



Realising an Applied Gaming Eco-sytem

Research and Innovation Action

Grant agreement no.: 644187

D3.3 – First Social Gamification Assets.

RAGE – WP3 – D3.3

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|----------------------|---|
| Project Number | H2020-ICT-2014-1 |
| Due Date | 31 July 2016 |
| Actual Date | 27 July 2016 |
| Document Author/s | Kam Star, Ben Hirsh, Jared Glass, Jack Coldridge, James Allsopp, Ellis Spice, Felix Wentworth |
| Version | 1.0 |
| Dissemination level | PU/ RE |
| Status | Final |
| Document approved by | WW |

This project has received funding from the European Union's Horizon 2020 Research and innovation programme under grant agreement No 644187



| Document Version Control | | | |
|---------------------------------|-------------|---|--|
| Version | Date | Change Made (and if appropriate reason for change) | Initials of Commentator(s) or Author(s) |
| 0.1 | 1/2/2016 | Initial document structure | KS |
| 0.2 | 15/2/2016 | Outline of asset market evaluation | JA,KS |
| 0.3 | 4/7/2016 | Addition of asset description and links | BH,JC,ES,FW |
| 0.4 | 11/7/2016 | Addition of gamification of the ecosystem | KS |
| 0.5 | 14/7/2016 | Update of content | KS |
| 0.6 | 22/7/2016 | Review comments from OUNL actioned | KS |
| 0.7 | 25/7/2016 | Review comments from UPM actioned | KS |
| 0.8 | 27/7/2016 | Review comments from Gameware actioned | KS |

| Document Change Commentator or Author | | |
|--|-----------------------|--------------------|
| Author Initials | Name of Author | Institution |
| KS | Kam Star | PlayGen |
| BH | Ben Hirsh | PlayGen |
| JG | Jared Glass | PlayGen |
| JC | Jack Coldridge | PlayGen |
| JA | James Allsopp | PlayGen |
| ES | Ellis Spice | PlayGen |
| FW | Felix Wentworth | PlayGen |
| WW | Wim Westra | OUNL |
| MD | Mihai Dascalu | UPM |
| STM | Stefan Trausan-Matu | UPM |
| JC | Jeremy Cooke | GameWare |
| IS | Ian Saunter | GameWare |

| Document Quality Control | | | |
|---------------------------------|-------------|--|------------------------------|
| Version QA | Date | Comments (and if appropriate reason for change) | Initials of QA Person |
| 0.5 | 21/7/2016 | Tracked changes in document | WW |
| 0.5 | 25/7/2016 | Tracked changes in document | MD,STM |
| 0.7 | 27/7/2016 | Tracked changes in document | JC, IS |

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1 EXECUTIVE SUMMARY

This deliverable (D3.3) is software, as such this document is abridged to be as succinct as possible, the extended descriptions and detailed documentation for the software are online. The document consists of two parts, part one describes the first bundle of social gamification assets developed in WP3, part two presents mock-ups of the RAGE ecosystem gamification.

In addition to the software outline, included in part one is a short market analysis of existing gamification solutions, outline rationale for combining the three social gamification assets into one unified asset, and the branding exercise to make the assets more developer friendly. Online links to the source code, binaries, demo and documentation for the assets are provided.

The combined assets offer game developers as well as a wide range of software developers the opportunity to readily enhance existing games or digital platforms with multiplayer gamification functionalities, catering for both competitive and cooperative game dynamics. The solution consist of a flexible client-server solution which can run either as a cloud-based service, serving many games or have specific instances for individual games as necessary.

2 SOCIAL GAMIFICATION ASSETS

“If I had an hour to solve a problem and my life depended on it, I would use the first 55 minutes determining the proper questions to ask.” Albert Einstien

Despite the short nature of this deliverable, we attempt to address the question of what is already in the marketplace for this type of solution, and how the RAGE solution differs. Next we present the functionality provided along the original three assets of social challenges, social rewards and social progression described in the DoA. This is followed by the rationale for combining these assets into one unified solution and the branding of the asset to make it more attractive to developers, finally we provide a full list of links for software and its detailed documentation.

