

Roadmap for gamification

Description and state of the art	
 Definition	<p>Trend, based on the use of game mechanics.</p> <p>Gamification is the use of game mechanics to drive engagement in non-game business scenarios and to change behaviours in a target audience to achieve business outcomes. Many types of games include game mechanics such as points, challenges, leaderboards, rules and incentives that make game-play enjoyable.</p> <p>Gamification applies these to motivate the audience to higher and more meaningful levels of engagement. Humans are "hard-wired" to enjoy games and have a natural tendency to interact more deeply in activities that are framed in a game construct[314].</p>
 Addressed societal /business or public sector need	<p>Public sector need: Employee remuneration and incentives</p>
 Existing solutions /applications /services	<ul style="list-style-type: none"> • Economie.gouv.fr[315] • The UVA baygame[316] • PEPC, MISIVIAS[317] • Games of Social Change by Engagement Lab @ Emerson College[318] • MIT, Education arcade[319] • MMOWGLI Portal[320]
 Main actors regarding R&D of this technology	<ul style="list-style-type: none"> • Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung e.V. • Telefonica Investigacion y Desarrollo SA • Institut National de Recherche En Informatique et en Automatique • Universidad Politecnica de Madrid



Current research activities

EU R&D projects and programmes

RAGE, GALANOE, PLAYMANCER, PERGAMON and also several projects with very different applications of Gamification: **air traffic management:** PACAS; **Cars:** Safe and Sound Drive; **Education:** STIMULATE, SIREN, ILearnRW, ManuSkills, TARGET, GaLA, ADAPTITMES, ProsocialLearn, BEACONING, TheCityGame pilot, Q-Tales, FACE, **Environment:** Waternomics, WaterWatt, TRIBE, ENTROPY, EnerGAware, PEAKapp, GreenPlay, ECO – ENGAGE, **health:** DOREMI, BLINDPAD, VERVE, HEALTHNAR, IRIS, 3D-Tune-In, **police, first responder:** LEILA, INSPEC2T, TARGET, CITYCoP, AUGGMED, **policy, government:** SYMPHONY, xDELIA, JobCity

Other national or international R&D projects and programmes

PlayFM – Serious Games for knowledge transfer in facility management, Serious Games in nursing training; **EUREKA** project (Gamified school information system), EUROSTARS projects (LBSaaS) and (FRAIL)



Impact assessment

Public sector modernization:

- Efficiency / Productivity
- Image Modernization
- Level of Participation

Public Sector as an Innovation Driver:

- Innovation
- Quality of Education
- Environmental Awareness Creation

Necessary technological modifications



Potential cases use

Generally speaking, gamification can be part of every organization’s digital business strategy:

- Services supporting collaboration among teams – Provision of work incentives.
- Awareness on and adoption of systems.
- Education and awareness raising, gamified systems are used to motivate people to learn online

Within the public sector, gamification can be used to help public agencies run communications campaigns, raise awareness of new or undervalued initiatives, engage citizens, train officials and even change behaviour.

In this roadmap, gamification is considered as a way to motivate public employees. Adding game elements to the job is expected to raise motivation, as players take on challenges, receive immediate feedback on their performance, and can compete against others. Building self-esteem and re-enforcing it with peer recognition is a powerful means of unlocking motivation.



Technological challenges

- Unclear effects on user attitudes and behaviours.
- Simplification and limitation of the game elements employed.
- One-size-fits-all approach that impedes customization of the game mechanics for specific user groups.
- Legal restrictions applying to gamification with regard to the use of virtual currencies and virtual assets, data privacy laws and data protection, or labour laws.
- Target groups being mostly youngsters and those familiar with gaming.
- Need for expertise in information systems, organization behaviour and human psychology.

