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## Research Article

# Building a Personal Learning Environment with IFTTT Service

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## Abstract

**Background:** Along with rapid development of the network technique and continuous update of learning concept, people learn and study in the personal environment consisting of the social network, cloud storage, sharing and APP. **Materials and Methods:** With different social networks, relation groups, mass information and information reuse people have urgent demands for the information, which may integrate different APP to make them to be integrated effectively and shared, while the personal learning environment, which is built with the traditional social software increasingly shows its disadvantages. **Results:** Therefore, a new application concept, i.e., IFTTT service starts to become a study field. **Conclusion:** To fully understand the connotation, meaning and application of IFTTT is helpful for people to perform more in-depth study for building a personal learning environment.

**Key words:** IFTTT, personal learning environment (PLE), social software, APP, facebook

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**Data Availability:** All relevant data are within the paper and its supporting information files.

## INTRODUCTION

With rapid development of the Internet, emerging of social network leads a revolution, which provides an interactive tool and platform for personal exploration, cooperation and communication. The personal learning environment is an informal learning mode along with development of the network technique with its purpose to ensure that each learner is able to create a personalized personal learning environment with the network technique. The personal learning environment not only helps the individuals manage their knowledge obtained, but also ensures that they are able to create new knowledge to reflect the new learning concept of student-centered, lifelong learning and personalized learning through drawing and learning the experience of others based on their mastered knowledge.

However, although the learners are in various social software each day, the channel to share and create the knowledge is limited because cross-platform sharing of information, goals and topics in different software and APPs is not integrated well. Therefore, it is necessary to make different platforms share the information freely through integration, so as to meet the habits and requirements of the learners. Recently, the scholars have put forward lots of construction methods for PLE, including construction method from blog, Google service, mashup and ZOH service<sup>1</sup>, construction of Mashup Personal Learning Environment (MPLE) based on the Virtual Learning Environment (VLE), Wiki, social network and social aggregator<sup>2</sup>, construction of PLE centered on web 2.0 social software<sup>3</sup> or based on VLE, construction through integrating the web 2.0 tools, which are applicable to study learning, reflection and cooperation by focusing on the formation of the learner's knowledge management capacity<sup>4</sup>. This study effectively solves the fundamental problems during construction of the personal learning environment through constructing a personal learning environment based on the IFTTT service. The IFTTT can integrate all services with API provided by different websites or APPs to provide the users with automatic and personalized services. Therefore, IFTTT may be regarded as a huge application program integration platform.

## MATERIALS AND METHODS

**Concept of IFTTT:** As an American website, whose founders are Linden Tibbets and Jesse Tane, IFTTT.COM was on line in May, 2011. At present, it is in the test phase. Unexpected, it draws much attention and pursuit in the shortest time. The



Fig. 1: Concept of IFTTT

concept of the website is very new. The IFTTT is an abbreviation of "If this then that" and means "To do something if certain condition may be met", which is an expression of thinking model in the network environment in the new era.

If ... Then ... is the most basic sentence of all programming languages. In fact, IFTTT is the application of the sentence beginning with if in the real life. Its website interface is shown in Fig. 1, which allows the user to achieve the complicated social information trigger and interlocking through the simple logic selection. The IFTTT.COM presents the ready-made service rather than code for the user<sup>5</sup>. If event A (this) is triggered, event B will happen (that) and it will release the information to the user in a conventional format, while the user may decide the way to read and process such information, i.e. If certain condition is met. Then initiate a series tasks such as E-mail sending, video uploading with the tenet of "Make the internet work for you".

**Basic elements of IFTTT:** The IFTTT includes four basic elements including task, triggers, actions and channel.

**Task:** Create a task through a sentence. Each IFTTT (if this then that) is a task, which may be reflected by the IFTTT mode (Fig. 2). In fact, IFTTT is a "Macro-language" of the action about internet use, which concludes the affairs from the higher abstract level.