2.1. *Existing solutions in the marketplace and gaps*

We began by searching all the potential solutions currently available in the market that developers could use to integrate gamification into their games. We carried out an indepth analysis of almost 30 technology provider, in table 1 below we present the top 15 in short form. Providers ranged from the biggest global technology providers such as Apple, Google and Valve’s Steam, to more specialised providers such as Simple Clans (for Minecraft).

| Name | Year | Website | High level features list | App.Cost | Open Source |
|---------------|------|---|--|--------------|-------------|
| Apple GameKit | 2010 | https://google.com/zvcT6m | Realtime/Turn-based Multiplayer, Leaderboards, Achievements, Challenges. | \$99+/per yr | No |

| | | | | | |
|------------------------|------|---|---|--------------------------|-----|
| Google Play | 2008 | https://goo.gl/EQWNP | Achievements, leaderboards, Realtime/Turn-based Multiplayer, Quests (Challenges) | Free | No |
| Steam Works | 2003 | https://goo.gl/f6xfLK | Achievements, Matchmaking, Authentication, Ownership, Community | Free | No |
| Next Peer | 2011 | https://goo.gl/L46VTH | Realtime/Turn-based Multiplayer, Matchmaking, Leaderboard, Friends | to \$199+ monthly | No |
| AppWarp | 2013 | http://goo.gl/Ywvp7s | Achievements, Rewards, Buddy(Friends), Gifts | to \$300+ monthly | No |
| Facebook Game Services | 2012 | https://goo.gl/GwVUfC | Achievements, Scores, Friends | Free | No |
| GetSocial | 2012 | https://goo.gl/UALvhX | Chat, Activity Feed, Analytics | to \$399+ monthly | No |
| Simple Clans | 2011 | http://goo.gl/FztLQE | A Minecraft Mod (not available for other games), Alliance, Rivalries, Kill.Death Ratio, Chat, Ranks, Leaderboards | Free / Donation | Yes |
| HeroicLabs | 2015 | https://goo.gl/4xZTxQ | Achievements, leaderboards, Realtime/Turn-based Multiplayer | to \$3000+ monthly | No |
| Fuel | 2011 | https://goo.gl/qB2HYI | Tournaments, Matchmaking, challenges, leaderboards | Price not public | No |
| Swarm | 2013 | http://goo.gl/XQzSLC | Achievements, leaderboards, cloud storage | Price not public | No |
| Leaderboards.io | 2010 | http://leaderboards.io | Leaderboards | \$0.05 per 1000 requests | No |
| Onyx [Unity Asset] | 2011 | https://goo.gl/ODPPrd | Ranking, achievements | \$25 | No |
| GeoQ | 2013 | https://goo.gl/SHvCqy | Points, badges | Free | Yes |
| Mozilla OpenBadges | 2011 | https://goo.gl/OsbxkE | Badges | Free | Yes |

Table 1 Existing Gamification Platforms for Game Developers

Almost all existing solutions focus on competition and the individual, lacking the critical focus of social gamification in RAGE, where there is prominence given to social interaction and group based cooperative features in an open source solution.

The indepth feature analysis, identified some 70 features relevant to this asset, divided into Object Models, Graph Models, Player Actions, Goal Model, Player Matching, UI, Admin Interface and Templates. Each technology providers solution was then ranked against this feature list in order to produce a complete list of the most commonly provided features and least commonly provided features, these are presented in Table 2 below.

| Most Common Features | In top 15 | Least Common Features | In top 15 |
|-----------------------------|-----------|-------------------------|-----------|
| Objects Model: Player model | 14 | Goal Model: Group goals | 1 |

| | | | |
|---|----|---|---|
| Player Action: Sending/receiving private message | 14 | Graph Model: Group-role graph | 1 |
| Goal Model: Single Player Goals | 14 | Graph Model: Group-group graph | 1 |
| Objects Model: Single Player Score | 11 | Goal Model: Group scorekeeping | 1 |
| Player Action: Friending/unfriending | 11 | Player Action: Affecting player states | 2 |
| Player Action: Sending/receiving broadcast message | 11 | Graph Model: Group-resource graph | 2 |
| Player Action: Following/unfollowing player | 10 | Objects Model: Role model | 2 |
| Player Action: Sharing game event | 10 | Graph Model: Player-player graph | 3 |
| Goal Model: Player Matching | 8 | Player Action: Affecting resource state | 3 |
| Objects Model: Resource model | 8 | Graph Model: Player-group-role graph | 4 |

Table 2 Existing Gamification Features

As highlighted in Table 2 whilst the majority of platforms offer individual friending and goals, very few make any provision for group goals or group related activities. This is compounded by the fact that all the platforms take a competitive stance in gamification, with almost no provision for cooperative gamification. Additionally, from a licencing and accessibility of the technology point of view, 12 out of the top 15 solutions were closed source, and the remaining 3 open source solutions provided extremely limited functionality in comparison.

