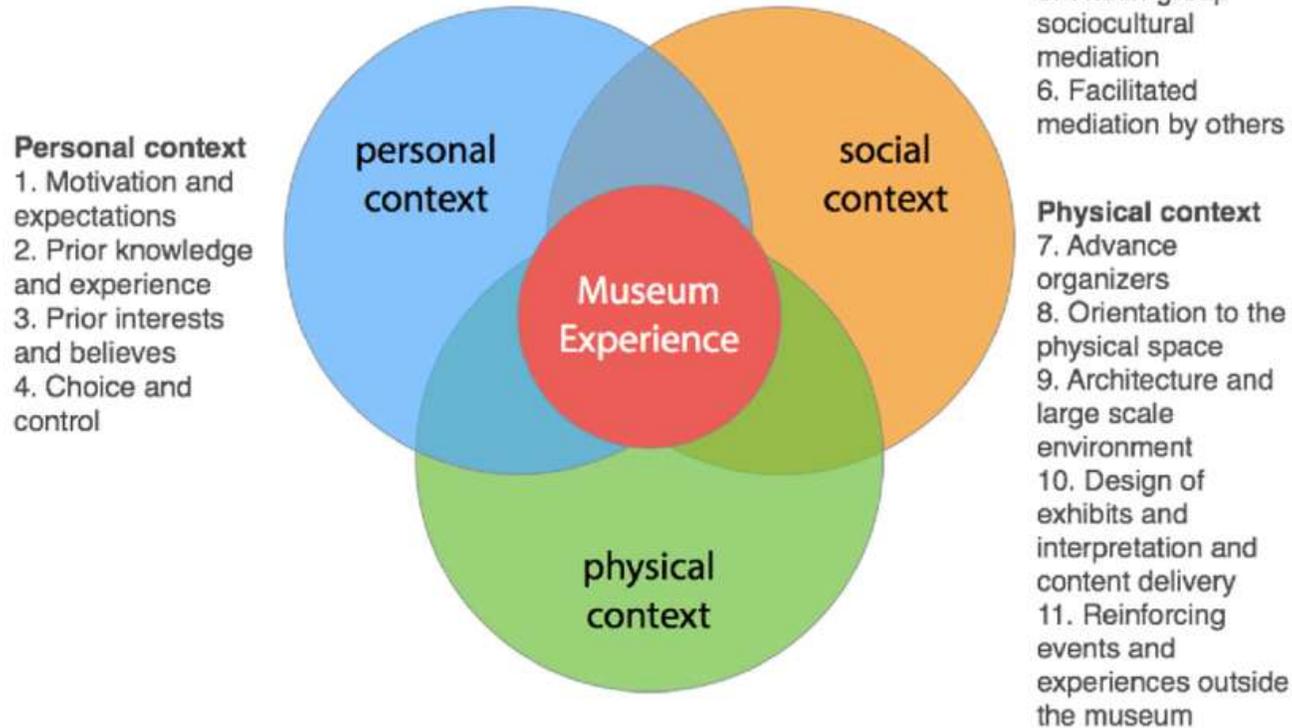


# Analytics in tourism

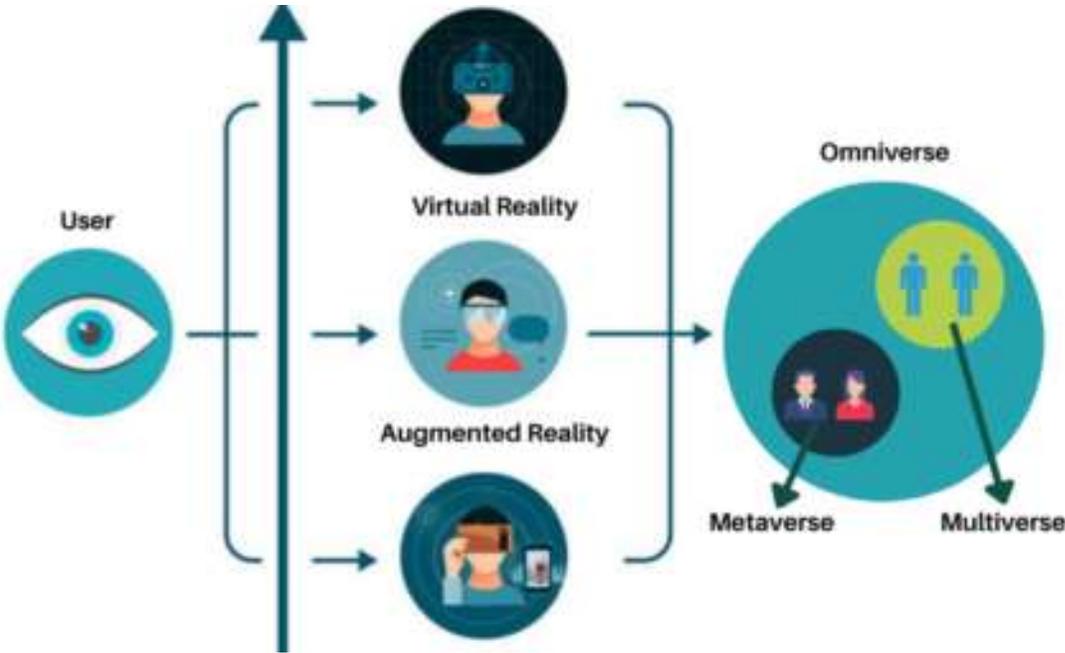


# Sensory experience in museum