**Triggers:** The "Trigger" corresponds to this in IFTTT. Click this, the conditions may be customized. For example, some user circles you on facebook, a famous overseas social platform or someone sends a private message to you on twitter, which is called "Trigger". Take the domestic website for an example: "If I post a message on Sina Weibo", it will be called a trigger,



Fig. 2: Create a task in IFTTT

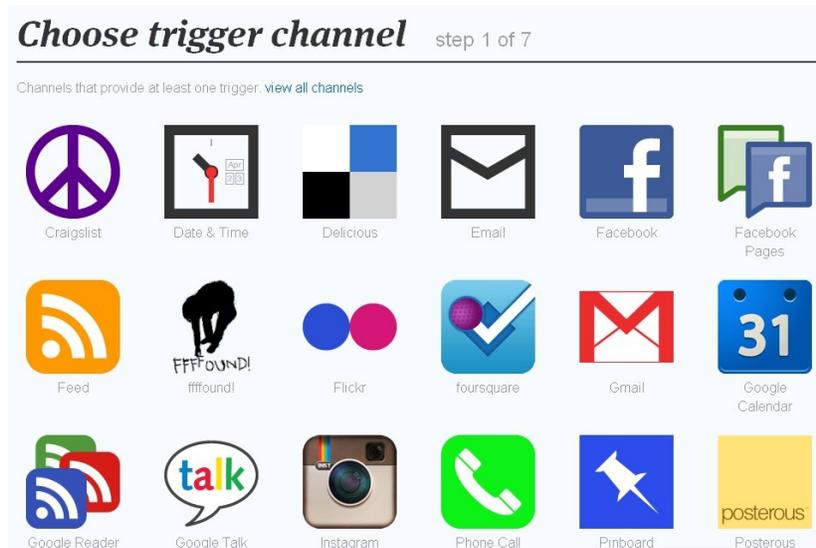


Fig. 3: Trigger channel in IFTTT



Fig. 4: Action in IFTTT

which is also called "Trigger conditions". The common trigger channels provided on IFTTT website are shown in Fig. 3.

**Actions:** The action corresponds to that in IFTTT, which means the things to be completed. Click that, the actions may be customized. For example, post a state on facebook or update a tweet on twitter, which are actions, as shown in Fig. 4. After the trigger condition of "If I post a Sina Weibo" is met, the action of "Help me forward it to Tencent Weibo" will happen.

**Channel:** The trigger and action need the channel as a carrier. For example, "Someone circles you on facebook", which requires support of the platform facebook and thus facebook

is a channel. Likewise, "You post a new tweet on twitter", which requires support of the platform twitter and thus twitter is a channel. The IFTTT provides us with lots of channels, including the platforms, which are often used in the overseas internet. Numerous tasks may be created according to such channel. The action channels of IFTTT are shown in Fig. 5, such as facebook, Gmail, flickr, delicious and so on.

In short, in the IFTTT logic, the operation to be done by "This" is called a "trigger", which is the operation action of the user on certain website, while "That" means another network "Action" brought by the chain reaction. "Trigger" and "Action" should be based on certain website, which is called channel.