Taken together the scope for the social gamification assets, as supporting cooperative interaction provide a novel and much needed solution for the applied games space. Particularly as cooperation has been established empirically as being more effective at supporting learning than competition. (Johnson & Johnson 2008)

2.2. Asset Features

In this section we provide a brief overview of the features selected for development in the social gamification assets based on detailed analysis of the market and in adherence with the rationale and tasks presented in the DoA. The solution provides a flexible framework that can accommodate different strategies. See section 2.4. for link to software documentation which includes core concepts, entity models diagram, system architecture, detailed feature description, API references, demos and installation guide.

In order to deliver a social gamification solution a set of scaffolding features are required to be in place. These include the provision of functionalities to have users, form groups, store game data and be able to form relationships, set and evaluation achievements, as well as create leaderboards. Accordingly, the following scaffolding features are incorporated into the asset:

Create/Update/Delete User: The ability to create, update or remove a user together with their metadata such as name and bio.

Create/Delete/Join/Leave Group: Create, remove, join, leave a group. A group can contain other groups.

Achievements: Achievements are tasks accomplishable by users or groups, either binary or incrementally.

Resources: Resources are generalised data storage functionality for game items, rewards, inventories, skills etc, in fact any game object necessary to be tracked or shared between users or groups.

Leaderboards: Leaderboards provide a generalised ranking functionality that provide any combination of competitive comparison or collaborative effort.

Relationships: Provide links between two or more entitties, such as friendship or alliance.

The scaffolding features make it possible to provide the functionality for the assets as described in the DoA; Social Challenges, Social Progress and Social Rewards as follows :

Social Challenges

Group Achievements: Achievements can be associated with groups enabling groups to complete or make progress on any type of task, such as attaining a certain score, collecting a set of resources etc.

Group Alliances: Relationships provide groups with ability to connect to form alliances with other groups to share information, ask for help etc.

Within-group cooperation: Resources together with achievements provide the ability for interaction between individual players within a group.

Competitions between or within groups: Achievements and resources provide the ability to create a variety of competitive game dynamics such as races, survival (last man standing), elimination and score-based tournaments.

Cooperation between groups: Achievements and resources in combination with alliances provide the ability to setup cooperative dynamics between groups including sharing of resources, items, etc.

Social Progress

Tracking Progress: Achievements can be both binary and incremental, providing the ability to track progress for individual and groups.

Displaying player-group relations: Providing the ability to see the groups, group members, multi-group alliances. As well as individual contribution to group.

Displaying Group Progress: Display of group achievements as tracked.

Displaying Comparison (Leaderboard): Display of group resource (i.e., group leader boards, tournament league tables)

Social Rewards

Peer-initiated rewards – Resources enable peer initiated reward, these include the support of such functionalities as user initiated gifting of resources, ability to share resources (give usage rights without transferring ownership) and by extension the same on items or other objects as defined by the game developer, from one user or group to another users or group.

System-initiated rewards – includes designer specified provision of a resource, item or reward given from the system to individual or group based on a variety of fixed and variable reward schedules.

Administration panel

In addition to the software provided as Restful APIs, there is also an administrator interface system for management. See online documentation for details.

2.3. Developing for a developer community

Here we provide the rationale for combining the 3 assets described in the DoA as Social Challenge, Social Progress, Social Reward in a unified asset set called SUGAR.

2.3.1 Unification of assets

Through extended discussions with a variety of game developers about the provision of the social gamification assets as three separate assets, the conclusion was drawn that in effect combining these three into one unified asset is more logical. The key factor were the need for the scaffolding functionality which would need to be present in all three, meaning that rather than providing each asset separately whereas practically they would often be used together, the bundling into a unified solution was preferred. This makes it quicker and easier for developers to integrate and utilise the assets, by removing the need to have multiple components integrated. This provides a simpler and more flexible architecture for deployment, whilst the saving the developers from needing to integrate multiple APIs, in line with what the marketplace is offering.

2.3.2 Asset branding and identity

In order to increase the attractiveness of this asset bundle to potential developers, a new identity and web site were developed. The name chosen is SUGAR. Sugar is often an additive, much like gamification. Additionally gamification is often designed to increase desirability and stickiness of a product, much like sugar.

As such the asset now has it's own website the developer community hosted on <http://sugarengine.org>

The site includes friendly description of the functionalities and features, as well as detailed documentation covering everything from core concepts to detailed API examples and use cases and demos. Figure 1 provides screenshot of the site, serving links to the repositories, and acting as a landing page for promoting the asset. As the rest of the RAGE ecosystem takes form, SUGAR may be integrated into the ecosystem.