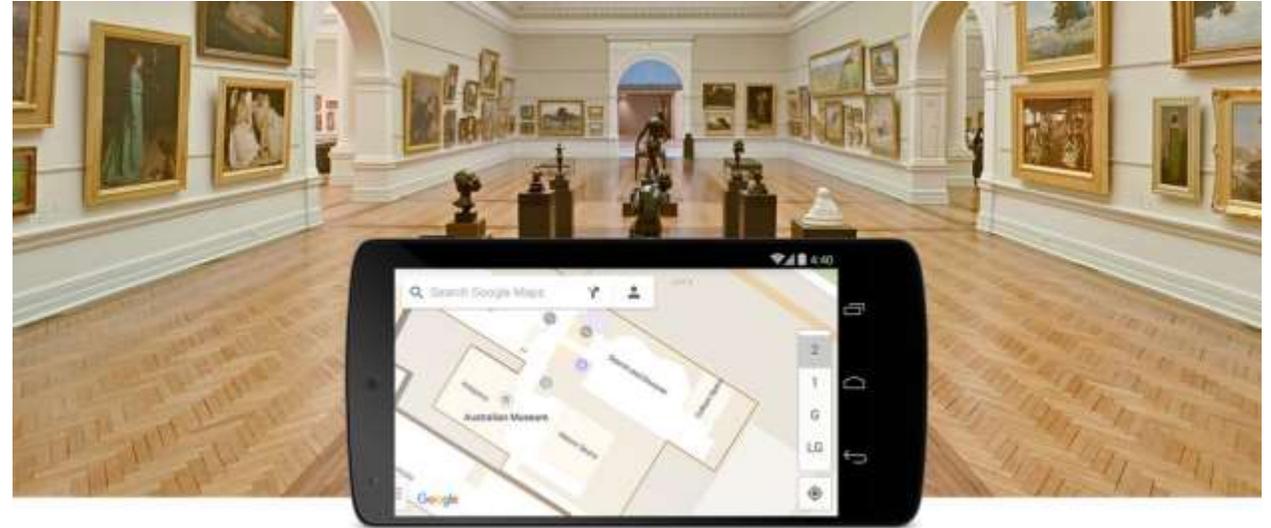
Museum Experience Model



# Immersive reality in museum



# Digital twins in museum



r Navigation App for Museum Visitors