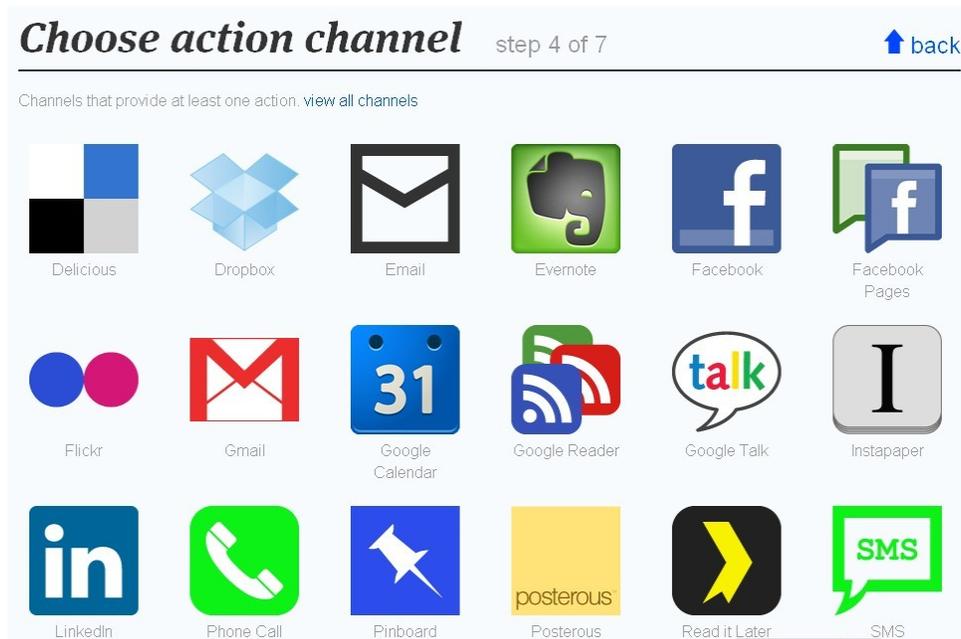


Fig. 5: Action channel in IFTTT

The whole measure "If this then that" to be completed by the user is defined as a "task". If the trigger is "I upload a video onto YouTube", the action is "release this link to my twitter". Therefore, the whole task will become "release the link to my twitter if I upload a video onto YouTube".

At present, other channel page supports 33 kinds of services including website, software, short message and call<sup>6</sup>, all of which generally cover most of your network behaviors. Several triggers and actions are listed under each kind of service for matching, which may generally cover your various uses and operations for such service. The ideal state is that all tools in the whole Internet are networked through IFTTT, such as social networking services, E-mail, call, short message and Flickr and serve your life according to your requirements<sup>7</sup>.

**Application of IFTTT:** Examples of IFTTT user customization tasks are as follows:

- If the user marks an asterisk for this article in Google reader (an online reading tool of really simple syndication), this article will be automatically shared to Tumblr (which is a microblog)
- Customize the photos on flickr (online photo album), which may be automatically synchronized to the information wall of your facebook (social network)
- When this article is collected with delicious (bookmark) and add a tweet tag, the information with the tag tweet will be automatically shared on twitter (social network and microblog service)

- When a tweet is collected on twitter, it will be synchronically collected on Evernote (note software)
- The new information is automatically sent to blog with Rss (really simple syndication)

Applications of IFTTT are unlimited. Except the above-mentioned applications, the creation of diversified tasks such as weather (weather forecast), SMS (short message service), Instagram (photo sharing)-dropbox (online application of network storage), weatherr-Twitter, foursquare (location-based service)-calendar, Email-dropbox may be also supported. The rich channels and interfaces may form various combinations and various unimaginable tasks may be completed like a domino.

Meanwhile, IFTTT service also has the practical backup and synchronizing functions: Automatically backup the blog articles, contents in share in Google reader and contents of other services, synchronization from Twitter to Facebook and timely rain short message notice.

## RESULTS

**Unified personalized terminal:** Different learners have different use habits. Some of them often use the social platform, some often use E-mail and others often use SMS and traditional website, etc. The information jump depends on the website design. It is very common to jump to a similar content from one content, but it is not so common to jump to an

irrelevant field from one field. All personal social software may be connected to achieve unification with IFTTT service. Learners may select the terminal according to their habits to conditionally reorganize API according to their demands and set various task combinations with the channel to make their methods to acquire the information more flexible and diversified.

**Communicable information transfer:** Another advantage of IFTTT service is more smooth information flow. The API is used to adapt to the content standards of different websites during flow. In the personal environment built by the learner, only their own website can be visited, rather than concerning the social network of others and how they communicate. The IFTTT is a cross-website and cross-platform function call tool, which is like a personal dispatching center of the learners. The communication between different platforms may be achieved through PLE. The interaction supported by the personal learning environment under IFTTT service is an interaction, which supports information absorption and communication and which makes learning to be transferred the result of multi-platform sharing.

**Customized and released learning resources:** The wide cognition and numerous detailed wills of learners may trigger their wills and behaviors. The IFTTT service may complete them through the behavior customization, which changes the method of conditional release (release which is customized by the user), rather than a threshold. The IFTTT customizes the tasks for the learners and dispatches all Internet resources according to their hobbies and demands and the learners may select different contents and learning method according to their own situations.