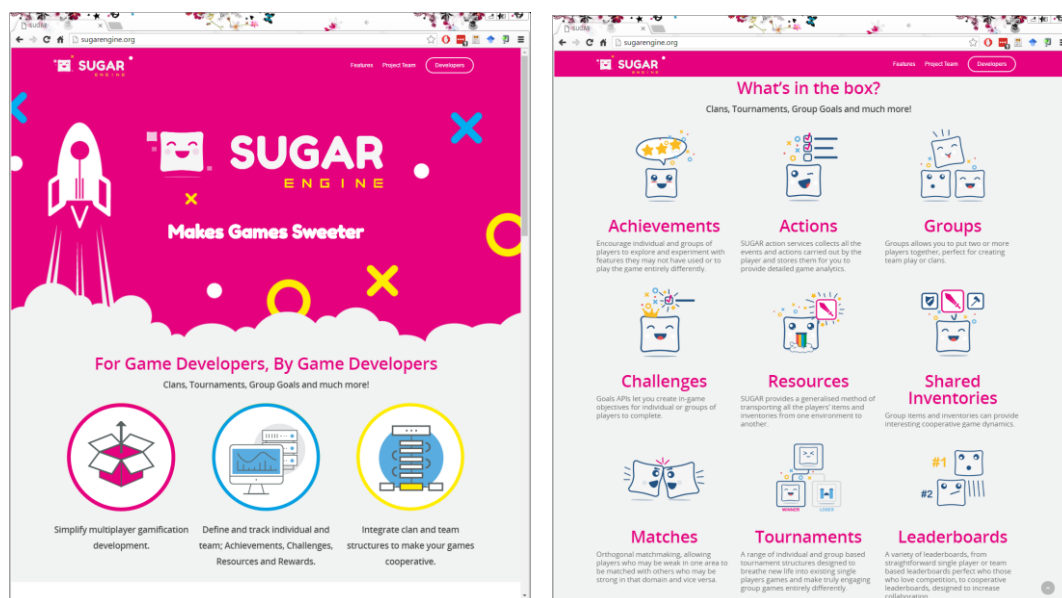


Figure 1 Screenshots from SugarEngine.org

2.4. *Links to the software*

The easiest way to access the software is to visit <http://sugarengine.org> and go to the “Developer” tab in the top right corner. Below we provide some direct links for consistency with other deliverables.

Documentation:

- <http://sugarengine.org/documentation/>
- Covers: Features, Roadmap, Core Concepts, Client API reference, Restful API reference, Admin Panel User Guide, Server Installation guide and Client Demo

Repositories:

- Server API Repository :
 - <https://github.com/playgenhub/SUGAR-SocialGamification/>
- Admin Panel Repository :
 - <https://github.com/playgenhub/SUGAR-AdminUI>
- Client Demo Repository :
 - <https://github.com/playgenhub/SUGAR-UnityDemo>

Executables:

- Admin Panel Demo :
 - <https://admindemo.sugarengine.org/>
- Client Demo :
 - <http://sugarengine.org/documentation/demo/>

3 MOCK UP OF RAGE ECOSYSTEM GAMIFICATION

This section provides a description of the rationale for the RAGE ecosystem gamification together with a visual mock-up of the elements.

3.1. **Overview**

The general purpose of any gamification is to increase user engagement. Digital gamification claims to add gameful purpose and direction in otherwise open ended digital platforms, serving to frame activities using game mechanics and providing goals to complete by the users.

Good gamification, like service design approach, support users in doing more than they would do otherwise. It flag-posts what needs attention, helps users help others and generally increases the usability and enjoyment of using an online system. In short, good gamification provides tangible utility without detracting from the real task at hand. And it is this good gamification that we're focusing on delivering with the RAGE ecosystem platform gamification.

Gamification is a relatively new and emerging field that is not yet fully understood in terms of theories and its underlying concepts, e.g. motivation, acceptance, flow, competition, social rewards, etcetera. Yet, successfully gamified online platforms are the result of an evolutionary approach to pragmatic incremental improvement, while using elements of games as useful and sometime playful functionalities that deliver real benefits to users.

3.2. **Functionality Concepts**

It is thus with acknowledgement to a wide range of both academic research and industrial success stories such as Reddit, StackOverFlow and Ebay that we provide the following pragmatic considerations for the potential ecosystem gamification:

The gamification must aim to:

- Support users in interacting more efficiently with the system,
- Increase Collaboration,
- When possible be playful

Conversely the gamification of the ecosystem must not:

- Be superficial to the point of serving no functional purpose,
- Increase complexity of interacting with the system,
- Cause undue anxiety or negative competition stress

Additionally, whilst the gamification ought to be designed such that it serves to increase overall system *utility* (what the system does), *usability* (how easily it is to interact with) and *pleasurability* (that it's enjoyable to interact with), its use must remain optional and voluntary, such that users can switch the functionality off if they wish to do so. Forcing a user to dance to a tune they don't like, without the ability for them to turn it off, is a sure way of reducing engagement.