Necessary activities (in or for the public sector)

 <p>Development of a specific training necessary</p>		<p>Game mechanics comes natural for most part of the people, so public employees will not need any special training associated with this.</p>
 <p>Advanced or adapted ICT infrastructure needed</p>		<p>To introduce gamification into public sector processes does not imply the need for an advanced complex infrastructure. In fact, what gamification does is to create a digital environment where people compete to win prizes as part of a game, and through the process, learn something new or behave in a desirable manner.</p> <p>So, the problem does not lie in the infrastructure, the hard part is designing the game correctly.</p>
 <p>Change of (public sector internal) processes necessary</p>	<p>Open task</p>	<p>Public sector internal processes need to be changed, as gamification affects employees progress paths, the use of feedback and rewards, user interfaces, etc. to make it easier to share information and engage internally. An interdisciplinary approach, with a user-centred philosophy, is recommended for best results when designing processes.</p> <p>For example[321, 322], each user, in consultation with colleagues and managers, could set concrete goals and concrete standards of success or failure. Such an approach may allow for various work processes to be tailored to a specific audience, while allowing for personalization based on individual</p>



 <p>Promotion / of information of stakeholders necessary</p>		<p>preferences.</p> <p>According to Dan Hunter and Kevin Werbach, both professors at the University of Pennsylvania, adoption of gamification in the public sector could be greater than in the private sector because public sector employees are mission-oriented - "Gamification taps into motivations other than money or tangible rewards. People play games because they find them enjoyable and they care about the outcomes. Workers in public service organizations are likely to respond to gamified systems that are effectively connected to the organization's mission." In conclusion, gamification is likely to succeed in the public sector because money is less of a motivator than in private industry. Public service environment just can't rely on greater monetary rewards to make people do things.</p> <p>When it comes to the different generations, we can say that gamification is particularly relevant to young people, digital natives, now entering the workforce. New employees may find a gamified workplace more attractive because they value work experiences that are supportive, fun, engaging and rewarding. But gamification holds also great value for their colleagues of different generations, as the workings of games are as universal as the excitement they produce. In fact, according to a KPMG study[323], more mature individuals can be more responsive to gamification experiences than their younger peers.</p>
 <p>Need to deal with cyber security issues</p>	<p>Open task</p>	<p>Security should be at the top of every organisation's agenda, irrespective of whether gamification is implemented in their processes or not.</p> <p>Applying gamification inside an organization where employees interact with a gamified system, generates - due to the nature of the concept - a track record of their achievements and the collection and use of personally identifiable data.</p>



 <p>New or modified legislative framework or regulations necessary</p>	<p>Open task</p>	<p>It becomes necessary to look at the legal aspects of gamification: labour laws, data privacy and constitutional rights, depending on the countries the employees are located and accessing the gamified systems.</p> <p>For example, there will be a need for new or modified legislative framework to deal with the ethical challenges identified bellow.</p>
 <p>Development of a common standard necessary</p>	<p>Open task</p>	<p>If standards are met it is more likely that a game can be ported from one platform to another and be applied in multiple administrations with minor adaptations.</p>
 <p>Need for a more economical solution</p>		<p>Gamification is basically a digital engagement model, which can be packaged into an app or device and scaled to engage an audience of any size at a very low incremental cost.</p>
<p>Dealing with challenges</p>		
 <p>Ethical issues</p>	<p>Open task</p>	<p>According to Kim, T.W. & Werbach, K.,[324] practitioners and designers should be precautious about, primarily, but not limited to, whether or not their use of gamification practices: (1) takes unfair advantage of workers (e.g., exploitation); (2) infringes any involved workers' or customers' autonomy (e.g., manipulation); (3) intentionally or unintentionally harms workers and other involved parties; or (4) has a negative effect on the moral character of involved parties.</p>
 <p>Societal issues</p>		<p>No issues identified.</p>
 <p>Health issues</p>		<p>No issues identified.</p>

 <p>Public acceptance</p>		Awarding virtual badges and points as employees complete assignments will result in a more engaged, productive and happier public workforce and this is also beneficial for the citizens they serve. So, gamification within public sector is likely to be very well accepted.
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