**Selective information integration:** The learners may selectively "Integrate" the required "Sources" of information on the social software into the personalized and customized information "Flow". The personalized information filter helps the user return to the interested thing and establish connection with the nodes required to form a self-centered network. The contents will be naturally gathered from different "Sources" later and "Flow" and the learners may disconnect at any time. The IFTTT may easily make the learners actively use various media to integrate information, which makes the personal learning environment to be integrated effectively.

**Intelligent and timely notification:** The real-time notification service based on conditions of IFTTT is very attractive. When your friend is unhappy, you will immediately find it out. Therefore, it is helpful for strengthening the social tie and emotional interaction between learners, which reduces their aloneness in the personal learning environment. Meanwhile, the intelligent real-time notification service becomes a private secretary in the personal learning environment to some extent.

## DISCUSSION

In study of studying social micro-worlds as personal learning environments by Kojukhov<sup>8</sup> proposed using a popular mash-up IFTTT (If-This-Then-That) that specifies a set of rules. The students form the set of rules by creating their social personal micro-world. It was showed that the structure and the content of the IFTTT rules contain information about the networked student's behaviour, both in general and the student's personal identity on-line in particular<sup>8</sup>. In study of enacting personal knowledge management and learning with web services interoperability tools<sup>9</sup> the authors discuss the use of PLE and N with a web services interoperability tool, IFTTT (aka If This Then That), which bridges the web services. The benefits of how a PLE and N with IFTTT is discussed to support personal knowledge management for better learning. Individual knowledge workers are continuing being empowered by such web 2.0 tools in the cloud to pursue personal goals and aspirations<sup>9</sup>. In study of from idea to impact: A case study for sustainable innovation<sup>10</sup> currently changed courses from the Arduino-based system to show that the system can be built around a popular, commercially available product, the Belkin WeMo. There is a mobile app already created by Belkin for the WeMo and the author plan to take advantage of its ability to use the IFTTT (If-This -Then-That) web service to respond to events from other services and devices, such as from a calendar or email event<sup>10</sup>.

The value and innovation of IFTTT lie in horizontal serial connection of various information through "process" in the way of trigger, rather than "radial" information organization "from top to bottom". With in-depth insight for the user's demands, IFTTT transfers all complicated setting such as API call and service integration of all websites to the background. The front-end general user may set the conditions such as If ... Then ... which is very simple and easily understood like "commanding" to make the user command the internet to "work" in the manner complying with lifestyle. The computational result is the automated service<sup>11</sup>.

The IFTTT is like a neural network of human and each network node is like the nerve cell. The information on the network is like the neurotransmitter transfer among the nerve cells. With development and maturity of IFTTT, more and more nodes on the network will form the synapses through linkage, which will make the Internet form a huge information exchange and processing system which is similar to the intelligent neural network. Such process is spontaneously formed along with increasingly wide application of IFTTT.

However various applications of IFTTT.COM are for the overseas social software and applications, it is inconvenient for the domestic users for use. Therefore, they should be localized to support the social software and applications in China. At present, there are three simulated IFTTT websites in China, including [ruguoyun.com](http://ruguoyun.com), [ruguojiu.com](http://ruguojiu.com) and [ruguoshuo.com](http://ruguoshuo.com), which are used for call of function of domestic social software. Tencent has also established its specific research group to study the IFTTT products.

At present, the application of IFTTT does not support the tasks customized by the user, but mainly supports its default tasks. Therefore, the users may achieve the chain reaction under the limited conditions. However, the potential of technology is unlimited. It is estimated that the customization may be achieved among partial channels, which cannot be achieved by the current synchronous tool or sharing tool<sup>12</sup>.

## CONCLUSION

With development of technologies, there are more and more social software on the internet. Building of personal learning environment is a very important link during non-formal learning, which cannot only depend on series of tools and resources, but indeed meets demands of personalized learning of learners, reduces the information overload and further reflects the openness, dynamic nature and intercommunity. The IFTTT provides a new study perspective for the construction of personal learning environment. The author elaborates the connotation, value and application of IFTTT from the problems of personal learning environment to make people better build their personal learning environment with it or make in-depth study for it, while accepting such concept.

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