The ecosystem gamification will utilise SUGAR, the social gamification asset developed in RAGE. SUGAR provides functionality for team based goals, resources and cooperative leaderboards. The RAGE ecosystem makes extensive use of artefacts, these can be programming assets, scientific papers, digital assets any other type of digital media. Artefacts are seen as resources. Resources can be owned, shared, gifted or rated by users.

3.3. **Systems for implementation**

Accordingly the following systems are suggested for implementation:

- An achievement system (sometimes referred to as a goal system), this will highlight one or more of the following to the user :

- What's new to be explored (for example what's been gifted or has been uploaded recently)
 - What needs attention by the user (for example question asked on an artefact that the user owns or shares).
 - What's interesting (for example what artefact has been gilded recently)
 - Who needs help (for example a new request made by another user)
- A resource system, to make it possible to ; own, gift, watch, request support , get statistics or gild - artefacts.
 - A social graph system, to make it possible to follow/friend other users, providing an activity stream from their recent actions.
 - A collaborative leaderboard system, to make it possible to see what needs collective attention (for example artefacts that need support, areas that need more input).

3.4. *Typical User Journey*

A typical journey for a user may be as follows :

1. User accesses the ecosystem platform and logs in.
2. User is presented with three achievements to complete in their visit. (see Figure 2)
 - To respond to a question on an artefact that they own.
 - To check out a new artefact added/gifted by one of their friends.
 - To check out an artefact uploaded by the users that's been gilded.
3. As the user completes each of these tasks, new suggestions are created, if a suggestion is ignored for more than a set of time, it goes to the back of the queue.
4. User may view the collaborative leaderboard of artefacts with new discussion or outstanding support requests. (see Figure 2)
5. User may view the list of their friends and see their recent activity stream. (see Figure 3)

3.5. *Caveats and disclaimers*

The RAGE's approach to gamifying the ecosystem portal is subtle and based on empirical evidence. There is no intention to present users with a pointification or a competitive leaderboard on their actions. However some competitive elements may be added through leaderboard of artefacts, such as the artefacts rating or other artefact based rankings.

Additionally users will not be 'rewarded' with meaningless badges, such as badge for logging in. Despite the 'marketing' papers on gamification which champions badges, empirical evidence on such 'gimmicks' suggest they may reduce engagement by serious users in the long run.

Additionally, as a disclaimer at month 18, the ecosystem is still under development: detailed use cases for the different stakeholder groups (among which the primary group of game developers/ game studios) are not available yet and can only be developed after the anticipated stakeholder consultations, business plan development and associated branding have taken place in the next period. Therefore, sound substantiation of the gamification cannot be provided as yet. In the next period of 18 months the conditions and needs for gamification will be investigated, so that well-considered decisions can be made about what gamification actually would be useful. In the extreme case of insufficient arguments for gamifying the ecosystem platform it may be fully abandoned.

3.6. Visual Mockup of Gamification elements

In this section we provide the mockup of gamification of RAGE ecosystem as a series of modular 'snap-in' elements that can be added and styled according to the final visual design of the site or sites.

3.6.1 Top tasks for today

This module provides the user with a list of most recent activity that's relevant to them (see Figure 2). In each case the light blue text is a live link that connects the user to the specific page with the artefact. Once the user visits that page the task is removed from their task list.

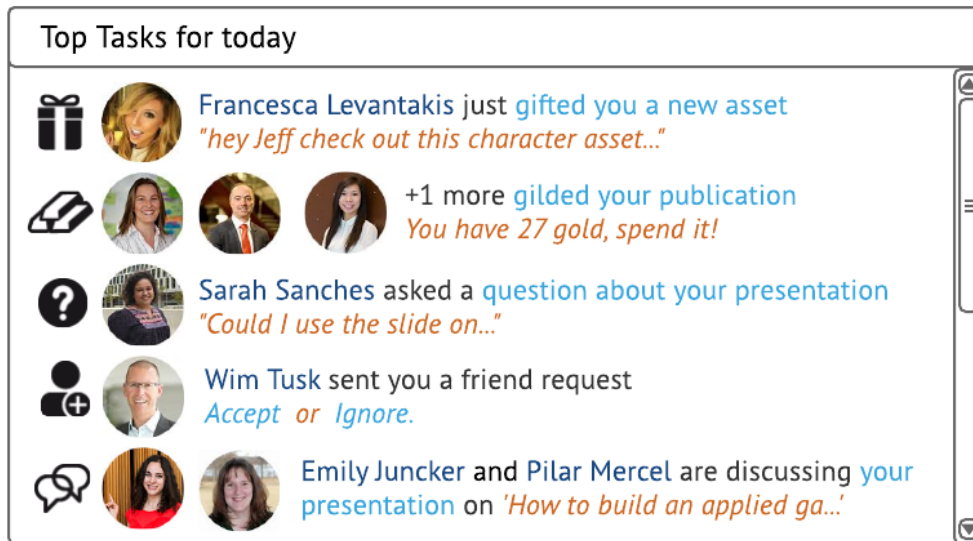


Figure 2 Top Tasks for Today

This module provides a list of friends most recent activities, including new connections, gifting, gilding, questions asked or answered. (see Figure 3) In each case the light blue text is a live link that connects the user to the specific page with the artefact.

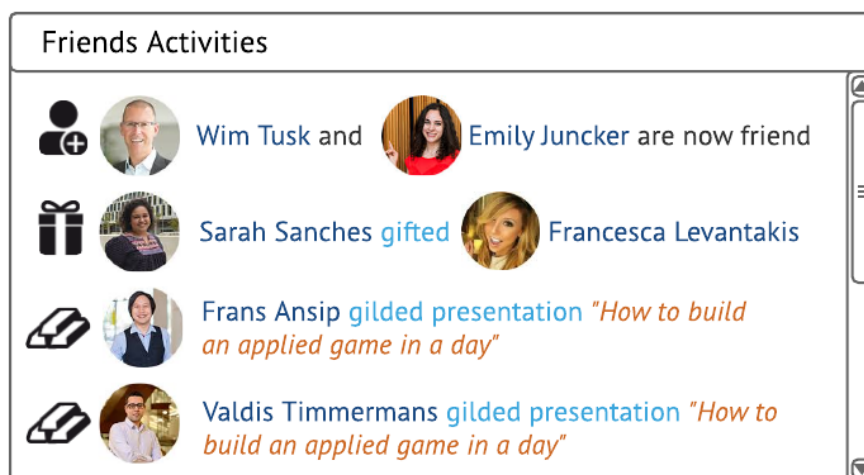


Figure 3 Friends Activities

3.6.2 Adding friends

Rolling over any profile picture will bring up the ability to add the person as a friend. (see Figure 4) Friend requests are displayed as part of the top tasks for today.

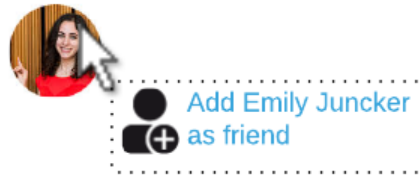


Figure 4 Adding friends through rollover

3.6.3 Actions on Artefact

Figure 5 shows typical interface additions for artefacts. This includes an icon for the type of artefact (for example paper, presentation, asset component or game), the number of times it's been gifted and gilded (shown at the top right hand side), and the actions the user can carry out such as to gild it, to gift it or to ask a question about it (shown on the bottom left hand side).

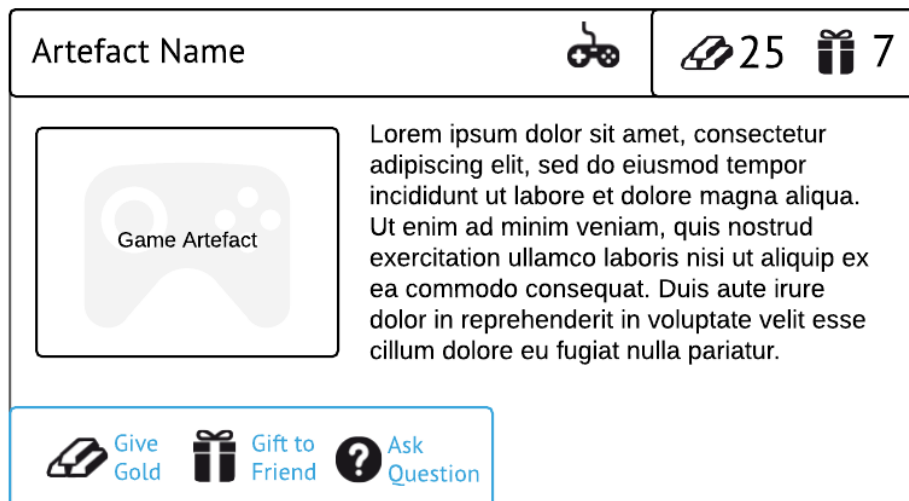


Figure 5 Actions on Artefacts

Gold : Each artefact that the user uploads earns them gold. Other users can give gold to the artefact (which is displayed as the amount of gold that the artefact has earned, and added to the amount of gold the user has). Giving gold is similar to 'liking' that is found in platforms such as facebook, or gilding in platform such as Reddit. Users do not have unlimited gold and must earn it through contributing. Other actions that may randomly provide gold are answering questions, connecting with a friend, asking a question or sending or receiving a gift. The amount of gold given in these instances are based on a variable resource ratio, approximately 30% of the time (see Raymer 2011, Richter et al. 2015, Kapp 2012). The ratio may be adjusted following user testing.

Gifting : Gifting is similar to sharing an article. How many times an artefact has been gifted is displayed. Users can gift any artefact, and there are no limits to the number of gifting actions. Gifting may occasionally earn gold for the person giving or receiving the gift. Gifting adds a task to the users tasks notifying them that they've been gifted a particular artefact.

Questions : Users can ask questions on any artefact. The difference between a 'question' and a 'comment' is that there is an expectation for an answer for a questions, usually from the person who uploaded the artefact. The interface may also make it possible to see a list of all outstanding questions, this is inspired by stackoverflow, a Questions and Answers website largely used by the technical development community.

3.6.4 Player Profile – Public

Each user has a public profile, these can be viewed in both simple or extended versions. (see Figure 6). It maybe that these appear as roll over, or next to artefacts that the user has added. Both profiles emphasis the tasks that the platform deems most important or most worthy of being carried out, these are all based on cooperative actions such as answering questions, giving gold, giving gifts or contributing artefacts.

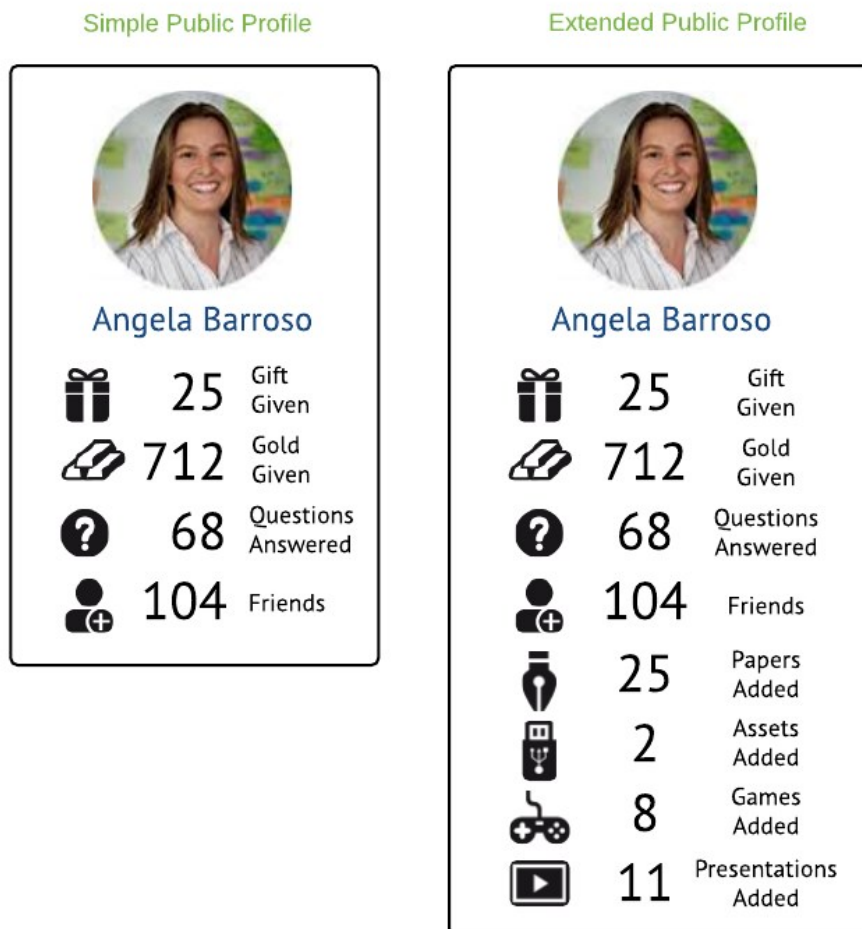


Figure 6 Public Profiles in Simple and Extended Form

3.6.5 Player Profile – Private

Whilst the public view of the player profiles focus on the key actions deemed of value to the community. The private view should give all the critical stats to the player, including what’s given and received.

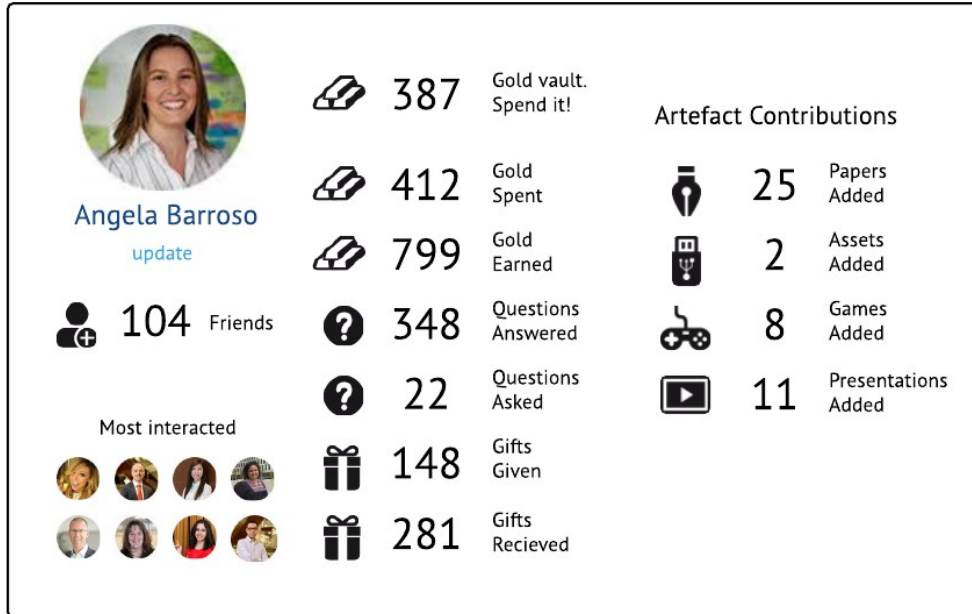


Figure 7 User Profile Private View

3.6.6 Leaderboards

Arguably one of the staples of online gamification is the use of leaderboards, as explained in the beginning of this section, the gamification of RAGE is not designed to pressure interpersonal competition but to increase cooperation. There are no default user based leaderboards provided publically, although they may be presented privately should a user wish to see them, instead the leaderboards focus on the main assets of the site, the artefacts and associated tags.

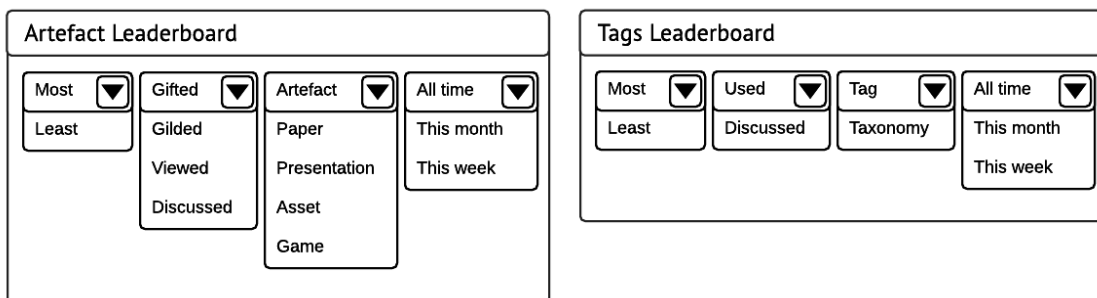


Figure 8 Artefact and Tag Leaderboards

Figure 8 presents the typical leaderboards to be supported by the gamification. This includes a method for the designer or the user to change the view of the leaderboards. For example for the artefacts leaderboards a user or designer could decide to query the most, or least – gifted, gilded, viewer or discussed – artefact, scientific paper, presentation, asset or game – of all time, this month or this week. Similarly a Tags leaderboard can be configured to provide the most or

least – used or discussed – tag or taxonomy – of All time, this month or this week. Additional variables, such as 'questions', may also be used in creating leaderboards.

4 CONCLUSION

This report presents; the highlevel overview for the Social Gamification Asset software developed as part of WP3 of the RAGE project, and the rationale and mock-up of the RAGE ecosystem gamification.

As noted the best way to access the Asset is to visit <http://sugarengine.org> where we provide detailed documentation together with future roadmap plans for the asset.

Additionally as described in section 3.5, the RAGE Ecosystem is still under construction and it's subsequent gamification is dependent on outcomes of the anticipated stakeholder consultations, business plan development and associated branding.

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